Hearings Examiner Continuance of Public Hearing Agenda
Thursday, December 12, 2024, 4:30 PM
Council Chambers, 616 NE 4th AVE

NOTE: The City welcomes public meeting citizen participation. TTY Relay Service: 711. In compliance with the ADA, if you need special assistance to participate in a meeting, contact the City Clerk's office at (360) 834-6864, 72 hours prior to the meeting so reasonable accommodations can be made (28 CFR 35.102-35.104 ADA Title 1)

To Participate Remotely:

OPTION 1 -

1. Go to www.zoom.us and download the app or click "Join A Meeting" and use Meeting ID – 835 7305 1660
2. Or, from any device click https://us06web.zoom.us/j/83573051660

OPTION 2 - Join by phone (audio only):
Dial 877-853-5257 and enter meeting ID# 835 7305 1660

For Public Comment:
Click the raise hand icon in the app or by phone, hit *9 to "raise your hand", or email to communitydevelopment@cityofcamas.us

These will be entered into the meeting record. Emails received up until one hour before the start of the meeting will be emailed to the Meeting Body prior to the meeting start time.

CALL TO ORDER

INTRODUCTIONS AND INSTRUCTIONS

HEARING ITEM

1. 13th Street Gas Station (APPEAL24-1001)

CLOSE OF MEETING

LAND USE DECISION

APPEAL24-1001 STAFF REPORT

13th Street Gas Station

CONSOLIDATED PLANNING FILES: ARCH23-07, CA23-08, DR23-09, SEPA23-12, SPRV23-06
Decision Date: September 16, 2024
Appeal Date: September 30, 2024

PROPOSAL	The proposal includes the construction of an 8-pump gas station, a 4,100 square-foot convenience store, and a drive-thru car wash, located at 20101 NE 13th Street, in the BP - Business Park Zone.
LOCATION	The property is located on the southwesterly corner of the intersection at NE 13th Street and NW Friberg-Strunk Street. The parcel number is 176148000, situated in the NW 1/4 of Section 29, Township 2 North, Range 3 East of the Willamette Meridian, Clark County.

APPLICANT	PLS Engineering, Travis Johnson 604 W. Evergreen Blvd. Vancouver, WA 98660 (360) 944-6519	**OWNER**	Pak USA Camas, LLC 3993 NW Currawong Court Camas, WA 98607 (512) 779-4999

APPLICABLE LAW: The application was submitted on November 9, 2023, and the applicable codes are those codes that were in effect at the date of application. Camas Municipal Code (CMC) Title 17 Land Development and Title 18, specifically (but not limited to): Chapter 18.11 - Parking, Chapter 18.13 - Landscaping, Chapter 18.18 - Site Plan Review, Chapter 18.19 Design Review, Chapter 18.37 Business Park, and Chapter 18.55 Administrative Procedures.

SUMMARY

The proposed project includes the construction of an 8-pump gas station, a 4,100 square-foot convenience, and a drive-thru car wash on an approximately 0.97-acre parcel currently developed with a single-family residence, situated in the BP – Business Park Zone. According to CMC 18.07.030 – Table 1, the proposed uses are allowed within the BP Zone, subject to the necessary approvals.

A SEPA Determination of Non-Significance was issued on February 22, 2024, with the comment period closing on March 7, 2024. Prior to the closing of the comment period, several comments were received from the public with concerns related to noise, traffic, air and water pollution. The applicant voluntarily placed the project on pause so that they could addressed concerns received during the initial SEPA comment period. Revised technical reports were submitted to staff on July 11, 2024, and the SEPA Determination of Non-Significance was re-distributed on August 15, 2024, with the comment period ending on August 29, 2024. Public comments were again received during the second SEPA comment period with comments similar to what was submitted during the initial SEPA review period. No new topics of concern were included.

A Notice of Decision for the project's approval was distributed on September 16, 2024, and the decision was appealed September 30, 2024.

The appeal narrative noted concerns related to potential water pollution, noise and light pollution, as well as an increase in traffic congestion. Also noted was the concern to allow a vehicle car was within the BP – Business Park Zone. With regards to the items noted in the Appeal Narrative, staff has the following comments:

- Water Pollution
  The appeal narrative notes the belief that the project has the potential to pollute open waters, increasing concerns about the management of Lacamas Lake, endangering safe drinking water supply of neighboring wells.

  As noted in the staff report dated September 16, 2024, a Preliminary Stormwater Technical Information Report (PTIR) dated November 2023, was prepared by PLS Engineering, Inc. The PTIR was prepared in accordance with Ecology's *Stormwater Management Manual for Western Washington* (2019 SWMMWW). Ecology issued the 2024 *Stormwater Management Manual for Western Washington* which was effective as of August 1, 2024. Both the 2019 and the 2024 manuals state that minimum requirements (MRs) #1-#9 will apply for a new development project that results in 5,000 sf or greater of new plus replaced hard surface area. Minimum requirements #1 - #9 applies to the proposed development.

  The minimum requirement discussed in the PTIR relate to construction stormwater pollution prevention; source control of pollution; preservation of natural drainage systems, including infiltration, which is not proposed for this project; on-site stormwater management; stormwater runoff treatment; stormwater flow control; wetlands protection; and operation and maintenance of stormwater treatment and detention facilities.

  With the conditions of approval contained in the staff report, the proposed project meets the requirements of CMC 14.02 Stormwater Control and CMC 17.19.040.C.3 Storm Drainage. ***Staff's position in support of the project stands.***

- Noise & Light Pollution
  The appeal narrative states that the proposed project could have the potential to create noise and light pollution that would interfere with the quiet enjoyment of residences in the nearby neighborhoods.

  [Noise Pollution]: As noted in the Revised SEPA Checklist dated July 9, 2024, typical noise in the area consists of traffic noise from surrounding areas/roads along with typical home and business use noises. Short term noise would include construction noise which would occur during approved hours as mandated by the City of Camas and Washington State. Long term noises could include slight increase in traffic noise and vehicle noise once construction is completed. The project is required to comply with CMC 9.32.050 – Public disturbance noises which prohibits the use of equipment and activities producing intermittent or repetitive noise commonly associated with site improvements before 7am or after 7pm - Monday through Friday, before 7am or after 5pm – Saturday, and anytime on Sundays or anytime on New Years Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, or Christmas Day. The project has been conditioned in accordance with Camas Municipal Code requirements***. Staff's position in support of the project stands.***

  [Light Pollution]: With regards to light pollution, the applicant's narrative indicates that the lighting plan meets the minimum safety standards and outdoor lighting will be shielded to prevent off-site light spillage to the greatest extent possible. In accordance with CMC 18.19.050, the proposed project has been conditioned to require all landscape, parking lot, and/or building lighting to be directed, hooded, or shielded away from surrounding properties. ***Staff's position in support of the project stands.***

- Permitting a Car Wash in the BP – Business Park Zone

The appeal narrative notes that permitting the construction of a car wash in the BP Zone potentially violates zoning requirements.

As per CMC 18.07.030 – Table 1, Gas/Fuel stations with mini markets are a permitted use within the BP – Business Park Zone, as are most auto oriented uses. Although the Camas Municipal Code does not specifically call out a car wash in the Use Authorization Table as a permitted use in the BP Zone, it is an auto oriented use and is considered an ancillary use to the proposed gas station/mini market. The project has been reviewed under the current development standards of Camas Municipal Code and no variances have been requested. Adequate parking has been provided for the proposed gas station, mini market, and car wash as per CMC 18.11.130. With the conditions of approval in place, the project meets the requirements of the Camas Municipal Code. ***Staff stands in support of the project.***

- Dangerous Intersection/Access Standards

  The appeal narrative indicates the proposed project would create a dangerous intersection, expose the City to liability for granting an exception to the Access Standards – permitting a left turn access shorter than 660-feet, and the disruption of recreational use of the designated bicycle route.

  [Dangerous Intersection]: The proposed project is located on the southeast corner of the existing signalized intersection of NE 13th Street, NW Goodwin Road, and NW Friberg-Strunk. The signalized intersection consists of dedicated east and west bound travel lanes, a dedicated bike lane, a dedicated right turn lane from NE 13th Street onto NW Friberg-Strunk, and pedestrian crosswalks.

  [Access Standards]: Per CDSM, Section III Design Standards, *Table 3 Access Spacing Standards*, the access spacing standards on a roadway classified as an arterial are a minimum of 660-feet and a maximum of 1,000-feet. Due to the length of the parcel frontage along NE 13th Street, which is approximately 328-feet, it is not possible for the applicant to meet the minimum access spacing standards and still access the proposed development from NE 13th Street. Therefore, a deviation request to the city engineer was required for the location of the drive access as shown. A deviation request was submitted by the applicant.

  The access spacing standards apply to the distance between access drives. These standards do not refer to the length of a dedicated left-turn pocket. A dedicated left turn pocket was a requirement for support of the deviation request from the city engineer.

  A revised site plan was submitted with the Traffic Engineer's *Left Turn Lane Memo*, dated April 9, 2024, that included a dedicated left-turn lane. The staff report addresses the traffic and transportation as well as the request for a deviation from the access spacing standards and the left turn requirements. As conditioned, the project can and will meet the requirements of the Camas Design Standards Manual (CDSM) for Traffic and Transportation. ***Staff's support of the proposed project stands.***

- Updated Traffic Study

  The appeal narrative indicates the proposed project should conduct an updated traffic study that accounts for the new warehouse, the new residential traffic east (Goodwin/Green Mountain), Union Hight School traffic, the new Oak Tree Station, the new Business Park mall buildings on NW Friberg-Struck St., and to include the traffic impact of Harmony Sports Complex.

  The Traffic Analysis Report (TIR), dated September 2023, included all the developments noted above, except for the Harmony Sports Complex, which is in the City of Vancouver and owned by

Clark County. It should be noted that staff is not aware of any vested new trips for the Harmony Sports Complex.

Not noted above nor included in the September 2023 TIR is the 34 Lot Monte Verde subdivision east of Green Mountain on the south side of NE 28th Street. The in-process information for Monte Verde has been provided to the applicant. The Monte Verde development will add no more than 1 extra trip for every two minutes to the overall PM peak traffic count on NE 13th Street. The city engineer finds that the impact of these additional trips to be de minimis in relation to the findings of the Charbonneau traffic study. ***Staff's support of the proposed project stands.***

- Separate Ingress and Egress
  The appeal narrative indicates a requirement for separate ingress and egress for better traffic flow, including a primary exit to NW Friberg-Strunk Street.

  Highlights of the Charbonneau Engineering Memo, dated June 12, 2024, and the city's responses are as follows:

  > *"Only one access (NE 13th Street) is permitted to serve the property as no connection is allowed to NE Friberg-Strunk Street."*

  The pre-application notes stated no access onto NE Friberg-Strunk Street would be permitted; however, during the application review process, staff stated that access onto NW Friberg-Strunk would be supported as a right-in/right-out only. ***Staff's support of the proposed project stands.***

- Operating Hours
  The appeal narrative indicates operating hours of the gas station shall be incompliance with BP zoning, including all gasoline tanker trucks filling gasoline and all deliveries.

  Highlights of the Charbonneau Engineering Memo, dated June 12, 2024, and the city's responses are as follows:

  > *"To minimize the impacts associated with fueling trucks, deliveries will avoid the peak traffic periods by restricting arrivals and departures to the hours between 7:00 PM to 7:00 AM. Additionally, the fueling truck operators will be directed to make right turns from/to NE 13th Street when entering and exiting the site."* A condition of approval is warranted.

  The staff report addresses the traffic and transportation, the request for a deviation from the access spacing standards, the left turn requirements, ingress and egress, and hours of operation. As conditioned, the project can and will meet the requirements of the Camas Design Standards Manual (CDSM) for Traffic and Transportation. ***Staff's support of the proposed project stands.***

CONCLUSION

Based on the findings and discussion provided in the staff report dated September 16, 2024, staff concludes that the appeal should be denied, and the 13th Street Gas Station (SPRV23-06) should be upheld because the project complies with the applicable standards if all conditions of approval are met.

Community Development Department | Planning Division
616 NE Fourth Ave, Camas, WA 98607
360-817-1568 | permits@cityofcamas.us

General Application Form 13th Street Gas Station **Case Number:** SPRV23-06

Applicant Information

Applicant/Contact:: Khan (*Last*) Taz (*First*) *Phone:* 512-779-4999

Address: 3993 NW Currawong Court Camas, WA 98607 (*Street Address*) (*Apartment/Unit #*)

Vancouver (*City*) WA (*State*) 98660 (*ZIP Code*)

Email Address: tkhanusa@gmail.com

Property Information

Property Address: 20101 NE 13th Street (*Street Address*) 176148000 (*County Assessor # / Parcel #*)

Camas (*City*) WA (*State*) 98607 (*ZIP Code*)

Zoning District BP Site Size 0.97 AC

Description of Project

Convenience store with drive-thru car wash and gas pumps

Are you requesting a consolidated review per CMC 18.55.020(B)? YES ☐ NO ☐

Permits Requested: ☐ Type I ☑ Type II ☐ Type III ☐ Type IV, BOA, Other

Property Owner or Contract Purchaser

Owner's Name: Pak USA Camas LLC (*Last*) (*First*) *Phone:* 512-779-4999

20101 NE 13th Street (*Street Address*) (*Apartment/Unit #*)

Vancouver (*City*) WA (*State*) 98607 (*Zip Code*)

Email Address: tkhanusa@gmail.com

Signature

I authorize the applicant to make this application. Further, I grant permission for city staff to conduct site inspections of the property.

Signature: DocuSigned by: FF97DED7E6DD4EF... **Date:** 10/19/2023

Note: If multiple property owners are party to the application, an additional application form must be signed by each owner. If it is impractical to obtain a property owner signature, then a letter of authorization from the owner is required.

Date Submitted: 11/9/23 Pre-Application Date:	$7,906.80 Receipt #788411 11/9/23 by AB
Staff: Related Cases # PA22-32 DR23-09 ARCH23-07 SEPA23-12 CA23-08 ☐ **Electronic Copy Submitted**	**Validation of Fees**

Application Checklist and Fees [updated on January 1, 2023]

◊	Annexation	$944 - 10% petition; $4,013 - 60% petition	001-00-345-890-00		$
◊	Appeal Fee		001-00-345-810-00	$436.00	$
◊	Archaeological Review		001-00-345-810-00	$150.00	$ 150.00
◊	Binding Site Plan	$2,055 + $24 per unit	001-00-345-810-00		$
◊	Boundary Line Adjustment		001-00-345-810-00	$113.00	$
◊	Comprehensive Plan Amendment		001-00-345-810-00	$6,373.00	$
◊	Conditional Use Permit				
	Residential	$3,738 + $105 per unit	001-00-345-810-00		$
	Non-Residential		001-00-345-810-00	$4,734.00	$
◊	Continuance of Public Hearing		001-00-345-810-00	$573.00	$
◊	Critical or Sensitive Areas (fee per type)		001-00-345-810-00	$848.00	$ 848.00
	(wetlands, steep slopes or potentially unstable soils, streams and watercourses, vegetation removal, wildlife habitat)				
◊	Design Review				
	Minor		001-00-345-810-00	$474.00	$
	Committee		001-00-345-810-00	$2,598.00	$ 2,598.00
◊	Development Agreement	$959 first hearing; $590 ea. add'l hearing/continuance	001-00-345-810-00		$
◊	Director's Intrepretation			$350.00	$
◊	Engineering Department Review - ***Fees Collected at Time of Engineering Plan Approval***				
	Construction Plan Review & Inspection		***(3% of approved estimated construction costs)***		
	Modification to Approved Construction Plan Review		***(Fee shown for information only)***	$459.00	
	Single Family Residence (SFR) - Stormwater Plan Review		***(Fee shown for information only)***	$228.00	
	Gates/Barrier on Private Street Plan Review		***(Fee shown for information only)***	$1,139.00	
◊	Fire Department Review				
	Short Plat or other Development Construction Plan Review & Insp.		115-09-345-830-10	$308.00	$
	Subdivision or PRD Construction Plan Review & Inspection		115-09-345-830-10	$384.00	$
	Commercial Construction Plan Review & Inspection		115-09-345-830-10	$460.00	$
◊	Franchise Agreement Administrative Fee			$5,696.00	$
◊	Home Occupation				
	Minor - Notification (No fee)			$0.00	0.00
	Major		001-00-321-900-00	$75.00	$
◊	LI/BP Development	$4,734 + $41.00 per 1000 sf of GFA	001-00-345-810-00		$
◊	Minor Modifications to approved development		001-00-345-810-00	$378.00	$
◊	Planned Residential Development	$38 per unit + subdivision fees	001-00-345-810-00		$
◊	Plat, Preliminary				
	Short Plat	4 lots or less: $2,118 per lot	001-00-345-810-00		$
	Short Plat	5 lots or more: $7,848 + $250 per lot	001-00-345-810-00		$
	Subdivision	$7,848 + $250 per lot	001-00-345-810-00		$
◊	Plat, Final:				
	Short Plat		001-00-345-810-00	$219.00	$
	Subdivision		001-00-345-810-00	$2,598.00	$
◊	Plat Modification/Alteration		001-00-345-810-00	$1,308.00	$
◊	Pre-Application (Type III or IV Permits)				
	No fee for Type I or II				
	General		001-00-345-810-00	$387.00	$
	Subdivision (Type III or IV)		001-00-345-810-00	$996.00	$
◊	SEPA		001-00-345-890-00	$886.00	$ 886.00
◊	Shoreline Permit		001-00-345-890-00	$1,308.00	$
◊	Sign Permit				
	General Sign Permit	(Exempt if building permit is required)	001.00.322.400.00	$45.00	$
	Master Sign Permit		001.00.322.400.00	$138.00	$
◊	Site Plan Review				
	Residential	$1,259 + $34 per unit	001-00-345-810-00		$
	Non-Residential	$3,146 + $68 per 1000 sf of GFA	001-00-345-810-00		$ 3,424.80
	Mixed Residential/Non Residential	(see below)	001-00-345-810-00		$
		$4,435 + $34 per res unit + $68 per 1000 sf of GFA			
◊	Temporary Use Permit		001-00-321-990-00	$88.00	$
◊	Variance (Minor)		001-00-345-810-00	$760.00	$
◊	Variance (Major)		001-00-345-810-00	$1,417.00	$
◊	Zone Change (single tract)		001-00-345-810-00	$3,659.00	$

Fees reviewed & approved by Planner: _____ 11/9/23

Initial ***Date***

Total Fees Due: $ 7,906.80

City of Camas
616 NE 4th Avenue
Camas, WA 98607
360-834-2462

Finance Office Hours:
Monday-Friday 9:00 - 5:00 p.m.

Date/Time 11/09/2023 03:53 PM
Receipt No. 00788411
Receipt Date 11/09/2023

CR plan	7,906.80
arc/rev archaeoligal review	150.00
crit/sens critical/sensitve areas	848.00
sepa sepa fees	886.00
designrev design review	2,598.00
plan rev plan review	3,424.80

Cash:	0.00
Other:	0.00
	7,906.80
Check:	7,906.80

Total:	7,906.80
Change:	0.00

Check No: 13th St Gas Station chk #111

PAK USA Camas, LLC
Customer #: 000000

Cashier: abaldwin
Station: IS02593

Engineering - Surveying - Planning * 604 W Evergreen Blvd, Vancouver, WA 98660 * P 360-944-6519 * F 360-944-6539

13th Street Site Plan

Complete list of the permit approvals sought by the applicant:

1. Type II Site Plan Review
2. Design Review
3. SEPA
4. Critical Areas Review
5. Archaeological Review
6. Fire Department Review
7. Building permit and Plan Review
8. Engineering Review

Pre-Application Meeting Notes
13th Street Gas Station w/ Convenience Store, Drive-thru Car Wash & Retail Building
File PA22-32

Meeting held via Zoom: Thursday, July 28th, 2022
Notes issued via email: Tuesday, August 8, 2022

Applicant:
Taz Khan
701 Columbia Street, #109
Vancouver, WA 98660

Representing City of Camas: Yvette Sennewald, Senior Planner
Randy Miller, Fire Marshal
Anita Ashton, Engineering
Ahmed Yanka, Engineering

Location: 20101 NE 13th Street, Camas, WA 98607
NW ¼ of Section 29, Township 2 North, Range 3 East, of the Willamette Meridian

Tax Accounts: 176148000

Zoning: Business Park (BP)

Description: Applicant is proposing to construct a gas station with convenience store, drive through car wash, and retail building on the subject 0.95-acre site, currently developed with a single-family residential dwelling unit.

NOTICE: Notwithstanding any representation by City staff at a pre-application conference, staff is not authorized to waive any requirement of the City Code. Any omission or failure by staff to recite to an applicant all relevant applicable code requirements shall not constitute a waiver by the City of any standard or requirement [CMC 18.55.060 (C)]. This pre-application conference shall be valid for a period of 180 days from the date it is held. If no application is filed within 180 days of the conference or meeting, the applicant must schedule and attend another conference before the city will accept a permit application [CMC 18.55.060 (D)]. Any changes to the code or other applicable laws, which take effect between the pre-application conference and submittal of an application, shall be applicable [CMC 18.55.060 (D)]. **A link to the Camas Municipal Code (CMC) can be found on the City of Camas website, http://www.cityofcamas.us/ on the main page under "Business and Development".**

STAFF NOTES

PLANNING DIVISION Yvette Sennewald | 817-7269

Applicable codes for this development include Title 17 - Land Development, and Title 18 - Zoning of the Camas Municipal Code ("CMC"). The applicant is responsible for reviewing the code and addressing the applicable provisions. The following pre-application notes are based on application materials and site plan submitted on June 24, 2022.

Development of a gas station with drive-thru car wash, convenience store, and retail space in the Business Park (BP) Zone is a permitted use and requires Design Review (Major) and Site Plan Review. Design Review is a Type II approval, and the city will schedule a public meeting with the Design Review Committee (DRC) to seek recommendations for the proposed project.

Type II Design Review and Site Plan Review	**Fees (as of July 28th, 2022)**
Archeological Review	$137
Critical Area Review	$775
Design Review Committee	$2,375
SEPA	$810
Site Plan Review (Non-Residential)	$2,876 + $68 per 1000 sf of GA

The following items are required to be submitted for consideration of the proposed project:

1. **APPLICATION.** Required materials are listed in CMC18.55.110 (A through G). Include a site plan with applicable setbacks, building footprint and elevations. As per CMC 18.09.030, commercial development setbacks must meet the following:

    - Front: 15-feet
    - Side: 15-feet
    - Rear: 50-feet
    - Maximum building coverage: 50%

2. **DESIGN REVIEW**. Design Review is required for new developments in commercial zones pursuant to CMC Chapter18.19.020. The standards applicable to this property for Design Review are found in the Design Review Manual to include the Standard Principles & Guidelines and the Specific Principles & Guidelines Commercial and Mixed Uses including, but not limited to:

    - Building shall be used to define the streetscape. Building walls or fences visible from roadways should be articulated to avoid a blank look. The wall can be broken up by including a combination of window/display space, plantings, and offsetting walls with two tone colors.
    - On-site parking areas shall be placed to the interior of the development unless the development proves prohibitive.
    - All parking shall be screened with landscaping. The drive-thru along street frontages shall be heavily landscaped.
    - The development adjacent to residential areas should be built with a size, scale, and materials compatible with neighboring buildings.

    An application for design review must include (at a minimum) building elevations, materials, exterior colors, and landscaping plans.

    Development sign. The applicant must install a 4'x8' sign on the property that provides details about the project, site plan, contact information, and includes space for public hearing information to be filled in when a date is scheduled. Staff can provide a handout if requested.

Landscaping Regulations

- A Tree Survey per CMC 18.13.045, which requires an inventory and assessment of existing trees prepared by a certified arborist or professional forester, is required if trees are proposed for removal.
- A Landscape, Tree, and Vegetation plan must be submitted pursuant to CMC 18.13.050. A minimum 20 tree unit density per net acre (exclusive of critical area tracts) is required for new development per CMC 18.13.051 and shall be incorporated into the overall landscape plan.
- Landscape screening buffers shall be provided per CMC 18.13.055 Table 1. A 10-foot L3 landscape buffer is required long the property line abutting the residentially zoned property to the west and a 5-ft L2 landscape buffer is required along the property line abutting residentially zoned property separated by a street to the north. A minimum 10-ft. L3 High screen landscape buffer will be required to screen the drive-thru from NW 13th Street and NW Friberg-Strunk Street.

Abutting Zone ➡	Residential	
Uses on Site ⬇	Not Separated by a Street	Separated by a Street
Commercial	10' L 3	5' L 2

- Landscaping for the parking lot shall comply the requirements in CMC 18.13.060 (A-H).

Parking Regulations

The proposed project is required to meet the automobile parking requirements pursuant to CMC Chapter 18.11. The number of off-street parking spaces is calculated based on the table at CMC 18.11.130 Standards as follows:

USE	**NUMBER OF PARKING SPACES**
Gas station with mini market	1 per nozzle plus 1 per 250 square feet of gross floor area
Car wash	2 per stall, and 1 space per 2 employees
Retail stores less than 5,000 sq. ft.	1 per 300 square feet

3. **ARCHEOLOGICAL REVIEW.** The site is in an area of high probability for the presence of archaeological objects as identified on Clark Co. GIS. If the site is within ¼ mile of an archaeological site, an archaeological predetermination will be required per CMC Section 16.31.070.A. Submit to the City proof of emailing or mailing the tribes per CMC 16.31.160.

4. **CRITICAL AREAS REVIEW.** Per Clark County GIS mapping, habitat conservation areas (i.e. wetlands) have been identified on the subject property. As such, per CMC Section 16.51.130, a critical areas report prepared by a qualified professional is required if a proposed development is within or adjacent to a critical area. The general requirements for a critical areas report are found in CMC Section 16.51.140.

5. **SEPA.** The subject site contains critical areas, and the proposed project is not categorically exempt from the State Environmental Policy Act (SEPA) requirements. Per CMC Section 16.07.020.A, a SEPA checklist is required.

6. **SITE PLAN REVIEW.** All new non-residential uses for the location of any buildings are required to obtain Site Plan Review and approval as per CMC 18.18.020.A. The city shall consider approval of the site plan with specific consideration to the following and as stated in CMC 18.18.060.A-F:
   - Compatibility with the city's comprehensive plan;
   - Compliance with all applicable design and development standards;
   - Availability and accessibility of adequate public services;
   - Adequate provisions are made for other public and private services and utilities, parks, and trails;
   - Adequate provisions are made for maintenance of public utilities; and
   - All relevant statutory codes, regulations, ordinances, and compliance with the same. The review and decision of the city shall be in accordance with the provisions of CMC Chapter 18.55 Administration and Procedures.

BUILDING DIVISION — Brian Smith | 817-1568

No comments at this time.

ENGINEERING DIVISION — Anita Ashton | 817-7231

General Engineering Requirements:

1. Civil site construction plans shall be prepared by a licensed Washington State Engineer in accordance with the *Camas Design Standards Manual (CDSM)* and CMC 17.19.040.
2. Per CMC 17.19.040.C.1 all utilities designed to serve the development shall be placed underground. This includes the dry utilities, such as power, fiber optics, cable, etc.
3. *Engineering civil site improvements plans are not to be submitted until after land-use decision is issued.*
4. Engineering civil site improvement plans are to be submitted to Community Development (CDev) Engineering Dept. for review and approval.
5. The CDev Engineering Dept. is responsible for plan review (PR) and construction inspection (CI). A 3% PR&CI fee is collected by engineering for all infrastructure improvements.
   a. The 3% fee is based on a stamped engineer's estimate.
   b. The engineer's estimate is to include all improvements outside of the proposed building footprints.
   c. *Payment of the 1% plan review (PR) fee is required prior to 1st review of the civil plans*.
      i. *The 1st review will not begin until the 1% PR fee is paid.*
   d. *Payment of the 2% construction inspection (CI) fee is to be paid prior to release of approved construction drawings by the CDev Engineering Dept.*
6. *Building permit applications are not to be submitted until after final engineering plan approval, unless otherwise approved by the Building Official.*
7. The applicant will be required to purchase all permanent traffic control signs, street name signs, street lighting, and traffic control markings for the proposed development.

8. Work within the city right-of-way (ROW) will require an encroachment permit and approval of a traffic control plan (TCP), prior to start of any work.
    a. The encroachment permit and TCP is to be submitted to CDev engineering.
9. If applicable, existing wells, septic tanks, and septic drain fields shall be decommissioned in accordance with state and county guidelines per CMC 17.19.020 (A3).
10. Regulations for installation of public improvements, improvement agreements, bonding, final acceptance, etc. can be found at CMC 17.21.
11. The applicant will be responsible for ensuring that private utilities; underground power, telephone, gas, CATV, and associated appurtenances are installed.

Traffic/Transportation:

1. A transportation impact analysis (TIA) is required and shall be prepared in accordance with the City's adopted *Traffic Impact Study Guidelines* as outlined in the *CDSM*.
2. The Applicant will be required to have a traffic engineer analyze the following:
    a. Site distance at the applicant's access point onto NE 13th Street.
    b. Vision clearance area is to be addressed, per CMC 18.17.030.
    c. An onsite traffic circulation plan showing ingress and egress, per CMC 17.19.040 (B.10.a).
    d. Address movement conflicts with nearby intersections and existing driveways.
    e. Provide AM and PM Peak Hour trip distribution to and from the site down to less than 20 trips thru any given impacted intersection.
    f. Intersections to be analyzed include, but are not limited:
        i. NE Goodwin Road / NW Friberg-Strunk Street
        ii. NE 192nd Avenue / NE 13th Street
        iii. SE 1st Street / NW Friberg-Strunk Street
        iv. Additional intersections will be based on the trip distribution information and the COV Concurrency requirements in the attached memo noted below.
3. Comments from Eric Hahn, City of Vancouver's Senior Engineer for Streets & Transportation are attached. The applicant's traffic engineer is to include and address the requirements noted in the July 14, 2022, Concurrency Review memo.
4. At time of application, the additional comments will be provided from Clark County's Concurrency Engineer regarding the proposed development.

Streets:

The proposed development is bordered by NE 13th Street on the north side and on the east side by NW Friberg-Strunk Street.

NE 13th Street:

1. Half-width street improvements along NE 13th Street is not TIF creditable at this time.
2. NE 13th Street is federally functionally classified as a minor arterial within Camas City Limits.
    a. There were minimal frontage improvements installed on the corner of NE 13th Street and NW Friberg-Strunk Street as part of the intersection improvements for the signal and road improvements to the south.

3. Per CMC 17.19.040.B.1, the applicant will be required to construct full-depth half-width street improvements along the frontage of the proposed development along the NE 13th Street frontage.
    a. The required frontage improvements, which will begin at the west curb return and continue west along the proposed development.
    b. Some of the existing curb along the right-turn lane, to the west, will need to be removed for the frontage improvements and to still allow for the right-turn lane to the east. Staff will work with the applicant's consultant to during the preliminary design phase.
4. Per CMC 17.19.040.B.5, the applicant will be required to dedicate sufficient right-of-way (ROW) for full half-width street improvements.
    a. The existing right-of-way width varies from approximately 60-feet to 63-feet along the frontage of the proposed development.
    b. The existing right-of-way width from the centerline to the existing north property boundary varies from 25-feet to 27-feet.
    c. The applicant will be required to dedicate approximately 10-feet to 14-feet of ROW to allow for construction of curb & gutter, 6-foot sidewalk, 6-foot planter strip, maintain the existing right-turn lane, 5-foot bike lane, and a center left-turn median.
5. Per *CDSM, Table 1 – Guideline for Geometry of Private Roadways - Off-Street Parking*:
    a. Note 2.c: Aisle dimensions: one-way aisles are a minimum of 15-feet wide; two-way aisles are a minimum of 24-feet wide.
    b. Note 2.d: Parking spaces are to be setback a minimum of 50-feet from back of sidewalk on an arterial.
        i. The existing depth of the parcel is 131-feet. The requirement for right-of-way dedication will reduce the depth the depth of the parcel. Meeting the required offset from the back of sidewalk would further reduce the developable area.
        ii. A deviation request from the minimum 50-foot setback requirement should be submitted. A deviation request from this standard would be supported by the city engineer.
6. Per *CDSM Table 3, Access Spacing Standards* on a roadway classified as an arterial are 660-feet minimum and 1000-feet max.
    a. The westernmost property boundary is approximately 367-feet west of the intersection on NE 13th Street and NW Friberg-Strunk Street.
    b. The existing driveway to the current single-family residence is approximately 244-feet west of the intersection of NE 13th Street and NW Friberg-Strunk Street.
    c. A deviation request from meeting the minimum access spacing required should be submitted. A deviation request from this standard would be supported by the city engineer. However, The access to the proposed development is to be located as close to the western property boundary as feasible.
6. The proposed drive access is to be a minimum 24-foot-wide full ingress / egress access, with 35-foot curb radii and ADA accessible curb ramps on each side.
    a. A wider drive access may be required to accommodate fueling tankers and large delivery vehicles. The onsite circulation plan is to be based on the fueling tankers and large delivery vehicles.

On-site Parking Lot Requirements:

7. Per CDSM, Table 1 – Guideline for Geometry of Private Roadway:
   a. Note 2.c: Aisle dimensions: one-way aisles are a minimum of 15-feet wide; two-way aisles are a minimum of 24-feet wide.
8. Additional drive aisle widths may be required based on usage, truck sizes, on-site circulation plan, and input from Fire Marshall's Office.

NW Friberg-Strunk Street:

9. NW Friberg-Strunk Street is a fully improved 3-lane arterial with two travel lanes and a center-turn pocket with sidewalk and planter strips on both sides.
10. No frontage improvements or right-of-way dedication will be required since the road is fully improved.
11. No access is proposed to the site; nor will one be allowed on NW Friberg-Strunk Street due to the site's proximity to the intersection with NW 13th Street.

Stormwater:

1. The size of the proposed development is approximately 41,382 sf (0.95 acres).
2. A preliminary stormwater report (TIR), in accordance with the latest edition of Ecology's *Stormwater Management Manual for Western Washington (current edition 2019 SWMMWW*), is required at time of application.
3. Per CMC 14.02 Stormwater Control, stormwater treatment and detention shall be designed in accordance with the latest edition of Ecology's *SWMMWW*.
4. Refer to Ecology's *Figure I-3.1 Flow Chart for Determining Requirements for Re-Development (Vol. I, Chapter 3)*.
   a. All development projects shall comply with Minimum Requirement (MR) #2 – Submittal of a Stormwater Pollution Prevent Plan (SWPPP).
   b. As the project results in 5,000 sf, or greater, of new plus replaced hard surface area; than Minimum Requirements (MR) #1- #9 will apply.
5. Catch basins that will collect surface water runoff from the fueling station area are to discharge to the sanitary sewer system.
6. Ownership and maintenance of onsite stormwater facilities will be the responsibility of the property Owner, per CMC 17.19.040 (C3).
7. The City shall have right-of-entry for inspection purposes.
8. Onsite private storm easements, if required, are to be shown on the construction drawings.
9. Provisions are to be made for roof downspout controls. Stormwater from downspouts is not to be directed onto adjoining parcels. Reference Ecology's latest edition of the SWMMWW for roof downspout controls.
10. A designated concrete washout area (BMP C154, Vol. II, Chap. 3, pgs. 320-326) is to be shown on the site plans.
    a. The concrete washout area is to be removed prior to issuance of final occupancy.

Erosion Control

1. The size of the proposed development is approximately 41,382 sf (0.95 acres).

2. The land-disturbing activities are not greater than one acre, therefore, the applicant is not required to obtain an *NPDES Construction Stormwater General Permit* from Ecology.
    a. However, a Stormwater Pollution Prevention Plan (SWPPP) is required and is to be submitted prior to any land-disturbing activities. A copy is to be on site at all times during construction.
3. The applicant will be responsible for all erosion and sediment control measures to ensure that sediment laden water does not leave the site or impact adjacent parcels.
4. Mud tracking onto the road surface is discouraged and any mud tracking is to be cleaned up immediately.

Water:

1. There is an existing 12-inch water main located in NE Friberg-Strunk Street.
    a. An 8-inch water service and an existing 1-inch water service were stubbed to this parcel from NW Friberg-Strunk Street. The 8-inch water service is located at the southernmost property boundary of the proposed development, with the 1-inch water service approximately 5-feet to the north.
2. The applicant will be required to design and extend the existing 8-inch ductile iron waterline for the proposed development.
3. The onsite water system shall be privately owned and maintained beyond the water meter by the property owner.
    a. An above-ground reduced pressure valve assembly (RPBA) is to be installed behind the water meter and is to be accessible for testing and inspections.
    b. The onsite fire line will require a Double Detector Check Valve (DDCV) which is to be located at the right-of-way.
4. Applicant shall demonstrate that there are adequate fire flows available for the development.
5. Onsite fire hydrants are to be private and shall be ordered and painted red from the factory.
6. Irrigation systems will require a separate irrigation meter with Back Flow Prevention Device (BFPD), which will be owned and maintained by the property owners.
7. A 10-foot separation is required, within the right-of-way, between the waterline and sanitary sewer main.

Sanitary Sewer:

1. NW Friberg-Strunk Street: There is an existing 4-inch pressure sewer main located in the west side of NW Friberg-Strunk Street.
    a. A 4-inch pressure sewer lateral was stubbed to this parcel from NE Friberg-Strunk Street. The existing 4-inch lateral is located approximately 15-feet north of the 8-inch water service.
2. The applicant will be responsible for the design, installation, and maintenance of the private STEP sewer system, including the STEP tank, that will serve the proposed development, per CMC 17.19.040 (C, 2, d.).
3. A 10-foot separation is required, within the right-of-way, between water service and sewer lateral.

Parks/Trails:

1. Not applicable.

Garbage & Recycling:

1. Location of onsite garbage and recycling receptacles is to be approved by the garbage and recycling providers.

Impact Fees & System Development Charges (SDCs):

1. The proposed development is located in the South District.
2. Impact Fees and SDCs are collected at time of building permit submittal.
3. The impact fees and SDCs noted below are for informational purposes only.
4. Impact fees and SDCs are adjusted on January 1st of each year.

Impact Fees for 2022:

Commercial use:

1. Traffic Impact Fees (TIF) – $3,657.00 / PM Peak Hour Trip
   a. Contact Engineering for estimated fees which will be based on usage and number of PM Peak Hour trips.
2. School Impact Fees (SIF) – Not applicable
3. Park/Open Space (PIF) – Not applicable
4. Fire (FIF) - $0.40 psf

System Development Charges (SDCs) for 2022:

1. Water
   a. 1" meter - $13,451.00 + $445.00 connection fee
   b. 1.5" meter - $26,901.00 + $851.00 connection fee
   c. 2" meter - $43,002.00 + $2,075.00 connection fee

2. Sewer – Commercial (Sewer SDCs are based on the size of water meters.)
   a. 1" meter - $6,234.00 + $177.00 STEP/STEF Inspection
   b. 1.5" meter - $12,467.00 + $177.00 STEP/STEF Inspection
   c. 2" meter - $19,948.00 + $177.00 STEP/STEF Inspection

FIRE MARSHAL — Randy Miller | 834-6191

No building or structure regulated by the building and/or fire code shall be erected, constructed, enlarged, altered, repaired, moved, converted, or demolished unless a separate permit for each building or structure has first been obtained from the CWFMO Camas Municipal Code 15.04.030.D.12.a

Any inadvertent omission or failure to site or include any applicable codes or code language by the Fire Marshal's office or the City shall not be considered a waiver by the applicant.

1) Multiple permits or potential permits with the Fire Marshal's Office will/may be required as this property develops.
    a. Site Plan
    b. New Construction permit with the FMO. Provide 2 sets of drawings and any explanatory needed to complete the review.
    c. Depending on building use, NFPA 24 Fire Main Underground permit required with the FMO. Minimum level "U" license required. Strictly enforced.
    d. Depending on building use classification, NFPA 13 Fire Sprinkler System required with the FMO. WA State licensed fire sprinkler contractor. Federal programs for tax benefits may be available for fire sprinkler installations.
    e. Depending on building use, NFPA 72 Fire Alarm System permit required with the FMO, minimum NICET III for design and NICET II for acceptance testing.
    f. NFPA 17A Commercial Hood Suppression System permit required with the FMO. (commercial-hood or stand-alone fryer systems) Mechanical permit with the building department required.
    g. IFC CO2 Permit required with the FMO for any Dewar Tank use.
    h. Permit required with the FMO for any retail propane tank exchange-cabinet.
    i. IFC Fuel Dispensing. Combustible/flammable liquids underground tanks-dispensing and use Permit required with the FMO.
    j. Bulk Propane tank Sales/Dispensing Permit required with the FMO when applicable.
    k. UST Permit required with the FMO for any underground storage tanks discovered during site preparations/excavation.
    l. Approved address and or monument required with the FMO, to be clearly visible and readable from both directions on 13th.

2) Please don't hesitate to contact the FMO if you have any questions. 360-834-6191 or FMO@cityofcamas.us

20101 NE 13th Street Gas Station **County Pre-app (PA22-32)**
20101 NE 12th Street Case Mgr (Yvette Sennewald)

CONCURRENCY (VMC 11.70)

- Based on submitted information and the City of Vancouver's initial review the proposed development may send trips to the following Transportation Management Zones (TMZ) and Transportation Analysis Zones (TAZ).

TAZ #481

TMZ/Corridor	**Limits of Corridor**
192nd Avenue	SR 14 to 18th Street

- After an initial review of the submitted information it appears the proposed project may send trips into the city's street systems and concurrency corridors. The City of Vancouver requests the following submittal requirements be placed on the proposed project:

Trip Generation and Distribution

- Use the most current edition of the Institute of Transportation Engineers (ITE) Tip Generation, and follow the guidelines specified in the most current ITE Trip Generation Handbook. Trip generation and distribution shall be justified by the applicant and approved by the City Traffic Engineer prior to completion of the TIA.
- Approved pass-by trips shall be included at driveways.

A. General TIA Requirements.

- For any development sending 5 or more net new PM peak hour trips through the city's concurrency corridors, trip generation and distribution is required for project-generated AM & PM peak hour trips at or adjacent to all site accesses.
- When sending fewer than 5 PM peak trips through the city's concurrency corridors only trip generation is required. In this case, the trip generation calculation does not have to be completed by a licensed engineer.
- Additionally, for developments sending 20 or more PM peak hour trips through the city's concurrency corridors, the analysis shall encompass all intersections specified by the traffic engineer for LOS analysis that fall within the limits identified in 11.70.090. The analysis may also include intersections beyond the thresholds listed in 11.70.090 where significant traffic hazards would be caused or materially aggravated by the proposed development.
- Trip distribution shall use the Regional Transportation Council select link assignment for the project TAZ. However, if the project sends fewer than 20 net new PM peak hour trips through the city's concurrency corridors, trip distribution may be based on existing traffic patterns and guidelines in the current ITE Trip Generation Handbook.

B. Transportation Concurrency Requirements.

- For developments sending 5 or more net new PM peak hour trips through the city's concurrency corridors, the applicant is required to submit trip generation and distribution for the proposed development and to list the number of PM peak trips entering each of the concurrency corridors in table format. See Table 1 below for the list of corridors.
- For developments sending fewer than 5 PM peak trips through the city's concurrency corridors, trip distribution is not required. However, for concurrency purposes, all trips shall be assumed to impact the closest concurrency corridor.
- Transportation Concurrency is evaluated according to the Corridor Classification. The Director may require additional information or modeling if an impacted corridor is operating close to the adopted level of service. Generally, where a proposed development sends trips to a Category 1 or Category 2 corridor, the Director shall track those trips and presume concurrency between LOS measurements pursuant to VMC 11.70.090.

Table 1: Concurrency Corridors and Current Classification

Arterial Concurrency Corridor	Extent	LOS Standard Avg. PM Peak Speed (MPH)	2012 Corridor Classification
Mill Plain Blvd.	Fourth Plain to I-5	10	Category 1
	I-5 to Andresen	12	Category 1
	Andresen to I-205	12	Category 1
	I-205 to 136th Ave.	10	Category 1
	136th Ave. to 164th Ave.	10	Category 1
	164th Ave. to 192nd Ave.	10	Category 1
St. Johns / Ft. Van Way	Mill Plain to 63rd St.	12	Category 1
Fourth Plain Blvd.	Mill Plain to I-5	12	Category 1
	I-5 to Andresen	10	Category 1
	Andresen to I-205	10	Category 1
	I-205 to 162nd Ave.	10	Category 1
Andresen Road	Mill Plain to SR500	11	Category 1
	SR500 to 78th St.	15	Category 1
112th Avenue	Mill Plain to 28th St.	11	Category 1
	28th St. to 51st St.	15	Category 1
164th/162nd Avenue	SR14 to SE 1st St.	10	Category 1
	SE 1st St. to Fourth Plain	10	Category 1
Burton Road / 28th Street	18th St. to 112th Ave.	12	Category 1
	112th Ave. to 138th Ave.	10	Category 1
	138th Ave. to 162nd Ave.	12	Category 1
18th Street	112th Ave. to 138th Ave.	12	Category 1
	138th Ave. to 164th	12	Category 1

	Ave.		
136th/137th Avenue	Mill Plain to 28th St.	12	Category 1
	28th St. to Fourth Plain	12	Category 1
192nd Avenue	SR14 to NE 18th St.	10	Category 1

Identify in table format the number of site generated PM peak hour trips entering all City corridors, if any. If there are no trips to a corridor, enter as zero.

- Prior to final site plan approval, the applicant shall pay per-trip monitoring fees for trips sent to every corridor, up to a maximum monitoring fee of $1,500 for any single development (VMC 20.180.070).

- **Below are a few items that shall be included in the traffic impact analysis. All other requirements can be found on the City of Vancouver website at** http://www.cityofvancouver.us/publicworks/page/concurrency

  - Safety – Crash history and mitigations - Provide a five year crash history, crash rate per mev, and proposed mitigations for intersections with crash rate exceeding 1.0 per mev. Copies of the crash reports shall be included in the TIA. (VMC 11.80.130 and 11.70)
    Please contact Eric Hahn, Senior Civil Engineer, at Eric.Hahn@cityofvancouver.us for a list of intersections to study.

  - Safety and operations – Queue analysis - Provide peak hour queue analysis. (VMC 11.80.130, 11.80.080, 11.70)
    Please contact Eric Hahn, Senior Civil Engineer, at Eric.Hahn@cityofvancouver.us for a list of intersections to study.

  - Warrant analysis – Signals and Turn lanes - Provide traffic signal / turn lane warrants as defined by the Manual on Uniform Traffic Control Devices. (VMC 11.80.080)
    Please contact Eric Hahn, Senior Civil Engineer, at Eric.Hahn@cityofvancouver.us for a list of intersections to study.

- **The city is collecting proportionate share fees for the following project(s):**

Project Location	Unit Cost per Trip
137th Ave – 49th St to Fourth Plain Blvd	**$3,000** per PM peak hour trip
192nd Ave & SR-14 ramps	**$2,000** per PM peak hour trip
Fourth Plain Blvd & 152nd Ave Signal	**$333** per PM peak hour trip
Lieser/St. Helens/MacArthur	**$2,000** per PM peak hour trip
192nd Avenue & NE 13th Street	**$400** per PM Peak hour trip
192nd Ave & SE 34th St	**$150** per PM peak hour trip
176th Ave & SE 20th St	**$400** per PM peak hour trip
Grove St/Columbia House Blvd/SR-14 WB off-ramp	**$600** per **AM** peak hour trip
MacArthur & Devine Roundabout	**$2,226** per **PM** peak hour trip
MacArthur & Andresen Roundabout	**$2,285** per **PM** peak hour trip

- **The applicant will be required to contribute proportionate share fees to mitigate trips that the development project will generate and send through any of the current proportionate share projects. The TIA must determine and identify the number of peak hour trips that will be generated by the project and sent through the proportionate share intersections and/or street segments as listed above.**

- **The applicant shall submit to the City of Vancouver a trip generation and distribution and assignment to 5 pm peak hour trips and the traffic study review fee of $398.00. This shall be submitted electronically in ePlans.**

- If there any questions on the City of Vancouver transportation or traffic scoping requirements, please contact Eric Hahn or Jen Patrick at the City of Vancouver - Transportation Services at the contact numbers listed below.

  Eric Hahn
  Eric.Hahn@cityofvancouer.us
  (360) 487-7702

  Jen Patrick
  Jennifer.Patrick@cityofvancouver.us
  (360) 487-7720

PROJECT NARRATIVE
For

13TH SITE PLAN

A PRELIMINARY TYPE II APPLICATION

Submitted to
CITY OF CAMAS

FOR
TAZ KHAN
3993 NW Currawong Court
Camas, WA 98607

October 2023

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General Information

Applicant/Owner:

Taz Khan
3993 NW Currawong Court
Camas, WA 98607
512-779-4999
tkhanusa@gmail.com

Owner:

Pak USA Camas LLC
20101 NE 13th Street
Camas, WA 98607

***Project Contacts*:**

PLS Engineering
Travis Johnson, PE
604 W Evergreen Boulevard
Vancouver, WA 98660
(360) 944-6519
pm@plsengineering.com

Location:	NW ¼ of Section 29, T2N, R3E, WM
Address:	20101 NE 13th Street, Camas, WA 98607
Project Size:	0.97 acres/42,257 SF
Zoning:	BP – Business Park
Overlay:	None
Comprehensive Plan:	IND
Current Use:	Vacant
Parcel Number:	176148000
School District:	Evergreen
Water District:	Camas
Sewer District:	Camas
Fire District:	Camas
Park District:	N/A
Clark County Reference:	PA22-32
Transportation Impact Fee:	Camas

Project Description

The 13th Street Site Plan project proposes to construct a 4,100 sf convenience store with drive-thru car wash and gas pumps on parcel 176148000. The convenience store will have small general retail sales including food items, cold beverages and potentially some on-site prepared foods.

The site is located on the southwest corner of the intersection at NE 13th Street and NW Friberg-Strunk Street. A single-family home is currently on site that will be removed. Parcels to the north across NE 13th Street, as well as directly to the west, are single-family residential uses under Clark County jurisdiction. South of the site is a developing business park approved as Lacamas Tech Business Park. East of the site across NW Friberg-Strunk Street is Camas Meadows Golf Club.

The site is relatively flat with vegetation consisting primarily of grass with scattered trees.

Transportation and Utilities:
NE 13th Street is an existing Minor Arterial that abuts the site to the north and provides access to the site. Frontage improvements are proposed to bring the street up to half-width standards including a 37' half-width ROW and 23' half-width paved section with 6' planter strip and 6' detached sidewalks.

NW Friberg-Strunk Street is a fully improved 3 lane arterial that does not require frontage improvements per the Pre-Application Conference Report.

There are no transit routes or stops within 1/4 mile of the development site.

A traffic study has been provided that shows the projected trip generations for the development. No offsite mitigation is required based on the study.

Stormwater will be collected and treated onsite before being routed to an onsite underground stormwater detention facility. From there it will be discharged to an existing conveyance system. A stormwater report has been provided to show compliance with the City stormwater regulations.

The site will be served by public water and sewer services.

Critical Areas:
Ecological Land Services (ELS) assessed the site for critical areas and has provided a Critical Areas Report. ELS concludes that there is one Oregon white oak on the south portion of the property, but no wetlands, oak woodlands or cave as mapped by WDFW.

The parcel is within a high and moderate - high archaeological predictive area, therefore an Archaeological Predetermination has been prepared for the site and submitted with this application.

Proposal & Code Compliance Discussion

Title 16 – Environment

16.01 - SEPA

The State Environmental Policy Act (SEPA) procedures require documentation of critical areas as well as discussion on earth, air, water, plants and animals, energy and natural resources, environmental health, noise, land and shoreline uses, aesthetics, recreation, historic and cultural preservation, transportation, and public services and utilities. A SEPA application is required and has been included with this application.

16.31 – Archaeological Resource Preservation

The site is located in an area of high probability for the presence of archaeological artifacts. An Archaeological Predetermination Survey Report is required for this project. Archaeological Services, LLC (ASCC) performed an onsite field investigation on August 17, 2023. Several artifacts were found including pink glass fragments suspected to be Depression Glass, a coin bank dated to 1926-1930, and a metal bolt. Based on these items, along with the former structures that appear on site in historic photos, ASCC is recording the debris scatter as a historic-area archaeological site and recommends a Cultural Resource Survey Report prior to any ground disturbing activity.

16.51 – Critical Areas - 16.53 Wetlands - 16.61 Fish and Wildlife Habitat

WDFW has mapped the site as having oak woodland and being within a cave rich area. No wetlands are mapped onsite however potential wetlands are mapped by Clark County GIS on the property to the south. A Critical Areas Report has been prepared by Ecological Land Services (ELS) for the the site and concludes that there is one Oregon white oak on the south portion of the property, but no oak woodlands or caves as mapped by WDFW. The potential wetland to the south is located within the footprint of a proposed building and that application has received permits to fill the wetland.

A Mitigation Plan prepared by ELS is included with this application that proposes mitigation within the Terrace Oak Bank for the removal of the single Oregon white oak on site.

Title 17 – Land Development

17.19.040 – Infrastructure Standards

NE 13th Street is an existing minor arterial that abuts the site to the north. Access to the site will be via a new entrance/exit from NE 13th Street. Half width improvements are proposed as part of this project. Some improvements at the intersection of NW Friberg-Strunk Street were previously completed. Frontage improvements for this development will begin at the west curb return and continue west along the site frontage. Additional right-of-way will be dedicated to provide a 37’ half-width right-of-way with a 52’ full-width right-of-way. The 23’paved

roadway half width that tapers out to 28.5'at the intersection with NW Friberg-Strunk Street. It includes a 6' detached sidewalk and an 8' planter strip.

NW Friberg-Strunk is an existing 3-lane arterial that is fully improved. No frontage improvements are required or proposed. No access is proposed via NW Friberg-Strunk Street.

Circulation:

No circulation to adjacent parcels is proposed. The site fronts on NE 13th Street and NW Friberg-Strunk Street, therefore no further circulation to the north or east is required. The parcel to the west is zoned residential and falls under Clark County jurisdiction. Any circulation to the west would not be compatible with this proposed use. The parcels to the south are currently developing as a business park and do not require circulation to and through the subject parcel.

Turnarounds:

The proposed drive aisles that will serve the site vary in width from 24' to 32' wide and can be utilized as a loop road for fire turnaround.

Pedestrian/Bicycle Circulation:

All sidewalks, driveway aprons, and pedestrian crossings will comply with the American with Disabilities Act.

Access Spacing:

Required access spacing along an arterial is 660' minimum and 1,000' maximum. The westernmost property line is approximately 367' west of the intersection with NW Friberg-Strunk Street, therefore it is not possible to meet minimum access spacing based on the existing conditions of the site. A deviation request has been submitted with this application to grant relief from this standard. The access to the site has been located as far west as possible, while allowing for a street taper on NE 13th Street and providing space on site for gas tanker trucks to maneuver to exit the site.

Traffic Study:

A Traffic Study has been prepared for this project by Charbonneau Engineering and is included with this application. The following is a summary of the study:

- Intersection sight distance at the access point exceeds the minimum standard (390 feet) as over 500 feet of sightline is available in both directions on NE 13th Street. For safety reasons the sightlines must be maintained and potential obstructions due to street grade, buildings, parking, signing, fencing, landscaping, above ground utilities, or other objects shall not be permitted.
- The capacity analysis has determined that only one intersection will fail. The signalized intersection at NE 13th Street and NE 192nd Avenue will operate at LOS `F` during the PM peak hour in the year 2026 background and total traffic scenarios. The failing condition is attributed to the growth and in-process traffic. The City has recognized and documented in the TSP that long range future improvements will be necessary on NE 13th Street (Goodwin Road) to accommodate heavier traffic. A year 2035 improvement is listed in Table 6 within the TSP that proposes street widening which should mitigate the issue.

Specifically, the current study finds that adding a separate left turn lane on the westbound approach will mitigate the failing condition to acceptable LOS `D`. However, no mitigation is proposed in conjunction with the gas station & market development as the failure is due to the background traffic conditions.

- A left turn lane warrant was assessed for the westbound to southbound movement from NE 13th Street for traffic entering the site. The AM & PM peak hours were evaluated for the year 2026 total traffic scenario. The turn lane is not warranted in the PM peak hour. The warrant curve (Exhibit 1310-7a in the appendix) indicates that a left turn is marginally met based on a 40 MPH travel speed. However, the travel speed on NE 13th Street is 35 MPH which if plotted indicates the warrant would not be met. It is also noted that the queuing analysis for the westbound left turn movement has confirmed that up to one vehicle may queue to make a left turn resulting in a LOS `A` condition. Considering these factors adding a westbound left turn lane on NE 13th Street is not proposed in conjunction with the development.
- Based on the findings of the traffic analysis no off-site improvements to the transportation system are recommended.
- The City of Vancouver's intersections that are identified for future improvements are detailed in the traffic study in Table 4. The table includes the number of peak hour site trips that will impact the locations, cost per trip, and the proportionate share fee equating to $153,050.
- The development at full build out will create an additional 2,281 new trips, with 60 net AM peak hour trips and 81 net PM peak hour trips.

Sewer and Water

The site will be served by the City of Camas for public sewer service. There is an existing 4" pressure sewer main located in the west half of NE Friberg-Strunk Street. A 4" pressure sewer lateral was stubbed to the site from NE Friberg-Strunk Street. A private STEP sewer system is required for this site.

City of Camas will provide public water service. There in an existing 12" water main located in NE Friberg-Strunk Street with an existing 8" water main to the site at the SE corner of the site. The development will extend the existing 8" water main to serve the site.

Stormwater and Erosion Control

Stormwater runoff from pollution generating surfaces is proposed to be treated using filter cartridges and then routed to an underground detention facility. Infiltration was deemed infeasible by the geotechnical engineer, so discharge from the site will be routed to an existing drainage ditch on the north side of the site.

A preliminary stormwater plan has been submitted with this application. The preliminary technical information report (TIR) has also been submitted with this application which better explains the stormwater system and how it meets the applicable code.

Garbage and Recycling:
The location of onsite garbage and recycling receptacles is shown on the preliminary site plan.

Impact Fees:
This development will pay impact fees for traffic and fire.

System Development Charges:
Water and sewer system development charges will be paid by this development.

Fire:
Fire apparatus access is provided onsite with the proposed drive aisles. Permits for underground storage tanks, fuel dispensing, sprinkler system and fire alarm system will be required. One new fire hydrant is proposed onsite.

Title 18 - Zoning

18.05 – Zoning Districts

The site is designated as being within the BP (Business Park) zoning district, a commercial district.

18.07 – Use Authorization

The applicant proposes a gas/fuel station with mini market, which is a permitted uses in the BP zone. Development in this zone is noted as needing to comply with Design Review under CMC 18.19.

18.09 – Density and Dimensions

Density standards are not applicable for this zone/use. The following standards apply to this development:

Table 1 – Density and Dimensions for Commercial and Industrial Zones

	BP	Proposed
Maximum density (dwelling units/net acre)	n/a	n/a
Minimum lot area (square feet)	½ acre	0.97 acres
Minimum lot width (feet)	100	131’
Minimum lot depth (feet)	100	328’
Maximum building lot coverage	50%	20%
Maximum building height (feet)	None	28’
Minimum front yard	15’	15’
Minimum side yard	15’	15’
Minimum rear yard	50’	50’

The development will comply with the above standards.

18.11 – Parking

CMC 18.11.130 requires that gas stations with mini markets provide 1 parking space per nozzle plus 1 space per 250 sf of gross floor area. Car wash uses require 2 spaces per stall and 1 space per 2 employees. The following parking calculations demonstrate what is required for this site:

4,100 sf mini market @ 1/250 sf	= 17 spaces
8 nozzle gas station @ 1/nozzle	= 8 spaces
1 stall carwash w/2 employees @ 2/stall + ½ employees	= 3 spaces
Total	= 28 spaces
Excluding gas fill-up stalls	= 20 spaces

This development proposes a total of 20 parking spaces, all standard size, plus 8 gas fill-up stalls. Of the 20 standard spaces 1 will be ADA compliant, 2 will have electric vehicle charging infrastructure at the time of development and 2 are designated as future electric vehicle charging spaces.

The design of the site limits any vehicle from having to back out into public right-of-way.

18.13 – Landscaping

A Tree Survey has been submitted with this application providing an inventory of existing trees. A Landscape, Tree and Vegetation Plan has been submitted with this application showing proposed landscaping, and all onsite trees proposed to be retained or removed.

A 20-unit/acre tree density per net acre has been incorporated into the site plan. The tree density is met by providing street trees, and plantings withing the proposed tract areas. The proposed and adjacent uses are residential or open space, so specific landscape buffers are not required.

Landscape buffers have been provided as follows:

North: 5’ - L2
West: 10’ – L3
South: 5’ – L2
East: 10’ – L3

The pre-application conference report states that the drive-thru car wash should be screened to a 10’- L3 buffer standard. This would require a 10’ – L3 buffer along the east as well as a portion of the north property line. This is not a code requirement, rather a design review recommendation from previous projects. It is not possible to provide the 10’ buffer due to the constraints of the parcel. The lot is narrow; after right-of-way dedication the remaining lot width is approximately 124’. A 10’ – L3 buffer is provided along NW Friberg-Strunk Street, as the lot is quite deep and there is room for the additional buffer. Along NE 13th Street a 5’ – L2 buffer has been shown. It should be noted that the drive-thru for the car wash will generate significantly less traffic than a drive-thru for fast food. In addition, the car wash will generate fewer trips than the traffic utilizing the site for the gas station or the mini mart. From a trip

generation/screening standpoint it does not seem that additional screening is necessary for this type of a drive-thru. A deviation request is not submitted for this item because the project does meet written code. The applicant hopes that the City will work with us to find a compromise.

Street trees will be provided along NE 13th Street. NW Friberg-Strunk Street is already built to the required standards with street trees; no street trees along NW Friberg-Strunk Street are proposed.

18.15 – Signs

No signs are proposed with this project at this time.

18.17 – Supplemental Development Standards

This lot is a corner lot, therefore a vision clearance area of 15' x 15' is required.

18.19 – Design Review

Per CMC 18.19.020 Design Review is required for new developments in commercial zones. The applicant has designed the site to provide:

- Parking areas placed towards the interior of the site and screened with landscaping.
- The drive-thru is screened heavily with landscape.
- The design of the site has kept development away from the existing home to the west.
- The proposed building is designed to be built right on the setback line in order to define the streetscape. Blank walls have been avoided.
- Outdoor lighting will be directed so as not to impact adjacent properties and streets.

18.18 – Site Plan Review

This proposal is subject to a Type II Site Plan Review. All applicable content has been submitted for a complete application. The following criteria must be addressed in order for the site plan to be approved:

- *Compatibility with the City's comprehensive plan*

Response: This project encourages economic development in an area designated as Business Park, which is considered Employment Land.

- *Compliance with all applicable design and development standards*

Response: As evidenced in this narrative, and associated plans, the proposed development complies with all applicable codes and development standards.

- *Availability and accessibility of adequate public services*

Response: Public water and sewer are available adjacent to the site in public right-of-way. Garbage and recycling services are available in the area. Emergency services such as fire, medical and police also are available in the area. This development will not impact schools or parks.

- *Adequate provisions are made for other public and private services and utilities, parks, and trails*

Response: This development will pay impact fees for traffic and fire, as well as system development charges for water and sewer. This development will not impact schools or parks as it is commercial in nature. There are no trails in the vicinity of the site to connect to. Garbage and recycling service will be paid for by the owner of the site.

- *Adequate provisions are made for maintenance of public utilities*

Response: Provisions have been made to provide for the maintenance of public utilities by paying impact fees and system development charges.

- *All relevant statutory codes, regulations, ordinance, and compliance with the same*

Response: This narrative and the associated plans and reports address all relevant statutory codes, regulations, ordinance and demonstrate compliance with the applicable codes.

18.55 – Administration and Procedures

This project is subject to a Type II process for Site Plan Review. The application will be subject to the development approval and application timelines of this chapter.

A preapplication meeting is required per CMC 18.55.060. A preapplication conference was held on July 28th, 2022 and a land use application was not submitted within 180 days. The applicant met City staff to review changes made to the layout. Emails with Yvette Sennewold confirm that this meeting acted as a 2nd pre-application conference and no further conference or waiver would be required.

The applicant has submitted the required documents and information as required CMC 18.55.110.

CLARK COUNTY WASHINGTON
PUBLIC HEALTH
www.clark.wa.gov
1601 E Fourth Plain Blvd, Bldg 17
PO Box 9825
Vancouver, WA 98666-8825
564.397.8000

August 23rd, 2023

Travis Johnson
PLS Engineering
604 W. Evergreen Blvd.
Vancouver, WA 98660

RE: Conditional Development Review Evaluation Approval for the "13th Street Site Plan" Development located at 20101 NE 13th St. in Camas, WA 98607 (SR0063672; APN 176148000; PA22-32)

*****Final Approval Required by Clark County Public Health*****

The Development Review Evaluation for which you applied has been completed by Clark County Public Health (CCPH). This evaluation is limited to the area of the proposed development.

On-Site Sewage Treatment Systems (CCC 24.17, WAC 246-272A, CCC 40.370, RCW 58.17):

Public sewer service is proposed and required for this development. The presence of an on-site sewage system (OSS) is indicated within County records and was confirmed by the current resident of the parcel during a 8/23/23 field evaluation:

- 20101 NE 13th St., APN 176148000 – Operational OSS (ON0018388), tank located east of existing residence consistent with as-built drawing within County records

Additional OSS components may exist at the site. This OSS and any OSS tanks or drywells discovered during development must be properly abandoned per CCC 24.17.210, with written notice provided to CCPH and Online RME Pumper Reports or receipts attached. Abandoned OSS locations must be marked on the final development site plan. The proposed development must be served by public sewer.

Water Systems (WAC 173-160, WAC 246-290, CCC 40.370, RCW 58.17):

Public water service is proposed and required for this project. The presence of an existing drinking water well is indicated within County records and was observed in the field by CCPH staff during a 8/23/23 field evaluation:

- 20101 NE 13th St., APN 176148000 – Operational water well (WP0002883) located west of existing residence as shown on OSS as-built drawing within County records

Additional water wells may exist at the site. This water well and any water wells discovered during development must be legally decommissioned by a licensed well driller per WAC 173-160-381, with written notice provided to CCPH and decommissioning well logs attached. Decommissioned well locations must be marked on the final development site plan. The proposed development must be served by public water.

If you have any questions concerning this letter, please contact me at (564) 397-7373.

Sincerely,

Salvador Robb-Chavez
Digitally signed by Salvador Robb-Chavez
Date: 2023.08.23 14:30:05 -07'00'

Salvador Robb-Chavez
Environmental Health Specialist II

Cc: Taz Khan, PAK USA Camas LLC; Yvette Sennewald, City of Camas Community Development Department

Community Development
616 NE Fourth Avenue • Camas, WA 98607
(360) 817-1568
http://www.cityofcamas.us

SEPA ENVIRONMENTAL CHECKLIST

UPDATED 2016

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

***Instructions for applicants*:**

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals: [help]

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background [help]

1. Name of proposed project, if applicable: [help]

13th Street Site Plan

2. Name of applicant: [help]

Taz Khan

3. Address and phone number of applicant and contact person: [help]

3993 NW Currawong Court
Camas, WA 98607

4. Date checklist prepared: [help]

August 23, 2023

5. Agency requesting checklist: [help]

City of Camas

6. Proposed timing or schedule (including phasing, if applicable): [help]

Development is expected to start at the time of final construction drawing approval, likely in early 2024. No phasing is proposed.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. [help]

No, not at this time.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. [help]

SEPA Checklist, Archaeological Predetermination, Geotechnical Report, Critical Areas Report

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. [help]

No, there are no known government approvals pending related to this property.

10. List any government approvals or permits that will be needed for your proposal, if known.

- *Preliminary Type II Site Plan*
- *Public notification and staff report publications*
- *Final engineering plan review and approval*
- *Final Site Plan Approval*
- *SEPA*
- *SWWPPP*

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.) [help]

The applicant proposes to construct a 4,100 sf convenience store with gas pumps and a drive through car wash. The site is zoned BP, Business Park, and is 0.97 acres in size.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist. [help]

The site is located at 20101 NE 13th Street, Camas, WA 98607, in the NW ¼ of Section 29, Township 2 North, Range 3 East of the Willamette Meridian. The site is comprised of tax lot 176148000. See the proposed development plans for a preliminary site plan, grading plan, vicinity map and topographical data.

B. ENVIRONMENTAL ELEMENTS [help]

1. Earth [help]

a. General description of the site: [help]

(circle one) (Flat), rolling, hilly, steep slopes, mountainous, other _____

b. What is the steepest slope on the site (approximate percent slope)?

5% per Clark County GIS data

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils. [help]

This site has the following soils onsite per Clark County GIS data:

WrB – Wind River Gravelly Loam, 0-8% slopes
CvA – Cove Silty Loam, 0-3% slopes

It is unknown if these soils are classified as agricultural or if the site contains prime farmland.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe. [help]

There are no known surface indications or history of unstable soils in the immediate area.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill. [help]

There will be grading for the construction of drive aisles, the installation of utilities, and the preparation of the site for the future convenience store, car wash and gas pumps. Surplus material may be required to be hauled from the site to an approved dump site or offsite fill may be required. Quantities and source are unknown at this time.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe. [help]

Standard erosion control measures will be followed during grading construction on the site. A final erosion control plan will be reviewed and approved by City of Camas.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? [help]

Approximately 80%

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any: [help]

Proposed measures to reduce and control erosion include providing an erosion control plan for review and approval prior to starting construction on the site and following the conditions of the approved grading and erosion control plan during all phases of construction.

2. Air [help]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known. [help]

Construction equipment emissions and dust on the short term. Long-term emissions will be produced by automobile traffic and normal commercial/retail uses as well as possible vapor from the gas tanks.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe. [help]

There are no known off-site sources of emissions or odor that may affect the proposal.

c. Proposed measures to reduce or control emissions or other impacts to air, if any: [help]

Dust from construction can be mitigated by sprinkling the site with water during construction as needed. Stage 2 vapor recovery systems will be included in the gas storage tanks and delivery systems.

3. Water [help]

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into. [help]

There is a wetland to the south of the site that has permits to be filled for the proposed

Lacamas Tech Business Park. There are no other surface water bodies or wetlands within the immediate vicinity of the site.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans. [help]

No, there is no work that will take place within 200' of any water bodies.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material. [help]

Not applicable – there are no wetlands onsite.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known. [help]

The proposal will not require surface water withdrawals or diversions.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan. [help]

No, the site does not lie within a 100-year floodplain.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge. [help]

No, there will be no discharge of waste material to surface waters.

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known. [help]

No ground water will be withdrawn with this proposal. Stormwater from pollution generating surfaces will be treated prior to being routed to an existing roadside ditch.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve. [help]

No waste material is proposed to be discharged into the ground.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe. [help]

The main source of runoff is from stormwater. There will be runoff from impervious roof area, drive aisles, parking areas, and landscaped areas. Onsite catch basins will connect

to a pipe network that leads to an underground detention facility that will discharge to an existing roadside ditch.

2) Could waste materials enter ground or surface waters? If so, generally describe. [help]

Yes, if waste materials were somehow released or dumped into surface runoff flows, substances associated with the source material could enter ground or other surface waters. There is no proposal to release waste material to the ground or to surface waters.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe. [help]

Not anticipated.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any: [help]

Use of approved erosion control measures during all phases of development.

4. Plants [help]

a. Check the types of vegetation found on the site: [help]

x deciduous tree: alder, **maple**, aspen, **other: Oregon white oak, ash, cottonwood, cherry**
x evergreen tree: **fir**, cedar, pine, other
x shrubs
x grass
____ pasture
____ crop or grain
____ Orchards, vineyards or other permanent crops.
____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____ water plants: water lily, eelgrass, milfoil, other
x other types of vegetation: **blackberry**

b. What kind and amount of vegetation will be removed or altered? [help]

Site vegetation will be stripped for site preparation. Trees beyond the property line are proposed to be retained.

c. List threatened and endangered species known to be on or near the site. [help]

There is 1 priority habitat Oregon white oak onsite.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any: [help]

Landscaping will be provided onsite in accordance with City of Camas requirements. One Oregon white oak will be removed and mitigated at a 6:1 ratio.

e. List all noxious weeds and invasive species known to be on or near the site. [help]

None known.

5. Animals [help]

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. [help]

Examples include:
birds: hawk, heron, eagle, **songbirds, other:** mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

Small mammals, such as mice, voles, and rabbits are located on and near the site. This site is also in an area where larger mammals, such as raccoons, opossum, and mammals indigenous to the Clark County area are sometimes located.

b. List any threatened and endangered species known to be on or near the site. [help]

There are no known threatened or endangered species on or near the site.

c. Is the site part of a migration route? If so, explain. help]

This site is part of the Pacific Flyway for migratory waterfowl.

d. Proposed measures to preserve or enhance wildlife, if any: [help]

The site will provide landscaped buffers and street trees.

e. List any invasive animal species known to be on or near the site. [help]

None known

6. Energy and Natural Resources [help]

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc. [help]

The site will be served primarily by electricity.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe. [help]

No.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any: [help]

The convenience store and car wash will have energy efficient windows and will comply with state building codes which includes conservation measures.

7. Environmental Health [help]

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk

of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe. [help]

The gas station will store and dispense gasoline and diesel, which are flammable and could spill.

1) Describe any known or possible contamination at the site from present or past uses. [help]

Utilizing the "What's in My Neighborhood" section of DOE's database shows that there are no cleanup sites or known hazards within 0.5 miles of the site.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity. [help]

There are no known existing hazardous chemicals/conditions that may affect the development.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project. [help]

The site proposes a gas station; gas and diesel will be stored and used on the site after development.

4) Describe special emergency services that might be required. [help]

No special emergency services outside those normally expected in a commercial/business area are anticipated to be required in association with this proposal.

5) Proposed measures to reduce or control environmental health hazards, if any: [help]

Emergency shut-off switches will be located inside of the convenience store and outside at the gas pumps. Underground storage and pipes will be double-containment construction with rupture protection. Underground tanks also include monitoring of the inner walls for leaks. Overfill protection, gravity return of undispensed product, breakaway valves and stage 2 vapor recovery systems are also included in the storage tanks and delivery systems.

b. Noise [help]

1) What types of noise exist in the area which may affect your project (for example:traffic, equipment, operation, other)? [help]

Light traffic noise from surrounding areas/roads along with typical home and business use noises. None of these will affect the proposal.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indi- cate what hours noise would come from the site. [help]

Short term noises would include construction noises which would occur during approved hours as mandated by City of Camas and Washington State. Long term noises could include slight increase in traffic noise and vehicle noise at the site.

3) Proposed measures to reduce or control noise impacts, if any: [help]

Construction on the site will take place during normal working hours as allowed by the City.

8. Land and Shoreline Use [help]

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe. [help]

The proposed site has an existing single-family residence and two outbuildings. To the south is a developing business park. West of the site is a single family residence. To the east of the site across NW Friberg-Strunk Street is land owned by Camas Meadows Golf Club. To the north across NE 13th Street are single family homes.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use? [help]

It is unknown whether the site has been used as working farmlands or forest lands. There are not currently any agricultural or forest uses associated with the site.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how: [help]

No, the proposal will not be affected by, nor will it affect, any surrounding working farm or forest land business.

c. Describe any structures on the site. [help]

Single family residences and two outbuildings.

d. Will any structures be demolished? If so, what? [help]

All structures will be demolished.

e. What is the current zoning classification of the site? [help]

BP – Business Park

f. What is the current comprehensive plan designation of the site? [help]

IND - Industrial

g. If applicable, what is the current shoreline master program designation of the site? [help]

The site does not lie within the shoreline master program.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify. [help]

There is an Oregon white oak on site.

i. Approximately how many people would reside or work in the completed project? [help]

It is currently planned that approximately 2 people will work at this site at the time of full buildout.

j. Approximately how many people would the completed project displace? [help]

The removal of one single-family residence has the potential to displace up to 3 people.

k. Proposed measures to avoid or reduce displacement impacts, if any: [help]

There are no measures proposed to avoid or reduce displacement impacts.

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any: [help]

By complying with the zoning designation, the comprehensive plan, and the City of Camas Development Code, the proposal will be compatible with the existing and projected land uses.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any: [help]

No impacts are expected to agricultural or forest lands, therefore no measures are proposed.

9. Housing [help]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. [help]

Not applicable, no homes are proposed.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. [help]

One existing residence will be eliminated. The income level housing type is unknown.

c. Proposed measures to reduce or control housing impacts, if any: [help]

The applicant will pay all impact fees associated with the development at the time of building permit.

10. Aesthetics [help]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? [help]

All new construction will meet City of Camas building codes for commercial/business development. Exterior building materials will include composite wood siding, fiber cement panels, CMU, metal roofing and accents, and veneer stone. The tallest structure will not exceed 28'.

b. What views in the immediate vicinity would be altered or obstructed? [help]

The site will change from a large-lot single family residence to a commercial/retail development with a convenience store, gas station and drive-through car wash.

c. Proposed measures to reduce or control aesthetic impacts, if any: [help]

The site will be landscaped as required by the City of Camas. The main roadway frontages will be landscaped with trees per the City of Camas roadway standards.

11. Light and Glare [help]

a. What type of light or glare will the proposal produce? What time of day would it mainly occur? [help]

When the site is built out external illumination will be provided for the canopy/fueling area and for perimeter lot lighting and parking areas.

b. Could light or glare from the finished project be a safety hazard or interfere with views? [help]

No, light or glare from the finished project will not be a safety hazard or interfere with views.

c. What existing off-site sources of light or glare may affect your proposal? [help]

There are existing off-site sources of light from adjacent homes and roads, but they will not affect the proposal.

d. Proposed measures to reduce or control light and glare impacts, if any: [help]

Shielding of lights and streetlights will reduce light and glare impacts offsite.

12. Recreation [help]

a. What designated and informal recreational opportunities are in the immediate vicinity? [help]

Camas Meadows Golf Club is adjacent to the east. The Harmony Sports Complex is approximately ½ mile to the west.

b. Would the proposed project displace any existing recreational uses? If so, describe. [help]

There will be no recreational uses displaced with this proposal.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any: [help]

No impacts are proposed, therefore no measures to reduce or control impacts on recreation are proposed.

13. Historic and cultural preservation [help]

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers ? If so, specifically describe. [help]

There are no structures recommended for listing in national, state or local preservation registers per the Archaeological Predetermination.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources. [help]

Archaeological Services, LLC (ASCC) performed an onsite field investigation on August 17, 2023. No mention of landmarks, features or other evidence of Indian use or occupation are mentioned. Several artifacts were found including pink glass fragments suspected to be Depression Glass, a coin bank dated to 1926-1930, and a metal bolt. Based on these items, along with the former structures that appear on site in historic photos, ASCC is recording the debris scatter as a historic-area archaeological site and recommends a Cultural Resource Survey Report prior to any ground disturbing activity.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc. [help]

The report utilized surface surveys and excavation of test pits, as well as reviewing historical maps and records on file at the Washington State Department of Archaeology and Historic Preservation.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required. [help]

Based on the findings of the Archaeological Predetermination, a Cultural Resources Study is recommended prior to ground disturbing activity. If during the course of construction any artifacts are discovered, all work will cease, and proper notification shall be given to City of Camas and DAHP.

14. Transportation [help]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any. [help]

NE 13th Street and NW Friberg-Strunk Street abut the site to the north and west. A new driveway off of NE 13th Street will provide access to the site.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop? [help]

C-tran does not operate in close proximity to the site. The nearest stop is 1.6 miles SE of the site along SE 192nd Avenue at Mill Plain Blvd.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate? [help]

20 parking spaces, plus 8 gas fill-up spaces, will be provided with this development. The project will eliminate approximately 2-4 parking spaces with the removal of the existing home.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). [help]

Frontage improvements are proposed to bring NE 13th Street up to half-width roadway standards. NW Friberg-Strunk Street is currently built out to standard.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe. [help].

No

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates? [help]

It is anticipated that 2,281 new trips per day would be generated by the project. It is expected that 60 trips will occur in the AM peak hour (7:00 – 9:00 AM) and 81 trips will occur in the PM peak hour (4:00 – 6:00).

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe. [help]

Not anticipated

h. Proposed measures to reduce or control transportation impacts, if any: [help]

The applicant will pay transportation impact fees.

15. Public Services [help]

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe. [help]

Yes. The completion of this development will increase the need for public services in the area.

b. Proposed measures to reduce or control direct impacts on public services, if any. [help]

This project will pay impact fees for traffic at the time of building permit.

16. Utilities [help]

a. Circle utilities currently available at the site: [help]
electricity, natural gas, water, refuse service, telephone, sanitary sewer

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed. [help]

- *Electricity: Clark Public Utilities*
- *Water: City of Camas*
- *Telephone: Century Link, Comcast*
- *Sanitary Sewer: City of Camas*
- *Natural Gas: NW Natural*

C. Signature [help]

Under the penalty of perjury, the above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: DocuSigned by: FF97DED7F6DB4EF...

Name of signee Faz Khan

Position and Agency/Organization Managing Member Pak USA Camas, LLC

Date Submitted: 10/9/2023

GEOTECHNICAL ENGINEERING STUDY

13th Street Gas Station
NE 13th Street & NW Friberg-Strunk Street
Camas, Clark County, Washington
Tax Lot No. (176148000)

Prepared for:
Taz Khan
701 Columbia Street #109
Vancouver, WA 98660

Prepared By:

Donald J. Bruno, CEG
Engineering Geologist

9/31/23

State of Washington
Engineering Geologist
2177
Licensed Geologist
DONALD J. BRUNO

Project No. G26-0723

{August 2023}

Earth Engineering Inc.
PO Box 1512, Ridgefield, Washington 98642
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Earth Engineering, Inc.
Geotechnical & Environmental Consultants

Taz Khan
701 Columbia Street #109
Vancouver, Washington 98660

August 31st 2023
G26-0723

Subject: **Geotechnical Engineering Study**
13th Street Gas Station, C-Store & Car Wash
NE 13th Street & NW Friberg-Strunk Street
Camas, Clark County, Washington
(Tax Lot No. 176148000)

Hello Taz,

We are pleased to submit our engineering report for the subject property located in Camas, Washington. This report presents the results of our field exploration, selective laboratory tests, field testing and engineering analyses.

Based on the results of this study, it is our opinion that construction of the proposed commercial structures is feasible from a geotechnical standpoint, provided recommendations presented in this report are included in the project design.

We appreciate the opportunity to have been of service to you and look forward to working with you in the future. Should you have any questions about the content of this report, or if we can be of further assistance, please call.

Respectfully Submitted,
Earth Engineering Inc.,

Donald J. Bruno, CEG
Engineering Geologist

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{G26-0723}

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Exhibit 8 APPEAL24-1001

INTRODUCTION

General

This report presents the results of the geotechnical engineering study completed by Earth Engineering, Inc. for the proposed gas station, convenience store and drive thru car wash located in Camas, Washington. The general location of the site is shown on the *Vicinity Map, Figure 1.* At the time our study was performed, the site and our exploratory locations are approximately as shown on the *Site Plan, Figure 2.*

The purpose of this study was to explore subsurface conditions at the site and based on the conditions encountered provide geotechnical recommendations for the proposed construction. In addition this report includes infiltration testing for stormwater design and a seismic hazard evaluation.

Project Description

Based on the information that was provided to us by the project civil engineer (PLS), it is our understanding the site will be developed with a one story convenience store building that will provide four thousand one-hundred (4100) square feet of floor space, a one thousand one-hundred and eighty nine (1189) square foot drive thru car wash, a fuel pumping island, trash enclosure and an asphalt paved access driveway with vehicle parking spaces. Construction will also include the installation of a stormwater system and subsurface utilities.

Due to the relatively flat topography, it is anticipated that earthwork cuts and fills will be less than two feet to achieve the desired design grade. The convenience store and car wash structures will be constructed with a metal or wood frame and slab on grade floors.

Structural design loads were not available at the time this report was written. However, based on our experience with similar projects, we anticipate that wall and column loads will be approximately seven hundred and fifty (750) to one thousand five hundred (1500) pounds per lineal foot (maximum dead plus live loads). Slab on grade loads will most likely range from one hundred (100) to one hundred and fifty (150) pounds per square foot (psf).

If any of the above information is incorrect or changes, we should be consulted to review the recommendations contained in this report. In any case, it is recommended that Earth Engineering, Inc. perform a general review of the final design for the proposed construction.

SITE CONDITIONS

Surface

The rectangular shaped property encompasses approximately one acre. An existing single family residence was located at the central west area of the property. The adjacent properties to the south and west are moderately to heavily vegetated with single family homes on acreage.
NE 13th Street borders the north side and NW Friberg-Strunk Street.

Exhibit 8 APPEAL24-1001

The property is relatively level and slopes gently downward from the north to the south and southeast with an overall elevation change of approximately five feet and a gradient that is less than two percent (2%). The property has been landscaped with a manicured lawn as well as a variety of trees and flowering bushes.

Subsurface & Soil Classification

For this study, the site was explored by excavating two test pits at the approximate locations shown on the *Site Plan, Figure 2.* Infiltration testing was performed in both test pits. All soil was classified following the Unified Soil Classification System (USCS). A USCS Legend is included as Plate A1. A description of the field exploration methods is included in Appendix A.

In general, in our test pits we encountered very stiff to hard soil consisting of Silt (ML) and lean Clay (CL) to the maximum exploration depth of ten and one half (10.5) feet below the existing ground surface. Please refer to the test pit logs, Plates A-2 thru A-3, for a more detailed description of the conditions encountered.

Groundwater

During the time of our field exploration (August 2023) groundwater was not encountered in any of our test pits. It is important to note that groundwater conditions are not static; fluctuations may be expected in the level and seepage flow depending on the season, amount of, surface water runoff, and other factors. Generally, groundwater levels are higher and the seepage rate is greater in the wetter winter months (typically October through May).

General Regional Geology

General information about geologic conditions and soil in the vicinity of the site was obtained by reviewing the Geologic Map of Washington-Southwest Quadrant, Washington Division of Geology and Earth Resources, (Geologic Map GM-34, 1987). This map provides general information about geologic units in the Camas, Clark County, Washington area.

Our review of existing geological information indicates that soils in the vicinity of the subject site were formed from alluvial deposits during the Quaternary Period. Outburst flood deposits from glacial Lake Missoula deposited these sedimentary soils. The native material encountered in our test pits consists predominantly of Silt.

LABORATORY TESTING

Laboratory tests were conducted on representative soil samples to verify or modify the field soil classification of the units encountered, and to evaluate the general physical properties as well as the engineering characteristics of the soils encountered. The following provides information about the testing procedures performed on representative soil samples and the general condition of subsurface soil conditions encountered:

Exhibit 8 APPEAL24-1001

- *Moisture Content (ASTM-D2216-92)* tests were performed on representative samples. The native Silt has a moisture content that ranges from thirteen to forty three percent (13-43 %). The native lean clay has a moisture content of thirty eight percent (38%)

- In-Situ Soil Density (ASTM-D4564-93) utilizing the sleeve method was performed on representative samples to determine the wet and dry density of native soil. The in-situ density provides a relative indication of soil support characteristics. The average wet density of the native silt is one hundred and ten (110) pounds per cubic foot (pcf). The average dry density of this soil is ninety six (96) pcf.

Laboratory testing confirms that subsurface soil consists predominantly of Silt and lean Clay. These types of soil are sensitive to changes in moisture content. Moisture sensitive soils are discussed in more detail in the *Site Preparation and Grading* section of this report.

The results of laboratory tests performed on specific samples are provided at the appropriate sample depth on the individual test pit logs. However, it is important to note that some variation of subsurface conditions may exist. Our geotechnical recommendations are based on our interpretation of these test results.

SEISMIC HAZARD EVALUATION

The following provides a seismic hazard evaluation for the proposed commercial building and fuel island. Our evaluation is based on subsurface conditions encountered at the site during the time of our geotechnical study and a review of applicable geologic maps (Washington State Department of Natural Resources, Geologic Map of Washington-Southwest Quadrant, 1987) and the International Building Code (IBC-2018) guidelines.

In general, supportive soil at the subject site consists of very stiff to hard Silt. The geologic map indicates that no known active faults are located within one-mile of the subject site. Soils encountered at the site are classified as a type "D" soil in accordance with "Seismic Design Categories" (IBC 2018, Section 1803.5.12).

Liquefaction:

Structures are subject to damage from earthquakes due to direct and indirect action. Shaking represents direct action. Indirect action is represented by foundation failures and is typified by liquefaction. Liquefaction occurs when soil loses all shear strength for short periods of time during an earthquake. Ground shaking of sufficient duration results in the loss of grain to grain contact as well as a rapid increase in pore water pressure. This causes the soil to assume physical properties of a fluid.

To have potential for liquefaction a soil must be loose, cohesion-less (generally sands and silts), below the groundwater table, and must be subjected to sufficient magnitude and duration of ground shaking. The effects of liquefaction may be large total settlement and/or large differential settlement for structures with foundations in or above the liquefied soil. Based on the very stiff to hard soil conditions encountered and the absence of a near surface groundwater table, it is not likely that soil liquefaction would occur at the subject site during a seismic event.

Exhibit 8 APPEAL24-1001

DISCUSSION AND RECOMMENDATIONS

General

Based on the results of our study, it is our opinion the commercial project can be developed as planned provided the geotechnical recommendations contained in this report are incorporated into the final design. The proposed buildings (convenience store & car wash) as well as the fuel island canopy can be supported on conventional shallow spread footings bearing either entirely on competent native soil or compacted structural fill. Supporting the proposed buildings on homogeneous material will significantly decrease the potential for differential settlement across the foundation area.

This report has been prepared for specific application to this project only and in a manner consistent with that level of care and skill ordinarily exercised by other members of the profession currently practicing under similar conditions in this area for the exclusive use of Taz Khan and their representatives. This report, in its entirety, should be included in the project documents for information to the contractor. No warranty, expressed or implied, is made.

Site Preparation and Grading

The site shall be stripped and cleared of all vegetation, organic matter and any other deleterious material. Stripped material should not be mixed with any soils to be used as fill. Stripped soil could potentially be used for topsoil at landscape areas after removing vegetation and screening out organic matter.

Building and Driveway Areas:

After clearing and grading, the exposed sub-grade at building and pavement areas should be compacted to a dense non-yielding condition with suitable compaction equipment. This phase of earthwork compaction shall be performed prior to the placement of structural fill, at the bottom of all foundation excavations, interior and exterior concrete slabs, as well as the driveway-parking areas, before the placement of base rock.

Structural Fill:

Structural fill is defined as any soil placed under buildings or any other load bearing-areas. Structural fill placed under footings and slab on grade should be placed in thin horizontal lifts not exceeding eight inches and compacted to a minimum ninety-five percent (95%) of its maximum dry density (Modified Proctor ASTM D1557). The fill material should be placed within two to three percent of the optimum moisture content.

Fill under pavements should also be placed in lifts approximately eight inches in thickness, and compacted to a minimum of ninety percent (92%) of its maximum dry density (Modified Proctor ASTM D1598), except for the top twelve (12) inches which should be compacted to ninety-five percent (95%) of the maximum dry density.

Exhibit 8 APPEAL24-1001

We recommend that structural fill consist of a well graded granular material having a maximum size of two inches and no more than five percent (5%) fines passing the #200 sieve, based on the ¾ inch fraction. It is recommended that any structural fill planned for onsite use, be submitted for approval prior to import.

The placement and compaction of structural fill should be observed by a representative from our office to verify that fill has been placed and compacted in accordance with the approved project plans and specifications.

It should be noted that the depth of excavation to competent soil at foundation footings and floor slab areas could be greater or less than anticipated depending on conditions encountered. Our test pits provide general information about subsurface soil and groundwater conditions.

Wet Weather Construction & Moisture Sensitive Soils:

Field observations and laboratory testing indicates that soil encountered at the site consists of moisture sensitive Silt and lean Clay. As such in an exposed condition moisture sensitive soil can become disturbed during normal construction activity, especially when in a wet or saturated condition. Once disturbed, in a wet condition, these soils will be unsuitable for support of foundations, floor slabs and pavements.

Therefore, where soil is exposed and will support new construction, care must be taken not to disturb their condition. If disturbed soil conditions develop, the affected soil must be removed and replaced with structural fill. The depth of removal will be dependent on the depth of disturbance developed during construction. Covering the excavated area with plastic and refraining from excavation activities during rainfall will minimize the disturbance and decrease the potential degradation of supportive soils.

Earthwork grading and foundation construction will be difficult during the wet winter and spring seasons. Based on this condition we suggest that grading and foundation construction be completed during the drier summer and fall seasons.

Foundations

Based on the encountered subsurface soil conditions, preliminary building design criteria, and assuming compliance with the preceding *Site Preparation and Grading* section, the proposed building may be supported on conventional shallow spread footings bearing entirely on six inches of compacted granular structural fill.

Individual spread footings or continuous wall footings providing support for the proposed commercial building and pump island canopy may be designed for a maximum allowable bearing value of two -thousand (2000) pounds per square foot (psf).

Footings for a one level structure should be at least twelve (12) inches in width. Footings for a two-level structure should be a minimum of fifteen (15) inches in width. In either case, all footings should extend to a depth of at least eighteen (18) inches below the lowest adjacent finished sub grade for lateral support and frost heave considerations.

Exhibit 8 APPEAL24-1001

These basic allowable bearing values are for dead plus live loads and may be increased one-third for combined dead, live, wind, and seismic forces. It is estimated that total and differential footing settlements for the relatively light building will be approximately one-half and one-quarter inches, respectively.

Lateral loads can be resisted by friction between the foundation and the supporting sub grade or by passive earth pressure acting on the buried portions of the foundation. For the latter, the foundations must be poured "neat" against the existing soil or back filled with a compacted fill meeting the requirements of structural fill.

- Passive Pressure = 300 pcf equivalent fluid weight
- Coefficient of Friction = 0.40

We recommend that all footing excavations be observed by a representative of Earth Engineering, Inc. prior to placing forms or rebar, to verify that sub grade support conditions are as anticipated in this report, and/or provide modifications in the design as required.

Slab on Grade

The sub-grade for all concrete floor slab areas should be compacted to a dense non-yielding condition prior to the placement of base rock. It is important to note that the existing sub-grade soil may become too wet to re-compact due to weather conditions. If supportive soils become saturated it may be necessary to remove the unsuitable material and replace it with imported granular structural fill.

Interior floor slabs should be provided with a minimum of six inches of compacted granular structural fill after compacting the sub-grade. In areas where moisture is undesirable, a vapor barrier such as a 8-mil plastic membrane should be placed beneath the slab.

Temporary Excavations

The following information is provided solely as a service to our client. Under no circumstances should this information be interpreted to mean that Earth Engineering Inc. is assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

In no case should excavation slopes be greater than the limits specified in local, state and federal safety regulations. Based on the information obtained from our field exploration and laboratory testing, the site soils expected to be encountered in excavations, very stiff to hard Silt would be classified as a Type "A" soil by OSHA guidelines.

Therefore, temporary excavations and cuts greater than four feet in height, should be sloped at an inclination no steeper than 3/4H:1V (horizontal:vertical) for type "A" soils. If slopes of this inclination, or flatter, cannot be constructed or if excavations greater than ten feet in depth are required, temporary shoring will be necessary.

Exhibit 8 APPEAL24-1001

Infiltration Testing

During August of 2023, infiltration testing was performed at two locations at four and one half and six feet below the existing ground surface. The approximate location of the infiltration tests are shown on the *Site Plan, Figure 2.*

Infiltration testing was conducted in general accordance with standard engineering practices The Encased Falling Head Test consists of driving a fifteen (15) inch long, six-inch diameter pipe six inches into the exposed ground surface at the bottom of the test pit. The pipe is filled with water as the soil around the bottom and below the pipe is saturated for several hours. The pipe is filled again, and the amount of time required for the water to fall, per inch, for six inches, is recorded. This step is performed a minimum of three times. The test results are averaged and calculated in inches per hour.

Testing yielded infiltration rates that ranged from 0.1 to 0.25 inches per hour. Based on these infiltration rates and the very stiff to hard soil conditions encountered, it is our opinion on-site soil is not conducive to infiltration. Alternative methods will need to be employed for stormwater control.

Site Drainage

The site should be graded so that surface water is directed off the site. Water should not be allowed to stand in any area where buildings or slabs are to be constructed. Loose surfaces should be sealed at the end of each workday by compacting the surface to reduce the potential for moisture infiltration into the soils. Final site grades should allow for drainage away from the building foundation. The ground should be sloped at a gradient of three percent for a distance of at least ten feet away from the buildings.

We recommend that a footing drain be installed around the perimeter of the building just below the invert of the footing with a gradient sufficient to initiate flow. Under no circumstances should the roof down spouts be connected to the footing drain system. We suggest that clean outs be installed at several accessible locations to allow for the periodic maintenance of the footing drain system. Details for the footing drain have been included on *Figure 3, Typical Footing Drain Detail.*

Utility Support and Back Fill

Based on the conditions encountered, the soil to be exposed by utility trenches should provide adequate support for utilities. Utility trench backfill is a concern in reducing the potential for settlement along utility alignments, particularly in pavement areas. It is also important that each section of utility line be adequately supported in the bedding material. The back fill material should be hand tamped to ensure support is provided around the pipe haunches.

Fill should be carefully placed and hand tamped to about twelve inches above the crown of the pipe before any compaction equipment is used. The remainder of the trench back fill should be placed in lifts having a loose thickness of ten inches.

Exhibit 8 APPEAL24-1001

A typical trench backfill section and compaction requirements for load supporting and non-load supporting areas is presented on *Figure 4, Utility Trench Backfill Detail.* Trench back fill may consist of imported granular fill provided the material is approved, placed and compacted near the optimum moisture content.

Imported granular material or on-site soil to be used as backfill should be submitted to our laboratory at least one week prior to construction so that we can provide a laboratory proctor for field density testing. If native soil is planned for use as backfill, additional testing may be required to determine the suitability of the material.

Pavements

The durability of pavements is related in part to the condition of the underlying sub grade. To provide a properly prepared sub grade for pavements, we recommend the sub grade be treated and prepared as described in the *Site Preparation and Grading* section of this report.

It is possible that some localized areas of soft, wet or unstable sub grade may still exist after this process. Before placement of any base rock, the sub grade should be compacted with suitable compaction equipment. Yielding areas that are identified should be excavated to firm material and replaced with compacted one and one quarter inch-minus clean-crushed rock. The following pavement sections are recommended for the proposed pavement areas:

- Entrance Driveway & Truck Turnaround - Four inches of Asphalt Concrete (AC) over ten inches of compacted Crushed Rock Base (CRB), over a geo-grid consisting of Tensar BX 1200 or equivalent.

- Parking Stalls for Automobiles - Three inches of Asphalt Concrete (AC) over eight inches of compacted Crushed Rock Base (CRB) material.

The geo-grid should be placed directly on the sub grade surface of the driveway prior to placement of base rock. Appropriate geo-textiles have been designed to increase the strength of the sub grade and extend pavement life.

Asphaltic Cement (AC) and Crushed Rock Base (CRB) materials should conform to WSDOT specifications. All base rock should be compacted to at least ninety-five percent (95 %) of the ASTM D1557-91 laboratory test standard.

We recommend that a minimum of eight inches of compacted CRB be placed below all exterior slabs. Exterior concrete slabs that are subject to vehicle traffic loads should be at five inches in thickness. It is also suggested that nominal reinforcement such as "6x6-10/10" welded wire mesh be installed, near midpoint, in new exterior concrete slabs and paving.

Additional Services & Earthwork Monitoring

Earth Engineering, Inc. will be available to provide consultation services related to review of the final design to verify that the recommendations within our purview have been properly interpreted and implemented in the approved construction plans and specifications. A representative from our office will be available to attend a pre-construction meeting to discuss and/or clarify all geotechnical issues related to the proposed project.

In addition, it is suggested that our office be retained to provide geotechnical services during construction to observe compliance with the design concepts and project specifications and to allow design changes in the event subsurface conditions differ from those anticipated. Our construction services would include monitoring and documenting the following:

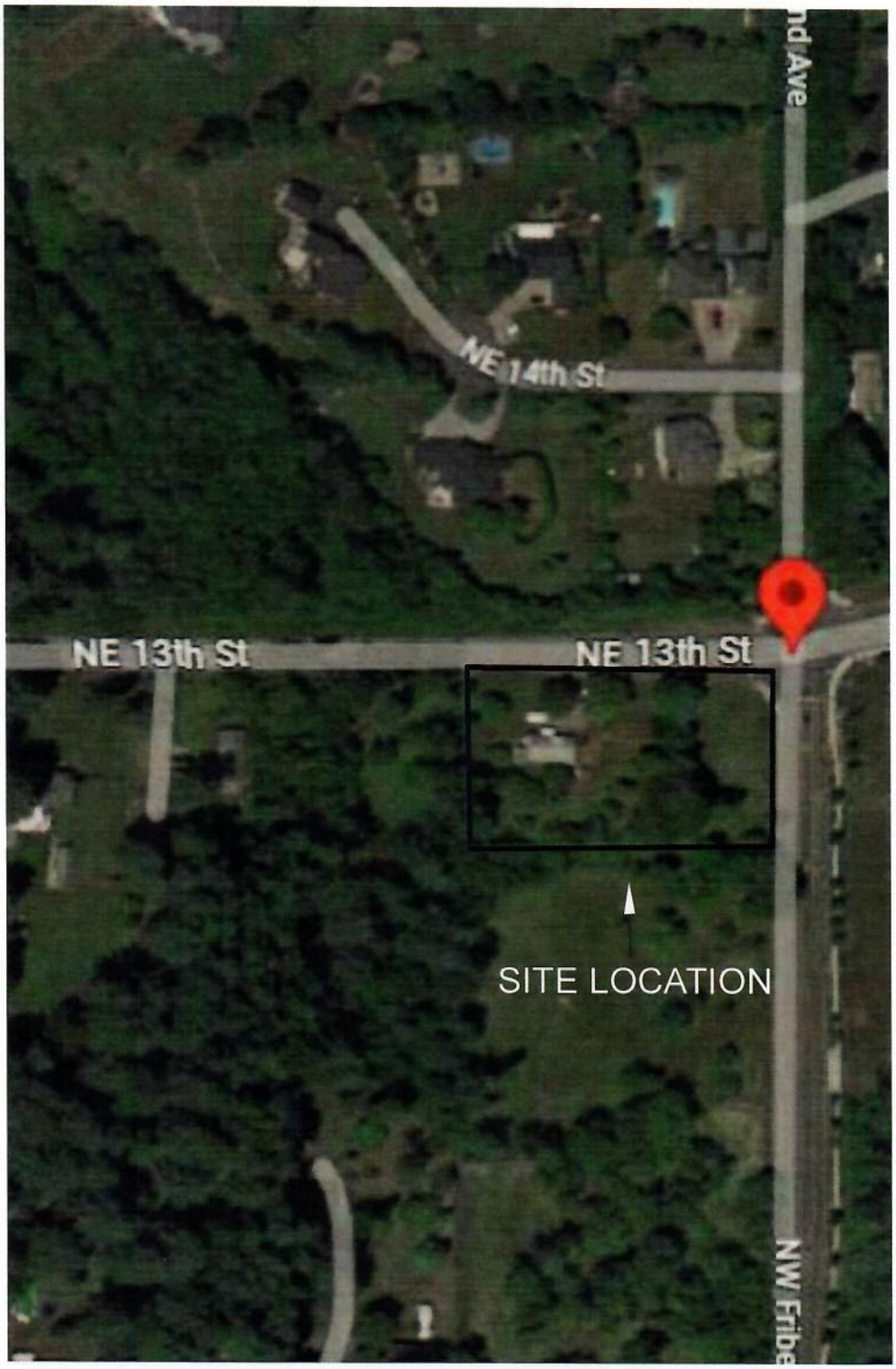
- Verify that site has been adequately stripped of organic materials.
- Observe the condition of exposed bearing soils at the building areas.
- Laboratory proctor tests for structural fill materials.
- Observe compaction and provide density testing of structural fill.
- Observe compaction and provide density testing of utility trench backfill.
- Provide footing inspection at the building & canopy footings to verify soil bearing capacity.
- Verify the installation of all building and site drainage elements.
- Provide density testing of the asphalt driveway and parking areas.

LIMITATIONS

Our recommendations and conclusions are based on the site materials observed, selective laboratory testing, engineering analyses, the design information provided to Earth Engineering, Inc. and our experience as well as engineering judgment. The conclusions and recommendations are professional opinions derived in a manner consistent with that level of care and skill ordinarily exercised by other members of the profession currently practicing under similar conditions in this area. No warranty is expressed or implied.

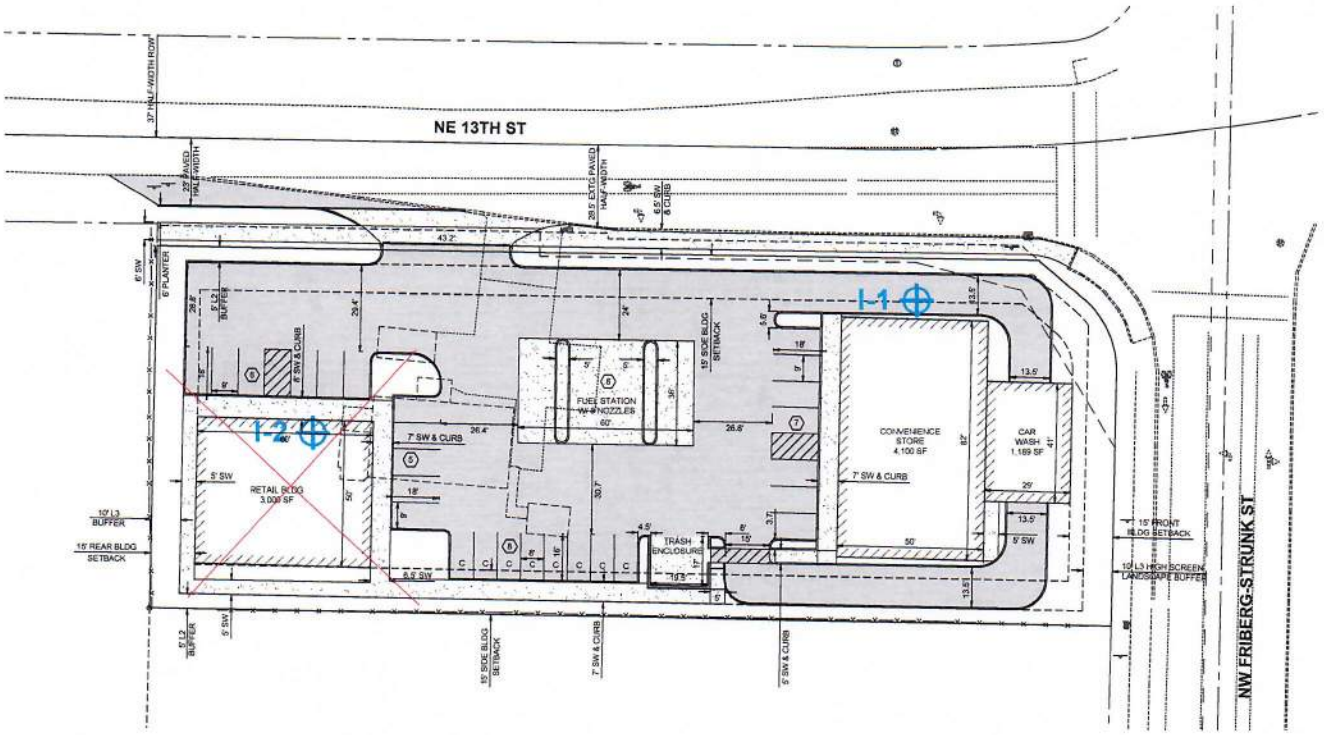
The recommendations submitted in this report are based upon the data obtained from the test pits. Soil and groundwater conditions may vary from those encountered. The nature and extent of variations may not become evident until construction. If variations do appear, Earth Engineering, Inc. should be requested to reevaluate the recommendations contained in this report and to modify or verify them in writing prior to proceeding with the proposed construction.

VICINITY MAP



Earth Engineering GEOTECHNICAL & ENVIRONMENTAL SERVICES	CLIENT: TAZ KHAN	DRAWN: EG
	PROJECT: 13TH STREET GAS STATION NE 13TH ST & NW FRIBERG-STRUNK ST CAMAS, WA	DATE: 09/2023
		FIGURE: 1
		PRO. #: G26-0723

SITE PLAN

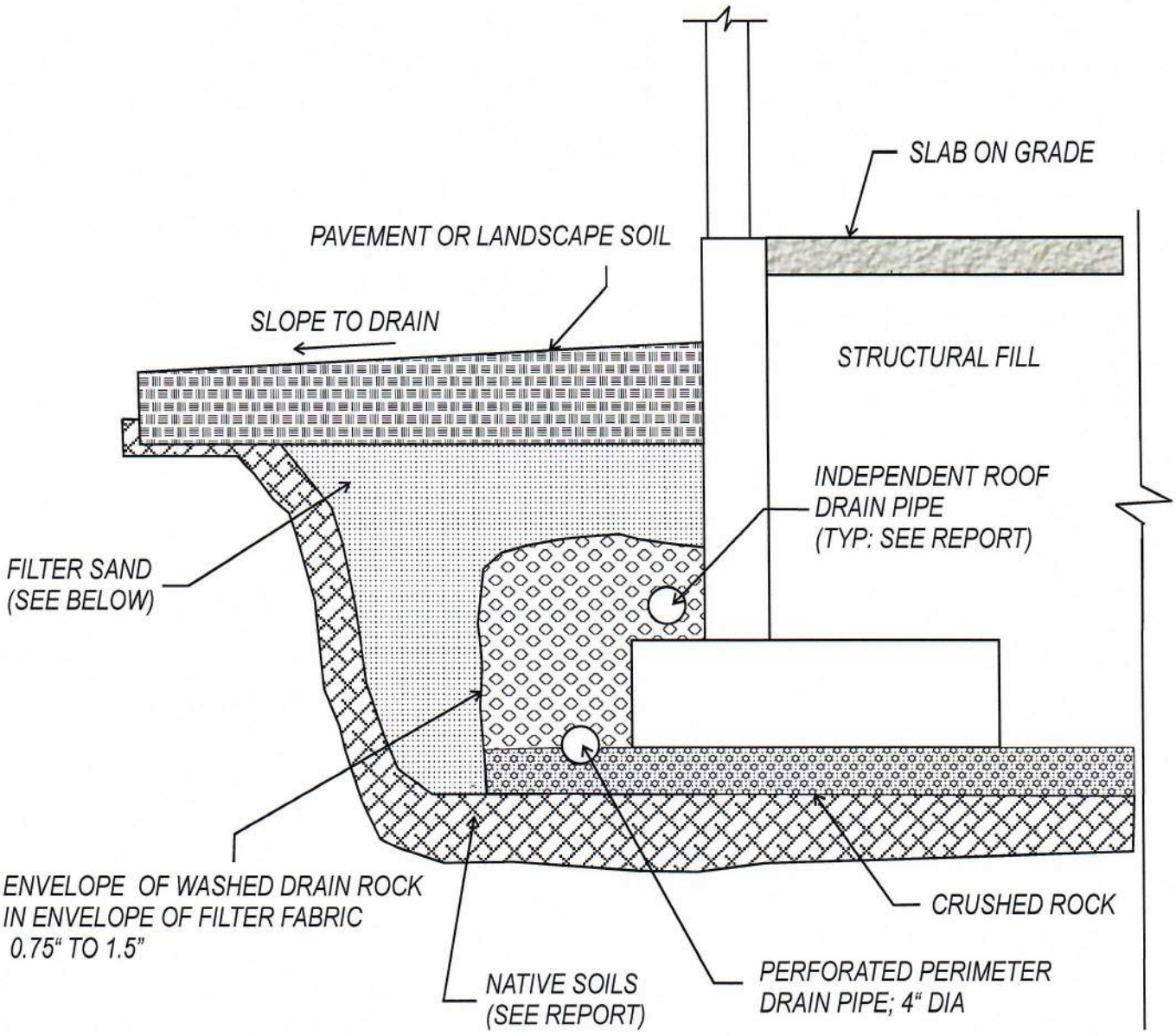


LEGEND

I-1 ⊕ Approximate Infiltration Test Location

NTS

Earth Engineering GEOTECHNICAL & ENVIRONMENTAL SERVICES	CLIENT: TAZ KHAN	DRAWN: EG
	PROJECT: 13TH STREET GAS STATION NE 13TH ST & NW FRIBERG -STRUNK ST CAMAS, WA	DATE: 09/2023
		FIGURE: 2
		PRO. #: G26-0723



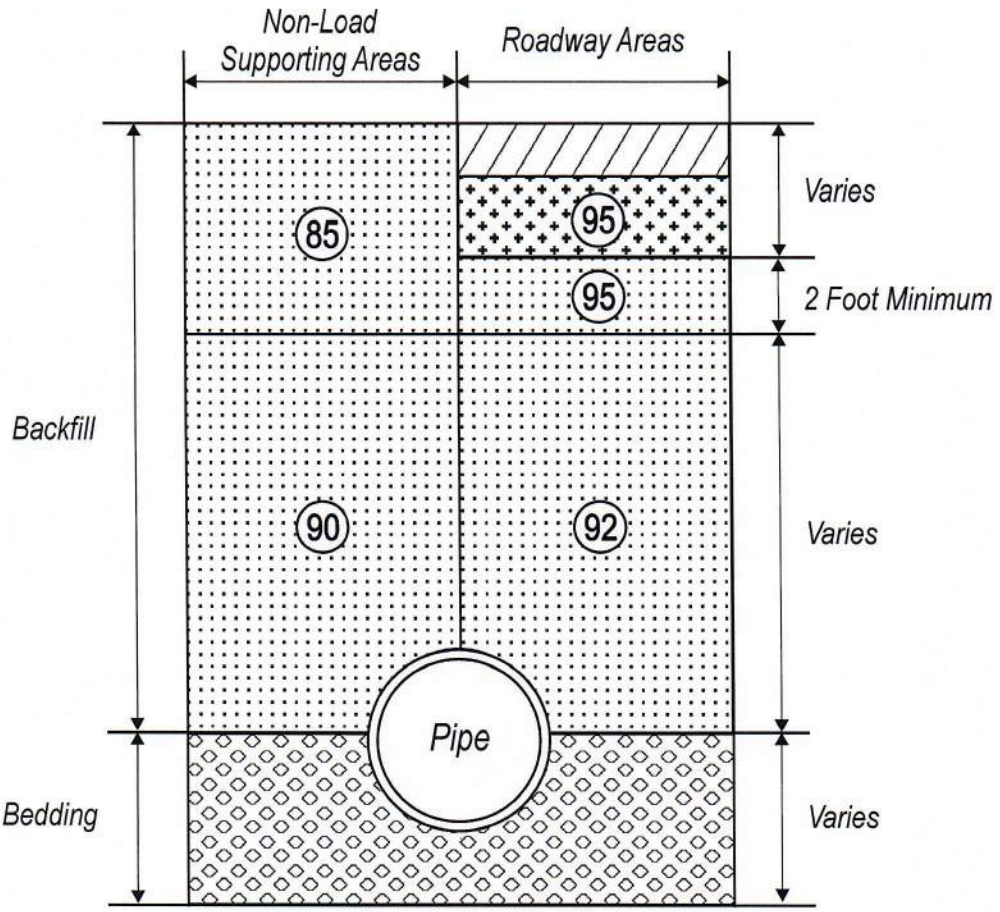
NOTES:

1. FILTER SAND - FINE AGGREGATE FOR PORTLAND CEMENT; SECTION 9=03.1(2)
2. PERFORATED OR SLOTTED RIGID PVC PIPE WITH A POSITIVE DRAINAGE GRADIENT
3. FILTER FABRIC OPTIONAL IF FILTER SAND USED

TYPICAL FOOTING DRAIN DETAIL

Not to Scale

Earth Engineering, Inc. GEOTECHNICAL & ENVIRONMENTAL SERVICES	CLIENT: 13TH STREET GAS STATION	DRAWN: DB
	PROJECT: COMMERCIAL BUILDING NE 13TH ST. & NW FRIBERG-STRUCK ST. VANCOUVER, WA	DATE: 07/2023
		FIGURE: 3
		PRO. #: G26-0723



LEGEND

Asphalt or Concrete Pavement

Roadway Base Material or Base Rock

Backfill: Compacted on-site soil or imported select fill material as described in the site preparation of the general Earthwork Section of the attached report text.

92 — Minimum percentage of maximum Laboratory Dry Density as determined by ASTM Test method D1557 (Modified Proctor),unless otherwise specified in the attached report text.

Bedding Material: Material type depends on type of pipe and laying conditions. Bedding should conform to the manufacturer's recommendations for the type of pipe selected.

UTILITY TRENCH BACKFILL DETAIL

Not to Scale

Earth Engineering, Inc. GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS	CLIENT: 13TH ST. GAS STATION	DRAWN: DB
	PROJECT: COMMERCIAL BUILDING NE 13TH ST. & NW FRIBERG-STRUNK CAMAS, WA	DATE: 07/2023
		FIGURE: 4
		PRO. #: G26-0723

APPENDIX A

(FIELD EXPLORATION)

FIELD EXPLORATION

Our field exploration was performed on August 4th 2023. Subsurface conditions at the site were explored by excavating two test pits. The test pits were excavated to a maximum depth of ten and one half (10.5) feet below the existing ground surface. The test pits were excavated using a track-hoe.

The test pits were located by pacing from property features. The locations are shown on the Site Plan, Figure 2. Field exploration was monitored by an Earth Engineering, Inc. representative, who classified the soils that we encountered and maintained a log of each test pit, obtained representative samples, and observed pertinent site features. Representative soil samples were placed in closed containers and returned to the laboratory for further examination and testing.

All samples were identified using the Standard Classification of Soils for Engineering Purposes (ASTM D2487-93) in accordance with the Unified Soil Classification System (USCS), which is presented on Plate A-1. The test pit log and boring logs are presented in Appendix A. The final log represents our interpretations of the field logs and the results of the laboratory tests on field samples.

UNIFIED SOIL CLASSIFICATION SYSTEM
LEGEND

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTION
Coarse Grained Soils	Gravel and Gravelly Soils More Than 50% Coarse Fraction Retained on No 4 Sieve	Clean Gravels (little or no fines)		GW gw	Well-Graded Gravels, Gravel-Sand Mixtures Little or no Fines
				GP gp	Poorly-Graded Gravels, Gravel-Sand Mixtures, Little or no Fines
		Gravels with Fines (appreciable amount of fines)		GM gm	Silty Gravels, Gravel-Sand-Silt Mixtures
				GC gc	Clayey Gravels, Gravel-Sand-Clay Mixtures
More Than 50% Material Larger Than No 200 Sieve Size	Sand and Sandy Soils More Than 50% Coarse Fraction Passing No 4 Sieve	Clean Sand (little or no fines)		SW sw	Well-graded Sands, Gravelly Sands Little or no Fines
				SP sp	Poorly-Graded Sands, Gravelly Sands Little or no Fines
		Sands with Fines (appreciable amount of fines)		SM sm	Silty Sands, Sand-Silt Mixtures
				SC sc	Clayey Sands, Sand-Clay Mixtures
Fine Grained Soils	Silts and Clays	Liquid Limit Less than 50		ML ml	Inorganic Silts and Very Fine Sands, Rock Flour, Silty-Clayey Fine Sands; Clayey Silts w/ slight Plasticity
				CL cl	Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean
				OL ol	Organic Silts and Organic Silty Clays of Low Plasticity
More Than 50% Material Smaller Than No 200 Sieve Size	Silts and Clays	Liquid Limit Greater than 50		MH mh	Inorganic Silts, Micaceous or Diatomaceous Fine Sand or Silty Soils
				CH ch	Inorganic Clays of High Plasticity, Fat Clays
				OH oh	Organic Clays of Medium to High Plasticity, Organic Silts
Highly Organic Soils				PT pt	Peat, Humus, Swamp Soils with High Organic Contents

Topsoil		Humus and Duff Layer
Fill		Highly Variable Constituents

Earth Engineering Inc.
GEOTECHNICAL & ENVIRONMENTAL SERVICES

CLIENT:	13TH STREET GAS STATION	DRAWN:	DB
PROJECT:	COMMERCIAL BUILDING NE13TH ST. & NW FRIBERG-STRUNK ST. CAMAS, WA	DATE:	07/2023
		PLATE:	A1
		PRO. #:	G26-0723

LOG OF TEST PIT I-1

(Northeast)

ELEVATION: +/- 239 feet

EXPLORATORY EQUIPMENT: TRACK HOE

DATE: 08/04/2023

DEPTH IN FEET	SAMPLES	SOILS CLASSIFICATION	LITHOLOGY (USGS)	COLOR	MOISTURE	CONSISTENCY	MOISTURE CONTENT % OF DRY WEIGHT	PERCENT PASS NUMBER 200
1	•	6" Topsoil		Light Brown			14	-
2								
3								
4								
5	•	- Field infiltration rate of 0.25 inches per hour **Silt (ML)** **trace sand**			Damp to Wet	Very Stiff to Hard	18	-
6								
7								
8								
9				Grey Brown				
10	•	(Native)					26	-

Bottom of test pit at 10.5 feet below existing ground surface.
No groundwater encountered.

Earth Engineering, Inc.
GEOTECHNICAL & ENVIRONMENTAL SERVICES

CLIENT:	TAZ KHAN	DRAWN:	DB
PROJECT:	13TH ST GAS STATION NE 13TH ST & NW FRIBERG-STRUNK ST CAMAS, WA	DATE:	09/2023
		PLATE:	A-2
		PRO. #:	G26-0723

LOG OF TEST PIT I-2

(Central West)

ELEVATION: **+/- 240 feet**
EXPLORATORY EQUIPMENT: **TRACK HOE**
DATE: **08/04/2023**

DEPTH IN FEET	SAMPLES	SOILS CLASSIFICATION	LITHOLOGY (USGS)	COLOR	MOISTURE	CONSISTENCY	MOISTURE CONTENT % OF DRY WEIGHT	PERCENT PASS NUMBER 200
1		8" Topsoil						
2	•	**Silt (ML)**		Light Brown to Dark Brown	Damp to Sat	Very Stiff to Hard	13	-
3								
4								
5								
6	•	- Field infiltration rate of 0.1 inches per hour					43	
7		(Native)						
8								
9		**lean Clay (CL)**		Light Brown Grey	Sat	Very Stiff to Hard		
10	•						38	-

Bottom of test pit at 10.0 feet below existing ground surface.
No groundwater encountered.

Earth Engineering, Inc.
GEOTECHNICAL & ENVIRONMENTAL SERVICES

CLIENT:	TAZ KHAN	DRAWN:	DB
PROJECT:	13TH ST GAS STATION NE 13TH ST & NW FRIBERG-STRUNK ST CAMAS, WA	DATE:	09/2023
		PLATE:	A-3
		PRO. #:	G26-0723

PRELIMINARY TECHNICAL INFORMATION REPORT

NE 13th Street Site Plan

City of Camas, Washington

Prepared by:
PLS Engineering
Consulting Engineers and Planners
604 W Evergreen Blvd
Vancouver, WA 98660
(360) 944-6519
pm@plsengineering.com

Prepared for:
Taz Khan
3993 NW Currawong Court
Camas, WA 98607

Prepared: November of 2023

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- **Vicinity Map**
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- **Critical Areas Map**
- **Basin Maps**

Appendix B: Design Calculations & Modeling

Appendix C: Geotechnical Report

Appendix D: Operations and Maintenance Manual

Appendix E: Construction Stormwater Pollution Prevention Plan (SWPPP)

Appendix F: Environmental Documentation

CERTIFICATE OF ENGINEER

NE 13th Street Gas Station Site Plan

Technical Information Report

The technical information and data contained in this report was prepared under the direction and supervision of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.

This document was prepared by:

Scott W. Gilliland, PE

Section A – Project Overview

Section A.1 – Site Information

This project will comply with current City of Camas Standards for Stormwater and Erosion Control per CMC Title 14. The Final Grading / Erosion Control / Drainage Plans have been prepared by the project civil engineer, PLS Engineering, Inc. The site will be served by public sewer and water provided by the City of Camas. This project phase proposes construction of 35 single-family residential lots with associated structures, access, paved storage areas, sewer, water, and storm drain connections. Access to the site is from NE 13th Street.

The physical address of the site is currently 20101 NE 13th Street, but the postal office may change that prior to the completion of this project. The parcel serial number is 176148000. The property is located in the Northwest quarter of Section 29, T2N, R3E of the Willamette Meridian. The property is bordered by NE 13th Street on the north side, 1 acre single family lots to the West, NW Friburg-Strunk Street to the East, and Business Park to the South. The cumulative property area contains a total of 42,257 square feet (0.97 acres), with 1,832 square feet (.04 acres) of right of way dedication, resulting in 40,425 square feet (0.93 acres) of developed area. This technical information report will address the stormwater runoff associated with the construction which will take place.

The topography of the site is set below the bordering roadways by approximately 2' and slightly sloped from the high point at the NW corner of the site towards the SW and SE corners of the site. Elevations range from approximately 249' to 244'. Slopes are generally between 1% and 7%, while the slopes at the edge of the Northern and Eastern boundary roads are around 33%. The site contains a 1,600 square-foot house and a 150 square-foot shop. These structures are planned to be removed. The remainder of the site is filled with grass, landscaping, and a variety of trees. There are potential wetlands mapped on Clark County Maps South of the site. There is a White Oak located on the South edge of the site. Otherwise, there are no known water courses, areas prone to flooding, floodplains, shoreline areas, water bodies, unstable slopes, landslide hazard areas, habitat, critical areas, or historic sites located on the site. Site drainage follows the slope of the land going from the NW corner to the SE/SW corners. There are also some isolated low points on site. The site runoff currently flows to the South, but that is clearly not the historical flow from the site. It appears that when NE 13th Street, and NW Friburg-Strunk Street were created, they were raised above the property and effectively dammed off the site. Historically, the flow from this site traveled to the NE towards Lacamas Creek.

Site runoff from PGIS surfaces will be routed to a to a cartridge vault for treatment. The treated runoff and any other runoff not routed to the vault will flow to an underground detention system. The detention system was modeled using WWHM software to discharge flows in compliance with the SWMMWW. The detention system discharges to an existing MH in NE 13th Street where it will be routed to a roadside ditch located on the North side of NE Goodwin road where it will eventually reach Lacamas creek, returning the site flows to their historical flow path.

Existing frontage on NE 13th Street is currently flowing in two different directions. The North side of the street is routed to the East where it eventually flows into Lacamas Creek. The South side of the street is routed to the South where it is treated and discharged as part of a City road project. The discharge appears to flow to a Wetland located East of NW Friberg-Strunk Street. The site discharge

historically followed the flow path of the North side of the road and is being discharged to that storm system. Consequently, this project has two TDA's. Runoff from the South side of 13th is identified as TDA 1, and will only include the existing and proposed frontage improvements along 13th. TDA 2 will include the roadway improvements on the North side of 13th, as well as the site improvements.

Section B – Minimum Requirements

Section B.2 – Determination of Applicable Minimum Requirements

After site development, disturbed impervious surfaces will cover approximately 49,280 square feet, resulting in more than 5,000 square foot of hard surface area. Consequently, this site must meet all nine Minimum Requirements of the stormwater manual. The site area and the North side of 13th will discharge to TDA 2, and the frontage improvements on the South side of 13th will discharge to TDA 1. The minimum requirements for the TDA's will be different. The areas for each TDA are summarized below. The stormwater system is designed to comply with all City requirements for stormwater treatment and quantity control. The treatment regulations require treatment of 91% of the total runoff volume from pollution generating impervious surfaces while the quantity control regulations require that post-development discharges shall match pre-developed durations for the range of pre-developed discharge rates from 50% of the 2-year peak flow up to the full 50-year peak flow.

Total Site Area:

Existing hard surface	12,106 ft^2
New hard surface	35,442 ft^2
Replaced hard	7,566 ft^2
Native vegetation converted to lawn or landscaping	9,829 ft^2
Native vegetation converted to pasture	0 ft^2
Total land-disturbing activity	1.21 acre
Pollution-generating hard surface	30,977 ft^2
Pollution-generating pervious surface	0 ft^2
New Pollution-generating hard surface	23,634 f t^2
Total pollution-generating surfaces	31,200 ft^2
Total non-pollution-generating surfaces	20,078 ft^2

TDA 1:

Existing hard surface	7,566 ft^2
New hard surface	3,091 ft^2
Replaced hard	7,566 ft^2
Native vegetation converted to lawn or landscaping	895 ft^2
Native vegetation converted to pasture	0 ft^2
Total land-disturbing activity	0.26 acre
Pollution-generating hard surface	8,875 ft^2
Pollution-generating pervious surface	0 ft^2
New Pollution-generating hard surface	1,532 f t^2
Total pollution-generating surfaces	9,098 ft^2
Total non-pollution-generating surfaces	895 ft^2

TDA 2:

Existing hard surface	4,540 ft^2
New hard surface	32,351 ft^2
Replaced hard	0 ft^2
Native vegetation converted to lawn or landscaping	8,934 ft^2
Native vegetation converted to pasture	0 ft^2
Total land-disturbing activity	0.95 acre
Pollution-generating hard surface	22,102 ft^2
Pollution-generating pervious surface	0 ft^2
New Pollution-generating hard surface	22,102 ft^2
Total pollution-generating surfaces	22,102 ft^2
Total non-pollution-generating surfaces	19,183 ft^2

MR #1) Preparation of Stormwater Site Plans
All Stormwater System designs meet City of Camas Requirements for conveyance, quality control and quantity. See final construction documents for more details.

MR #2) Construction Stormwater Pollution Prevention
A Stormwater Pollution Prevention Plan is being included with this report and will be onsite for the duration of the project's construction.

MR #3) Source Control of Pollution
See Section D

MR #4) Preservation of Natural Drainage Systems and Outfalls
The historic flow path from the site was to the NE. The South side of 13th was artificially routed to away from the historic flow path and to the South. This flow path will remain unchanged. The North side of 13th is currently following the historic flow path to the NE and will remain unchanged. The site runoff was dammed off by the roadways located North and East of the site, and its historic flow path was changed to the South. This project will restore the site to its historic flow path. This will maintain and preserve the natural drainage systems.

MR #5) Onsite Stormwater Management
See Section E

MR #6) Runoff Treatment
See Section F

MR #7) Flow Control
See Section G

MR #8) Wetland Protection

Clark County maps show the potential for a Wetland located South of the site. See Appendix F for documentation showing that there are not any wetlands on the site.

MR #9) Operations and Maintenance
See Appendix D

Section C – Soils Evaluation

The soils are mapped by the NRCS as Wind River gravelly loam (WrB) for the majority of the site, and Cove silty clay loam (CwA) at the SW corner and Eastern edge of the site.

Earth Engineering Inc. investigated the site on August 4, 2023, and provided a Geotechnical report for the site on August 31, 2023. The geotechnical investigation identified the subsurface soils on site as hard silty clay soils. Consequently, the site was modeled assuming soil type SG4. The geotechnical report has been included in Appendix C and a soil map is included in Appendix A.

Section D – Source Control

The pollution risks involved with this project mainly include the sediment accumulation involved with construction. The Stormwater Pollution Prevention Plan is a document that notes our certain Best Management Practice's (BMP's) that will help prevent sediment laden water from leaving the site during construction. The Erosion Control Plan located in the final construction drawings will provide protection measures involved with minimizing the chance that sediment from the site could enter downstream waterways. The SWPPP is provided in Appendix E.

After construction is complete, this site will be a Gas Station, with special source control measures required. The following Source Control BMPs should be implemented after construction to meet the MR# 3 requirements:

- **BMP S409: BMP's for Fueling at Dedicated Stations**.
- **BMP S412: BMP's for Loading and Unloading Areas of Liquid or Solid Materials**.
- **BMP S426: BMP's for Spills of Oil and Hazardous Substances**.
- **BMP S455: BMP's for Spill Prevention and Cleanup**.

Section E – On-site Stormwater Management BMPs

Minimum Requirement 5 requires the applicant to employ On-site Stormwater Management BMPs in accordance with the following project thresholds, standards, and lists to infiltrate, disperse, and retain stormwater runoff on-site to the maximum extent feasible without causing flooding or erosion impacts. Based on section I-2.5.1 of the Western Washington Stormwater Manual the development is within the UGA on a parcel that is less than 5 acres therefore Low Impact Development Performance Standards and BMP T5.13; or List #2 will apply (applicant option). Due to negligible infiltration rates, this project will apply List #2. If certain BMP's are infeasible; infeasibility criteria per the 2019 Stormwater Management Manual for Western Washington are also noted.

List #2:
Lawn and Landscape areas:
BMP T5.13 Post-Construction Soil Quality and Depth:
This requirement will be met during final design and shown on final construction drawings.

Roofs:
BMPT5.30A or T5.30B Full Dispersion:
There is insufficient area and length to provide a 100' flow path to meet the requirements of full dispersion while still maintaining sufficient spacing to prevent overlap.

BMPT5.14A or BMPT5.14B Rain Gardens and Bioretention:
The soil permeability factor above groundwater is less than 0.3 inches per. Because the site soils don't accommodate infiltration, this is not a feasible infiltration BMP as part of Minimum requirement #5.

BMPT5.10C Downspout Dispersion Systems:
There is insufficient space to meet the required dispersion lengths and setbacks from the structures and the property lines.

BMP T5.10D Perforated Stub-out Connections
There is insufficient space to meet the required setback of 10' away from the structures and property lines, and infiltration rates are less than 0.3 inches per hour.

Other Hard Surfaces:
BMPT5.30A or T5.30B Full Dispersion:
There is insufficient area and length to provide a 100' flow path to meet the requirements of full dispersion while still maintaining sufficient spacing to prevent overlap.

BMPT5.15 Permeable Pavement:
Permeable pavement is insufficient due to soil infiltration above the groundwater table being less than 0.3 in/hr.

BMPT5.14A or BMPT5.14B Rain Gardens and Bioretention:
The soil permeability factor above groundwater is less than 0.3 inches per hour. Because the site soils don't accommodate infiltration, this is not a feasible infiltration BMP as part of Minimum requirement #5.

BMPT5.12 Sheet Flow Dispersion:
There is insufficient area and length to provide a 100' flow path to meet the requirements of full dispersion while still maintaining sufficient spacing to prevent overlap.

None of the List 2 requirements can be met by this project. Consequently, site stormwater runoff from this project will be treated and detained prior to discharge as described in Sections F and G of this report.

The following BMPs will be implemented to meet the MR# 5 requirements:

- **BMP T5.13: Post-Construction Soil Quality and Depth** for lawn and landscaped areas.
- **BMP D.2: Detention Tanks** for runoff from the site.
- **BMP V10.0: Manufactured Treatment Devices** for runoff from the site.
- **BMP T11.11: Coalescing Plate (CP) Separator** for treatment of fuel station spills, mini-mart grease, and car wash oils.

Section F – Runoff Treatment Analysis and Design

Treatment for the site will be accomplished with Contech treatment cartridges. Preliminary stormwater analysis with a WWHM model (see appendix B) identifies the water quality storm event for the site as 0.1213. This volume includes roof, landscape, and frontage runoff, which will not all be treated as part of the final design. The Contech sizing table below identifies treatment flow rates for different cartridges. For example, the 18" ZPG cartridges will each treat 0.028 cfs. Based on this preliminary analysis, there will be 5 or less 18" cartridges needed to treat the stormwater runoff from the site. Due to elevation issues it might be necessary to use low drop cartridges which would result in 7 or less ZPG cartridges. This site is very tight vertically, so the preliminary rim elevations and pipe IE's were sent to Contech who verified that their treatment cartridges will operate properly under the proposed backwater conditions.

Table 1-Contech Sizing Chart

	$2\ GPM/ft^2$			$1\ GPM/ft^2$			$1.67\ GPM/ft^2$		
StormFilter	Flow (GPM)	Flow (CFS)	Color	Flow (GPM)	Flow (CFS)	Color	Flow (GPM)	Flow (CFS)	Color
LowDrop	10	0.022	Gray (GRY)	5.00	0.011	Blue (BLU)	8.35	0.019	Yellow (YLW)
18"	15	0.033	Black (BLK)	7.50	0.017	Blue (BLU)	12.53	0.028	Red (RED)
27"	22.5	0.05	Gold (GLD)	11.50	0.025	Pink (PNK)	18.79	0.042	White (WHT)

Section G - Flow Control Analysis and Design

The stormwater quantity control system for this site has been designed based on the current stormwater quantity control requirements of the City of Camas. The quantity control standards require that stormwater discharges shall match developed discharge durations to pre-developed durations for the range of pre-developed discharge rates from 50% of the 2-year peak flow up to the full 50-year peak flow.

The runoff from this site will be detained in an underground detention facility. The preliminary design assumes 6 x 136' 24" CMP pipes placed in gravel. The gravel has a porosity of 0.40. Underground storage was modelled in WWHM using a trench. In order to properly model the 24" CMP in the underground storage, the porosity for the rock was calculated and averaged out to be 0.7326. The WWHM model shows that it passed and meets the discharge requirements of the SWMMWW.

See Appendix B for calculations.

Section H – Wetland Protection

There are not any wetlands on the site. See appendix F.

Section I – Other Permits

The project will be required to obtain preliminary site plan approval, final site plan approval, construction drawing approval, an NPDES construction stormwater permit, and building permit approval prior to construction.

Section J – Conveyance Systems Analysis and Design

Conveyance will be provided with the Final TIR.

Section K – Special Reports and Studies

A Geotechnical Report for the site is included in Appendix C. A Critical Areas report and a Mitigation plan are included in Appendix F. No other special studies are anticipated to be needed.

Section L –Operations and Maintenance Manual

The stormwater facility located on-site will be maintained by the site owner. An Operations and Maintenance Manual is included as Appendix D of this report.

APPENDIX A

Maps

Vicinity Map

Legend

- Taxlots
- All Roads
  - Interstate
  - State Route
  - Arterial
  - Forest Arterial
  - Minor Collector
  - Forest Collector
  - Private or Other

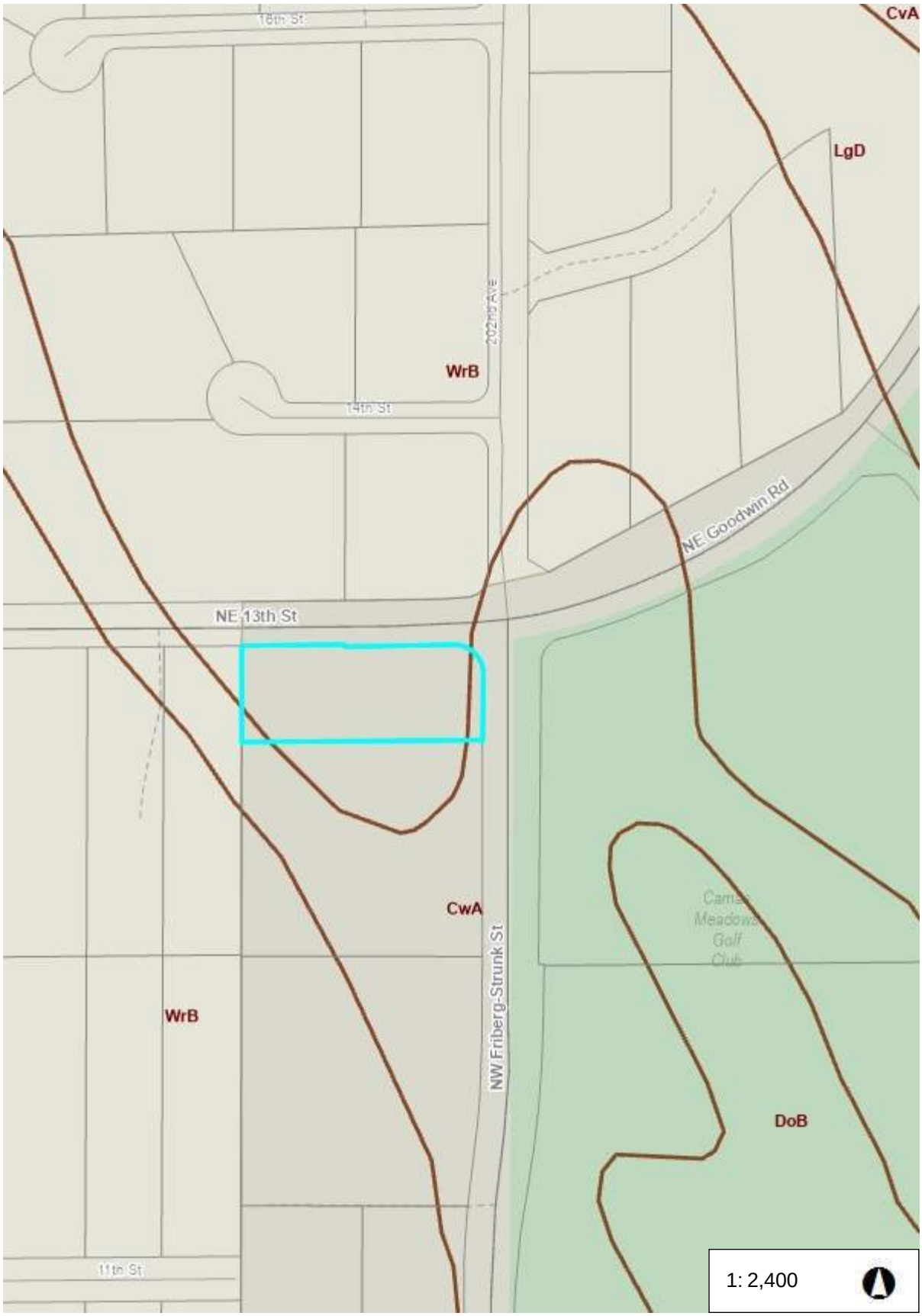
Notes:

1,000.0 0 500.00 1,000.0 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov

This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information. Tax lot (i.e., parcel) boundaries cannot be used to determine the location of property lines on the ground.

Soils Map



Legend

- Taxlots
- Soil Type

Notes:

400.0 0 200.00 400.0 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov

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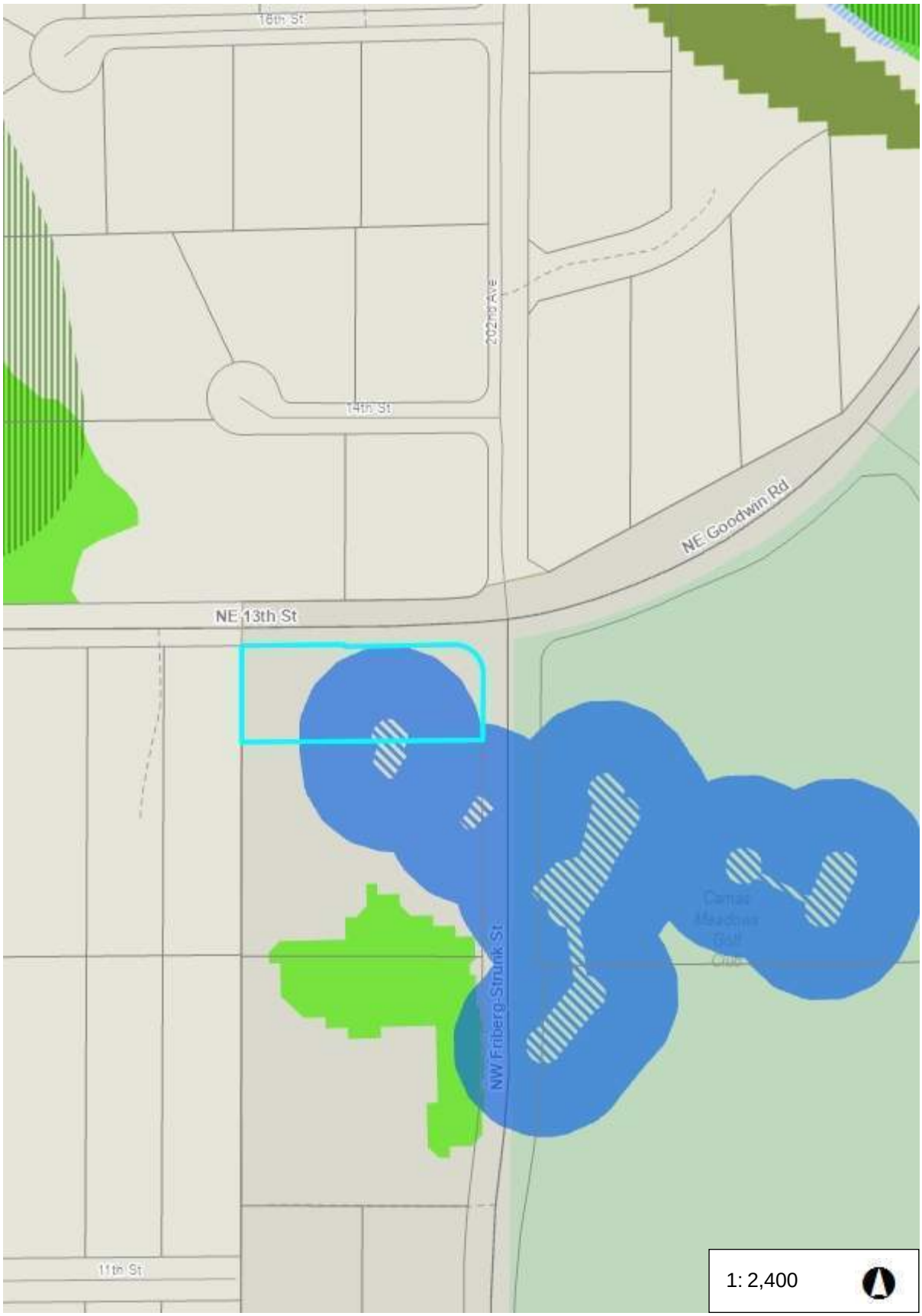
Critical Areas Map



Legend

- Taxlots
- Species
  - Species Area
  - Adjacent to Species Area
- Habitat
  - Habitat Area
  - Adjacent to Habitat Area
- Riparian Habitat
- Severe Erosion Hazard Areas
- Steep Slopes and Landslide H
  - Areas of Historic or Active Landslid
  - Areas of Potential Instability
  - Areas of Older Landslide Debris
  - Slopes > 15%
  - Slopes > 25%
- Potential Wetlands Presence
- Flood Zone Designation
  - Floodway
  - Floodway Fringe
  - 500 Year Flood Area
  - Area Not Studied
- Shoreline Designations
  - Aquatic
  - Natural
  - Urban Conservancy
  - Medium Intensity
  - High Intensity
  - Rural Conservancy Residential
  - Rural Conservancy Resource Land
- Critical Aquifer Recharge Area

Notes:

400.0 0 200.00 400.0 Feet

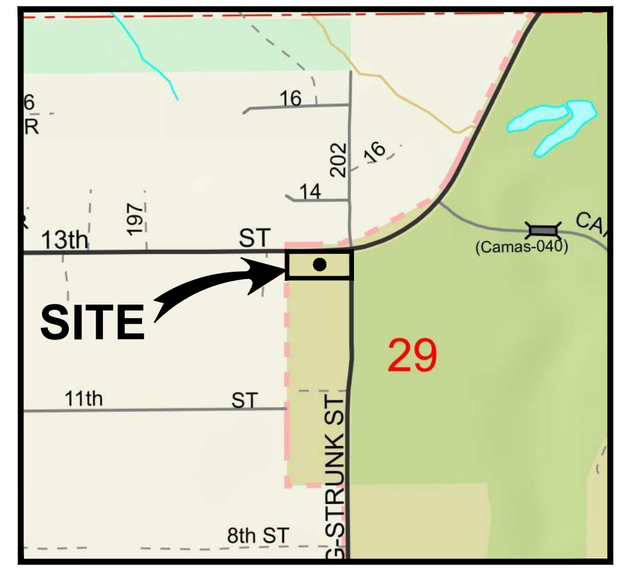
WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov

This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information. Tax lot (i.e., parcel) boundaries cannot be used to determine the location of property lines on the ground.

13th Street Site Plan

Located in the NW ¼ of Section 29, T2N, R3E, W.M.
City of Camas, Washington

Sheet Index
1. Predevelopment Basin Map
2. Postdevelopment Basin Map



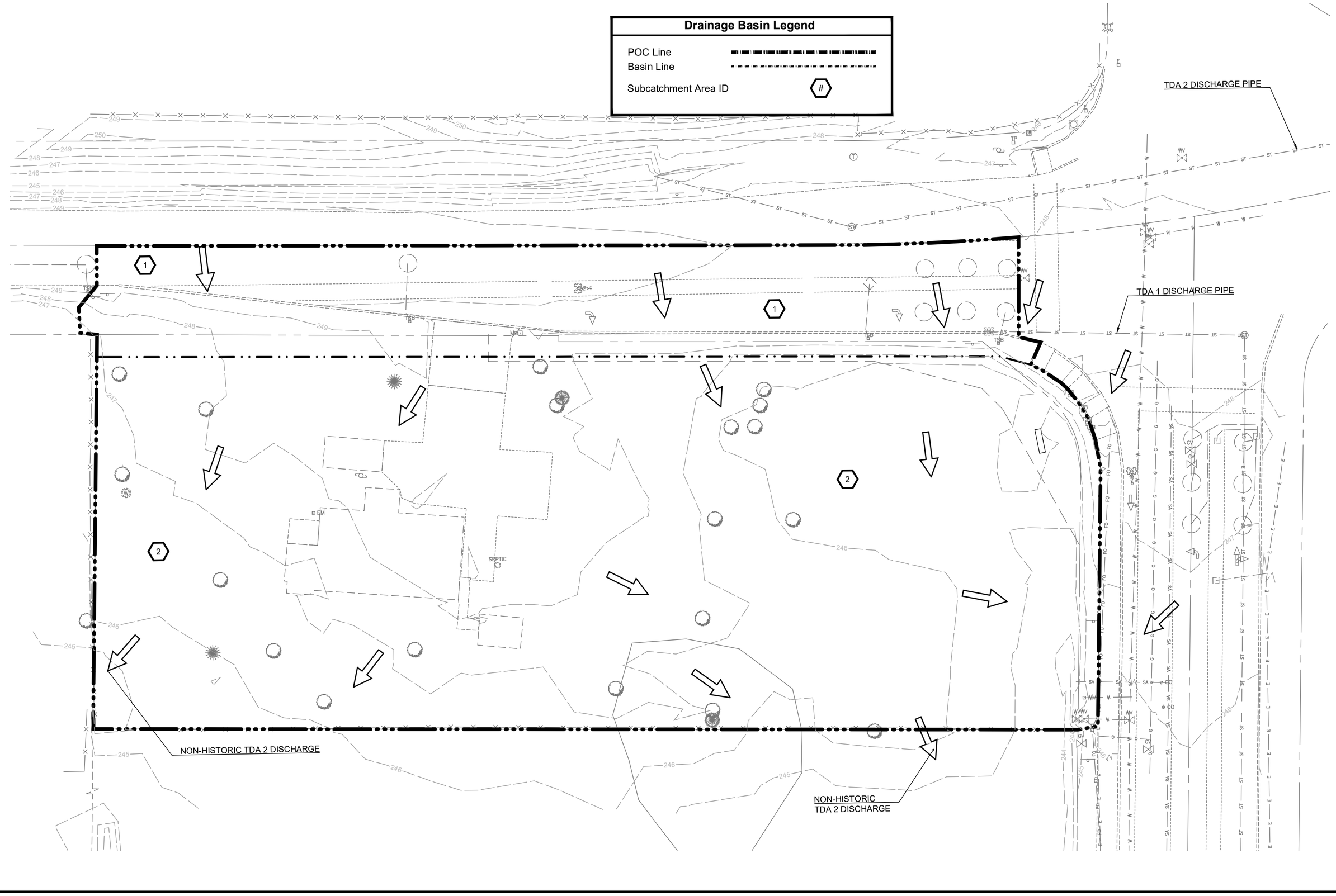
VICINITY MAP
NOT TO SCALE

Extg TDA Totals			
	sqft	acre	
TDA 1 Area	11,551.38	0.2652	1
Frontage Road	7,565.86	0.1737	
Frontage Landscape	3,985.52	0.0915	
TDA 2 Area	41,285.00	0.9478	2
Site Driveway	2,449.31	0.0562	
Site Sidewalk	154.38	0.0035	
Site Roof	1,936.36	0.0445	
Site Landscape	36,744.94	0.8435	
Existing Site Area Modeled as Forested	41,285.00	0.9478	

Scale 1" = 20'
20 10 0 20

N

Drainage Basin Legend	
POC Line	
Basin Line	
Subcatchment Area ID	#



GENERAL NOTES

APPLICANT:
Taz Kahn
3993 NW Currawong Court
Camas, WA 98607
TKahnusa@gmail.com

OWNER:
Pak USA Camas LLC
20107 NE 13th Street
Camas, WA 98607

CIVIL ENGINEER:
PLS Engineering
Contact: Travis Johnson, PE
604 W Evergreen Blvd
Vancouver, WA 98660
PH: (360) 944-6519
pm@plsengineering.com

SITE ADDRESS:
Parcel # 176148-000
20101 NE 13TH ST
Camas, WA 98607

SITE STATISTICS:
Existing Site Area: 42,257 SF (0.97 Acre)
ROW Dedication: 1,832 SF (0.04 Acre)
Developed Site: 42,257 SF (0.93 Acre)

ENGINEERING
PLS

Predevelopment Basin Map For:
13th Street Site Plan
A Subdivision Located In The City Of Camas, Washington

Engineering - Surveying - Planning | 604 W. Evergreen Blvd., Vancouver, WA 98660 | PH (360) 944-6519 | Fax (360) 944-6539

Revisions

1	2	3	4	5	6

Project No. 3632	
SCALE:	H: 1" = 50' V: N/A
DESIGNED BY:	SWG
DRAFTED BY:	JSV
REVIEWED BY:	TGJ

1
2

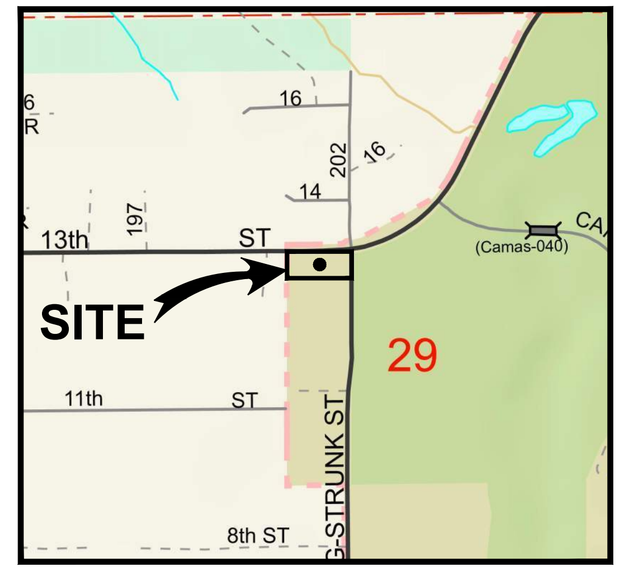
Exhibit 9 APPEAL24-1001

13th Street Site Plan

Located in the NW ¼ of Section 29, T2N, R3E, W.M.
City of Camas, Washington

Sheet Index

1. Predevelopment Basin Map
2. Postdevelopment Basin Map



VICINITY MAP
NOT TO SCALE

Basin Areas (sqft)						
Basin	Road	SW	Roof	Field	Landscape	Total
1 TDA 1 Basin 1 Frontage	9,097.51	1,559.09	-	-	894.78	11,551.38
2 TDA 2 Basin 3 Site	22,101.84	2,490.08	7,759.05	-	8,934.03	41,285.00
Total	31,199.36	4,049.16	7,759.05	-	9,828.81	52,836.38

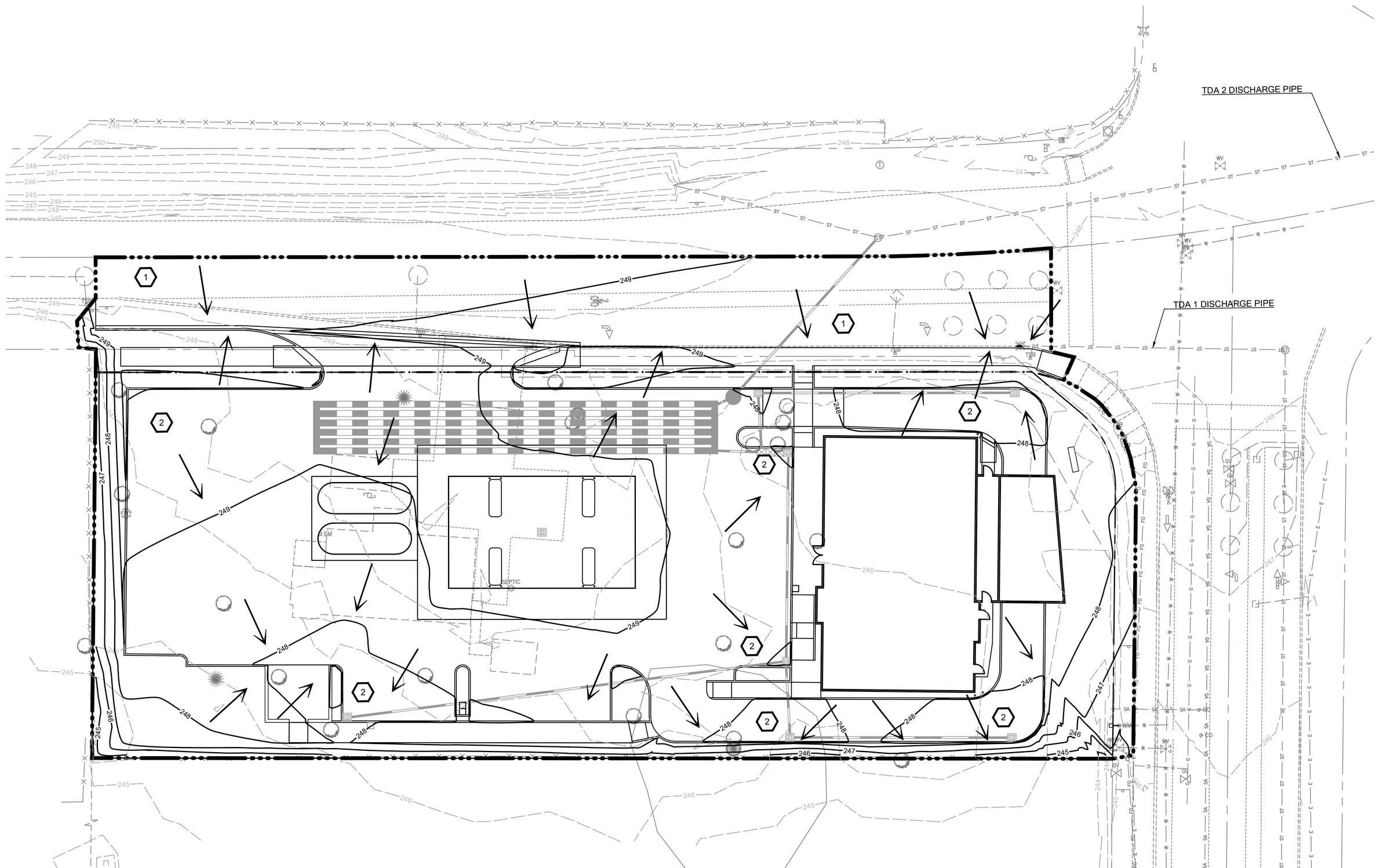
Basin Areas (acre)						
	Road	SW	Roof	Field	Landscape	Total
1 TDA 1 Basin 1 Frontage	0.2089	0.0358	-	-	0.0205	0.2652
2 TDA 2 Basin 3 Site	0.5074	0.0572	0.1781	-	0.2051	0.9478
	-	-	-	-	-	-
Total	0.7162	0.0930	0.1781	-	0.2256	1.2130

Scale 1" = 20'
20 10 0 20

N

Drainage Basin Legend

POC Line
Basin Line
Subcatchment Area ID #



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SITE ADDRESS:
Parcel # 176148-000
20101 NE 13TH ST
Camas, WA 98607

SITE STATISTICS:
Existing Site Area: 42,257 SF (0.97 Acre)
ROW Dedication: 1,832 SF (0.04 Acre)
Developed Site: 42,257 SF (0.93 Acre)

ENGINEERING | PLS

Post-Development Basin Map For:

13th Street Site Plan

A Subdivision Located In The City Of Camas, Washington

Engineering - Surveying - Planning | 604 W. Evergreen Blvd., Vancouver, WA 98660 | PH (360) 944-6519 | Fax (360) 944-6539

Revisions

1	2	3	4	5	6

Project No.	3632
SCALE:	H: 1" = 50' V: N/A
DESIGNED BY:	SWG
DRAFTED BY:	JSV
REVIEWED BY:	TGJ

2
2

Exhibit 9 APPEAL24-1001

APPENDIX B

Design Calculations and Modeling

Proposed TDA Totals		
	sqft	acre
Total Development	**52,836.38**	**1.2130**
Road	31,199.36	0.7162
Sidewalk	4,049.16	0.0930
Roof	7,759.05	0.1781
Landscape	9,828.81	0.2256
Impervious Area	43,007.57	0.9873
Pervious Area	9,828.81	0.2256
Pollution Generating Impervious Surface Area (PGIS)	31,199.36	0.7162
TDA 1	**11,551.38**	**0.2652**
Road	9,097.51	0.2089
Sidewalk	1,559.09	0.0358
Landscape	894.78	0.0205
TDA 1 New Impervious	3,090.74	0.0710
TDA 1 Replaced Impervious	7,565.86	0.1737
TDA 1 New PGIS	1,531.66	0.0352
TDA 1 Replaced PGIS	7,565.86	0.1737
TDA 2	**41,285.00**	**0.9478**
Road	22,101.84	0.5074
Sidewalk	2,490.08	0.0572
Roof	7,759.05	0.1781
Landscape	8,934.03	0.2051
TDA 2 New Impervious	32,350.97	0.7427
TDA 2 Replaced Impervious	-	-
TDA 2 New PGIS	22,101.84	0.5074
TDA 2 Replaced PGIS	-	-

Extg TDA Totals		
	sqft	acre
TDA 1 Area	11,551.38	0.2652
Frontage Road	7,565.86	0.1737
Frontage Landscape	3,985.52	0.0915
TDA 2 Area	41,285.00	0.9478
Site Driveway	2,449.31	0.0562
Site Sidewalk	154.38	0.0035
Site Roof	1,936.36	0.0445
Site Landscape	36,744.94	0.8435
Existing Site Area Modeled as Forested	41,285.00	0.9478

Basin Areas (sqft)						
Basin	Road	SW	Roof	Field	Landscape	Total
TDA 1 Basin 1 Frontage	9,097.51	1,559.09	-	-	894.78	11,551.38
TDA 2 Basin 3 Site	22,101.84	2,490.08	7,759.05	-	8,934.03	41,285.00
Total	31,199.36	4,049.16	7,759.05	-	9,828.81	52,836.38

Basin Areas (acre)						
	Road	SW	Roof	Field	Landscape	Total
TDA 1 Basin 1 Frontage	0.2089	0.0358	-	-	0.0205	0.2652
TDA 2 Basin 3 Site	0.5074	0.0572	0.1781	-	0.2051	0.9478
	-	-	-	-	-	-
Total	0.7162	0.0930	0.1781	-	0.2256	1.2130

WWHM Basin Treatment Flow Analysis (cfs)						
	WQ	2-yr	10-yr	25-yr	50-yr	100-yr
Total Site Treatment	0.1213	0.568841	0.844412	0.987932	1.097315	1.208959

Underground Storage Calculations		
17' Wide x 2' Tall is	34.0000	SF
6x24" CMP is	18.8496	SF
Rock Storage @ 40% Porocity	6.0602	SF
Total Storage	24.9097	SF
Porocity Tweaked to match	**73.26%**	
Facility Length	130.0000	LF
Total Facility Volume	4,420.0000	CF
Facility Storage	3,238.2654	CF

WWHM2012

PROJECT REPORT

General Model Information

WWHM2012 Project Name: 13thPrelimStormAnalysis

Site Name:	13th Gas Station
Site Address:	
City:	
Report Date:	11/3/2023
Gage:	Lacamas
Data Start:	1948/10/01
Data End:	2008/09/30
Timestep:	15 Minute
Precip Scale:	1.300
Version Date:	2023/01/27
Version:	4.2.19

POC Thresholds

Low Flow Threshold for POC1:	50 Percent of the 2 Year
High Flow Threshold for POC1:	50 Year

Landuse Basin Data

Predeveloped Land Use

TDA 2 EXTG

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
SG4, Forest, Flat	0.9478
Pervious Total	0.9478
Impervious Land Use	acre
Impervious Total	0
Basin Total	0.9478

Mitigated Land Use

TDA 2 Basin 3 Site

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Lawn, Flat	0.2051
Pervious Total	0.2051

Impervious Land Use	acre
ROADS FLAT	0.5074
ROOF TOPS FLAT	0.1781
SIDEWALKS FLAT	0.0572
Impervious Total	0.7427
Basin Total	0.9478

Routing Elements
Predeveloped Routing

Mitigated Routing

Underground Detention

Bottom Length:	136.00 ft.
Bottom Width:	17.00 ft.
Trench bottom slope 1:	0 To 1
Trench Left side slope 0:	0 To 1
Trench right side slope 2:	0 To 1
Material thickness of first layer:	2
Pour Space of material for first layer:	0.7326
Material thickness of second layer:	0
Pour Space of material for second layer:	0
Material thickness of third layer:	0
Pour Space of material for third layer:	0

Discharge Structure

Riser Height:	2 ft.
Riser Diameter:	10 in.
Notch Type:	Rectangular
Notch Width:	0.270 ft.
Notch Height:	0.400 ft.
Orifice 1 Diameter:	1.900 in. Elevation:0 ft.

Element Flows To:
Outlet 1 Outlet 2

Gravel Trench Bed Hydraulic Table

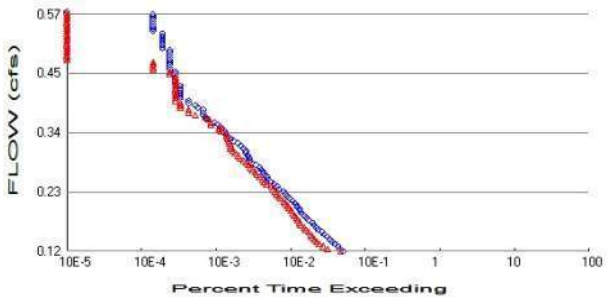
Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.053	0.000	0.000	0.000
0.0222	0.053	0.000	0.014	0.000
0.0444	0.053	0.001	0.020	0.000
0.0667	0.053	0.002	0.025	0.000
0.0889	0.053	0.003	0.029	0.000
0.1111	0.053	0.004	0.032	0.000
0.1333	0.053	0.005	0.035	0.000
0.1556	0.053	0.006	0.038	0.000
0.1778	0.053	0.006	0.041	0.000
0.2000	0.053	0.007	0.043	0.000
0.2222	0.053	0.008	0.046	0.000
0.2444	0.053	0.009	0.048	0.000
0.2667	0.053	0.010	0.050	0.000
0.2889	0.053	0.011	0.052	0.000
0.3111	0.053	0.012	0.054	0.000
0.3333	0.053	0.013	0.056	0.000
0.3556	0.053	0.013	0.058	0.000
0.3778	0.053	0.014	0.060	0.000
0.4000	0.053	0.015	0.062	0.000
0.4222	0.053	0.016	0.063	0.000
0.4444	0.053	0.017	0.065	0.000
0.4667	0.053	0.018	0.066	0.000
0.4889	0.053	0.019	0.068	0.000
0.5111	0.053	0.019	0.070	0.000
0.5333	0.053	0.020	0.071	0.000
0.5556	0.053	0.021	0.073	0.000
0.5778	0.053	0.022	0.074	0.000
0.6000	0.053	0.023	0.075	0.000
0.6222	0.053	0.024	0.077	0.000

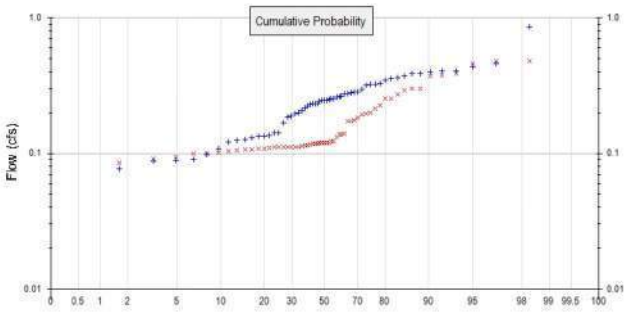
0.6444	0.053	0.025	0.078	0.000
0.6667	0.053	0.025	0.080	0.000
0.6889	0.053	0.026	0.081	0.000
0.7111	0.053	0.027	0.082	0.000
0.7333	0.053	0.028	0.083	0.000
0.7556	0.053	0.029	0.085	0.000
0.7778	0.053	0.030	0.086	0.000
0.8000	0.053	0.031	0.087	0.000
0.8222	0.053	0.032	0.088	0.000
0.8444	0.053	0.032	0.090	0.000
0.8667	0.053	0.033	0.091	0.000
0.8889	0.053	0.034	0.092	0.000
0.9111	0.053	0.035	0.093	0.000
0.9333	0.053	0.036	0.094	0.000
0.9556	0.053	0.037	0.095	0.000
0.9778	0.053	0.038	0.096	0.000
1.0000	0.053	0.038	0.098	0.000
1.0222	0.053	0.039	0.099	0.000
1.0444	0.053	0.040	0.100	0.000
1.0667	0.053	0.041	0.101	0.000
1.0889	0.053	0.042	0.102	0.000
1.1111	0.053	0.043	0.103	0.000
1.1333	0.053	0.044	0.104	0.000
1.1556	0.053	0.044	0.105	0.000
1.1778	0.053	0.045	0.106	0.000
1.2000	0.053	0.046	0.107	0.000
1.2222	0.053	0.047	0.108	0.000
1.2444	0.053	0.048	0.109	0.000
1.2667	0.053	0.049	0.110	0.000
1.2889	0.053	0.050	0.111	0.000
1.3111	0.053	0.051	0.112	0.000
1.3333	0.053	0.051	0.113	0.000
1.3556	0.053	0.052	0.114	0.000
1.3778	0.053	0.053	0.115	0.000
1.4000	0.053	0.054	0.115	0.000
1.4222	0.053	0.055	0.116	0.000
1.4444	0.053	0.056	0.117	0.000
1.4667	0.053	0.057	0.118	0.000
1.4889	0.053	0.057	0.119	0.000
1.5111	0.053	0.058	0.120	0.000
1.5333	0.053	0.059	0.121	0.000
1.5556	0.053	0.060	0.122	0.000
1.5778	0.053	0.061	0.123	0.000
1.6000	0.053	0.062	0.123	0.000
1.6222	0.053	0.063	0.127	0.000
1.6444	0.053	0.063	0.134	0.000
1.6667	0.053	0.064	0.141	0.000
1.6889	0.053	0.065	0.151	0.000
1.7111	0.053	0.066	0.161	0.000
1.7333	0.053	0.067	0.172	0.000
1.7556	0.053	0.068	0.185	0.000
1.7778	0.053	0.069	0.198	0.000
1.8000	0.053	0.070	0.211	0.000
1.8222	0.053	0.070	0.226	0.000
1.8444	0.053	0.071	0.241	0.000
1.8667	0.053	0.072	0.257	0.000
1.8889	0.053	0.073	0.274	0.000
1.9111	0.053	0.074	0.291	0.000

1.9333	0.053	0.075	0.309	0.000
1.9556	0.053	0.076	0.327	0.000
1.9778	0.053	0.076	0.346	0.000
2.0000	0.053	0.077	0.366	0.000

Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 0.9478
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0.2051
Total Impervious Area: 0.7427

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.237792
5 year	0.372265
10 year	0.445639
25 year	0.520497
50 year	0.565063
100 year	0.601747

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.143408
5 year	0.220762
10 year	0.285903
25 year	0.386617
50 year	0.47677
100 year	0.581482

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.186	0.173
1950	0.243	0.118
1951	0.322	0.120
1952	0.189	0.184
1953	0.254	0.109
1954	0.354	0.113
1955	0.197	0.109
1956	0.387	0.374
1957	0.294	0.118
1958	0.218	0.302

1959	0.127	0.091
1960	0.125	0.123
1961	0.349	0.196
1962	0.234	0.111
1963	0.260	0.119
1964	0.248	0.112
1965	0.222	0.175
1966	0.284	0.118
1967	0.248	0.116
1968	0.324	0.119
1969	0.264	0.461
1970	0.862	0.476
1971	0.136	0.100
1972	0.232	0.111
1973	0.231	0.133
1974	0.364	0.388
1975	0.198	0.109
1976	0.285	0.123
1977	0.008	0.094
1978	0.406	0.254
1979	0.275	0.215
1980	0.168	0.104
1981	0.386	0.293
1982	0.260	0.274
1983	0.432	0.172
1984	0.141	0.107
1985	0.109	0.138
1986	0.134	0.114
1987	0.234	0.137
1988	0.090	0.106
1989	0.098	0.105
1990	0.089	0.100
1991	0.253	0.111
1992	0.278	0.099
1993	0.327	0.255
1994	0.250	0.193
1995	0.207	0.299
1996	0.397	0.477
1997	0.459	0.376
1998	0.371	0.120
1999	0.278	0.198
2000	0.134	0.085
2001	0.077	0.082
2002	0.405	0.114
2003	0.319	0.139
2004	0.087	0.112
2005	0.131	0.111
2006	0.245	0.111
2007	0.121	0.228
2008	0.142	0.120

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.8622	0.4771
2	0.4595	0.4763
3	0.4322	0.4607
4	0.4060	0.3879

5	0.4054	0.3757
6	0.3967	0.3738
7	0.3870	0.3017
8	0.3860	0.2990
9	0.3714	0.2929
10	0.3637	0.2735
11	0.3544	0.2551
12	0.3485	0.2545
13	0.3270	0.2277
14	0.3237	0.2153
15	0.3216	0.1982
16	0.3187	0.1964
17	0.2943	0.1925
18	0.2848	0.1841
19	0.2841	0.1745
20	0.2782	0.1725
21	0.2776	0.1716
22	0.2748	0.1394
23	0.2638	0.1383
24	0.2598	0.1370
25	0.2598	0.1327
26	0.2543	0.1230
27	0.2529	0.1228
28	0.2500	0.1202
29	0.2480	0.1200
30	0.2476	0.1196
31	0.2446	0.1193
32	0.2435	0.1189
33	0.2343	0.1184
34	0.2338	0.1176
35	0.2319	0.1175
36	0.2309	0.1161
37	0.2223	0.1142
38	0.2183	0.1140
39	0.2075	0.1130
40	0.1982	0.1121
41	0.1973	0.1121
42	0.1885	0.1113
43	0.1857	0.1110
44	0.1681	0.1108
45	0.1421	0.1107
46	0.1410	0.1106
47	0.1364	0.1090
48	0.1344	0.1086
49	0.1343	0.1086
50	0.1308	0.1073
51	0.1269	0.1065
52	0.1254	0.1052
53	0.1211	0.1038
54	0.1087	0.1003
55	0.0983	0.0999
56	0.0905	0.0990
57	0.0892	0.0936
58	0.0875	0.0913
59	0.0775	0.0851
60	0.0078	0.0822

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.1189	1055	983	93	Pass
0.1234	965	655	67	Pass
0.1279	904	571	63	Pass
0.1324	818	507	61	Pass
0.1369	757	463	61	Pass
0.1414	699	434	62	Pass
0.1459	647	404	62	Pass
0.1504	587	388	66	Pass
0.1549	549	364	66	Pass
0.1595	490	333	67	Pass
0.1640	458	319	69	Pass
0.1685	429	291	67	Pass
0.1730	410	278	67	Pass
0.1775	367	263	71	Pass
0.1820	342	250	73	Pass
0.1865	317	236	74	Pass
0.1910	298	222	74	Pass
0.1955	281	213	75	Pass
0.2000	265	199	75	Pass
0.2045	254	192	75	Pass
0.2090	238	180	75	Pass
0.2135	225	169	75	Pass
0.2180	201	153	76	Pass
0.2226	187	146	78	Pass
0.2271	175	135	77	Pass
0.2316	169	129	76	Pass
0.2361	145	122	84	Pass
0.2406	139	115	82	Pass
0.2451	126	100	79	Pass
0.2496	114	92	80	Pass
0.2541	104	89	85	Pass
0.2586	101	80	79	Pass
0.2631	95	74	77	Pass
0.2676	90	71	78	Pass
0.2721	85	66	77	Pass
0.2766	81	61	75	Pass
0.2811	71	57	80	Pass
0.2856	62	53	85	Pass
0.2902	59	49	83	Pass
0.2947	58	44	75	Pass
0.2992	56	42	75	Pass
0.3037	53	38	71	Pass
0.3082	52	35	67	Pass
0.3127	49	33	67	Pass
0.3172	45	33	73	Pass
0.3217	41	32	78	Pass
0.3262	36	31	86	Pass
0.3307	33	30	90	Pass
0.3352	30	29	96	Pass
0.3397	28	29	103	Pass
0.3442	27	25	92	Pass
0.3487	25	23	92	Pass
0.3532	24	23	95	Pass

0.3578	22	18	81	Pass
0.3623	20	18	90	Pass
0.3668	16	17	106	Pass
0.3713	15	15	100	Pass
0.3758	14	11	78	Pass
0.3803	14	9	64	Pass
0.3848	14	9	64	Pass
0.3893	12	7	58	Pass
0.3938	11	7	63	Pass
0.3983	9	7	77	Pass
0.4028	9	6	66	Pass
0.4073	7	6	85	Pass
0.4118	7	6	85	Pass
0.4163	7	6	85	Pass
0.4208	7	6	85	Pass
0.4254	7	6	85	Pass
0.4299	7	6	85	Pass
0.4344	6	6	100	Pass
0.4389	6	6	100	Pass
0.4434	6	6	100	Pass
0.4479	6	6	100	Pass
0.4524	6	5	83	Pass
0.4569	6	5	83	Pass
0.4614	5	3	60	Pass
0.4659	5	3	60	Pass
0.4704	5	3	60	Pass
0.4749	5	3	60	Pass
0.4794	5	0	0	Pass
0.4839	5	0	0	Pass
0.4884	5	0	0	Pass
0.4930	5	0	0	Pass
0.4975	5	0	0	Pass
0.5020	4	0	0	Pass
0.5065	4	0	0	Pass
0.5110	4	0	0	Pass
0.5155	4	0	0	Pass
0.5200	4	0	0	Pass
0.5245	4	0	0	Pass
0.5290	4	0	0	Pass
0.5335	3	0	0	Pass
0.5380	3	0	0	Pass
0.5425	3	0	0	Pass
0.5470	3	0	0	Pass
0.5515	3	0	0	Pass
0.5560	3	0	0	Pass
0.5606	3	0	0	Pass
0.5651	3	0	0	Pass

Water Quality

Water Quality BMP Flow and Volume for POC #1

On-line facility volume:	0 acre-feet
On-line facility target flow:	0 cfs.
Adjusted for 15 min:	0 cfs.
Off-line facility target flow:	0 cfs.
Adjusted for 15 min:	0 cfs.

LID Report

LID Technique	Used for Treatment ?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Water Quality	Percent Water Quality Treated	Comment
Underground Detention POC	☐	154.69			☐	0.00			
Total Volume Infiltrated		154.69	0.00	0.00		0.00	0.00	0%	No Treat. Credit
Compliance with LID Standard 8% of 2-yr to 50% of 2-yr									Duration Analysis Result = Passed

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

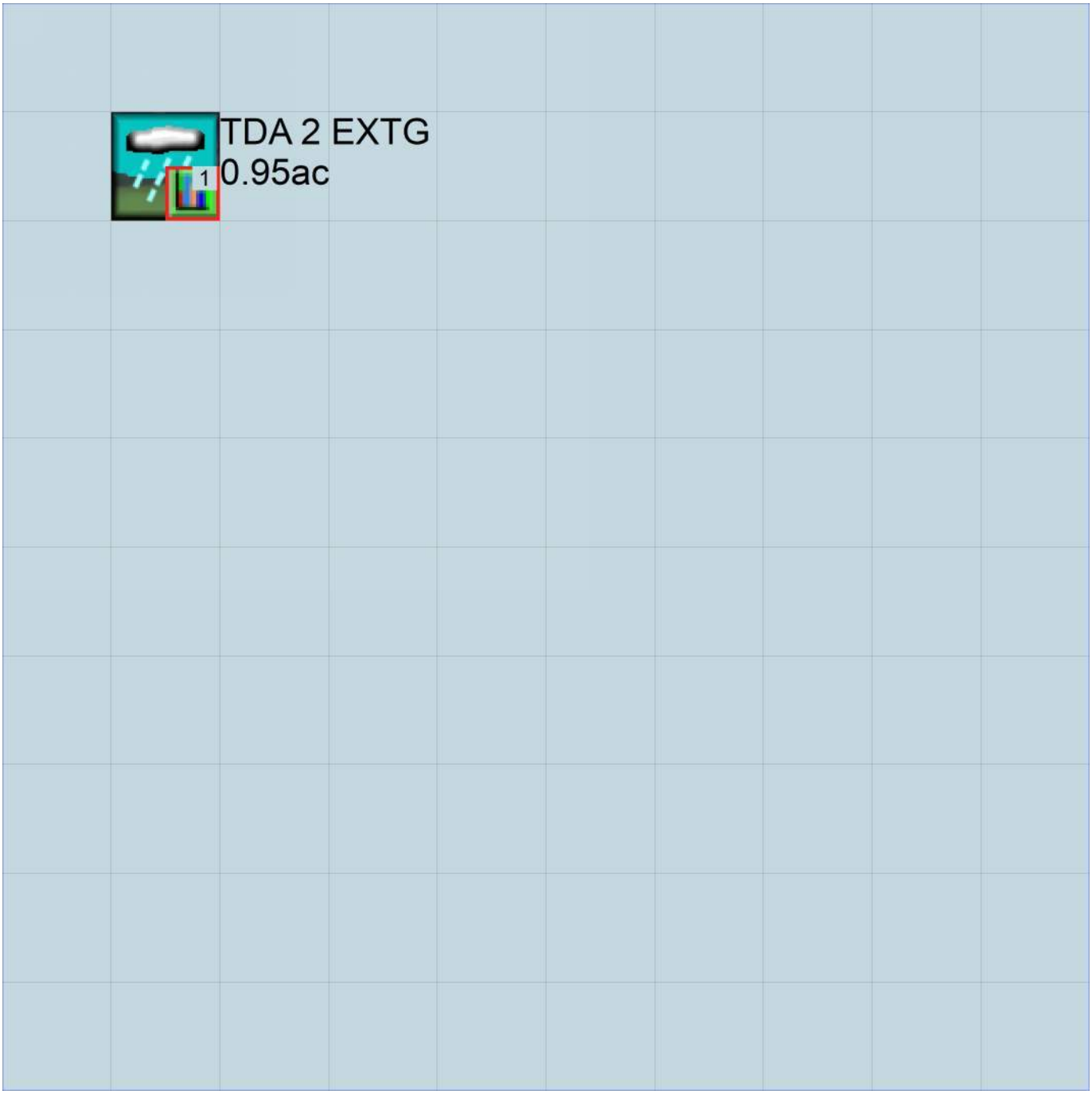
No PERLND changes have been made.

IMPLND Changes

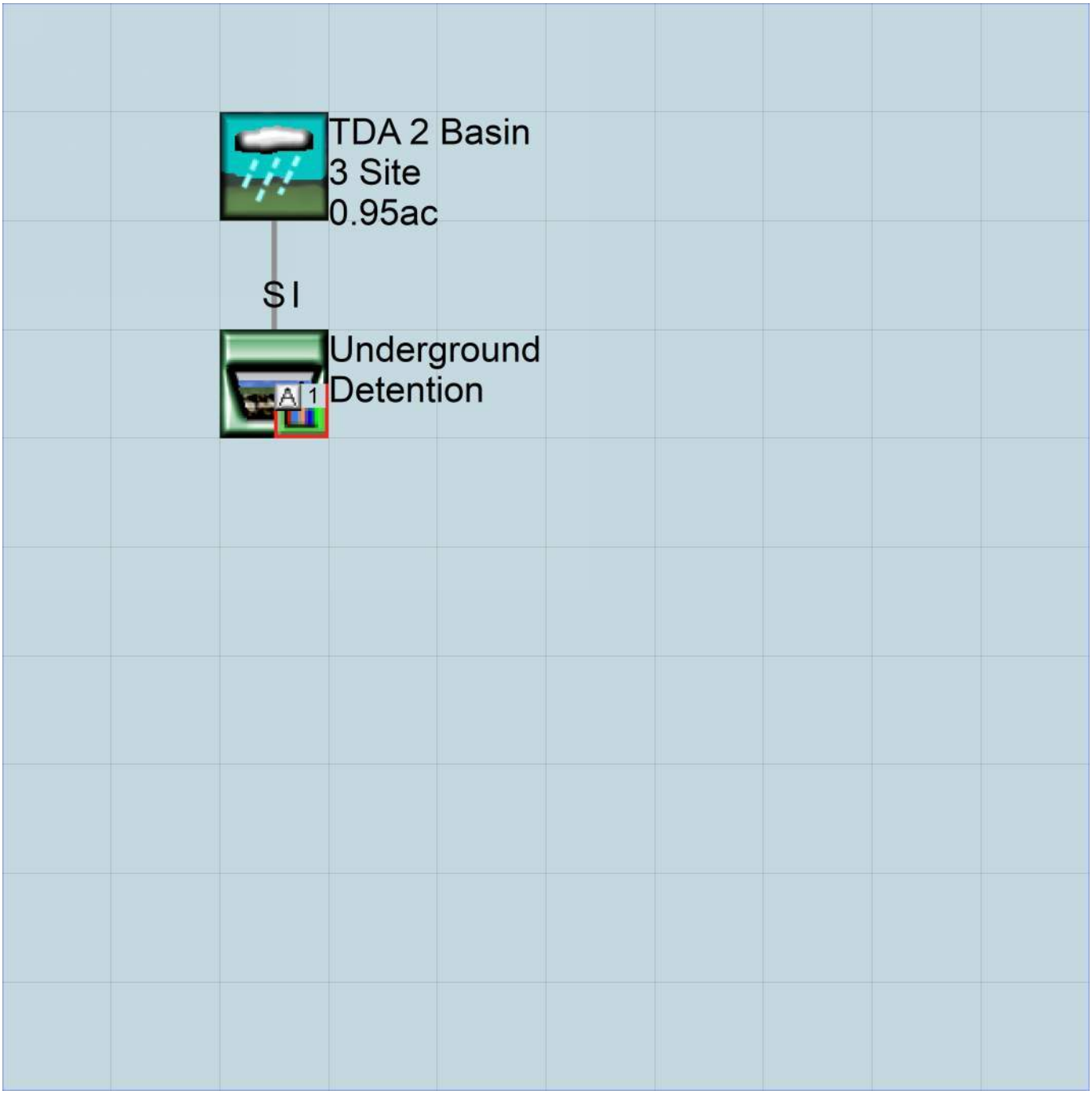
No IMPLND changes have been made.

Appendix

Predeveloped Schematic



Mitigated Schematic



Predeveloped UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2008 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   13thPrelimStormAnalysis.wdm
MESSU       25   Pre13thPrelimStormAnalysis.MES
            27   Pre13thPrelimStormAnalysis.L61
            28   Pre13thPrelimStormAnalysis.L62
            30   POC13thPrelimStormAnalysis1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:15
      PERLND      28
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        TDA 2 EXTG                  MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                         User  t-series Engl Metr ***
                                      in  out           ***
   28     SG4, Forest, Flat       1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   28         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags **************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   28         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO
```

```
  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   28         0    0    0    0    0    0    0    0    0    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   28             0         6      0.04       400      0.05         0      0.96
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   28             0         0         3         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                            ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   28            0.2       0.4      0.35         2       0.4       0.7
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
               ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   28             0         0         0         0       2.5         1         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                     in  out           ***
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
  END IWAT-STATE1
```

```
END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
TDA 2 EXTG***
PERLND  28                      0.9478     COPY   501     12
PERLND  28                      0.9478     COPY   501     13

******Routing******
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG           ***
                                       in  out                              ***
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************ Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ******************* PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                  ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *      *  *  *  *  *        ***
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><--------><--------> ***
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                     ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1.3            PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1.3            IMPLND   1 999 EXTNL  PREC
```

```
WDM      1 EVAP     ENGL    0.8             PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.8             IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY   501 OUTPUT MEAN   1 1     48.4      WDM    501 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13


END MASS-LINK

END RUN
```

Mitigated UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2008 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   13thPrelimStormAnalysis.wdm
MESSU       25   Mit13thPrelimStormAnalysis.MES
            27   Mit13thPrelimStormAnalysis.L61
            28   Mit13thPrelimStormAnalysis.L62
            30   POC13thPrelimStormAnalysis1.dat
END FILES

OPN SEQUENCE
    INGRP              INDELT 00:15
      PERLND      34
      IMPLND       1
      IMPLND       4
      IMPLND       8
      RCHRES       1
      COPY         1
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Underground Detention       MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                          in  out           ***
   34     SG4, Lawn, Flat         1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   34         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
```

```
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   34         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   34         0    0    0    0    0    0    0    0    0    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   34              0         6      0.02       400      0.05         0      0.96
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   34              0         0         3         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   34           0.1       0.2      0.25         2       0.4      0.25
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
             ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   34              0         0         0         0       2.5         1         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                     in  out           ***
    1      ROADS/FLAT             1    1    1   27    0
    4      ROOF TOPS/FLAT         1    1    1   27    0
    8      SIDEWALKS/FLAT         1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************ Active Sections ****************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
    4         0    0    1    0    0    0
    8         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    4    1    9
    4         0    0    4    0    0    0    1    9
    8         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    0
    4         0    0    0    0    0
    8         0    0    0    0    0
```

```
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1            400      0.01       0.1       0.1
    4            400      0.01       0.1       0.1
    8            400      0.01       0.1       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
    4              0         0
    8              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
    4              0         0
    8              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                 <--Area-->     <-Target->   MBLK   ***
<Name>   #                 <-factor->     <Name>   #   Tbl#   ***
TDA 2 Basin 3 Site***
PERLND  34                     0.2051     RCHRES   1      2
PERLND  34                     0.2051     RCHRES   1      3
IMPLND   1                     0.5074     RCHRES   1      5
IMPLND   4                     0.1781     RCHRES   1      5
IMPLND   8                     0.0572     RCHRES   1      5

******Routing******
PERLND  34                     0.2051     COPY     1     12
IMPLND   1                     0.5074     COPY     1     15
IMPLND   4                     0.1781     COPY     1     15
IMPLND   8                     0.0572     COPY     1     15
PERLND  34                     0.2051     COPY     1     13
RCHRES   1                          1     COPY   501     16
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<----------------><---> User T-series  Engl Metr LKFG             ***
                                        in  out                             ***
    1     Underground Dete-016    1    1    1    1   28    0    1
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************* Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
```

```
    1         1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ******************* PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
    1         4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                    ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
           FG FG FG FG  possible  exit  *** possible  exit      possible  exit
            *  *  *  *    *  *  *  *  *       *  *  *  *  *        ***
    1        0  1  0  0    4  0  0  0  0       0  0  0  0  0       2  2  2  2  2
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
    1               1      0.03       0.0       0.0       0.5       0.0
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                       ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
         *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
    1            0         4.0  0.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
  FTABLE      1
   92    4
     Depth      Area    Volume  Outflow1 Velocity  Travel Time***
      (ft)   (acres) (acre-ft)   (cfs)   (ft/sec)    (Minutes)***
  0.000000  0.053076  0.000000  0.000000
  0.022222  0.053076  0.000864  0.014604
  0.044444  0.053076  0.001728  0.020653
  0.066667  0.053076  0.002592  0.025294
  0.088889  0.053076  0.003456  0.029207
  0.111111  0.053076  0.004320  0.032655
  0.133333  0.053076  0.005184  0.035771
  0.155556  0.053076  0.006049  0.038637
  0.177778  0.053076  0.006913  0.041305
  0.200000  0.053076  0.007777  0.043811
  0.222222  0.053076  0.008641  0.046181
  0.244444  0.053076  0.009505  0.048435
  0.266667  0.053076  0.010369  0.050588
  0.288889  0.053076  0.011233  0.052654
  0.311111  0.053076  0.012097  0.054642
  0.333333  0.053076  0.012961  0.056559
  0.355556  0.053076  0.013825  0.058414
  0.377778  0.053076  0.014689  0.060212
  0.400000  0.053076  0.015553  0.061958
  0.422222  0.053076  0.016418  0.063656
  0.444444  0.053076  0.017282  0.065309
  0.466667  0.053076  0.018146  0.066922
  0.488889  0.053076  0.019010  0.068497
  0.511111  0.053076  0.019874  0.070036
  0.533333  0.053076  0.020738  0.071543
  0.555556  0.053076  0.021602  0.073018
  0.577778  0.053076  0.022466  0.074464
  0.600000  0.053076  0.023330  0.075882
  0.622222  0.053076  0.024194  0.077275
  0.644444  0.053076  0.025058  0.078643
  0.666667  0.053076  0.025922  0.079987
  0.688889  0.053076  0.026787  0.081309
```

```
  0.711111  0.053076  0.027651  0.082610
  0.733333  0.053076  0.028515  0.083891
  0.755556  0.053076  0.029379  0.085153
  0.777778  0.053076  0.030243  0.086396
  0.800000  0.053076  0.031107  0.087622
  0.822222  0.053076  0.031971  0.088830
  0.844444  0.053076  0.032835  0.090023
  0.866667  0.053076  0.033699  0.091199
  0.888889  0.053076  0.034563  0.092361
  0.911111  0.053076  0.035427  0.093509
  0.933333  0.053076  0.036291  0.094642
  0.955556  0.053076  0.037155  0.095762
  0.977778  0.053076  0.038020  0.096869
  1.000000  0.053076  0.038884  0.097964
  1.022222  0.053076  0.039748  0.099046
  1.044444  0.053076  0.040612  0.100117
  1.066667  0.053076  0.041476  0.101177
  1.088889  0.053076  0.042340  0.102225
  1.111111  0.053076  0.043204  0.103263
  1.133333  0.053076  0.044068  0.104291
  1.155556  0.053076  0.044932  0.105308
  1.177778  0.053076  0.045796  0.106316
  1.200000  0.053076  0.046660  0.107314
  1.222222  0.053076  0.047524  0.108303
  1.244444  0.053076  0.048389  0.109283
  1.266667  0.053076  0.049253  0.110255
  1.288889  0.053076  0.050117  0.111218
  1.311111  0.053076  0.050981  0.112172
  1.333333  0.053076  0.051845  0.113119
  1.355556  0.053076  0.052709  0.114058
  1.377778  0.053076  0.053573  0.114989
  1.400000  0.053076  0.054437  0.115912
  1.422222  0.053076  0.055301  0.116829
  1.444444  0.053076  0.056165  0.117738
  1.466667  0.053076  0.057029  0.118640
  1.488889  0.053076  0.057893  0.119536
  1.511111  0.053076  0.058757  0.120424
  1.533333  0.053076  0.059622  0.121307
  1.555556  0.053076  0.060486  0.122182
  1.577778  0.053076  0.061350  0.123052
  1.600000  0.053076  0.062214  0.123916
  1.622222  0.053076  0.063078  0.127752
  1.644444  0.053076  0.063942  0.134049
  1.666667  0.053076  0.064806  0.141947
  1.688889  0.053076  0.065670  0.151139
  1.711111  0.053076  0.066534  0.161446
  1.733333  0.053076  0.067398  0.172749
  1.755556  0.053076  0.068262  0.184961
  1.777778  0.053076  0.069126  0.198013
  1.800000  0.053076  0.069991  0.211850
  1.822222  0.053076  0.070855  0.226428
  1.844444  0.053076  0.071719  0.241707
  1.866667  0.053076  0.072583  0.257656
  1.888889  0.053076  0.073447  0.274245
  1.911111  0.053076  0.074311  0.291448
  1.933333  0.053076  0.075175  0.309245
  1.955556  0.053076  0.076039  0.327614
  1.977778  0.053076  0.076903  0.346537
  2.000000  0.053076  0.077767  0.365998
  2.022222  0.053076  0.078947  0.396049
  END FTABLE  1
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1.3            PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1.3            IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.8            PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.8            IMPLND   1 999 EXTNL  PETINP
```

```
END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
RCHRES   1 HYDR   RO     1 1        1      WDM   1000 FLOW     ENGL      REPL
RCHRES   1 HYDR   STAGE  1 1        1      WDM   1001 STAG     ENGL      REPL
COPY     1 OUTPUT MEAN   1 1     48.4      WDM    701 FLOW     ENGL      REPL
COPY   501 OUTPUT MEAN   1 1     48.4      WDM    801 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>             <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK        2
PERLND     PWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    2

  MASS-LINK        3
PERLND     PWATER IFWO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    3

  MASS-LINK        5
IMPLND     IWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    5

  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15

  MASS-LINK       16
RCHRES     ROFLOW                          COPY           INPUT  MEAN
  END MASS-LINK   16


END MASS-LINK

END RUN
```

Predeveloped HSPF Message File

Mitigated HSPF Message File

```
ERROR/WARNING ID:   341   6

DATE/TIME: 1969/ 9/17 21:30

RCHRES:     1

The volume of water in this reach/mixed reservoir is greater than the value
in the "volume" column of the last row of RCHTAB().  To continue the
simulation the table has been extrapolated, based on information contained
in the last two rows.  This will usually result in some loss of accuracy.
If depth is being calculated it will also cause an error condition.
Relevant data are:

NROWS         V1         V2        VOL
92 3387.5     3438.9     3471.8
```

```
ERROR/WARNING ID:   341   5

DATE/TIME: 1969/ 9/17 21:30

RCHRES:     1

Calculation of relative depth, using Newton's method of successive
approximations, converged to an invalid value (not in range 0.0 to 1.0).
Probably ftable was extrapolated.  If extrapolation was small, no problem.
Remedy; extend ftable.  Relevant data are:

A          B          C      RDEP1      RDEP2  COUNT
0.0000E+00 4624.0     -7.584E+03    1.6401  1.6401E+00      2
```

```
ERROR/WARNING ID:   341   6

DATE/TIME: 1969/ 9/17 21:45

RCHRES:     1

The volume of water in this reach/mixed reservoir is greater than the value
in the "volume" column of the last row of RCHTAB().  To continue the
simulation the table has been extrapolated, based on information contained
in the last two rows.  This will usually result in some loss of accuracy.
If depth is being calculated it will also cause an error condition.
Relevant data are:

NROWS         V1         V2        VOL
92 3.3875E+03 3438.9     3616.7
```

```
ERROR/WARNING ID:   341   5

DATE/TIME: 1969/ 9/17 21:45

RCHRES:     1

Calculation of relative depth, using Newton's method of successive
approximations, converged to an invalid value (not in range 0.0 to 1.0).
Probably ftable was extrapolated.  If extrapolation was small, no problem.
Remedy; extend ftable.  Relevant data are:

A          B          C      RDEP1      RDEP2  COUNT
0.0000E+00 4624.0     -2.061E+04    4.4577  4.4577E+00      2
```

```
ERROR/WARNING ID:   341   6

DATE/TIME: 1969/ 9/17 22: 0

RCHRES:     1
```

The volume of water in this reach/mixed reservoir is greater than the value
in the "volume" column of the last row of RCHTAB(). To continue the
simulation the table has been extrapolated, based on information contained
in the last two rows. This will usually result in some loss of accuracy.
If depth is being calculated it will also cause an error condition.
Relevant data are:

NROWS	V1	V2	VOL
92	3.3875E+03	3438.9	3482.2

ERROR/WARNING ID: 341 5

DATE/TIME: 1969/ 9/17 22: 0

RCHRES: 1

Calculation of relative depth, using Newton's method of successive
approximations, converged to an invalid value (not in range 0.0 to 1.0).
Probably ftable was extrapolated. If extrapolation was small, no problem.
Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT
0.0000E+00	4624.0	-8.521E+03	1.8427	1.8427E+00	2

ERROR/WARNING ID: 341 6

DATE/TIME: 1970/ 1/22 17: 0

RCHRES: 1

The volume of water in this reach/mixed reservoir is greater than the value
in the "volume" column of the last row of RCHTAB(). To continue the
simulation the table has been extrapolated, based on information contained
in the last two rows. This will usually result in some loss of accuracy.
If depth is being calculated it will also cause an error condition.
Relevant data are:

NROWS	V1	V2	VOL
92	3.3875E+03	3438.9	3565.4

ERROR/WARNING ID: 341 5

DATE/TIME: 1970/ 1/22 17: 0

RCHRES: 1

Calculation of relative depth, using Newton's method of successive
approximations, converged to an invalid value (not in range 0.0 to 1.0).
Probably ftable was extrapolated. If extrapolation was small, no problem.
Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT
0.0000E+00	4624.0	-1.600E+04	3.4612	3.4611E+00	2

ERROR/WARNING ID: 341 6

DATE/TIME: 1970/ 1/22 17:15

RCHRES: 1

The volume of water in this reach/mixed reservoir is greater than the value
in the "volume" column of the last row of RCHTAB(). To continue the
simulation the table has been extrapolated, based on information contained
in the last two rows. This will usually result in some loss of accuracy.
If depth is being calculated it will also cause an error condition.
Relevant data are:

NROWS	V1	V2	VOL
92	3.3875E+03	3438.9	3586.9

ERROR/WARNING ID: 341 5

DATE/TIME: 1970/ 1/22 17:15

RCHRES: 1

Calculation of relative depth, using Newton's method of successive approximations, converged to an invalid value (not in range 0.0 to 1.0). Probably ftable was extrapolated. If extrapolation was small, no problem. Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT
0.0000E+00	4624.0	-1.794E+04	3.8796	3.8796E+00	2

ERROR/WARNING ID: 341 6

DATE/TIME: 1970/ 1/22 17:30

RCHRES: 1

The volume of water in this reach/mixed reservoir is greater than the value in the "volume" column of the last row of RCHTAB(). To continue the simulation the table has been extrapolated, based on information contained in the last two rows. This will usually result in some loss of accuracy. If depth is being calculated it will also cause an error condition. Relevant data are:

NROWS	V1	V2	VOL
92	3.3875E+03	3438.9	3469.4

ERROR/WARNING ID: 341 5

DATE/TIME: 1970/ 1/22 17:30

RCHRES: 1

Calculation of relative depth, using Newton's method of successive approximations, converged to an invalid value (not in range 0.0 to 1.0). Probably ftable was extrapolated. If extrapolation was small, no problem. Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT
0.0000E+00	4624.0	-7.362E+03	1.5922	1.5922E+00	2

ERROR/WARNING ID: 341 6

DATE/TIME: 1995/11/11 6:15

RCHRES: 1

The volume of water in this reach/mixed reservoir is greater than the value in the "volume" column of the last row of RCHTAB(). To continue the simulation the table has been extrapolated, based on information contained in the last two rows. This will usually result in some loss of accuracy. If depth is being calculated it will also cause an error condition. Relevant data are:

NROWS	V1	V2	VOL
92	3.3875E+03	3438.9	3511.1

ERROR/WARNING ID: 341 5

DATE/TIME: 1995/11/11 6:15

RCHRES: 1

Calculation of relative depth, using Newton's method of successive approximations, converged to an invalid value (not in range 0.0 to 1.0).

Probably ftable was extrapolated. If extrapolation was small, no problem.
Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT
0.0000E+00	4624.0	-1.112E+04	2.4041	2.4041	2

ERROR/WARNING ID: 341   6

DATE/TIME: 1995/11/11 6:30

RCHRES: 1

The volume of water in this reach/mixed reservoir is greater than the value
in the "volume" column of the last row of RCHTAB(). To continue the
simulation the table has been extrapolated, based on information contained
in the last two rows. This will usually result in some loss of accuracy.
If depth is being calculated it will also cause an error condition.
Relevant data are:

NROWS	V1	V2	VOL
92	3387.5	3438.9	3643.9

ERROR/WARNING ID: 341   5

DATE/TIME: 1995/11/11 6:30

RCHRES: 1

Calculation of relative depth, using Newton's method of successive
approximations, converged to an invalid value (not in range 0.0 to 1.0).
Probably ftable was extrapolated. If extrapolation was small, no problem.
Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT
0.0000E+00	4624.0	-2.307E+04	4.9884	4.9884E+00	2

ERROR/WARNING ID: 341   6

DATE/TIME: 1995/11/11 6:45

RCHRES: 1

The volume of water in this reach/mixed reservoir is greater than the value
in the "volume" column of the last row of RCHTAB(). To continue the
simulation the table has been extrapolated, based on information contained
in the last two rows. This will usually result in some loss of accuracy.
If depth is being calculated it will also cause an error condition.
Relevant data are:

NROWS	V1	V2	VOL
92	3.3875E+03	3438.9	3511.3

ERROR/WARNING ID: 341   5

DATE/TIME: 1995/11/11 6:45

RCHRES: 1

Calculation of relative depth, using Newton's method of successive
approximations, converged to an invalid value (not in range 0.0 to 1.0).
Probably ftable was extrapolated. If extrapolation was small, no problem.
Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT
0.0000E+00	4624.0	-1.113E+04	2.4071	2.4071E+00	2

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WWHM2012

PROJECT REPORT

General Model Information

Project Name:	13thPrelimTreatmentAnalysis
Site Name:	13th Gas Station
Site Address:	
City:	
Report Date:	8/22/2023
Gage:	Lacamas
Data Start:	1948/10/01
Data End:	2008/09/30
Timestep:	15 Minute
Precip Scale:	1.300
Version Date:	2018/10/10
Version:	4.2.16

POC Thresholds

Low Flow Threshold for POC1:	50 Percent of the 2 Year
High Flow Threshold for POC1:	50 Year

Landuse Basin Data

Predeveloped Land Use

TDA 2 Treatment

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Lawn, Flat	0.2916
Pervious Total	0.2916

Impervious Land Use	acre
ROADS FLAT	0.6565
ROOF TOPS FLAT	0.1781
SIDEWALKS FLAT	0.0572
Impervious Total	0.8918
Basin Total	1.1834

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

TDA 2 Treatment

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Lawn, Flat	0.2916
Pervious Total	0.2916

Impervious Land Use	acre
ROADS FLAT	0.6565
ROOF TOPS FLAT	0.1781
SIDEWALKS FLAT	0.0572
Impervious Total	0.8918
Basin Total	1.1834

Element Flows To:

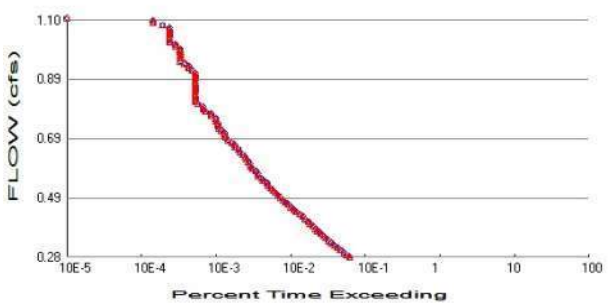
Surface	Interflow	Groundwater

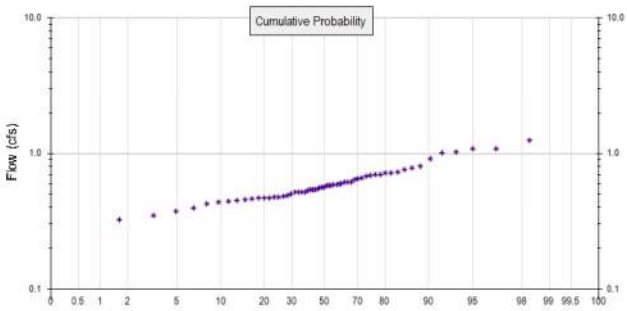
Routing Elements
Predeveloped Routing

Mitigated Routing

Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 0.2916
Total Impervious Area: 0.8918

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0.2916
Total Impervious Area: 0.8918

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	**Flow(cfs)**
2 year	0.568841
5 year	0.733272
10 year	0.844412
25 year	0.987932
50 year	1.097315
100 year	1.208959

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	0.568841
5 year	0.733272
10 year	0.844412
25 year	0.987932
50 year	1.097315
100 year	1.208959

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	**Predeveloped**	**Mitigated**
1949	0.762	0.762
1950	0.501	0.501
1951	0.537	0.537
1952	0.561	0.561
1953	0.520	0.520
1954	0.718	0.718
1955	0.437	0.437
1956	0.588	0.588
1957	0.612	0.612
1958	0.685	0.685

1959	0.460	0.460
1960	0.455	0.455
1961	0.560	0.560
1962	0.491	0.491
1963	0.592	0.592
1964	0.452	0.452
1965	0.467	0.467
1966	0.541	0.541
1967	0.558	0.558
1968	1.082	1.082
1969	0.918	0.918
1970	1.244	1.244
1971	0.483	0.483
1972	0.655	0.655
1973	0.534	0.534
1974	0.549	0.549
1975	0.395	0.395
1976	0.467	0.467
1977	0.289	0.289
1978	0.681	0.681
1979	0.779	0.779
1980	0.425	0.425
1981	0.644	0.644
1982	0.647	0.647
1983	0.724	0.724
1984	0.374	0.374
1985	0.470	0.470
1986	0.712	0.712
1987	0.444	0.444
1988	0.542	0.542
1989	0.611	0.611
1990	0.579	0.579
1991	0.610	0.610
1992	0.579	0.579
1993	0.693	0.693
1994	0.478	0.478
1995	0.589	0.589
1996	0.805	0.805
1997	1.019	1.019
1998	1.075	1.075
1999	0.477	0.477
2000	0.345	0.345
2001	0.323	0.323
2002	0.693	0.693
2003	0.518	0.518
2004	0.520	0.520
2005	0.596	0.596
2006	0.580	0.580
2007	0.514	0.514
2008	1.001	1.001

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	1.2439	1.2439
2	1.0816	1.0816
3	1.0749	1.0749
4	1.0186	1.0186

5	1.0011	1.0011
6	0.9178	0.9178
7	0.8045	0.8045
8	0.7793	0.7793
9	0.7619	0.7619
10	0.7241	0.7241
11	0.7179	0.7179
12	0.7124	0.7124
13	0.6935	0.6935
14	0.6927	0.6927
15	0.6851	0.6851
16	0.6812	0.6812
17	0.6545	0.6545
18	0.6466	0.6466
19	0.6442	0.6442
20	0.6123	0.6123
21	0.6111	0.6111
22	0.6101	0.6101
23	0.5959	0.5959
24	0.5924	0.5924
25	0.5892	0.5892
26	0.5876	0.5876
27	0.5797	0.5797
28	0.5787	0.5787
29	0.5786	0.5786
30	0.5607	0.5607
31	0.5604	0.5604
32	0.5581	0.5581
33	0.5492	0.5492
34	0.5415	0.5415
35	0.5414	0.5414
36	0.5374	0.5374
37	0.5337	0.5337
38	0.5201	0.5201
39	0.5200	0.5200
40	0.5184	0.5184
41	0.5144	0.5144
42	0.5005	0.5005
43	0.4907	0.4907
44	0.4833	0.4833
45	0.4781	0.4781
46	0.4771	0.4771
47	0.4696	0.4696
48	0.4669	0.4669
49	0.4667	0.4667
50	0.4597	0.4597
51	0.4553	0.4553
52	0.4517	0.4517
53	0.4439	0.4439
54	0.4367	0.4367
55	0.4251	0.4251
56	0.3951	0.3951
57	0.3742	0.3742
58	0.3454	0.3454
59	0.3232	0.3232
60	0.2887	0.2887

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.2844	1293	1293	100	Pass
0.2926	1194	1194	100	Pass
0.3008	1088	1088	100	Pass
0.3091	977	977	100	Pass
0.3173	891	891	100	Pass
0.3255	805	805	100	Pass
0.3337	738	738	100	Pass
0.3419	682	682	100	Pass
0.3501	612	612	100	Pass
0.3583	573	573	100	Pass
0.3665	528	528	100	Pass
0.3747	489	489	100	Pass
0.3830	456	456	100	Pass
0.3912	414	414	100	Pass
0.3994	379	379	100	Pass
0.4076	360	360	100	Pass
0.4158	330	330	100	Pass
0.4240	304	304	100	Pass
0.4322	276	276	100	Pass
0.4404	248	248	100	Pass
0.4486	231	231	100	Pass
0.4569	214	214	100	Pass
0.4651	193	193	100	Pass
0.4733	179	179	100	Pass
0.4815	165	165	100	Pass
0.4897	154	154	100	Pass
0.4979	143	143	100	Pass
0.5061	130	130	100	Pass
0.5143	121	121	100	Pass
0.5225	114	114	100	Pass
0.5308	106	106	100	Pass
0.5390	101	101	100	Pass
0.5472	90	90	100	Pass
0.5554	86	86	100	Pass
0.5636	77	77	100	Pass
0.5718	76	76	100	Pass
0.5800	71	71	100	Pass
0.5882	64	64	100	Pass
0.5964	61	61	100	Pass
0.6047	60	60	100	Pass
0.6129	57	57	100	Pass
0.6211	53	53	100	Pass
0.6293	51	51	100	Pass
0.6375	48	48	100	Pass
0.6457	44	44	100	Pass
0.6539	42	42	100	Pass
0.6621	38	38	100	Pass
0.6703	37	37	100	Pass
0.6786	34	34	100	Pass
0.6868	30	30	100	Pass
0.6950	28	28	100	Pass
0.7032	27	27	100	Pass
0.7114	27	27	100	Pass

0.7196	25	25	100	Pass
0.7278	23	23	100	Pass
0.7360	22	22	100	Pass
0.7442	22	22	100	Pass
0.7525	21	21	100	Pass
0.7607	21	21	100	Pass
0.7689	18	18	100	Pass
0.7771	18	18	100	Pass
0.7853	15	15	100	Pass
0.7935	14	14	100	Pass
0.8017	14	14	100	Pass
0.8099	12	12	100	Pass
0.8181	11	11	100	Pass
0.8264	11	11	100	Pass
0.8346	11	11	100	Pass
0.8428	11	11	100	Pass
0.8510	11	11	100	Pass
0.8592	11	11	100	Pass
0.8674	11	11	100	Pass
0.8756	11	11	100	Pass
0.8838	11	11	100	Pass
0.8920	11	11	100	Pass
0.9002	11	11	100	Pass
0.9085	11	11	100	Pass
0.9167	11	11	100	Pass
0.9249	10	10	100	Pass
0.9331	9	9	100	Pass
0.9413	9	9	100	Pass
0.9495	8	8	100	Pass
0.9577	7	7	100	Pass
0.9659	7	7	100	Pass
0.9741	7	7	100	Pass
0.9824	7	7	100	Pass
0.9906	7	7	100	Pass
0.9988	7	7	100	Pass
1.0070	6	6	100	Pass
1.0152	6	6	100	Pass
1.0234	5	5	100	Pass
1.0316	5	5	100	Pass
1.0398	5	5	100	Pass
1.0480	5	5	100	Pass
1.0563	5	5	100	Pass
1.0645	5	5	100	Pass
1.0727	5	5	100	Pass
1.0809	4	4	100	Pass
1.0891	3	3	100	Pass
1.0973	3	3	100	Pass

Water Quality

Water Quality BMP Flow and Volume for POC #1

On-line facility volume:	0.1553 acre-feet
On-line facility target flow:	0.2195 cfs.
Adjusted for 15 min:	0.2195 cfs.
Off-line facility target flow:	0.1213 cfs.
Adjusted for 15 min:	0.1213 cfs.

LID Report

LID Technique	Used for Treatment ?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Water Quality	Percent Water Quality Treated	Comment
Total Volume Infiltrated		0.00	0.00	0.00		0.00	0.00	0%	No Treat. Credit
Compliance with LID Standard 8% of 2-yr to 50% of 2-yr									Duration Analysis Result = Passed

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

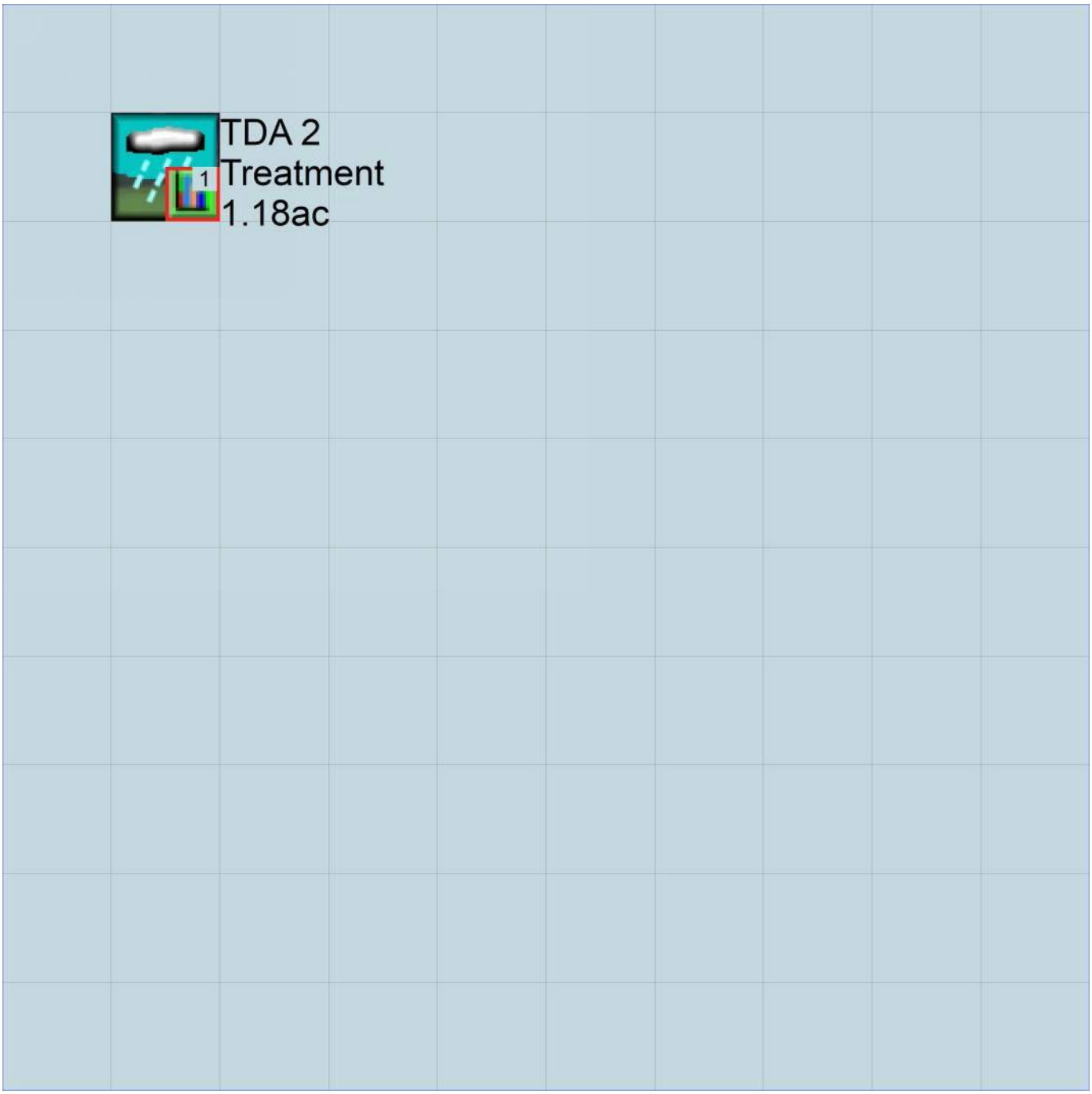
No PERLND changes have been made.

IMPLND Changes

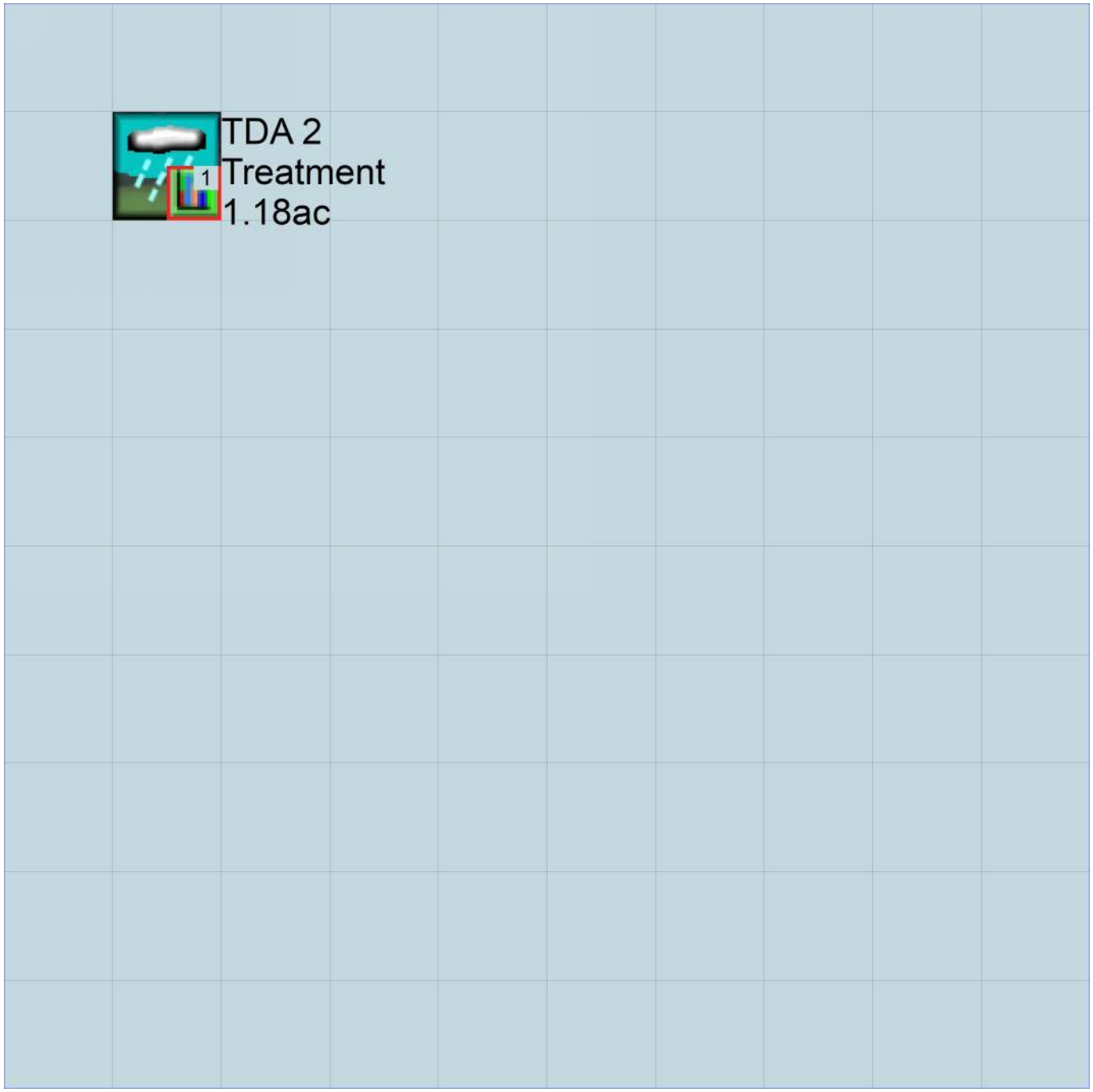
No IMPLND changes have been made.

Appendix

Predeveloped Schematic



Mitigated Schematic



Predeveloped UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2008 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   13thPrelimTreatmentAnalysis.wdm
MESSU       25   Pre13thPrelimTreatmentAnalysis.MES
            27   Pre13thPrelimTreatmentAnalysis.L61
            28   Pre13thPrelimTreatmentAnalysis.L62
            30   POC13thPrelimTreatmentAnalysis1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:15
      PERLND      34
      IMPLND       1
      IMPLND       4
      IMPLND       8
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        TDA 2 Treatment             MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                      in  out           ***
   34     SG4, Lawn, Flat         1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   34         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
```

```
   34         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   34         0    0    0    0    0    0    0    0    0    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   34              0         6      0.02       400      0.05         0      0.96
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   34              0         0         3         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   34           0.1       0.2      0.25         2       0.4      0.25
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
               ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   34              0         0         0         0       2.5         1         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                     in  out           ***
    1      ROADS/FLAT             1    1    1   27    0
    4      ROOF TOPS/FLAT         1    1    1   27    0
    8      SIDEWALKS/FLAT         1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************* Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
    4         0    0    1    0    0    0
    8         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    0    1    9
    4         0    0    4    0    0    0    1    9
    8         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    0
    4         0    0    0    0    0
    8         0    0    0    0    0
  END IWAT-PARM1
```

```
  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1            400      0.01       0.1       0.1
    4            400      0.01       0.1       0.1
    8            400      0.01       0.1       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
    4              0         0
    8              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
    4              0         0
    8              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
TDA 2 Treatment***
PERLND  34                      0.2916     COPY   501     12
PERLND  34                      0.2916     COPY   501     13
IMPLND   1                      0.6565     COPY   501     15
IMPLND   4                      0.1781     COPY   501     15
IMPLND   8                      0.0572     COPY   501     15

******Routing******
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG           ***
                                       in  out                              ***
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************* Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ******************* PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                  ***
```

```
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
             FG FG FG FG  possible  exit  *** possible  exit     possible  exit
              *  *  *  *    *  *  *  *  *       *  *  *  *  *        ***
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                          ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1.3            PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1.3            IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.8            PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.8            IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY   501 OUTPUT MEAN   1 1     48.4      WDM    501 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15


END MASS-LINK

END RUN
```

Mitigated UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2008 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   13thPrelimTreatmentAnalysis.wdm
MESSU       25   Mit13thPrelimTreatmentAnalysis.MES
            27   Mit13thPrelimTreatmentAnalysis.L61
            28   Mit13thPrelimTreatmentAnalysis.L62
            30   POC13thPrelimTreatmentAnalysis1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:15
      PERLND      34
      IMPLND       1
      IMPLND       4
      IMPLND       8
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title---------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        TDA 2 Treatment             MAX                   1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                         User  t-series Engl Metr ***
                                      in  out           ***
   34     SG4, Lawn, Flat         1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   34         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
```

```
   34         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   34         0    0    0    0    0    0    0    0    0    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   34              0         6      0.02       400      0.05         0      0.96
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   34              0         0         3         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   34           0.1       0.2      0.25         2       0.4      0.25
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
             ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   34              0         0         0         0       2.5         1         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                     in  out           ***
    1      ROADS/FLAT             1    1    1   27    0
    4      ROOF TOPS/FLAT         1    1    1   27    0
    8      SIDEWALKS/FLAT         1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************* Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
    4         0    0    1    0    0    0
    8         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    0    1    9
    4         0    0    4    0    0    0    1    9
    8         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    0
    4         0    0    0    0    0
    8         0    0    0    0    0
  END IWAT-PARM1
```

```
  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1            400      0.01       0.1       0.1
    4            400      0.01       0.1       0.1
    8            400      0.01       0.1       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
    4              0         0
    8              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
    4              0         0
    8              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
TDA 2 Treatment***
PERLND  34                      0.2916     COPY   501     12
PERLND  34                      0.2916     COPY   501     13
IMPLND   1                      0.6565     COPY   501     15
IMPLND   4                      0.1781     COPY   501     15
IMPLND   8                      0.0572     COPY   501     15

******Routing******
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG           ***
                                       in  out                              ***
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************* Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ******************* PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                  ***
```

```
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *       *  *  *  *  *         ***
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                          ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1.3            PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1.3            IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.8            PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.8            IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY     1 OUTPUT MEAN   1 1     48.4      WDM    701 FLOW     ENGL      REPL
COPY   501 OUTPUT MEAN   1 1     48.4      WDM    801 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15


END MASS-LINK

END RUN
```

Predeveloped HSPF Message File

Mitigated HSPF Message File

Disclaimer

Legal Notice

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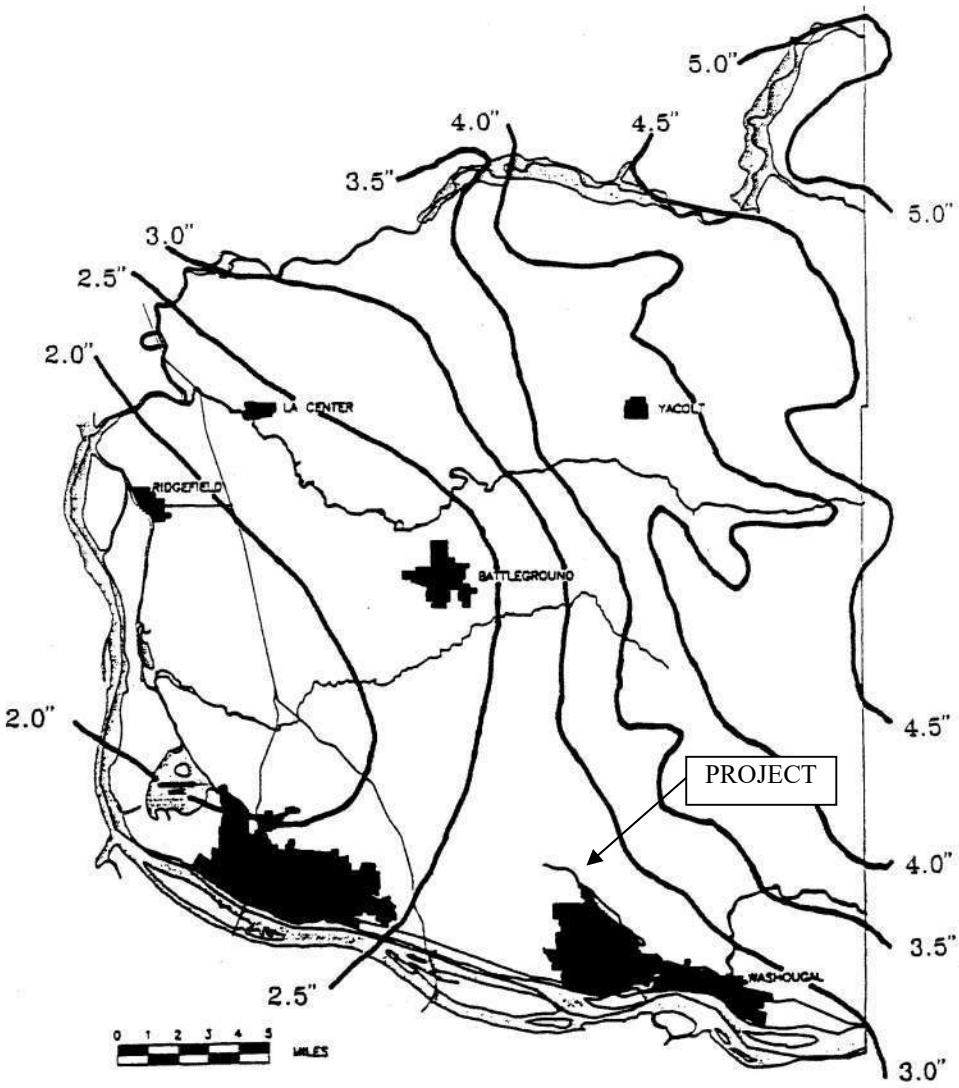
PLS ENGINEERING

Exhibit C
Isopluvial Maps for Design Storms in Clark County

2-Year, 24-Hour Isopluvials



Page 1

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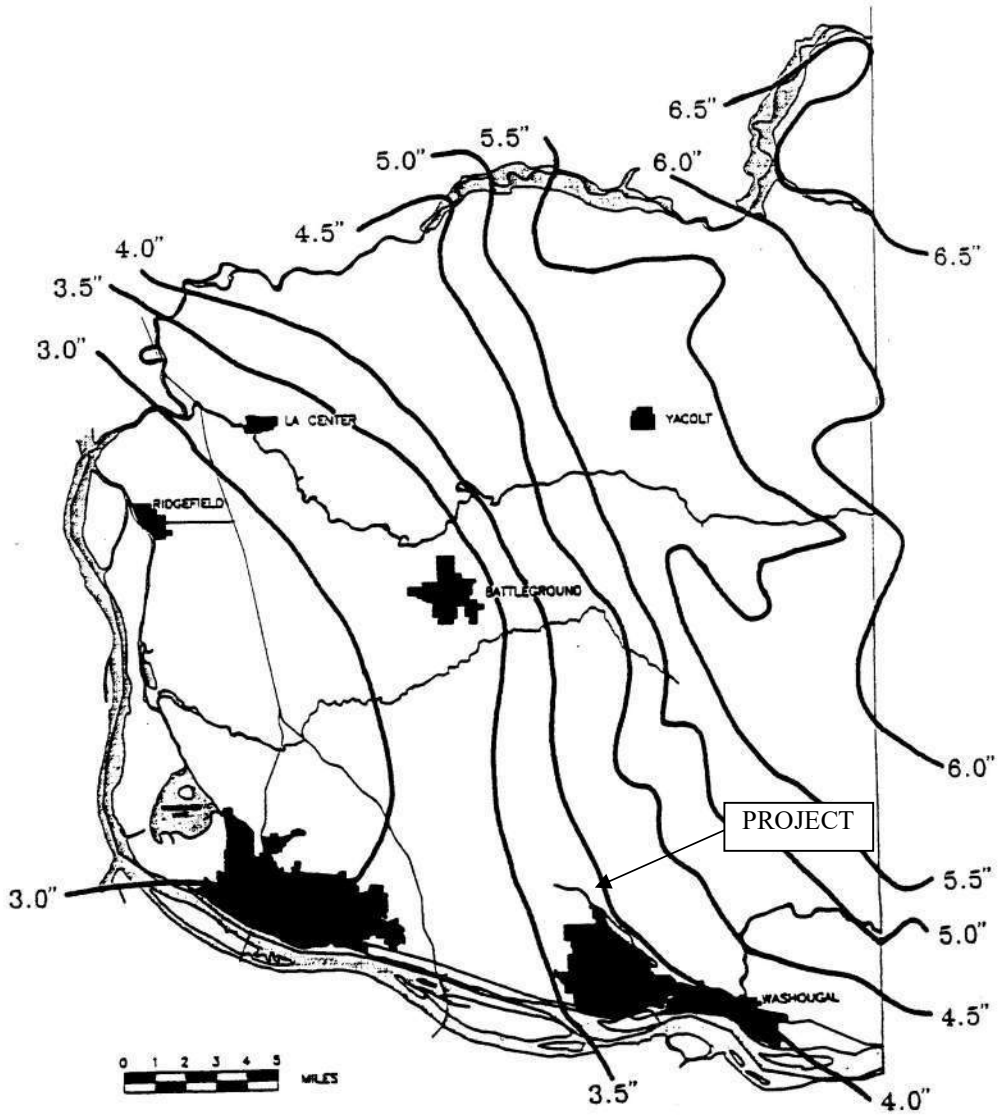
PLS ENGINEERING

Exhibit C
Isopluvial Maps for Design Storms in Clark County

10-Year, 24-Hour Isopluvials



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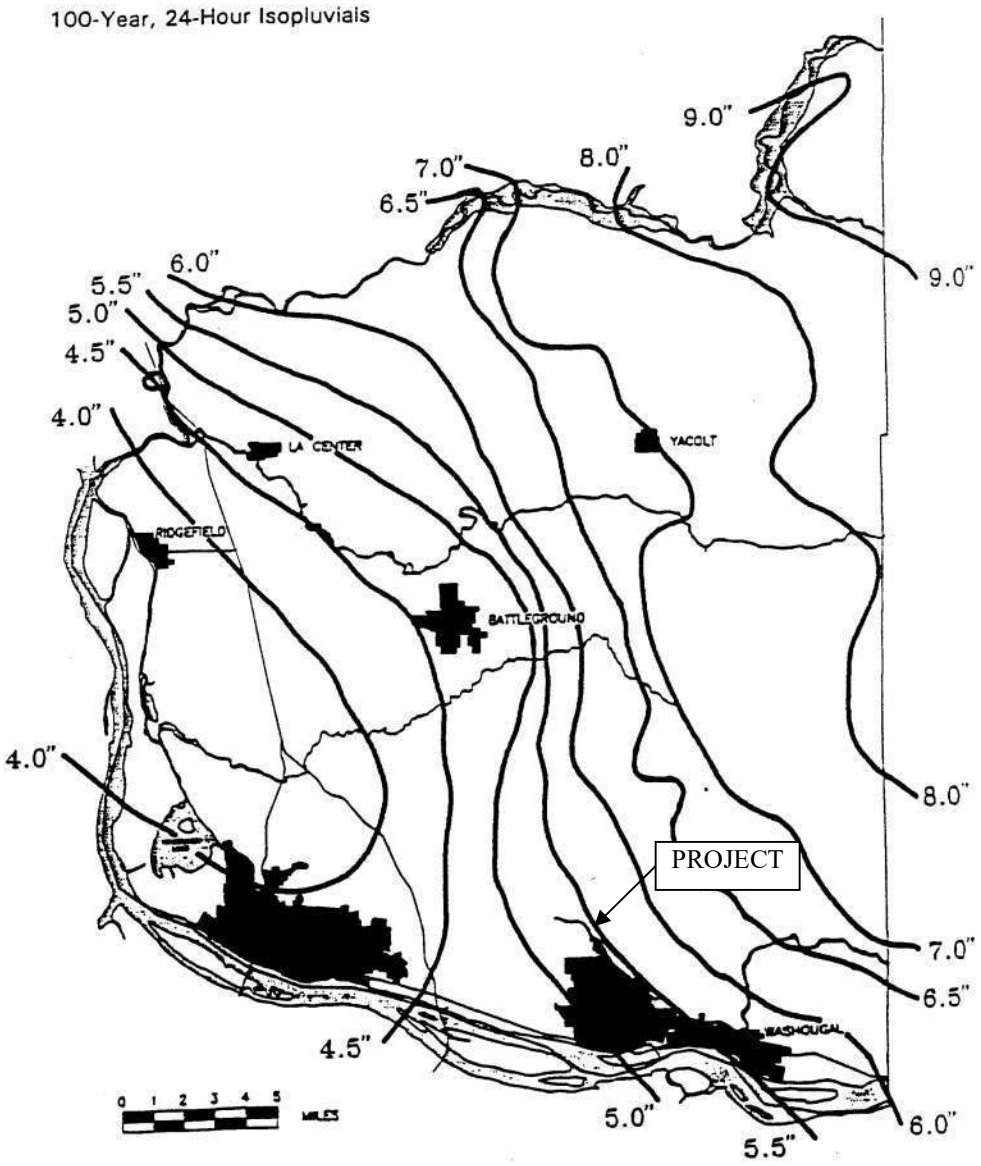
PLS ENGINEERING

Exhibit C

Isopluvial Maps for Design Storms in Clark County



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WASHINGTON STATE DEPARTMENT OF ECOLOGY

April 2017

GENERAL USE LEVEL DESIGNATION FOR BASIC (TSS) TREATMENT

For

CONTECH Engineered Solutions
Stormwater Management StormFilter®
With ZPG Media at 1 gpm/sq ft media surface area

Ecology's Decision:

Based on the CONTECH Engineered Solutions' (CONTECH) application submissions, Ecology hereby issues a General Use Level Designation (GULD) for the Stormwater Management StormFilter® (StormFilter):

1. **As a basic stormwater treatment practice for total suspended solids (TSS) removal,**
   - **Using ZPG™ media (zeolite/perlite/granular activated carbon), with the size distribution described below,**
   - **Sized at a hydraulic loading rate of 1 gpm/ft^2 of media surface area, per Table 1, and**
   - **Internal bypassing needs to be consistent with the design guidelines in CONTECH's current product design manual.**

Table 1. StormFilter Design Flow Rates per Cartridge

Effective Cartridge Height (inches)	12	18	27
Cartridge Flow Rate (gpm/cartridge)	5	7.5	11.3

2. **Ecology approves StormFilter systems containing ZPG™ media for treatment at the hydraulic loading rates shown in Table 1, and sized based on the water quality design flow rate for an off-line system when using an external bypass vault or a treatment vault with an internal bypass. Contech designs their StormFilter systems to maintain treatment of the water quality design flow while routing excess flows around the treatment chamber during periods of peak bypass. The water quality design flow rates are calculated using the following procedures:**
   - **Western Washington: For treatment installed upstream of detention or retention, the water quality design flow rate is the peak 15-minute flow rate as calculated using the latest version of the Western Washington Hydrology Model or other Ecology-approved continuous runoff model.**

- **Eastern Washington: For treatment installed upstream of detention or retention, the water quality design flow rate is the peak 15-minute flow rate as calculated using one of the three methods described in Chapter 2.2.5 of the Stormwater Management Manual for Eastern Washington (SWMMEW) or local manual.**
- **Entire State: For treatment installed downstream of detention, the water quality design flow rate is the full 2-year release rate of the detention facility.**

3. This designation has no expiration date, but Ecology may amend or revoke it.

<u>Ecology's Conditions of Use</u>:

The StormFilter with ZPG media shall comply with the following conditions:

1. **Design, install, operate, and maintain the StormFilter with ZPG media in accordance with applicable Contech Engineered Solutions manuals, documents, and the Ecology Decision.**

2. **Install StormFilter systems to bypass flows exceeding the water quality treatment rate. Additionally, high flows will not re-suspend captured sediments. Design StormFilter systems in accordance with the performance goals in Ecology's most recent Stormwater Manual and CONTECH's *Product Design Manual Version 4.1 (April 2006)*, or most current version, unless otherwise specified.**

3. **Owners must follow the design, pretreatment, land use application, and maintenance criteria in CONTECH's Design Manual.**

4. **Pretreatment of TSS and oil and grease may be necessary, and designers shall provide pre-treatment in accordance with the most current versions of the CONTECH's *Product Design Manual (April 2006)* or the applicable Ecology Stormwater Manual. Design pre-treatment using the performance criteria and pretreatment practices provided on Ecology's "Evaluation of Emerging Stormwater Treatment Technologies" website.**

5. **Maintenance: The required maintenance interval for stormwater treatment devices is often dependent upon the degree of pollutant loading from a particular drainage basin. Therefore, Ecology does not endorse or recommend a "one size fits all" maintenance cycle for a particular model/size of manufactured filter treatment device.**

    - **Typically, CONTECH designs StormFilter systems for a target filter media replacement interval of 12 months. Maintenance includes removing accumulated sediment from the vault, and replacing spent cartridges with recharged cartridges.**

- **Indications of the need for maintenance include effluent flow decreasing to below the design flow rate, as indicated by the scumline above the shoulder of the cartridge.**
- **Owners/operators must inspect StormFilter with ZPG media for a minimum of twelve months from the start of post-construction operation to determine site-specific maintenance schedules and requirements. You must conduct inspections monthly during the wet season, and every other month during the dry season. (According to the SWMMWW, the wet season in western Washington is October 1 to April 30. According to SWMMEW, the wet season in eastern Washington is October 1 to June 30). After the first year of operation, owners/operators must conduct inspections based on the findings during the first year of inspections.**
- **Conduct inspections by qualified personnel, follow manufacturer's guidelines, and use methods capable of determining either a decrease in treated effluent flowrate and/or a decrease in pollutant removal ability.**
- **When inspections are performed, the following findings typically serve as maintenance triggers:**
    - **Accumulated vault sediment depths exceed an average of 2 inches, or**
    - **Accumulated sediment depths on the tops of the cartridges exceed an average of 0.5 inches, or**
    - **Standing water remains in the vault between rain events, or**
    - **Bypass occurs during storms smaller than the design storm.**
- **Note: If excessive floatables (trash and debris) are present, perform a minor maintenance consisting of gross solids removal, not cartridge replacement.**

6. **CONTECH shall maintain readily available reports listed under "Application Documents" (above) as public, as well as the documentation submitted with its previous conditional use designation application. CONTECH shall provide links to this information from its corporate website, and make this information available upon request, at no cost and in a timely manner.**

7. **ZPG™ media used shall conform with the following specifications:**

- **Each cartridge contains a total of approximately 2.6 cubic feet of media. The ZPG™ cartridge consists of an outer layer of perlite that is approximately 1.3 cubic feet in volume and an inner layer, consisting of a mixture of 90% zeolite and 10% granular activated carbon, which is approximately 1.3 cubic feet in volume.**
- **Perlite Media: Perlite media shall be made of natural siliceous volcanic rock free of any debris or foreign matter. The expanded perlite shall**

have a bulk density ranging from 6.5 to 8.5 lbs per cubic foot and particle sizes ranging from 0.09" (#8 mesh) to 0.38" (3/8" mesh).

- **Zeolite Media: Zeolite media shall be made of naturally occurring clinoptilolite. The zeolite media shall have a bulk density ranging from 44 to 50 lbs per cubic foot and particle sizes ranging from 0.13" (#6 mesh) to 0.19" (#4 mesh). Additionally, the cation exchange capacity (CEC) of zeolite shall range from approximately 1.0 to 2.2 meq/g.**

- **Granular Activated Carbon: Granular activated carbon (GAC) shall be made of lignite coal that has been steam-activated. The GAC media shall have a bulk density ranging from 28 to 31 lbs per cubic foot and particle sizes ranging from a 0.09" (#8 mesh) to 0.19" (#4 mesh).**

Approved Alternate Configurations

Peak Diversion StormFilter

1. The Peak Diversion StormFilter allows for off-line bypass within the StormFilter structure. Design capture flows and peak flows enter the inlet bay which contains an internal weir. The internal weir allows design flows to enter the cartridge bay through a transfer hole located at the bottom of the inlet bay while the unit routs higher flows around the cartridge bay.
2. To select the size of the Peak Diversion StormFilter unit, the designer must determine the number of cartridges required and size of the standard StormFilter using the site-specific water quality design flow and the **StormFilter Design Flow Rates per Cartridge** as described above.
3. New owners may not install the Peak Diversion StormFilter at an elevation or in a location where backwatering may occur.

Applicant: Contech Engineered Solutions

Applicant's Address: 11835 NE Glenn Widing Dr.
Portland, OR 97220

Application Documents:

The applicant's master report, titled, "The Stormwater Management StormFilter Basic Treatment Application for General Use Level Designation in Washington", Stormwater Management, Inc., November 1, 2004, includes the following reports:

- (Public) *Evaluation of the Stormwater Management StormFilter Treatment System: Data Validation Report and Summary of the Technical Evaluation Engineering Report (TEER) by Stormwater Management Inc.,* October 29, 2004
  Ecology's technology assessment protocol requires the applicant to hire an independent consultant to complete the following work:

1. Complete the data validation report.
2. Prepare a TEER summary, including a testing summary and conclusions compared with the supplier's performance claims.
3. Provide a recommendation of the appropriate technology use level.
4. Work with Ecology to post recommend relevant information on Ecology's website.
5. Provide additional testing recommendations, if needed."
6. This report, authored by Dr. Gary Minton, Ph. D., P.E., Resource Planning Associates, satisfies the Ecology requirement.

- (Public) "Performance of the Stormwater Management StormFilter Relative to the Washington State Department of Ecology Performance Goals for Basic Treatment," is a summary of StormFilter performance that strictly adheres to the criteria listed in the Guidance for Evaluating Emerging Stormwater Treatment Technologies, Technology Assessment Protocol – Ecology (TAPE).
- "Heritage Marketplace Field Evaluation: Stormwater Management StormFilter with ZPG™ Media," is a report showing all of the information collected at Site A as stated in the SMI Quality Assurance Project Plan (QAPP). This document contains detailed information regarding each storm event collected at this site, and it provided a detailed overview of the data and project.
- "Lake Stevens Field Evaluation: Stormwater Management StormFilter with ZPG™ Media," is a report that corresponds to Site E as stated in the SMI QAPP. This document contains detailed information regarding each storm collected at this site, and includes a detailed overview of the data and project.
- (Public) "Evaluation of the Stormwater Management StormFilter for the removal of SIL-CO-SIL 106, a standardized silica product: ZPG™ at 7.5 GPM" is a report that describes laboratory testing at full design flow.
- "Factors Other Than Treatment Performance."
- "State of Washington Installations."
- "Peak Diversion StormFilter" is a technical document demonstrating the Peak Diversion StormFilter system complies with the Stormwater Management Manual for Western Washington Volume V Section 4.5.1.

Above-listed documents noted as "public" are available by contacting CONTECH.

Applicant's Use Level Request:

That Ecology grant a General Use Level Designation for Basic Treatment for the StormFilter using ZPG™ media (zeolite/perlite/granular activated carbon) at a hydraulic loading rate of 1 gpm/ft^2 of media surface area in accordance with Ecology's 2011 *Technical Guidance Manual for Evaluating Emerging Stormwater Treatment Technologies Technology Assessment Protocol – Ecology (TAPE).*

Applicant's Performance Claim:

The combined data from the two field sites reported in the TER (Heritage Marketplace and Lake Stevens) indicate that the performance of a StormFilter system configured for inline bypass with ZPG™ media and a hydraulic loading rate of 1 gpm/ft^2 of media surface area meets Ecology performance goals for Basic Treatment.

Ecology's Recommendations:

Based on the weight of the evidence and using its best professional judgment, Ecology finds that:

- StormFilter, using ZPG™ media and operating at a hydraulic loading rate of no more than 1 gpm/ft^2 of media surface area, is expected to provide effective stormwater treatment achieving Ecology's Basic Treatment (TSS removal) performance goals. Contech demonstrated this is through field and laboratory testing performed in accordance with the approved protocol. StormFilter is deemed satisfactory with respect to factors other than treatment performance (e.g., maintenance; see the protocol's Appendix B for complete list).

Findings of Fact:

- Influent TSS concentrations and particle size distributions were generally within the range of what Ecology considers "typical" for western Washington (silt-to-silt loam).
- Contech sampled thirty-two (32) storm events at two sites for storms from April 2003 to March 2004, of which Contech deemed twenty-two (22) as "qualified" and were therefore included in the data analysis set.
- Statistical analysis of these 22 storm events verifies the data set's adequacy.
- Analyzing all 22 qualifying events, the average influent and effluent concentrations and aggregate pollutant load reduction are 114 mg/L, 25 mg/L, and 82%, respectively.
- Analyzing all 22 qualifying events based on the *estimated average* flow rate during the event (versus the *measured peak* flow rate), and more heavily weighting those events near the design rate (versus events either far above or well below the design rate) does not significantly affect the reported results.
- For the 7 qualifying events with influent TSS concentrations greater than 100 mg/L, the average influent and effluent concentrations and aggregate pollutant load reduction are 241 mg/L, 34 mg/L, and 89%, respectively. If we exclude the 2 of 7 events that exceed the maximum 300 mg/L specified in Ecology's guidelines, the average influent and effluent concentrations and aggregate pollutant load reduction are 158 mg/L, 35 mg/L, and 78%, respectively.
- For the 15 qualifying events with influent TSS concentrations less than 100 mg/L, the average influent and effluent concentrations and aggregate pollutant load reduction are 55 mg/L, 20 mg/L, and 61%, respectively. If the 6 of 15 events that fall below the minimum 33 mg/L TSS specified in Ecology's guidelines are excluded, the average

influent and effluent concentrations and aggregate pollutant load reduction are 78 mg/L, 26 mg/L, and 67%, respectively.

- For the 8 qualifying events with peak discharge exceeding design flow (ranging from 120 to 257% of the design rate), results ranged from 52% to 96% TSS removal, with an average of 72%.
- Due to the characteristics of the hydrographs, the field results generally reflect flows below (ranging between 20 and 60 percent of) the tested facilities' design rate. During these sub-design flow rate periods, some of the cartridges operate at or near their *individual* full design flow rate (generally between 4 and 7.5 GPM for an 18" cartridge effective height) because their float valves have opened. Float valves remain closed on the remaining cartridges, which operate at their base "trickle" rate of 1 to 1.5 GPM.
- Laboratory testing using U.S. Silica's Sil-Co-Sil 106 fine silica product showed an average 87% TSS removal for testing at 7.5 GPM per cartridge (100% design flow rate).
- Other relevant testing at I-5 Lake Union, Greenville Yards (New Jersey), and Ski Run Marina (Lake Tahoe) facilities shows consistent TSS removals in the 75 to 85% range. *Note that the evaluators operated the I-5 Lake Union at 50%, 100%, and 125% of design flow*.
- SMI's application included a satisfactory "Factors other than treatment performance" discussion.

Note: Ecology's 80% TSS removal goal applies to 100 mg/l and greater influent TSS. Below 100 mg/L influent TSS, the goal is 20 mg/L effluent TSS.

Technology Description:

The Stormwater Management StormFilter® (StormFilter), a flow-through stormwater filtration system, improves the quality of stormwater runoff from the urban environment by removing pollutants. The StormFilter can treat runoff from a wide variety of sites including, but not limited to: retail and commercial development, residential streets, urban roadways, freeways, and industrial sites such as shipyards, foundries, etc.

Operation:

The StormFilter is typically comprised of a vault that houses rechargeable, media-filled, filter cartridges. Various media may be used, but this designation covers only the zeolite-perlite-granulated activated carbon (ZPG™) medium. Stormwater from storm drains percolates through these media-filled cartridges, which trap particulates and may remove pollutants such as dissolved metals, nutrients, and hydrocarbons. During the filtering process, the StormFilter system also removes surface scum and floating oil and grease. Once filtered through the media, the treated stormwater is directed to a collection pipe or discharged to an open channel drainage way.

This document includes a bypass schematic for flow rates exceeding the water quality design flow rate on page 8.

StormFilter Configurations:

Contech offers the StormFilter in multiple configurations: precast, high flow, catch basin, curb inlet, linear, volume, corrugated metal pipe, drywell, and CON/Span form. Most configurations use pre-manufactured units to ease the design and installation process. Systems may be either uncovered or covered underground units.

The typical precast StormFilter unit is composed of three sections: the energy dissipater, the filtration bay, and the outlet sump. As Stormwater enters the inlet of the StormFilter vault through the inlet pipe, piping directs stormwater through the energy dissipater into the filtration bay where treatment will take place. Once in the filtration bay, the stormwater ponds and percolates horizontally through the media contained in the StormFilter cartridges. After passing through the media, the treated water in each cartridge collects in the cartridge's center tube from where piping directs it into the outlet sump by a High Flow Conduit under-drain manifold. The treated water in the outlet sump discharges through the single outlet pipe to a collection pipe or to an open channel drainage way. In some applications where you anticipate heavy grit loads, pretreatment by settling may be necessary.

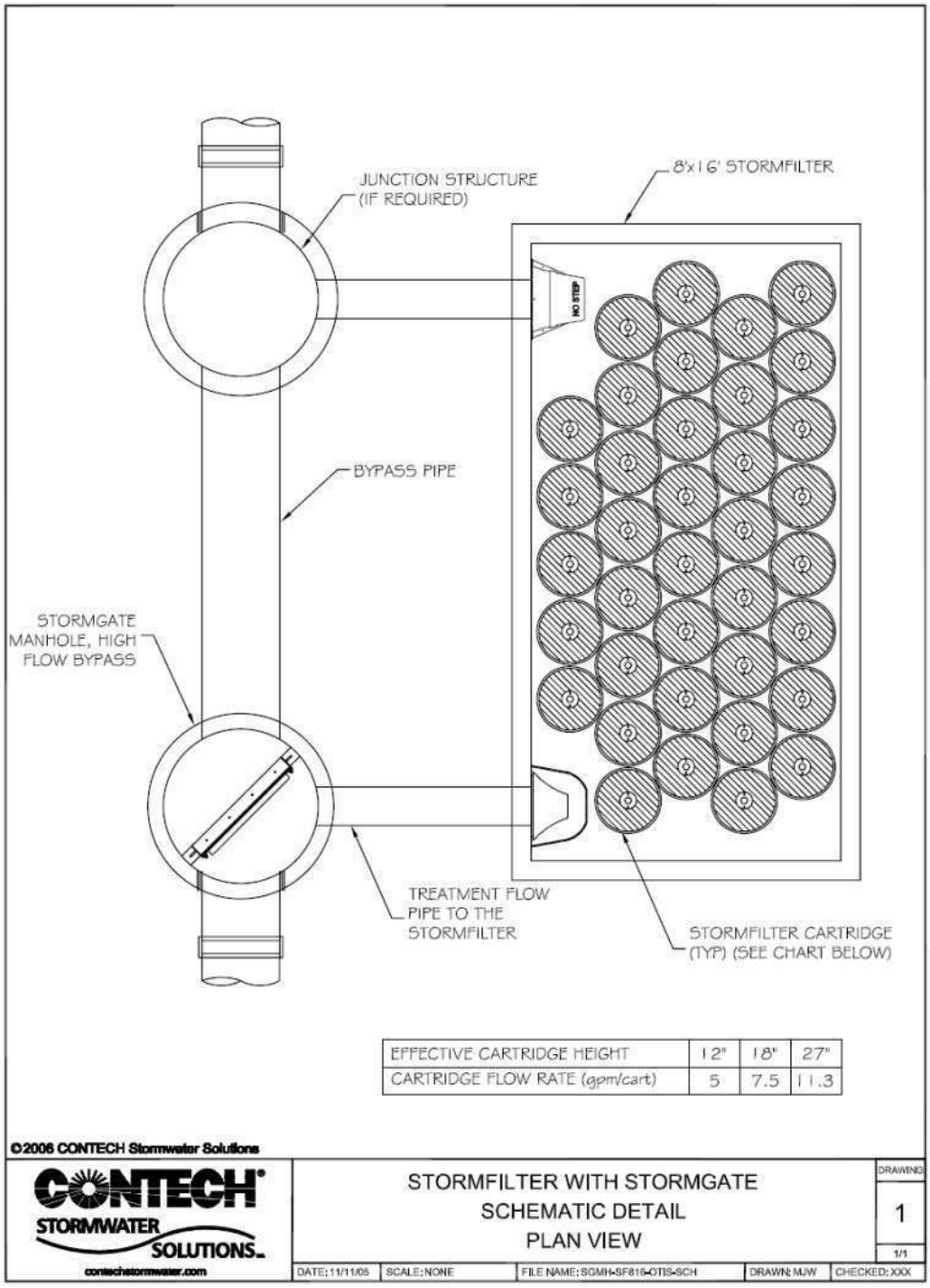

Figure 1. Stormwater Management StormFilter Configuration with Bypass

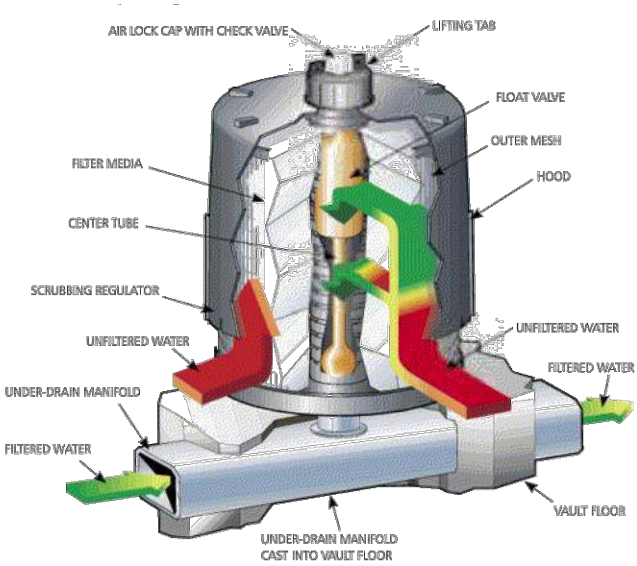

Figure 2. The StormFilter Cartridge

Cartridge Operation:

As the water level in the filtration bay begins to rise, stormwater enters the StormFilter cartridge. Stormwater in the cartridge percolates horizontally through the filter media and passes into the cartridge's center tube, where the float in the cartridge is in a closed (downward) position. As the water level in the filtration bay continues to rise, more water passes through the filter media and into the cartridge's center tube. Water displaces the air in the cartridge and it purges from beneath the filter hood through the one-way check valve located in the cap. Once water fills the center tube there is enough buoyant force on the float to open the float valve and allow the treated water to flow into the under-drain manifold. As the treated water drains, it tries to pull in air behind it. This causes the check valve to close, initiating a siphon that draws polluted water throughout the full surface area and volume of the filter. Thus, water filters through the entire filter cartridge throughout the duration of the storm, regardless of the water surface elevation in the filtration bay. This continues until the water surface elevation drops to the elevation of the scrubbing regulators. At this point, the siphon begins to break and air quickly flows beneath the hood through the scrubbing regulators, causing energetic bubbling between the inner surface of the hood and the outer surface of the filter. This bubbling agitates and cleans the surface of the filter, releasing accumulated sediments on the surface, flushing them from beneath the hood, and allowing them to settle to the vault floor.

Adjustable cartridge flow rate:

Inherent to the design of the StormFilter is the ability to control the individual cartridge flow rate with an orifice-control disc placed at the base of the cartridge. Depending on the treatment requirements and on the pollutant characteristics of the influent stream as

specified in the CONTECH *Product Design Manual*, operators may adjust the flow rate through the filter cartridges. By decreasing the flow rate through the filter cartridges, the influent contact time with the media is increased and the water velocity through the system is decreased, thus increasing both the level of treatment and the solids removal efficiencies of the filters, respectively (de Ridder, 2002).

Recommended research and development:

Ecology encourages CONTECH to pursue continuous improvements to the StormFilter. To that end, CONTECH recommends the following actions:

- Determine, through laboratory testing, the relationship between accumulated solids and flow rate through the cartridge containing the ZPG™ media. **Completed 11/05.**
- Determine the system's capabilities to meet Ecology's enhanced, phosphorus, and oil treatment goals.
- Develop easy-to-implement methods of determining that a StormFilter facility requires maintenance (cleaning and filter replacement).

Contact Information:

Applicant Contact: Jeremiah Lehman
Contech Engineered Solutions
11835 NE Glenn Widing Drive
Portland, OR, 97220
503-258-3136
jlehman@conteches.com

Applicant Web link http://www.conteches.com/

Ecology web link: http://www.ecy.wa.gov/programs/wq/stormwater/newtech/index.html

Ecology Contact: Douglas C. Howie, P.E.
Department of Ecology
Water Quality Program
(360) 407-6444
douglas.howie@ecy.wa.gov

Revision History

Date	**Revision**
Jan 2005	Original Use Level Designation
Dec 2007	Revision
May 2012	Maintenance requirements updated
November 2012	Design Storm and Maintenance requirements updated
January 2013	Updated format to match Ecology standard format
September 2014	Added Peak Diversion StormFilter Alternate Configuration
November 2016	Revised Contech contact information
April 2017	Revised sizing language to note sizing based on Off-line calculations

APPENDIX C

Geotechnical Report

GEOTECHNICAL ENGINEERING STUDY

13th Street Gas Station
NE 13th Street & NW Friberg-Strunk Street
Camas, Clark County, Washington
Tax Lot No. (176148000)

Prepared for:
Taz Khan
701 Columbia Street #109
Vancouver, WA 98660

Prepared By:

Donald J. Bruno, CEG
Engineering Geologist

9/31/23

State of Washington
Engineering Geologist
2177
Licensed Geologist
DONALD J. BRUNO

Project No. G26-0723

{August 2023}

Earth Engineering Inc.
PO Box 1512, Ridgefield, Washington 98642
(360) 600-6518

Earth Engineering, Inc.
Geotechnical & Environmental Consultants

Taz Khan
701 Columbia Street #109
Vancouver, Washington 98660

August 31st 2023
G26-0723

Subject: **Geotechnical Engineering Study**
13th Street Gas Station, C-Store & Car Wash
NE 13th Street & NW Friberg-Strunk Street
Camas, Clark County, Washington
(Tax Lot No. 176148000)

Hello Taz,

We are pleased to submit our engineering report for the subject property located in Camas, Washington. This report presents the results of our field exploration, selective laboratory tests, field testing and engineering analyses.

Based on the results of this study, it is our opinion that construction of the proposed commercial structures is feasible from a geotechnical standpoint, provided recommendations presented in this report are included in the project design.

We appreciate the opportunity to have been of service to you and look forward to working with you in the future. Should you have any questions about the content of this report, or if we can be of further assistance, please call.

Respectfully Submitted,
Earth Engineering Inc.,

Donald J. Bruno, CEG
Engineering Geologist

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{G26-0723}

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Figure 2	Site Plan (Test Pit & Infiltration Locations)
Figure 3	Typical Footing Drain Detail
Figure 4	Typical Utility Trench Back Fill Detail

APPENDICES

Appendix A	Field Exploration
Plate A1	Unified Soil Classification- Legend
Plates A2-A3	Log of Exploratory Test Pits

Exhibit 9 APPEAL24-1001

INTRODUCTION

General

This report presents the results of the geotechnical engineering study completed by Earth Engineering, Inc. for the proposed gas station, convenience store and drive thru car wash located in Camas, Washington. The general location of the site is shown on the *Vicinity Map, Figure 1.* At the time our study was performed, the site and our exploratory locations are approximately as shown on the *Site Plan, Figure 2.*

The purpose of this study was to explore subsurface conditions at the site and based on the conditions encountered provide geotechnical recommendations for the proposed construction. In addition this report includes infiltration testing for stormwater design and a seismic hazard evaluation.

Project Description

Based on the information that was provided to us by the project civil engineer (PLS), it is our understanding the site will be developed with a one story convenience store building that will provide four thousand one-hundred (4100) square feet of floor space, a one thousand one-hundred and eighty nine (1189) square foot drive thru car wash, a fuel pumping island, trash enclosure and an asphalt paved access driveway with vehicle parking spaces. Construction will also include the installation of a stormwater system and subsurface utilities.

Due to the relatively flat topography, it is anticipated that earthwork cuts and fills will be less than two feet to achieve the desired design grade. The convenience store and car wash structures will be constructed with a metal or wood frame and slab on grade floors.

Structural design loads were not available at the time this report was written. However, based on our experience with similar projects, we anticipate that wall and column loads will be approximately seven hundred and fifty (750) to one thousand five hundred (1500) pounds per lineal foot (maximum dead plus live loads). Slab on grade loads will most likely range from one hundred (100) to one hundred and fifty (150) pounds per square foot (psf).

If any of the above information is incorrect or changes, we should be consulted to review the recommendations contained in this report. In any case, it is recommended that Earth Engineering, Inc. perform a general review of the final design for the proposed construction.

SITE CONDITIONS

Surface

The rectangular shaped property encompasses approximately one acre. An existing single family residence was located at the central west area of the property. The adjacent properties to the south and west are moderately to heavily vegetated with single family homes on acreage.
NE 13th Street borders the north side and NW Friberg-Strunk Street.

Exhibit 9 APPEAL24-1001

The property is relatively level and slopes gently downward from the north to the south and southeast with an overall elevation change of approximately five feet and a gradient that is less than two percent (2%). The property has been landscaped with a manicured lawn as well as a variety of trees and flowering bushes.

Subsurface & Soil Classification

For this study, the site was explored by excavating two test pits at the approximate locations shown on the *Site Plan, Figure 2*. Infiltration testing was performed in both test pits. All soil was classified following the Unified Soil Classification System (USCS). A USCS Legend is included as Plate A1. A description of the field exploration methods is included in Appendix A.

In general, in our test pits we encountered very stiff to hard soil consisting of Silt (ML) and lean Clay (CL) to the maximum exploration depth of ten and one half (10.5) feet below the existing ground surface. Please refer to the test pit logs, Plates A-2 thru A-3, for a more detailed description of the conditions encountered.

Groundwater

During the time of our field exploration (August 2023) groundwater was not encountered in any of our test pits. It is important to note that groundwater conditions are not static; fluctuations may be expected in the level and seepage flow depending on the season, amount of, surface water runoff, and other factors. Generally, groundwater levels are higher and the seepage rate is greater in the wetter winter months (typically October through May).

General Regional Geology

General information about geologic conditions and soil in the vicinity of the site was obtained by reviewing the Geologic Map of Washington-Southwest Quadrant, Washington Division of Geology and Earth Resources, (Geologic Map GM-34, 1987). This map provides general information about geologic units in the Camas, Clark County, Washington area.

Our review of existing geological information indicates that soils in the vicinity of the subject site were formed from alluvial deposits during the Quaternary Period. Outburst flood deposits from glacial Lake Missoula deposited these sedimentary soils. The native material encountered in our test pits consists predominantly of Silt.

LABORATORY TESTING

Laboratory tests were conducted on representative soil samples to verify or modify the field soil classification of the units encountered, and to evaluate the general physical properties as well as the engineering characteristics of the soils encountered. The following provides information about the testing procedures performed on representative soil samples and the general condition of subsurface soil conditions encountered:

Exhibit 9 APPEAL24-1001

- *Moisture Content (ASTM-D2216-92)* tests were performed on representative samples. The native Silt has a moisture content that ranges from thirteen to forty three percent (13-43 %). The native lean clay has a moisture content of thirty eight percent (38%)

- In-Situ Soil Density (ASTM-D4564-93) utilizing the sleeve method was performed on representative samples to determine the wet and dry density of native soil. The in-situ density provides a relative indication of soil support characteristics. The average wet density of the native silt is one hundred and ten (110) pounds per cubic foot (pcf). The average dry density of this soil is ninety six (96) pcf.

Laboratory testing confirms that subsurface soil consists predominantly of Silt and lean Clay. These types of soil are sensitive to changes in moisture content. Moisture sensitive soils are discussed in more detail in the *Site Preparation and Grading* section of this report.

The results of laboratory tests performed on specific samples are provided at the appropriate sample depth on the individual test pit logs. However, it is important to note that some variation of subsurface conditions may exist. Our geotechnical recommendations are based on our interpretation of these test results.

SEISMIC HAZARD EVALUATION

The following provides a seismic hazard evaluation for the proposed commercial building and fuel island. Our evaluation is based on subsurface conditions encountered at the site during the time of our geotechnical study and a review of applicable geologic maps (Washington State Department of Natural Resources, Geologic Map of Washington-Southwest Quadrant, 1987) and the International Building Code (IBC-2018) guidelines.

In general, supportive soil at the subject site consists of very stiff to hard Silt. The geologic map indicates that no known active faults are located within one-mile of the subject site. Soils encountered at the site are classified as a type "D" soil in accordance with "Seismic Design Categories" (IBC 2018, Section 1803.5.12).

Liquefaction:

Structures are subject to damage from earthquakes due to direct and indirect action. Shaking represents direct action. Indirect action is represented by foundation failures and is typified by liquefaction. Liquefaction occurs when soil loses all shear strength for short periods of time during an earthquake. Ground shaking of sufficient duration results in the loss of grain to grain contact as well as a rapid increase in pore water pressure. This causes the soil to assume physical properties of a fluid.

To have potential for liquefaction a soil must be loose, cohesion-less (generally sands and silts), below the groundwater table, and must be subjected to sufficient magnitude and duration of ground shaking. The effects of liquefaction may be large total settlement and/or large differential settlement for structures with foundations in or above the liquefied soil. Based on the very stiff to hard soil conditions encountered and the absence of a near surface groundwater table, it is not likely that soil liquefaction would occur at the subject site during a seismic event.

Exhibit 9 APPEAL24-1001

DISCUSSION AND RECOMMENDATIONS

General

Based on the results of our study, it is our opinion the commercial project can be developed as planned provided the geotechnical recommendations contained in this report are incorporated into the final design. The proposed buildings (convenience store & car wash) as well as the fuel island canopy can be supported on conventional shallow spread footings bearing either entirely on competent native soil or compacted structural fill. Supporting the proposed buildings on homogeneous material will significantly decrease the potential for differential settlement across the foundation area.

This report has been prepared for specific application to this project only and in a manner consistent with that level of care and skill ordinarily exercised by other members of the profession currently practicing under similar conditions in this area for the exclusive use of Taz Khan and their representatives. This report, in its entirety, should be included in the project documents for information to the contractor. No warranty, expressed or implied, is made.

Site Preparation and Grading

The site shall be stripped and cleared of all vegetation, organic matter and any other deleterious material. Stripped material should not be mixed with any soils to be used as fill. Stripped soil could potentially be used for topsoil at landscape areas after removing vegetation and screening out organic matter.

Building and Driveway Areas:

After clearing and grading, the exposed sub-grade at building and pavement areas should be compacted to a dense non-yielding condition with suitable compaction equipment. This phase of earthwork compaction shall be performed prior to the placement of structural fill, at the bottom of all foundation excavations, interior and exterior concrete slabs, as well as the driveway-parking areas, before the placement of base rock.

Structural Fill:

Structural fill is defined as any soil placed under buildings or any other load bearing-areas. Structural fill placed under footings and slab on grade should be placed in thin horizontal lifts not exceeding eight inches and compacted to a minimum ninety-five percent (95%) of its maximum dry density (Modified Proctor ASTM D1557). The fill material should be placed within two to three percent of the optimum moisture content.

Fill under pavements should also be placed in lifts approximately eight inches in thickness, and compacted to a minimum of ninety percent (92%) of its maximum dry density (Modified Proctor ASTM D1598), except for the top twelve (12) inches which should be compacted to ninety-five percent (95%) of the maximum dry density.

Exhibit 9 APPEAL24-1001

We recommend that structural fill consist of a well graded granular material having a maximum size of two inches and no more than five percent (5%) fines passing the #200 sieve, based on the ¾ inch fraction. It is recommended that any structural fill planned for onsite use, be submitted for approval prior to import.

The placement and compaction of structural fill should be observed by a representative from our office to verify that fill has been placed and compacted in accordance with the approved project plans and specifications.

It should be noted that the depth of excavation to competent soil at foundation footings and floor slab areas could be greater or less than anticipated depending on conditions encountered. Our test pits provide general information about subsurface soil and groundwater conditions.

Wet Weather Construction & Moisture Sensitive Soils:

Field observations and laboratory testing indicates that soil encountered at the site consists of moisture sensitive Silt and lean Clay. As such in an exposed condition moisture sensitive soil can become disturbed during normal construction activity, especially when in a wet or saturated condition. Once disturbed, in a wet condition, these soils will be unsuitable for support of foundations, floor slabs and pavements.

Therefore, where soil is exposed and will support new construction, care must be taken not to disturb their condition. If disturbed soil conditions develop, the affected soil must be removed and replaced with structural fill. The depth of removal will be dependent on the depth of disturbance developed during construction. Covering the excavated area with plastic and refraining from excavation activities during rainfall will minimize the disturbance and decrease the potential degradation of supportive soils.

Earthwork grading and foundation construction will be difficult during the wet winter and spring seasons. Based on this condition we suggest that grading and foundation construction be completed during the drier summer and fall seasons.

Foundations

Based on the encountered subsurface soil conditions, preliminary building design criteria, and assuming compliance with the preceding *Site Preparation and Grading* section, the proposed building may be supported on conventional shallow spread footings bearing entirely on six inches of compacted granular structural fill.

Individual spread footings or continuous wall footings providing support for the proposed commercial building and pump island canopy may be designed for a maximum allowable bearing value of two -thousand (2000) pounds per square foot (psf).

Footings for a one level structure should be at least twelve (12) inches in width. Footings for a two-level structure should be a minimum of fifteen (15) inches in width. In either case, all footings should extend to a depth of at least eighteen (18) inches below the lowest adjacent finished sub grade for lateral support and frost heave considerations.

Exhibit 9 APPEAL24-1001

These basic allowable bearing values are for dead plus live loads and may be increased one-third for combined dead, live, wind, and seismic forces. It is estimated that total and differential footing settlements for the relatively light building will be approximately one-half and one-quarter inches, respectively.

Lateral loads can be resisted by friction between the foundation and the supporting sub grade or by passive earth pressure acting on the buried portions of the foundation. For the latter, the foundations must be poured "neat" against the existing soil or back filled with a compacted fill meeting the requirements of structural fill.

- Passive Pressure = 300 pcf equivalent fluid weight
- Coefficient of Friction = 0.40

We recommend that all footing excavations be observed by a representative of Earth Engineering, Inc. prior to placing forms or rebar, to verify that sub grade support conditions are as anticipated in this report, and/or provide modifications in the design as required.

Slab on Grade

The sub-grade for all concrete floor slab areas should be compacted to a dense non-yielding condition prior to the placement of base rock. It is important to note that the existing sub-grade soil may become too wet to re-compact due to weather conditions. If supportive soils become saturated it may be necessary to remove the unsuitable material and replace it with imported granular structural fill.

Interior floor slabs should be provided with a minimum of six inches of compacted granular structural fill after compacting the sub-grade. In areas where moisture is undesirable, a vapor barrier such as a 8-mil plastic membrane should be placed beneath the slab.

Temporary Excavations

The following information is provided solely as a service to our client. Under no circumstances should this information be interpreted to mean that Earth Engineering Inc. is assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

In no case should excavation slopes be greater than the limits specified in local, state and federal safety regulations. Based on the information obtained from our field exploration and laboratory testing, the site soils expected to be encountered in excavations, very stiff to hard Silt would be classified as a Type "A" soil by OSHA guidelines.

Therefore, temporary excavations and cuts greater than four feet in height, should be sloped at an inclination no steeper than 3/4H:1V (horizontal:vertical) for type "A" soils. If slopes of this inclination, or flatter, cannot be constructed or if excavations greater than ten feet in depth are required, temporary shoring will be necessary.

Exhibit 9 APPEAL24-1001

Infiltration Testing

During August of 2023, infiltration testing was performed at two locations at four and one half and six feet below the existing ground surface. The approximate location of the infiltration tests are shown on the *Site Plan, Figure 2.*

Infiltration testing was conducted in general accordance with standard engineering practices The Encased Falling Head Test consists of driving a fifteen (15) inch long, six-inch diameter pipe six inches into the exposed ground surface at the bottom of the test pit. The pipe is filled with water as the soil around the bottom and below the pipe is saturated for several hours. The pipe is filled again, and the amount of time required for the water to fall, per inch, for six inches, is recorded. This step is performed a minimum of three times. The test results are averaged and calculated in inches per hour.

Testing yielded infiltration rates that ranged from 0.1 to 0.25 inches per hour. Based on these infiltration rates and the very stiff to hard soil conditions encountered, it is our opinion on-site soil is not conducive to infiltration. Alternative methods will need to be employed for stormwater control.

Site Drainage

The site should be graded so that surface water is directed off the site. Water should not be allowed to stand in any area where buildings or slabs are to be constructed. Loose surfaces should be sealed at the end of each workday by compacting the surface to reduce the potential for moisture infiltration into the soils. Final site grades should allow for drainage away from the building foundation. The ground should be sloped at a gradient of three percent for a distance of at least ten feet away from the buildings.

We recommend that a footing drain be installed around the perimeter of the building just below the invert of the footing with a gradient sufficient to initiate flow. Under no circumstances should the roof down spouts be connected to the footing drain system. We suggest that clean outs be installed at several accessible locations to allow for the periodic maintenance of the footing drain system. Details for the footing drain have been included on *Figure 3, Typical Footing Drain Detail.*

Utility Support and Back Fill

Based on the conditions encountered, the soil to be exposed by utility trenches should provide adequate support for utilities. Utility trench backfill is a concern in reducing the potential for settlement along utility alignments, particularly in pavement areas. It is also important that each section of utility line be adequately supported in the bedding material. The back fill material should be hand tamped to ensure support is provided around the pipe haunches.

Fill should be carefully placed and hand tamped to about twelve inches above the crown of the pipe before any compaction equipment is used. The remainder of the trench back fill should be placed in lifts having a loose thickness of ten inches.

Exhibit 9 APPEAL24-1001

A typical trench backfill section and compaction requirements for load supporting and non-load supporting areas is presented on *Figure 4, Utility Trench Backfill Detail.* Trench back fill may consist of imported granular fill provided the material is approved, placed and compacted near the optimum moisture content.

Imported granular material or on-site soil to be used as backfill should be submitted to our laboratory at least one week prior to construction so that we can provide a laboratory proctor for field density testing. If native soil is planned for use as backfill, additional testing may be required to determine the suitability of the material.

Pavements

The durability of pavements is related in part to the condition of the underlying sub grade. To provide a properly prepared sub grade for pavements, we recommend the sub grade be treated and prepared as described in the *Site Preparation and Grading* section of this report.

It is possible that some localized areas of soft, wet or unstable sub grade may still exist after this process. Before placement of any base rock, the sub grade should be compacted with suitable compaction equipment. Yielding areas that are identified should be excavated to firm material and replaced with compacted one and one quarter inch-minus clean-crushed rock. The following pavement sections are recommended for the proposed pavement areas:

- Entrance Driveway & Truck Turnaround - Four inches of Asphalt Concrete (AC) over ten inches of compacted Crushed Rock Base (CRB), over a geo-grid consisting of Tensar BX 1200 or equivalent.

- Parking Stalls for Automobiles - Three inches of Asphalt Concrete (AC) over eight inches of compacted Crushed Rock Base (CRB) material.

The geo-grid should be placed directly on the sub grade surface of the driveway prior to placement of base rock. Appropriate geo-textiles have been designed to increase the strength of the sub grade and extend pavement life.

Asphaltic Cement (AC) and Crushed Rock Base (CRB) materials should conform to WSDOT specifications. All base rock should be compacted to at least ninety-five percent (95 %) of the ASTM D1557-91 laboratory test standard.

We recommend that a minimum of eight inches of compacted CRB be placed below all exterior slabs. Exterior concrete slabs that are subject to vehicle traffic loads should be at five inches in thickness. It is also suggested that nominal reinforcement such as "6x6-10/10" welded wire mesh be installed, near midpoint, in new exterior concrete slabs and paving.

Exhibit 9 APPEAL24-1001

Additional Services & Earthwork Monitoring

Earth Engineering, Inc. will be available to provide consultation services related to review of the final design to verify that the recommendations within our purview have been properly interpreted and implemented in the approved construction plans and specifications. A representative from our office will be available to attend a pre-construction meeting to discuss and/or clarify all geotechnical issues related to the proposed project.

In addition, it is suggested that our office be retained to provide geotechnical services during construction to observe compliance with the design concepts and project specifications and to allow design changes in the event subsurface conditions differ from those anticipated. Our construction services would include monitoring and documenting the following:

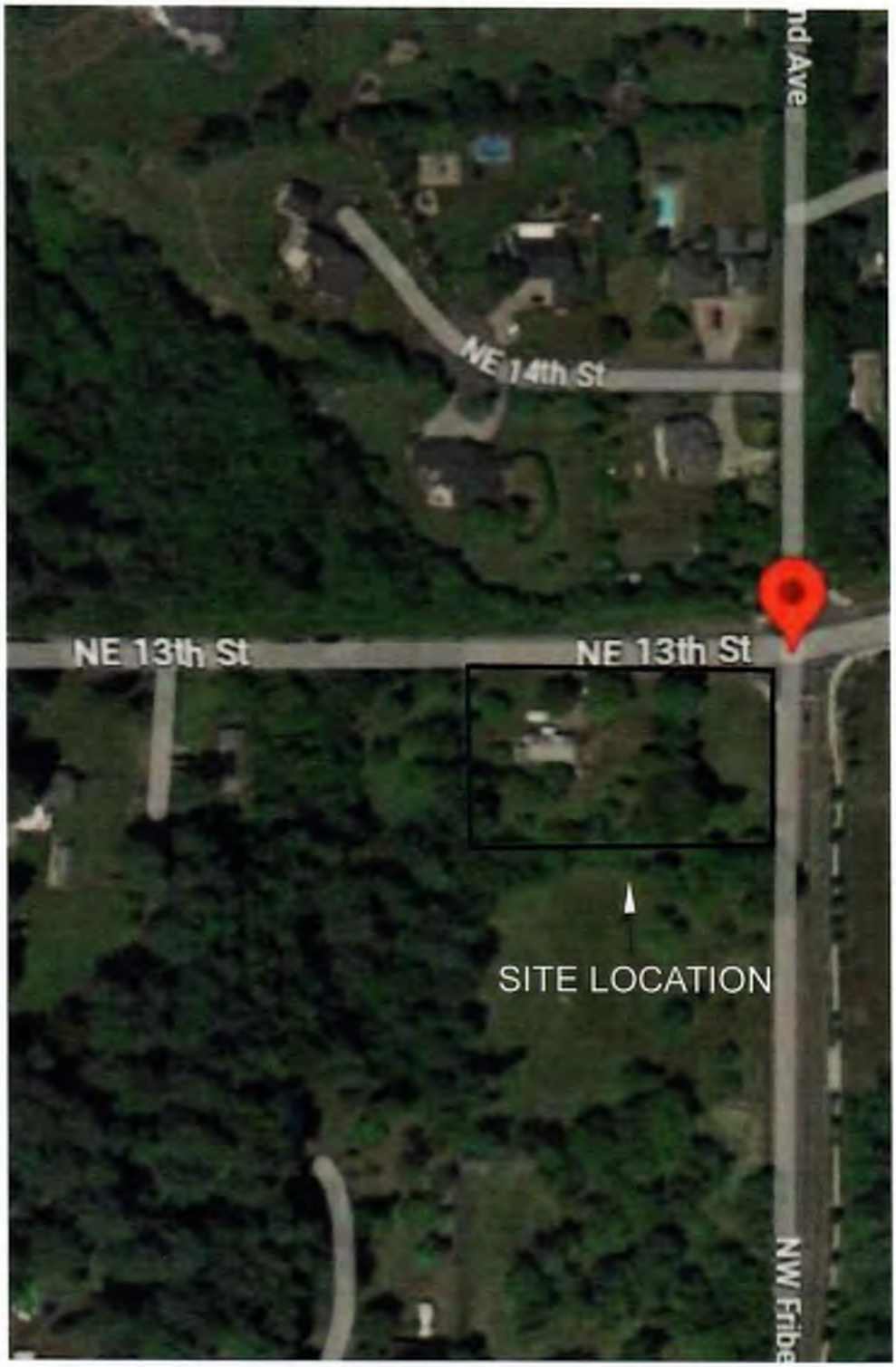
- Verify that site has been adequately stripped of organic materials.
- Observe the condition of exposed bearing soils at the building areas.
- Laboratory proctor tests for structural fill materials.
- Observe compaction and provide density testing of structural fill.
- Observe compaction and provide density testing of utility trench backfill.
- Provide footing inspection at the building & canopy footings to verify soil bearing capacity.
- Verify the installation of all building and site drainage elements.
- Provide density testing of the asphalt driveway and parking areas.

LIMITATIONS

Our recommendations and conclusions are based on the site materials observed, selective laboratory testing, engineering analyses, the design information provided to Earth Engineering, Inc. and our experience as well as engineering judgment. The conclusions and recommendations are professional opinions derived in a manner consistent with that level of care and skill ordinarily exercised by other members of the profession currently practicing under similar conditions in this area. No warranty is expressed or implied.

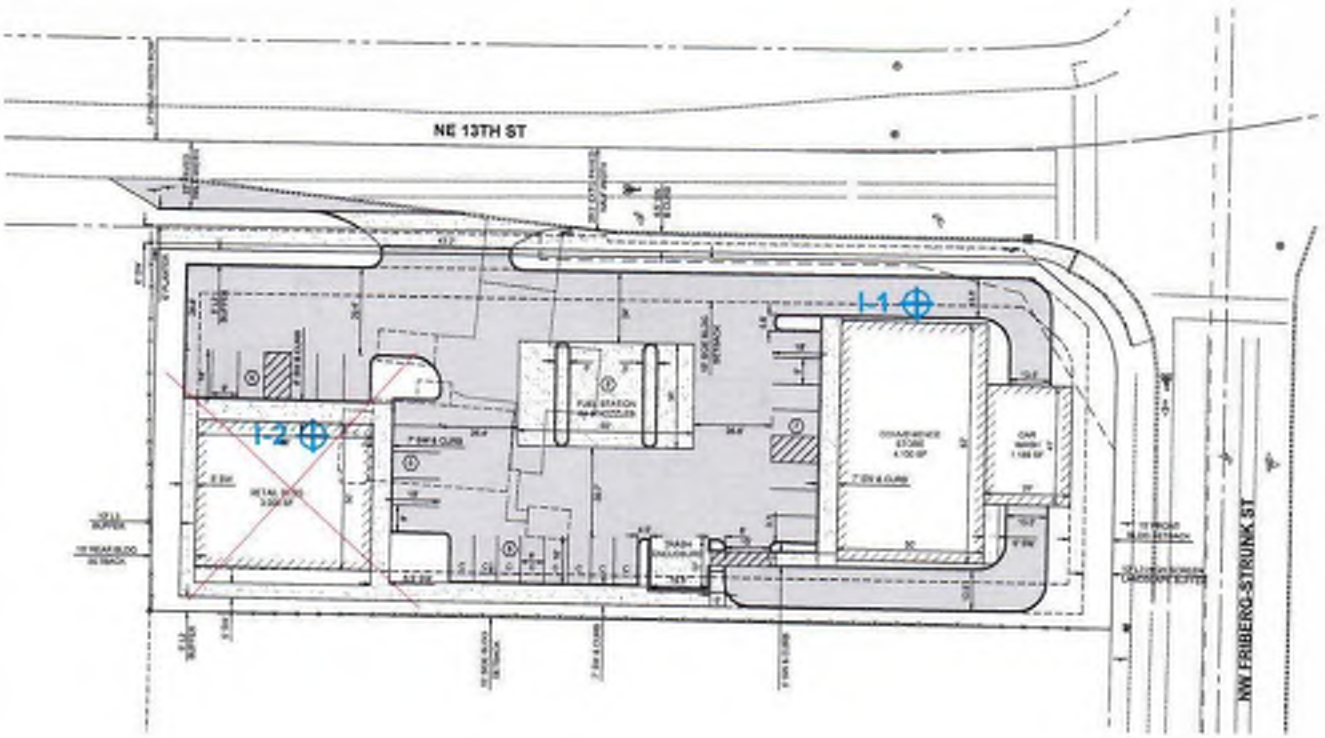
The recommendations submitted in this report are based upon the data obtained from the test pits. Soil and groundwater conditions may vary from those encountered. The nature and extent of variations may not become evident until construction. If variations do appear, Earth Engineering, Inc. should be requested to reevaluate the recommendations contained in this report and to modify or verify them in writing prior to proceeding with the proposed construction.

VICINITY MAP



Earth Engineering GEOTECHNICAL & ENVIRONMENTAL SERVICES	CLIENT: TAZ KHAN	DRAWN: EG
	PROJECT: 13TH STREET GAS STATION NE 13TH ST & NW FRIBERG-STRUNK ST CAMAS, WA	DATE: 09/2023
		FIGURE: 1
		PRO. #: G26-072

SITE PLAN

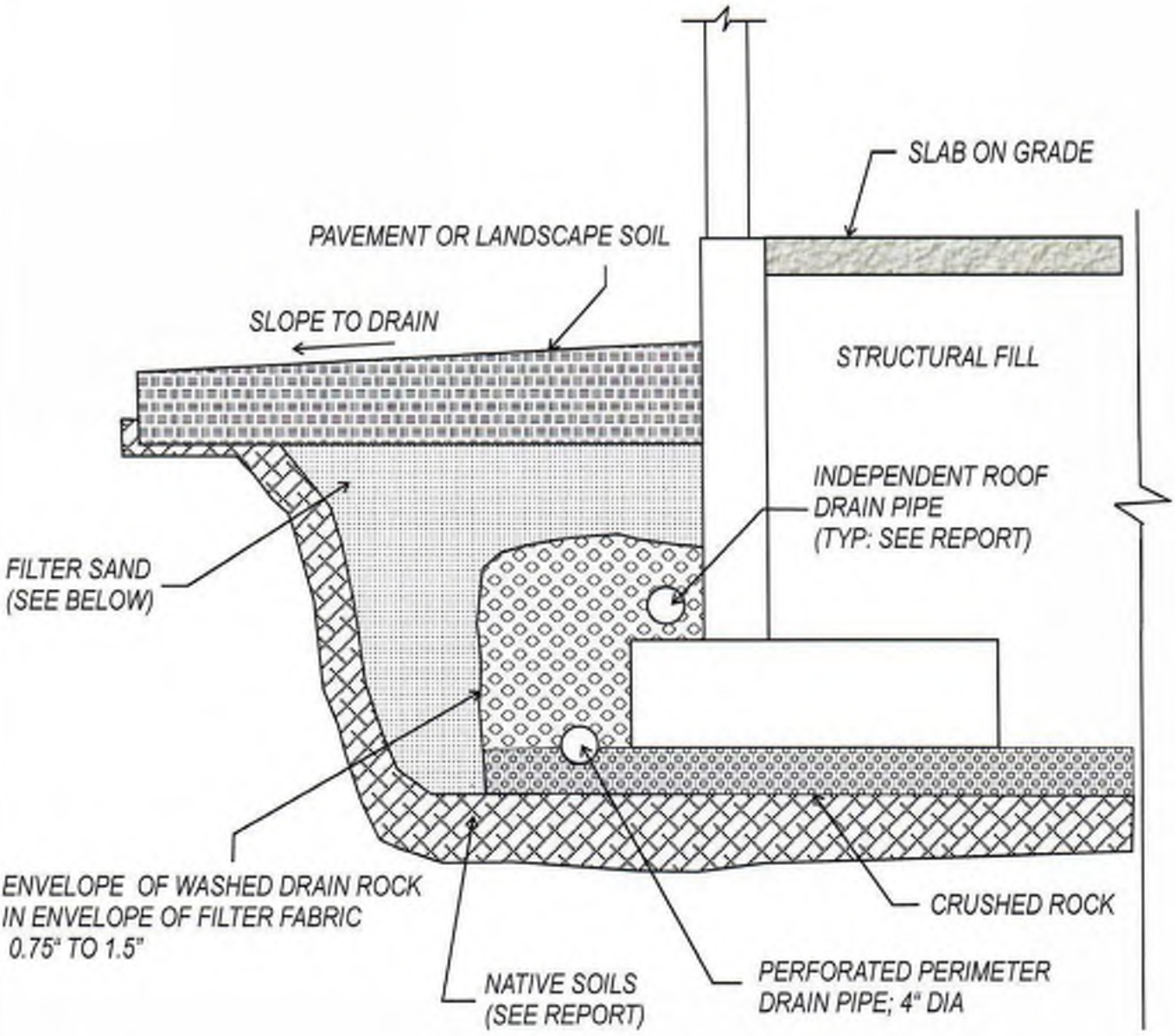


LEGEND

I-1 ⊕ Approximate Infiltration Test Location

NTS

Earth Engineering GEOTECHNICAL & ENVIRONMENTAL SERVICES	CLIENT: TAZ KHAN	DRAWN: EG	
	PROJECT: 13TH STREET GAS STATION NE 13TH ST & NW FRIBERG -STRUNK ST CAMAS, WA	DATE: 09/2023	
		FIGURE: 2	
		PRO. #: G26-072	



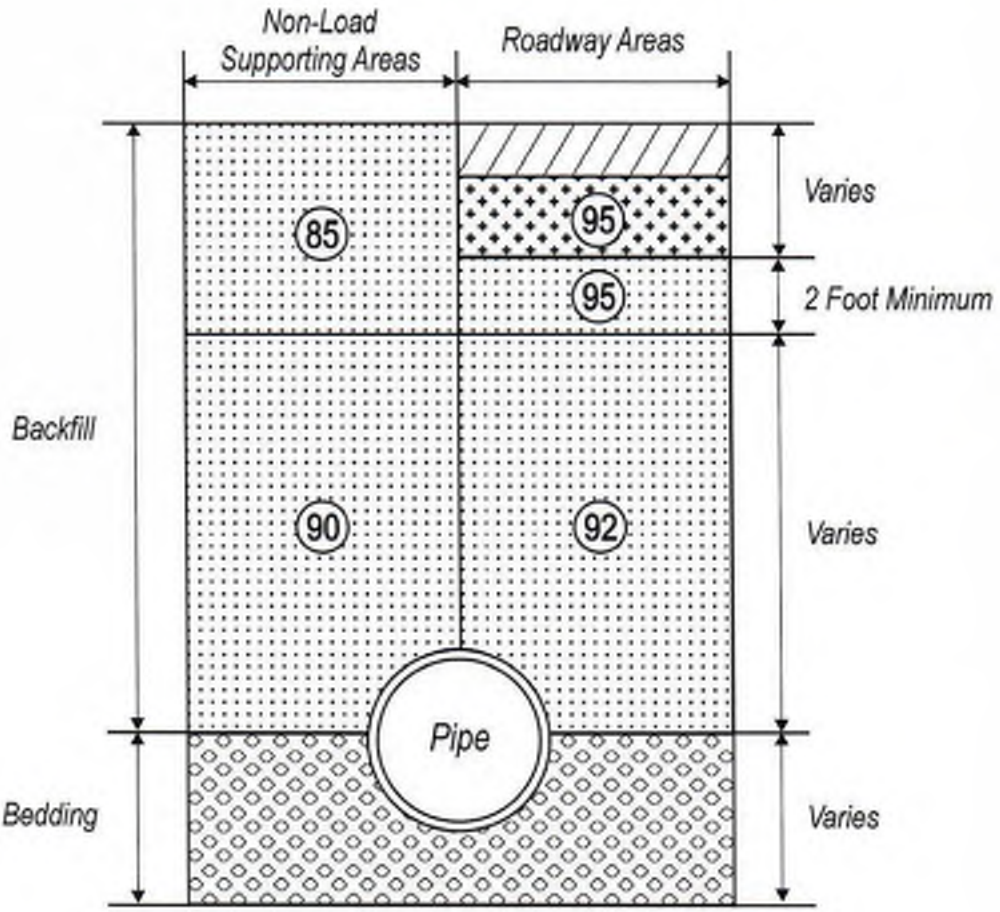
NOTES:

1. FILTER SAND - FINE AGGREGATE FOR PORTLAND CEMENT; SECTION 9=03.1(2)
2. PERFORATED OR SLOTTED RIGID PVC PIPE WITH A POSITIVE DRAINAGE GRADIENT
3. FILTER FABRIC OPTIONAL IF FILTER SAND USED

TYPICAL FOOTING DRAIN DETAIL

Not to Scale

Earth Engineering, Inc. GEOTECHNICAL & ENVIRONMENTAL SERVICES	CLIENT: 13TH STREET GAS STATION	DRAWN: DB
	PROJECT: COMMERCIAL BUILDING NE 13TH ST. & NW FRIBERG-STRUCK ST. VANCOUVER, WA	DATE: 07/2023
		FIGURE: 3
		PRO. #: G26-0723



LEGEND

Asphalt or Concrete Pavement

Roadway Base Material or Base Rock

Backfill: Compacted on-site soil or imported select fill material as described in the site preparation of the general Earthwork Section of the attached report text.

92 — Minimum percentage of maximum Laboratory Dry Density as determined by ASTM Test method D1557 (Modified Proctor),unless otherwise specified in the attached report text.

Bedding Material: Material type depends on type of pipe and laying conditions. Bedding should conform to the manufacturer's recommendations for the type of pipe selected.

UTILITY TRENCH BACKFILL DETAIL

Not to Scale

Earth Engineering, Inc. GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS	CLIENT: 13TH ST. GAS STATION	DRAWN: DB
	PROJECT: COMMERCIAL BUILDING NE 13TH ST. & NW FRIBERG-STRUNK CAMAS, WA	DATE: 07/2023
		FIGURE: 4
		PRO. #: G26-0723

APPENDIX A

(FIELD EXPLORATION)

FIELD EXPLORATION

Our field exploration was performed on August 4th 2023. Subsurface conditions at the site were explored by excavating two test pits. The test pits were excavated to a maximum depth of ten and one half (10.5) feet below the existing ground surface. The test pits were excavated using a track-hoe.

The test pits were located by pacing from property features. The locations are shown on the Site Plan, Figure 2. Field exploration was monitored by an Earth Engineering, Inc. representative, who classified the soils that we encountered and maintained a log of each test pit, obtained representative samples, and observed pertinent site features. Representative soil samples were placed in closed containers and returned to the laboratory for further examination and testing.

All samples were identified using the Standard Classification of Soils for Engineering Purposes (ASTM D2487-93) in accordance with the Unified Soil Classification System (USCS), which is presented on Plate A-1. The test pit log and boring logs are presented in Appendix A. The final log represents our interpretations of the field logs and the results of the laboratory tests on field samples.

UNIFIED SOIL CLASSIFICATION SYSTEM
LEGEND

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTION
Coarse Grained Soils	Gravel and Gravelly Soils More Than 50% Coarse Fraction Retained on No 4 Sieve	Clean Gravels (little or no fines)		GW gw	Well-Graded Gravels, Gravel-Sand Mixtures Little or no Fines
				GP gp	Poorly-Graded Gravels, Gravel-Sand Mixtures, Little or no Fines
		Gravels with Fines (appreciable amount of fines)		GM gm	Silty Gravels, Gravel-Sand-Silt Mixtures
				GC gc	Clayey Gravels, Gravel-Sand-Clay Mixtures
More Than 50% Material Larger Than No 200 Sieve Size	Sand and Sandy Soils More Than 50% Coarse Fraction Passing No 4 Sieve	Clean Sand (little or no fines)		SW sw	Well-graded Sands, Gravelly Sands Little or no Fines
				SP sp	Poorly-Graded Sands, Gravelly Sands Little or no Fines
		Sands with Fines (appreciable amount of fines)		SM sm	Silty Sands, Sand-Silt Mixtures
				SC sc	Clayey Sands, Sand-Clay Mixtures
Fine Grained Soils	Silts and Clays	Liquid Limit Less than 50		ML ml	Inorganic Silts and Very Fine Sands, Rock Flour, Silty-Clayey Fine Sands; Clayey Silts w/ slight Plasticity
				CL cl	Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean
				OL ol	Organic Silts and Organic Silty Clays of Low Plasticity
More Than 50% Material Smaller Than No 200 Sieve Size	Silts and Clays	Liquid Limit Greater than 50		MH mh	Inorganic Silts, Micaceous or Diatomaceous Fine Sand or Silty Soils
				CH ch	Inorganic Clays of High Plasticity, Fat Clays
				OH oh	Organic Clays of Medium to High Plasticity, Organic Silts
Highly Organic Soils				PT pt	Peat, Humus, Swamp Soils with High Organic Contents

Topsoil		Humus and Duff Layer
Fill		Highly Variable Constituents

Earth Engineering Inc.
GEOTECHNICAL & ENVIRONMENTAL SERVICES

CLIENT:	13TH STREET GAS STATION	DRAWN: DB
PROJECT:	COMMERCIAL BUILDING NE13TH ST. & NW FRIBERG-STRUNK ST. CAMAS, WA	DATE: 07/2023
		PLATE: A1
		PRO. #: G26-0723

LOG OF TEST PIT I-1

(Northeast)

ELEVATION: +/- 239 feet
EXPLORATORY EQUIPMENT: TRACK HOE
DATE: 08/04/2023

DEPTH IN FEET	SAMPLES	SOILS CLASSIFICATION	LITHOLOGY (USGS)	COLOR	MOISTURE	CONSISTENCY	MOISTURE CONTENT % OF DRY WEIGHT	PERCENT PASS NUMBER 200
1	•	6" Topsoil		Light Brown			14	-
2								
3								
4								
5	•	- Field infiltration rate of 0.25 inches per hour **Silt (ML)** **trace sand**			Damp to Wet	Very Stiff to Hard	18	-
6								
7								
8								
9				Grey Brown				
10	•	(Native)					26	-

Bottom of test pit at 10.5 feet below existing ground surface.
No groundwater encountered.

Earth Engineering, Inc.
GEOTECHNICAL & ENVIRONMENTAL SERVICES

CLIENT:	TAZ KHAN	DRAWN:	DB
PROJECT:	13TH ST GAS STATION NE 13TH ST & NW FRIBERG-STRUNK ST CAMAS, WA	DATE:	09/2023
		PLATE:	A-2
		PRO. #:	G26-0723

LOG OF TEST PIT I-2

(Central West)

ELEVATION: +/- 240 feet
EXPLORATORY EQUIPMENT: TRACK HOE
DATE: 08/04/2023

DEPTH IN FEET	SAMPLES	SOILS CLASSIFICATION	LITHOLOGY (USGS)	COLOR	MOISTURE	CONSISTENCY	MOISTURE CONTENT % OF DRY WEIGHT	PERCENT PASS NUMBER 200
1		8" Topsoil						
2	•						13	-
3		**Silt (ML)**		Light Brown to Dark Brown	Damp to Sat	Very Stiff to Hard		
4								
5								
6	•	- Field infiltration rate of 0.1 inches per hour					43	
7		(Native)						
8								
9		**lean Clay (CL)**		Light Brown Grey	Sat	Very Stiff to Hard		
10	•						38	-

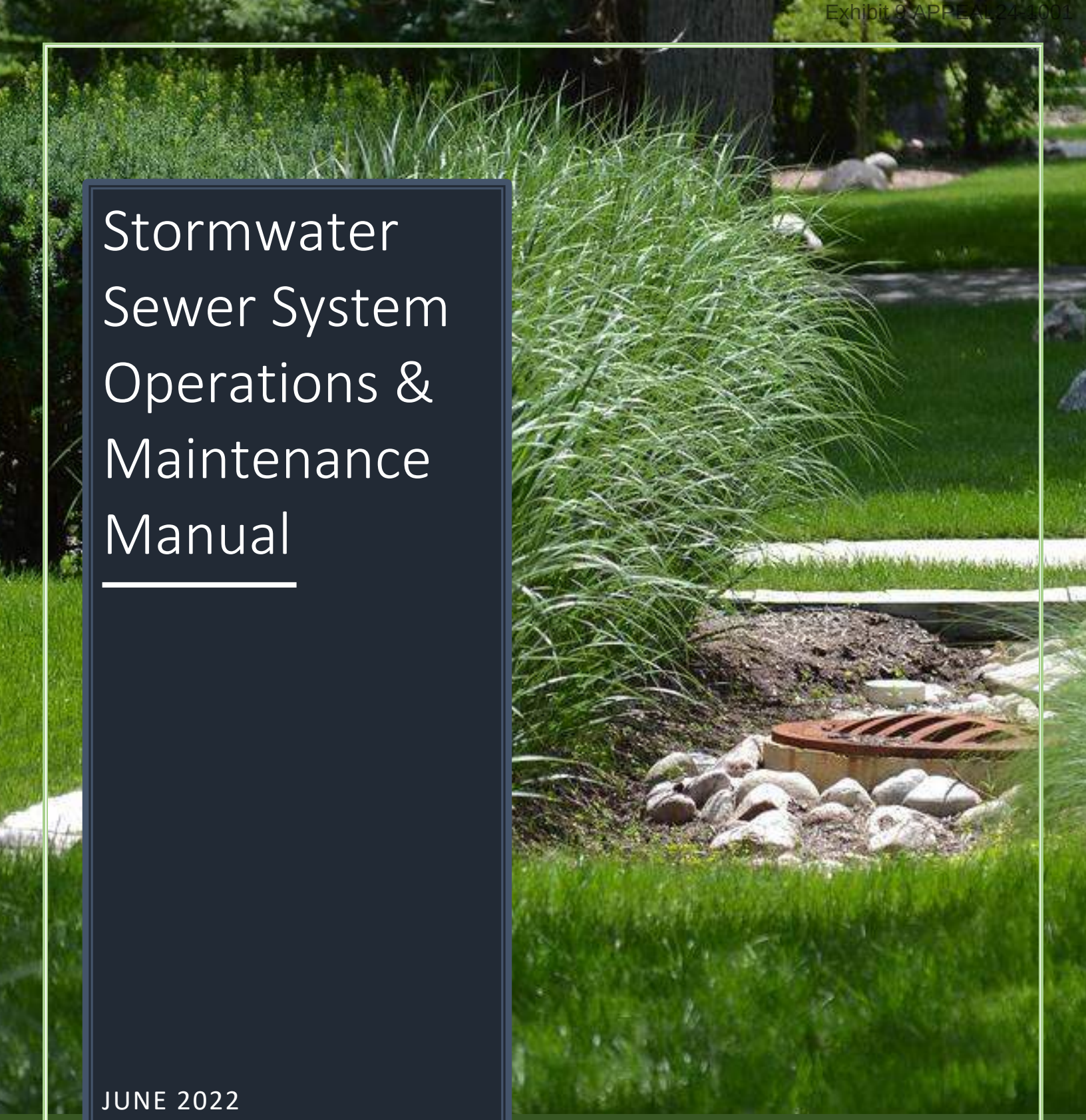
Bottom of test pit at 10.0 feet below existing ground surface.
No groundwater encountered.

Earth Engineering, Inc.
GEOTECHNICAL & ENVIRONMENTAL SERVICES

CLIENT:	TAZ KHAN	DRAWN:	DB
PROJECT:	13TH ST GAS STATION NE 13TH ST & NW FRIBERG-STRUNK ST CAMAS, WA	DATE:	09/2023
		PLATE:	A-3
		PRO. #:	G26-0723

APPENDIX D

Operations and Maintenance Manual



Stormwater Sewer System Operations & Maintenance Manual

JUNE 2022

City of Camas
Stormwater Division | Public Works

City of Camas WASHINGTON

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Introduction

Background

All public and privately owned, roads, parking lots, residential developments, commercial or industrial developments, or school facilities have various components that make up a storm system. These components consist of conveyance pipes, catch basins, manholes, roadside ditches, stormwater facilities (such as bioswales, detention ponds, wet ponds, treatment filters, etc.), landscaping and any other structure that collects, conveys, controls, and/or treats stormwater. Regardless of the component, all storm systems eventually discharge into 'waters of the state' which are streams, rivers, lakes, and wetlands.

Under the Federal Clean Water Act (FCWA) and in compliance with the Department of Ecology's NPDES Phase II Permit, 'waters of the state' are to be protected from contamination. This in turn protects threatened and endangered species under the Federal Endangered Species Act (FESA).

One way to protect 'waters of the state' is to provide the proper maintenance of all storm system components. It is the responsibility of the City of Camas (City) to ensure that all components of the public storm system be properly maintained and operated. The City is responsible for those components that are located within the City's right-of-way, such as the conveyance pipes, manholes, catch basins, roadside ditches, and stormwater facilities. A large part of the stormwater facilities in the City are privately owned and maintained by the property owners. These property owners include, but are not limited to, Homeowners Associations (HOAs), school district, businesses, and commercial/industrial site owners.

Purpose

This manual is intended to help, both public and private stormwater facility maintenance operators, meet the requirements of City Municipal Code 14.02.090 for proper maintenance and operation of the various storm system components. Proper maintenance will help to assure that:

- Stormwater facilities operate as they were designed;
- Storm systems are cleaned of the pollutants that they trap, such as sediment and oils, so that storm systems are not overwhelmed and become pollutant sources;
- Pollutant sources are removed, or minimized, prior to entering the storm system.

Along with keeping a site from flooding, properly maintained storm system can help reduce surface water and groundwater pollution. Most sites have some type of stormwater control component designed to limit the environmental and flooding damage caused by stormwater runoff. These components require more labor intensive maintenance than a system of pipes and catch basins.

Manual Layout

This manual is broken out into various best management practice (BMP) maintenance components. For each BMP maintenance component, this manual will:

- Briefly describe the component type, e.g. facility or activity.
- Describes potential maintenance issues and/or problems.
- Describes conditions when maintenance is required.
- Minimum performance standards and suggested maintenance methods.

Additional information may be found in other manuals, such as the Washington Department of Ecology's *Stormwater Management Manual for Western Washington (SWMMWW), Vols. V*, and Ecology's LID manual.

Inspection of a stormwater facility will determine if conditions require a maintenance action. The maintenance standard is not the required condition at all times. Exceeding a condition, between inspections and/or maintenance, does not automatically constitute a violation of these standards. The inspection and maintenance schedules should be adjusted to minimize the length of time that a facility is in a condition that requires maintenance.

Emergent Treatment Technologies

Some stormwater treatment facilities are designed and installed with emerging technologies that are not standard at the time of their installation. If not found in this manual, a treatment facility may be an emerging technology approved by Washington Department of Ecology; the maintenance standards can be found at Emerging Stormwater Treatment Technologies.

Mosquito Control

Mosquitoes are annoying and sometimes pose a serious risk to public health. They can transmit diseases such as West Nile Virus and equine encephalitis. Above-ground stormwater facilities should be designed to allow water to flow through or infiltrate in less than 48 hours. Presence of mosquitos in a stormwater facility may indicate a clogged outlet, compromised infiltration capacity, or other defect that should trigger inspection and may require maintenance.

If mosquitos are identified during a stormwater facility maintenance or inspection and are a concern, a request to the Clark County Mosquito Control District for service or information regarding mosquito control can be made online at Mosquito Control District or at the 24-hour request line, 360-397-8430.

Material Disposal and Spills

The disposal of waste, e.g. sediment or standing water, from the maintenance of the stormwater facilities and storm system components shall be conducted in accordance with federal, state, and local regulations, including the Solid Waste Handling Standards chapter 173-350 WAC, Minimum Functional Standards for Solid

Waste Handling chapter 173-304 WAC and Appendix IV-B: Management of Street Waste Solids and Liquids of the SWMMWW. Dangerous waste must be handled following, Dangerous Waste Regulations chapter 173-303 WAC. Vegetation to be recycled and disposed of at local receptacle locations.

For major spills, coordinate removal/cleanup with the City at 360-817-1563 and notify Department of Ecology at 360-407-6300.

Vegetated Facilities

Biofiltration Swale

Biofiltration swales use grass or other dense vegetation to filter sediment and oily materials out of stormwater. Usually, they look like flat-bottomed channels with grass growing in them. As water passes through the vegetation, pollutants are removed through the effects of filtration, infiltration and settling.

See SWMMWW Appendix V-A, Table V-A.8 for biofiltration swale maintenance standards. If available, reference record drawings for seed mix and groundcover replacements, or see SWMMWW BMP T9.10, Tables V-7.3 and V-7.4. Presence of cattails is a sign that that there is water ponding and the facility is not functioning as design. Cattails will need to be removed and further investigation may be required.

Wet Biofiltration Swale

A wet biofiltration swale is a variation of basic biofiltration swale for use where the centerline slope is slight, groundwater table are high, or a continuous low base flow is likely to result in wet soil conditions for long periods of time. Where continuously wet soil exceeds about 2 weeks, typically grasses will die. Thus, vegetation specifically adapted to wet soil conditions is needed. Different vegetation requires modification of several of the design and maintenance requirements from the basic biofiltration swale.

See SWMMWW Appendix V-A, Table V-A.9 for wet biofiltration swale maintenance standards. If available, reference record drawings for seed mix and groundcover replacements, or see SWMMWW BMP T9.20, Table V-7.5. Removal of cattail is required when vegetation is crowded out by very dense clumps of cattails, prevents water flow, or alters the designed functionality.

Filter Strip

Filter strips are linear strips of grass that remove sediment and oils from stormwater by filtering it. Stormwater is treated as it sheet flows across the filter strip. Usually, filter strips are placed along the edge of linear paved areas, such as parking lots and roads. Where designed filter strips are installed; road shoulders should only be graded to maintain level flow off the road.

See SWMMWW Appendix V-A, Table V-A.10 for filter strip maintenance standards. If available, reference record drawings for seed mix replacement, or see SWMMWW BMP T9.10, Table V-7.3.

Detention Pond

Detention pond facilities are designed to hold and slowly release stormwater by use of a pond with a specially designed control structure. Styles vary greatly from well-manicured to natural appearing. Generally, native vegetation is preferred for reduced maintenance and enhance wildlife habitat. Some facilities are designed to appear as natural water bodies or are in a park-like setting.

See SWMMWW Appendix V-A, Table V-A.1 for detention pond maintenance standards. If available, reference record drawings for seed mix replacement, or see SWMMWW BMP D.1, Table V-12.3. Removal of cattail is required when vegetation is crowded out by very dense clumps of cattails, prevents water flow, or alters the designed functionality.

Wet Pond

A wet pond is an open basin that retains a permanent pool of water year-round or only during the wet season. The volume of the wet pond allows sediment and other pollutants to settle out of the runoff. Wetland vegetation is typically planted within the wet pond to provide additional treatment through nutrient removal. Detention quantity control can be provided with additional temporary storage volume above the permanent pool elevation.

See SWMMWW Appendix V-A, Table V-A.11 for wet pond maintenance standards. If available, reference record drawings for seed mix and plants replacement, or see SWMMWW BMP D.1, Table V-12.3 for seed mix and BMP T10.10, Table V-8.1 for plants. Removal of cattail is required when vegetation is crowded out by very dense clumps of cattails, prevents water flow, or alters the designed functionality.

Infiltration Facility

Infiltration facilities dispose of water by holding it in an area where it can soak into the ground. These are open facilities that may either drain rapidly and have grass bases or have perpetual ponds where water levels rise and fall with stormwater flows. Infiltration facilities may be designed to handle all of the runoff from an area or they may overflow and bypass larger storms.

Since the facility is designed to pass water into the ground, generally after passing through a sediment trap/manhole, anything that can cause the base to clog will reduce the performance and is a large concern. Generally, infiltration basins are managed like detention ponds, but with greater emphasis on maintaining the capacity to infiltrate stormwater.

See SWMMWW Appendix V-A, Table V-A.2 for infiltration facility maintenance standards. If available, reference record drawings for seed mix replacement, or see SWMMWW BMP D.1, Table V-12.3. Removal of cattail is required when vegetation is crowded out by very dense clumps of cattails, prevents water flow, or alters the designed functionality.

Rain Garden

Rain gardens are non-engineered, shallow, landscaped depressions with compost-amended soils and adapted plants. The depression temporarily stores stormwater runoff from adjacent areas. Some or all the influent stormwater passes through the amended soil profile and into the underlying native soil. Stormwater that exceeds the storage capacity is designed to overflow to an adjacent drainage system.

If available, reference record drawings for plant replacements, or see Rain Garden Handbook for Western Washington, Appendix A for recommendation on rain garden plants. Presence of cattails is a sign that that there is water ponding and the facility is not functioning as design. Cattails will need to be removed and further investigation may be required.

Rain Garden			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
General	Trash and Debris	Evidence of trash and debris	Remove trash and debris
Side slopes	Erosion	Persistent soil erosion on slopes	Replenish mulch areas throughout rain garden - on the sides and bottom of the rain garden and around the perimeter (and on berm if applicable).
Bottom area	Sediment	Visible sediment that reduces drainage rate	Remove sediment accumulation
		Sediment deposited from water entering the rain garden	Remove sediment, determine the source, and stabilize area
	Leaves	Matted accumulation of leaves reducing drainage rate	Remove leaves
Ponded water	Ponding	Ponded water remains for more than 3 days after the end of a storm	Remove sediment, leaf litter and/or debris accumulation
Pipe inlet/outlet	Pipe	Water is backing up in pipe	Clear pipes of sediment and debris with snake and/or flush with water
		Damaged or cracked drain pipes	Repair or seal cracks, or replace as needed
Inlet rock pad	Erosion	Rock or cobble is removed, missing and flow is eroding soil.	Replace rock and reestablish pad
Weeds	Weeds	Weeds are present	Remove weeds and apply mulch after weeding
Vegetation	Dying Vegetation	Dying, dead or unhealthy plants	Remove diseased plants or plant parts and dispose, then replace
	Sight Distance	Vegetation reduces sight distances and sidewalk	Keep sidewalks and sight distances on roadways clear
	Blockage	Vegetation is crowding inlets and outlets	Remove vegetation crowding inlets and outlets
	Poor Vegetation Growth	Yellowing, poor growth, poor flowering, spotting or curled leaves, weak roofs, or stems	Test soil to identify specific nutrient deficiencies.
			Do not use synthetic fertilizers
			Consider selecting different plant for soil conditions
Mulch	Bare Soil	Bare spots are present or mulch depth less than 2 inches	Supplement mulch with hand tools to a depth of 2 to 3 inches, keep mulch away from woody stems.

Bioretention

Bioretention facilities are engineered facilities that store and treat stormwater by filtering it through a specified soil profile. Water that enters the facility ponds in an earthen depression or other basin (e.g., concrete planter) before it infiltrates into the underlaying bioretention soil. Stormwater that exceeds the surface storage capacity overflow to an adjacent drainage system. Treated water is either infiltrated into the underlying native soil or collected by an underdrain and discharged. An underdrain system can be comprised of perforated or slotted pipe, wrapped in an aggregate blanket.

See SWMMWW Appendix V-A, Table V-A.21 for bioretention maintenance standards. If available, reference record drawings for plant replacements, or see LID Technical Guidance Manual for Puget Sound, Appendix 1 for plant recommendations. Presence of cattails is a sign that that there is water ponding and the facility is not functioning as design. Cattails will need to be removed and further investigation may be required.

Conveyance Ditch

Ditches are often manmade open-channels that convey stormwater runoff. These ditches are maintained to prevent localized flooding.

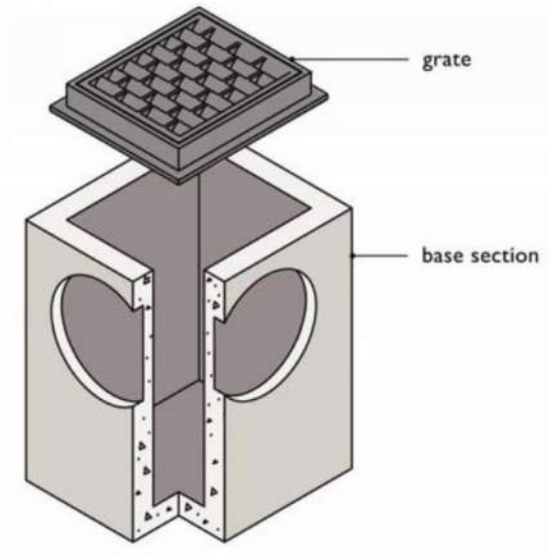
Conveyance Ditch			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
General	Sediment	Sediment exceeds 20% of ditch depth or affects the historic or designed hydraulic capacity.	Remove sediment deposits. When finished, ditch should be level from side to side and drain freely in intended direction.
	Standing Water	Excessive standing water in ditch between storms due to ditch not draining freely	If possible, repair cause of poor drainage. This may include but is not limited to the following activities: remove sediment or trash blockages, improve grade of ditch.
	Eroded or Unstable Side Slopes	When grass is sparse, bare or eroded, patches occur in more than 20% of the ditch	Determine why grass growth is poor and correct that condition. Replant with plugs of grass at eight-inch intervals or reseed. If cause is excessive moisture replace grass with wetland plantings.
	Vegetation	Grass is excessively tall (greater than 15 inches). Nuisance weeds and other vegetation start to take over ditch.	Mow vegetation and/or remove nuisance vegetation so that flow is not impeded. Grass should be mowed to a height of 3 to 4 inches.
	Bare Soil	Poor vegetation coverage.	Reseed poor vegetation areas. Reference "Low Grow" seed mix, see SWMMWW BMP C120 Table II-3.4
	Inlet/Outlet Pipes or Culverts	Inlet/outlet area clogged with sediment and/or debris	Remove material so that there is no clogging or blockage in the inlet and outlet area
	Trash and Debris	Any trash and debris which exceed 1 cubic feet per 1,000 square feet. In general, there should be no visual evidence of dumping.	Remove trash and debris from ditch.
	Erosion/Scouring	Eroded or scoured ditch bottom	Permanently stabilize ditch bottom

Stormwater Structures

Catch Basin

A catch basin is an underground concrete structure with a slotted grate that collects stormwater runoff and route it through the underground pipes. Catch basins typically provide a sump below the outlet pipe to allow sediment and debris to settle out of the stormwater runoff. Some catch basins are fitted with a spill control device such as an inverted elbow on the outlet pipe to control grease or oils. The most common tool for cleaning catch basins is a vactor truck which is used to remove sediment and debris from the sump. The sediment and oils if not removed from the catch basins have the potential to pollute downstream waterbodies. Unless you have Occupational Safety and Health Administration (OSHA) approved confined space training and equipment, never enter a catch basin. There is a considerable risk of poisonous gas and injury.

See SWMMWW Appendix V-A, Table V-A.5 for catch basin maintenance standards.



Field/Ditch Inlet

An inlet is a concrete, plastic or steel structure fitted with a slotted grate to collect stormwater runoff and route through underground pipes. A field inlet has a flat grate, and a ditch inlet has an angled grate. These inlets typically provide a sump below the outlet pipe to allow sediment and debris to settle out of the stormwater runoff. Some of these inlets are fitted with a spill control device such as an inverted elbow on the outlet pipe to control grease or oils. The most common tool for cleaning out the inlet is a vactor truck which is used to remove sediment and debris from the sump. The sediment and oils if not removed from the inlet has the potential to pollute downstream water bodies. Unless you have OSHA approved confined space training and equipment, never enter an inlet. There is a considerable risk of poisonous gas and injury.

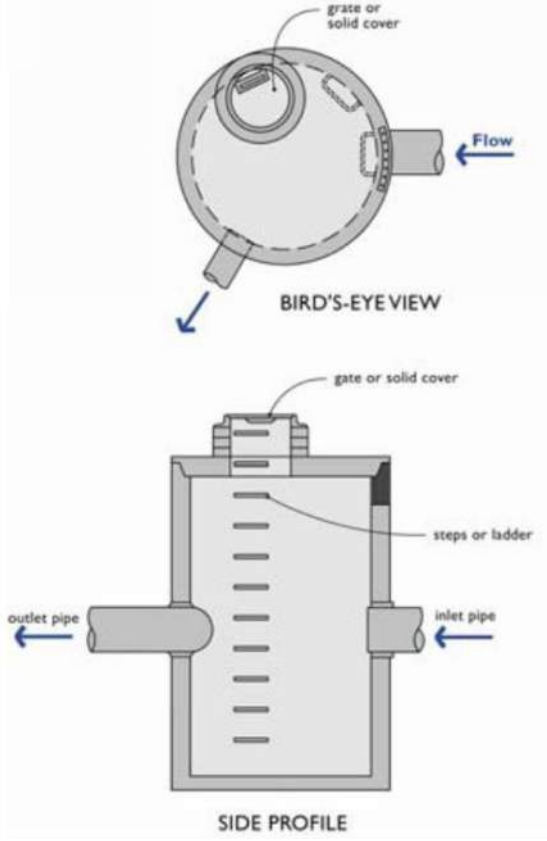
Field Inlet

Ditch Inlet

Field Inlet/Ditch Inlet			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
General	Trash & Debris	Trash or debris blocking inletting capacity by more than 10%.	Remove trash or debris blocking grate opening.
		Dead animals or vegetation that could generate odors that could cause complaints or dangerous gases (e.g., methane).	Remove dead animals or vegetation present within the field/ditch inlet.
	Sediment	Sediment has accumulated to within six inches of the invert of the lowest pipe	Remove sediment
	Structure Damage to Frame and/or Top Slab	Top slab has holes larger than 2 square inches or cracks wider than 1/4 inch.	Repair top slab to be free of holes and cracks.
		Frame not sitting flush on top slab, i.e., separation of more than 3/4 inch of the frame from the top slab. Frame not securely attached	Make adjustments so that frame is sitting flush on the riser rings or top slab and is firmly attached.
	Fractures or Cracks in Field Inlet Walls/Bottom	Grout fillet has separated or cracked wider than 1/2 inch and longer than 1 foot at the joint of any inlet/outlet pipe or any evidence of soil particles entering catch basin through cracks.	Regrout pipe and secure at field inlet wall.
	Settlement/ Misalignment	If failure of field inlet has created a safety, function, or design problem.	Replace or repair field inlet to design standards.
	Vegetation	Vegetation growing across and blocking more than 10% of the inlet opening.	Remove vegetation blockage from basin opening.
	Contamination and Pollution	Any evidence of oil, gasoline, contaminants, or other pollutants	Identify and remove source. Notify City at (360) 817-1567.
Metal Grates	Grate Not in Place	Grate is missing or only partially in place. Any open field inlet requires maintenance.	Replace missing grate, cover field inlet
	Grate opening Unsafe	Grate with opening wider than 7/8 inch.	Repair grate opening
	Damaged or Missing.	Grate missing or broken member(s) of the grate.	Replace missing grate or repair broken member(s)

Manhole

Manholes are large cylindrical underground structures usually set at storm sewer pipe connections. Manholes are used in storm sewer system at any change in direction, slope, pipe material or pipe size. Some manholes have sumps and fitted with stormwater flow control structures such as orifices or weirs. Unless you have OSHA approved confined space training and equipment, never enter a manhole. There is a considerable risk of poisonous gas and injury.

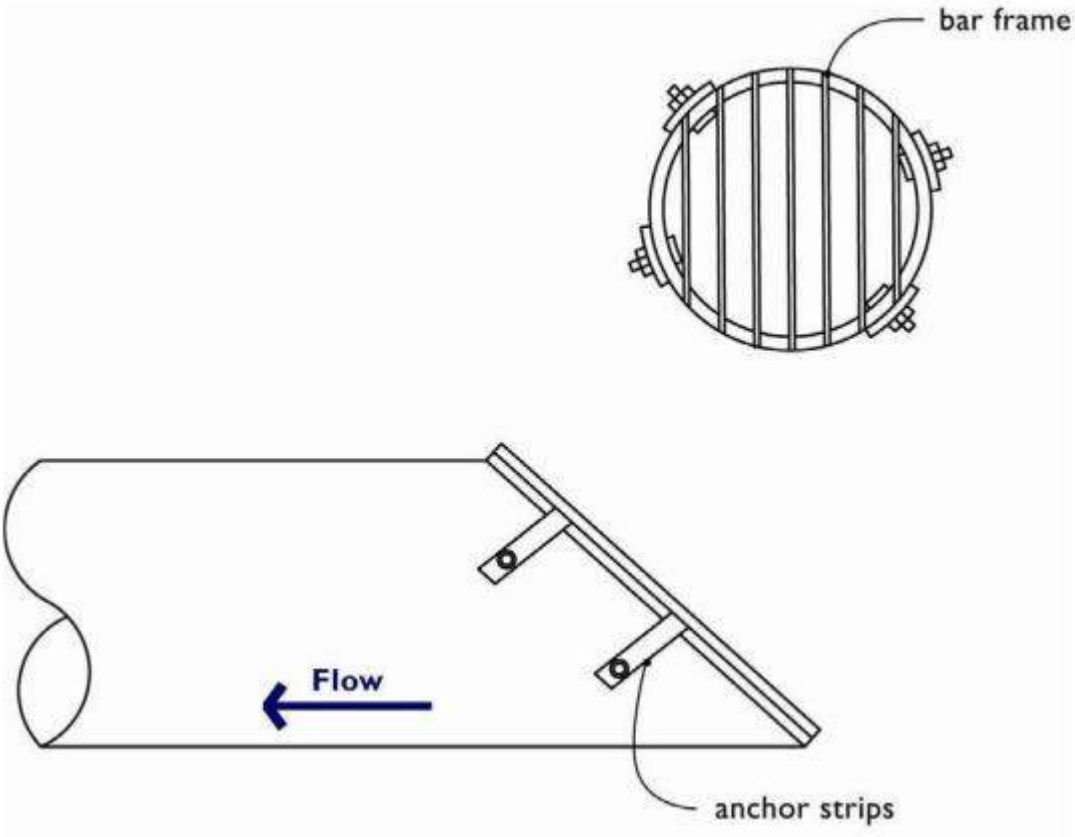


Manhole			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
General	Trash and Debris	Trash or debris has accumulated to within six inches of the invert of the lowest pipe.	Remove all trash or debris from manhole.
		Trash or debris in any inlet or outlet pipe blocking more than 1/3 of its height.	Remove trash or debris from inlet and outlet pipes.
	Sediment	Sediment has accumulated to within six inches of the invert of the lowest pipe.	Remove all sediment from manhole
	Structure Damage to Frame and/or Top Slab	Top slab has holes larger than 2 square inches or cracks wider than 1/4 inch.	Repair top slab to be free of holes and cracks.
		Frame not sitting flush on top slab, i.e., separation of more than 3/4 inch of the frame from the top slab. Frame not securely attached	Make adjustments so that frame is sitting flush on the riser rings or top slab and is firmly attached.
	Fractures or Cracks in Manhole Walls/Bottom	Grout fillet has separated or cracked wider than 1/2 inch and longer than 1 foot at the joint of any inlet/outlet pipe or any evidence of soil particles entering manhole through cracks.	Regrout pipe and secure at manhole wall.
	Settlement/ Misalignment	If failure of manhole has created a safety, function, or design problem.	Replace or repair manhole to design standards.
Cover	Cover Not in Place	Cover is missing or only partially in place. Any open manhole requires maintenance.	Replace missing cover, cover manhole.
	Locking Mechanism Not Working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than 1/2 inch of thread.	Repair opening mechanism
	Cover Difficult to Remove	One maintenance person cannot remove lid after applying normal lifting pressure.	Make adjustments so that one maintenance person can remove the manhole cover.
Ladder	Ladder Rungs Unsafe	Ladder is unsafe due to missing rungs, not securely attached to basin wall, misalignment, rust, cracks, or sharp edges.	Repair or replace ladder to meet design standards and allow maintenance person safe access.
Control Structure/Flow Restrictor	See Control Structure/Flow Restrictor		

Debris Barrier

Debris barriers and trash racks are barred covers to pipe openings. They prevent large objects from entering pipes and keeps pets and people out of the pipes as well.

See SWMMWW Appendix V-A, Table V-A.6 for debris barrier maintenance standards.



Profile View

Sediment Trap

A sediment trap is a concrete structure typically fitted with slotted grate or multiple slotted grates. The concrete structure provides a storage volume (sump) below the outlet pipe to allow sediment and debris to settle out of the stormwater runoff. A sediment trap can be a fully enclosed concrete structure (above or below ground) with a sump, inlet pipe(s) and outlet pipe.

Sediment Trap			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
General	Trash and Debris	Trash and debris which is located immediately in front of the sediment trap opening or is blocking the inlet capacity of the basin by more than 10%	Remove trash and debris
		Dead animals or vegetation that could generate odors that could cause complaints or dangerous gases (e.g., methane).	Remove dead animals or vegetation present within the sediment trap.
	Sediment (non-enclosed structure)	Sediment depth exceeds 2 inches.	Remove sediment
	Sediment (enclosed structure)	Sediment depth within 6 inches from lowest invert	Remove sediment
	Fractures or Cracks in Sediment Trap	Grout fillet has separated or cracked wider than 1/2 inch and longer than 1 foot at the joint of any inlet/outlet pipe or any evidence of soil particles entering sediment trap through cracks.	Regrout pipe and secure at sediment trap wall.
	Settlement/ Misalignment	If failure of sediment trap has created a safety, function, or design problem.	Replace or repair sediment trap to design standards.
	Vegetation	Vegetation growing across and blocking more than 10% of the sediment trap opening	Remove vegetation
	Contaminants and Pollution	Any evidence of oil, gasoline, contaminants, or other pollutants	Remove contaminants and/or pollutants. (Coordinate removal/cleanup with local water quality response agency)
Slotted Grate	Trash and Debris	Trash and debris that is blocking more than 20% of the grate surface inlet capacity	Remove trash and debris from grate
	Damaged or Missing Grate	Grate missing or broken member(s) of the grate	Replace or repair grate to design standards.
Cover (enclosed structure)	Cover Not in Place	Cover is missing or only partially in place.	Replace missing cover
	Cover Difficult to Remove	One maintenance person cannot remove lid after applying normal lifting pressure or latch broken	Make adjustments so that one maintenance person can remove the cover and/or repair broken latch.

Energy Dissipater

Energy dissipaters are critical for preventing erosion at storm drain outfalls. There are a variety of designs, including wire gabion baskets, rock splash pads, trenches, and specially designed pools or manholes. They are installed on or near the inlet or outlet to a closed pipe system to prevent erosion at these locations.

See SWMMWW Appendix V-A, Table V-A.7 for energy dissipater maintenance standards.

Discharge Point

Stormwater facility discharge points may convey drainage from the stormwater facility into open channels, ditches, ponds, wetlands, streams, or lakes. Stormwater facility discharge points need to be assessed to make sure stormwater is not causing any negative impacts to these drainage areas.

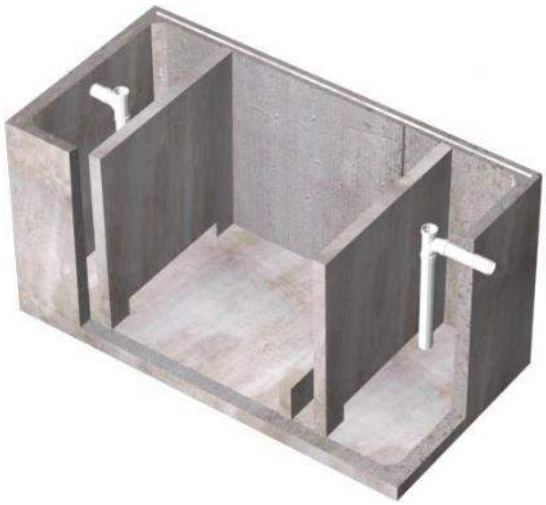
Discharge Point			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
Monitoring	Contaminants and Pollution	Any evidence of oil, gasoline, sewage, contaminants, or other pollutants	Identify and remove source. The effluent discharge should be clear and free of odor. Notify City at (360) 817-1567.
	Ditch or Stream Banks Eroding	Erosion, scouring, or head cuts in ditch or stream banks downstream of facility discharge point due to flow channelization or higher flows.	Stabilize ditch or stream banks. Report to City for engineer evaluation.
General	Missing or Moved Rock	Only one layer of rock exists above native soil in an area five square feet or larger, or any exposure of native soil	Replace or repair rock pad to design standards
	Erosion	Soil erosion in or adjacent to rock pad	Replace or repair rock pad to design standards
	Sediment	Sediment blocking 20% of the pipe diameter	Remove sediment
	Obstructions	Roots or debris enters pipe or deforms pipe, reducing flow	Remove roots from pipe by mechanical methods; do not use root-dissolving chemicals in storm sewer pipes. If necessary, remove vegetation over the line.
	Pipe Rusted or Deteriorated	Any part of the piping that is crushed or deformed excessively or any other failure to the piping	Repair or replace pipe
Energy Dissipater	See Energy Dissipater		

Oil/Water Separators

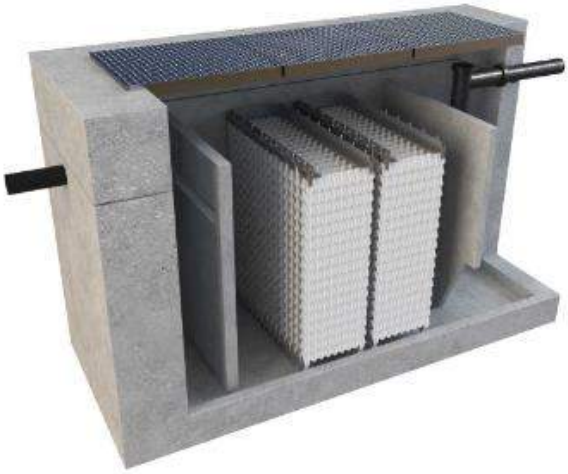
An oil/water separator is an underground vault that treats stormwater by mechanically separating oil from water. The oil rises to the surface and floats on the water and sediment settles to the bottom. Oil/water separators are typically utilized in locations where high oil concentrations in the stormwater runoff are anticipated (e.g., service and fuel stations). Oil/water separators are most commonly used as the first pretreatment facility in a series of stormwater management facilities.

These facilities have special problems for maintenance and should be serviced by contractors. The main issues are working in confined spaces and properly handling any sludge and oil cleaned from vaults or oil/water separators. Manufacturer's recommendations for maintenance should be followed at a minimum.

See SWMMWW Appendix V-A, Table V-A.16 for baffle oil/water separator maintenance standards and Table V-A.17 for coalescing plate oil/water separator maintenance standards.



Baffle Oil/Water Separator

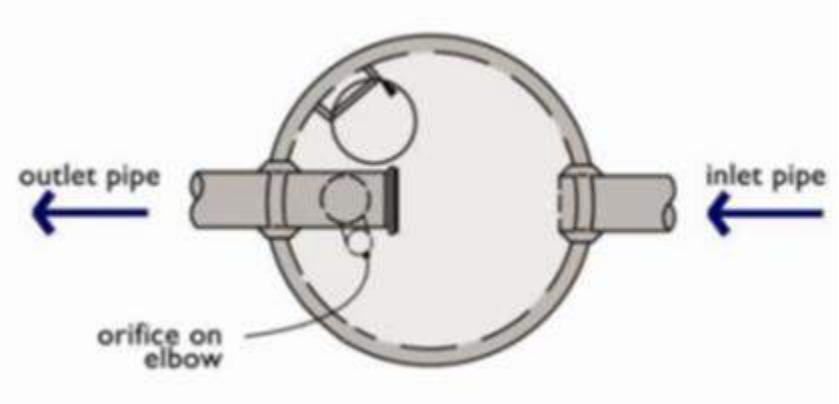


Coalescing Plate Oil/Water Separator

Flow Control Structures/Flow Restrictors

Flow control structures and flow restrictors direct or restrict flow in or out of facility components. Outflow controls on detention facilities are a common example where flow control structures slowly release stormwater at a specific rate. The flow is regulated by a combination of orifices (holes with specifically sized diameters) and weirs (plates with rectangular or 'V' shaped notch). Lack of maintenance of the control structure can result in the plugging of an orifice. If these flow controls are damaged, plugged, bypassed, or not working properly, the facility could overtop or release water too quickly.

See SWMMWW Appendix V-A, Table V-A.4 for control structure/flow restrictor maintenance standards.



Plan View

Storm Sewer Pipe

Storm sewer pipes convey stormwater. Storm pipes are constructed of many different types of materials and are sometimes perforated to allow groundwater to be collected by the storm system. Storm pipes are cleaned to remove sediment or blockages when problems are identified. Storm pipes must be clear of obstructions and breaks to prevent localized flooding.

Storm Sewer Pipe			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
General	Obstructions, Including Roots	Obstruction exists in pipe, reducing flow capacity	Remove obstruction. Use mechanical methods. Do not put root-dissolving chemicals in storm sewer pipes. If necessary, remove the vegetation over the line.
	Pipe Dented or Broken	Inlet/outlet pipe damaged or broken	Repair or replace pipe
	Pipe rusted or deteriorated	Any part of the piping that is crushed or deformed excessively or any other failure to the piping	Repair or replace pipe
	Sediment and Debris	Sediment or debris depth is greater than 15% of the pipe diameter	Clean pipe. Evaluate source of sediment upstream of the pipe and stabilize if possible.
	Broken Trash Screen	Trash screen is broken or missing parts	Repair or replace trash screen
	Contaminants and Pollution	Any evidence of oil, gasoline, contaminants, or other pollutants	Identify and remove source. Notify City at (360) 817-1567.

Closed Detention System

A closed detention system functions similarly to a detention pond but with the storage volume provided by an underground structure. The structure is typically constructed of large diameter pipe, plastic chamber structure or a concrete vault. These systems are typically utilized for sites that do not have space available for an above-ground system and are more commonly associated with commercial sites.

Underground detention systems are enclosed spaces where harmful chemicals and vapors can accumulate. Therefore, the maintenance of these facilities should be conducted by an individual trained and certified to work in hazardous confined spaces.

See SWMMWW Appendix V-A, Table V-A.3 for closed detention maintenance standards.

Drywell

Drywells are perforated, open-bottomed manholes used to infiltrate stormwater into the ground. While not the intended use, drywells trap sediment and some of the oil pollutants in stormwater runoff. Drywells are more likely to fill with oily sediment in areas that lack swales or other treatment facilities. Fine oil sediment can clog drywells and lead to localized street flooding. Also, pollutants discharged into drywells can migrate into groundwater. Drywells were often installed in closed topographic depressions, areas with will-drained soils, or areas having inadequate storm sewers. Often, drywells contain groundwater.

Drywell			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
General	Does not Dissipate Stormwater	Does not dissipate stormwater	Replace or repair
	Opening Clogged	Openings are clogged, reducing capacity	Clear openings or convert existing drywell to a sediment trap and install a new drywell or drainage trench. To convert to a sediment trap: grout holes, cover base with concrete, and add piping. Alterations to any storm facility cannot be done without approval from the City of Camas.
	Standing Water	Standing water indicates the drywell is into the groundwater table	Rebuild drywell to prevent stormwater from going directly into groundwater
	Trash and Debris	Trash or debris blocking any inlet or outlet pipe	Remove trash and debris
	Sediment	Sediment in drywell exceeds 60 percent of the depth below the lowest pipe	Remove sediment
	Structure Damage	Structure unsound	Replace or repair drywell to design standards.
	Contaminants and Pollution	Any evidence of oil, gasoline, contaminants, or other pollutants	Identify and remove source. Notify City at (360) 817-1567.
Cover	Cover Not in Place	Cover is missing or only partially in place.	Replace missing cover
	Cover Difficult to Remove	One maintenance person cannot remove cover after applying normal lifting pressure.	Make adjustments so that one maintenance person can remove the drywell cover.

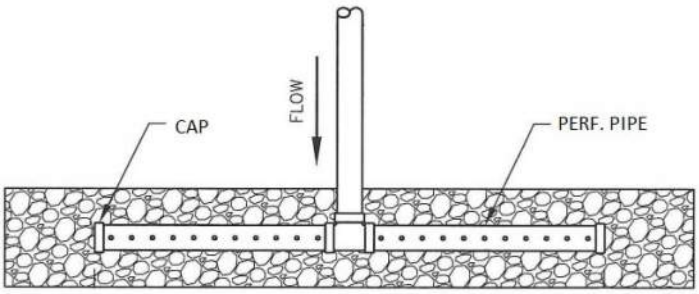
Pond Leveler System

The pond leveler system consists of an intake cage and outlet pipe. This system is used to bypass beaver dams. The pond leveler system creates a permanent leak through the beaver dam that the beavers cannot stop.

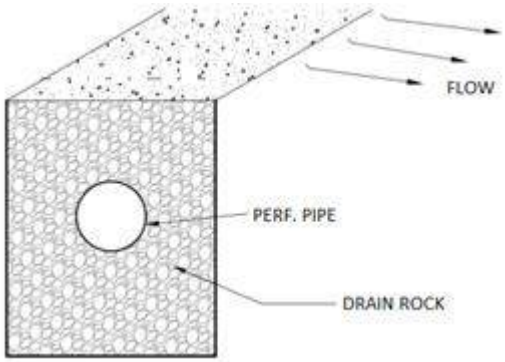
Pond Leveler			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
Intake Cage	Debris and sediment	Debris and sediment build up around cage	Remove debris and sediment build up around cage. Recommended tools: potato rake and a narrow, stiff shop broom.
	Structure	Broken cage, resulting in holes larger than 6" diameter.	Repair hole with similar cage material, attach with hog rings.
	Obstruction to inflow pipe	Debris obstructing pipe flow inside intake cage	Remove obstruction
Outflow Pipe	Obstruction	Debris obstructing outflow	Remove obstruction

Dispersion Trench

Dispersion trench are grave-filled trenches, which serve to spread runoff over vegetated pervious areas. This BMP reduce peak flows, provide some infiltration, and water quality benefits.



Plan View



Cross Section

Dispersion Trench			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
General	Trash and Debris	Any trash and debris which exceed 1 cubic feet per 1,000 square feet. In general, there should be no visual evidence of dumping.	Remove trash and debris from site.
	Poisonous Vegetation and noxious weeds	Any poisonous or nuisance vegetation which may constitute a hazard to maintenance personnel or the public. Any evidence of noxious weeds as defined by State or local regulations.	Remove noxious weeds. Compliance with State or local eradication policies required. Apply requirements of adopted IPM policies for the use of herbicides.
	Contaminants and Pollution	Any evidence of oil, gasoline, contaminants, or other pollutants	Identify and remove source. Notify City at (360) 817-1567.
	Rodent Holes	Any evidence of rodent holes.	Fill holes.
Perforated Pipe	Sediment and/or obstruction	Sediment and/or obstruction impeding the flow, causing backup	Remove sediment and/or obstruction

Special Facilities

Manufactured Media Filter

Manufacture media filters are passive, flow-through, stormwater treatment systems. They are comprised of manholes or vaults that house media-filled filter cartridges. Stormwater passes through a filtering medium, which traps particulates and/or absorb pollutants such as dissolved metals and hydrocarbons. Once filtered through the media, the treated stormwater is directed to a collection pipe or discharge to a pond or open channel drainage way.

The filter media can be housed in cartridge filters enclosed in concrete vaults or catch basins. Structures will have vault doors or manhole lids for maintenance access. Various types of filter media are available from different manufactures. Determine the type of filter media used and consult manufacturer for maintenance recommendations.

See SWMMWW Appendix V-A, Table V-A.15 for manufactured media filters maintenance standards.

Manufactured Media Filter – Additional Maintenance Standards			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
Below Ground Vault or Manhole	Sediment Accumulation in Vault (no first chamber)	Sediment depth exceeds 4-inches on vault floor.	Remove sediment from vault floor. May require replacing media cartridges, consult manufacturer.

Permeable Pavement

Permeable pavement is a paving system which allows rainfall to percolate through the surface into the underlying soil or an aggregate bed, where stormwater is stored and infiltrated to underlying subgrade, or removed by an overflow drainage system.

See SWMMWW Appendix V-A, Table V-A.22 for permeable pavement maintenance standards.

Modular Wetland

Modular wetlands linear is a biofiltration system that utilizes horizontal flow which allows for a smaller footprint, higher treatment capacity and design versatility. This system can be utilized downstream of storage for additional volume control and treatment. The modular wetland is contained in an underground vault that has different chambers containing media. Some modular wetlands can have plants growing out of it, but it is not required for the system to function. Once filtered through the media, the treated stormwater is directed to a collection pipe or discharge to a pond or open channel drainage way.

Modular Wetland			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
General	Missing or damaged components	Missing or damaged internal components or cartridges	Replace missing or repair damaged internal components or cartridges
Inlet or Outlet	Obstruction	Obstruction to inlet or outlet that impedes flow	Remove obstruction
Pretreatment Chamber	Floatables	Excessive accumulation of floatables, in which the length and width of the chamber is fully impacted more than 18"	Remove floatables
	Sediment	Excessive accumulation of sediment, more than 6"in depth	Remove sediment
Filter Cartridges	Sediment	Excessive accumulation of sediment on media, more than 85% clogged (blackish color)	Replace media
Vegetation (if applicable)	Overgrown	Overgrown vegetation	Trim/prune vegetation in accordance with landscaping and safety needs
Structure	Cracks in structure	Cracks wider than 1/2 inch or evidence of soil particles entering the structure through cracks	Repair cracks in vault

Tree Box Filter

Tree box filter is a stormwater treatment system incorporating high performance biofiltration media to remove pollutants from stormwater runoff.

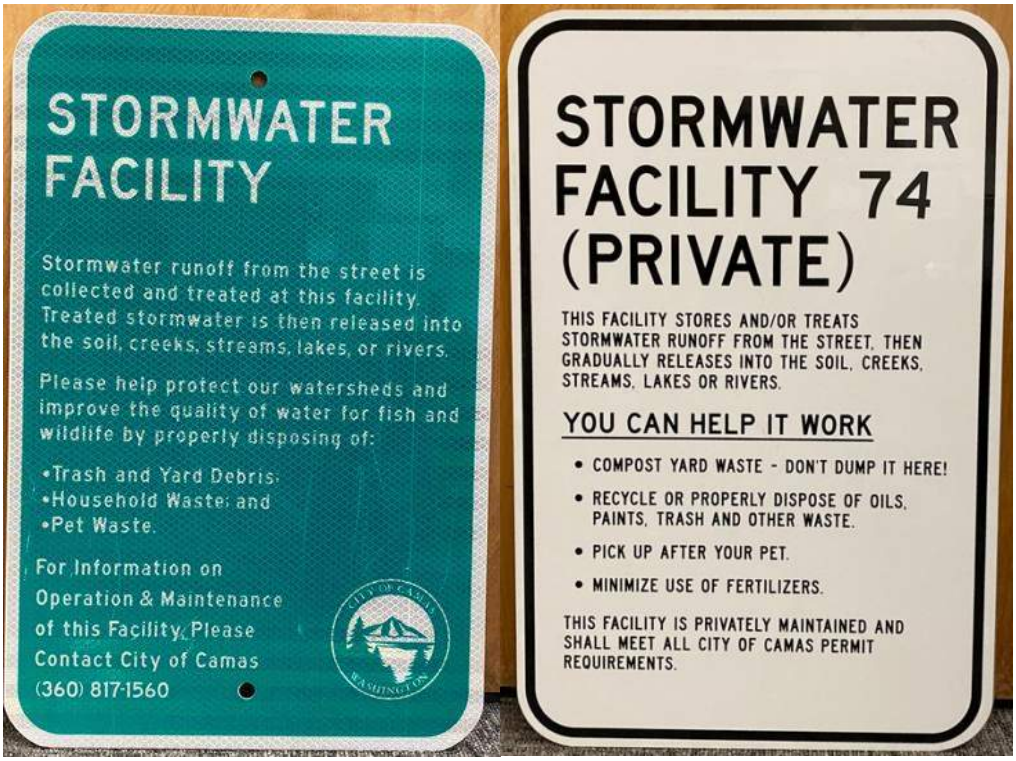
Tree Box Filter			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
Inlet	Excessive sediment or trash accumulation	Accumulated sediments or trash impair free flow of water into system	Remove sediment and/or trash
Mulch cover	Trash and debris	Excessive trash and/or debris accumulation	Remove trash and/or debris.
	Standing water	Ponding of water over mulch due to excessive fine sediment accumulation or spill of petroleum oils	Remove mulch and replace, contact manufacturer for advice
Vegetation	Plant not growing or in poor condition	Soil/mulch too wet, evidence of spill, incorrect plant selection, pest infestation, vandalism to plants	Plants should be healthy and pest free, contact manufacturer for advice
	Plant growth excessive	Plants should be appropriate to the species and location	Trim/prune plants in accordance with landscaping and safety needs
Structure	Cracks in structure	Cracks wider than 1/2 inch or evidence of soil particles entering the structure through cracks	Repair cracks in vault

Miscellaneous Items

Fences, Gates and Water Quality Signs

Fences are installed around the perimeter of stormwater facilities as a means of protecting the public, as they restrict entrance to the facility. Gates are installed to allow for maintenance access. Gates will be secured, typically with a double lock system (daisy chain) that allows access to the City and to the property owner's maintenance crew.

Water Quality Signs are installed on the fences, or on sign poles, within public view as a means of educating the public as to the presence of a stormwater facility. These signs also have a number located in the upper right hand corner that is cross referenced, at the City, to an address and maintenance responsibility. The publicly owned storm facility signs are green and the privately owned storm facility signs are white.



Public Storm Sign (Green) **Private Storm Sign (White)**

Fence, Gate and Water Quality Sign			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
General	Gate or Fence Allows Unauthorized Entry	Openings in fence, missing gate, openings beneath fence allowing unauthorized access	Repaired gate and/or fence to prevent unauthorized access
	Locking Mechanism	Mechanism cannot be opened by one maintenance person with proper tools	Repair/replace lock
		No lock on gate, allows unauthorized entry	Add lock
	Damaged Parts	Posts out of plumb more than six inches	Plumb post
		Top rails of plump more than six inches	Repair top rails so that it is free of bends greater than 1 inch
	Erosion	Erosion has resulted in an opening under a fence that allows entry by people or pets	Replace soil under fence so that no opening exceeds 4 inches in height
	Sign	Sign is leaning more than 8 inches off vertical	Reset sign to plumb
		Sign is missing or 20% of surface is unreadable	Replace sign

Access Roads and Easements

Many stormwater facilities have access roads to bring in heavy equipment for facility maintenance. These roads are typically gravel and should be maintained for inspection access and ease of equipment entry. All facilities should allow access for the inspection process. The easement area should be adequately or otherwise stabilized. Bare soil areas will generate higher levels of stormwater runoff and increase erosion and sedimentation in stormwater facilities.

Access Road and Easements			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
General	Erosion	Soils are bare or eroded	Seed or use other stabilization BMP
	Road Surface	Conditions of road surface may lead to erosion of the facility or limit access	Repair road
	Erosion of Ground Surface	Noticeable rills are seen in landscaped areas	Identify causes of erosion and implement BMPs to slow down/spread out the water. Fill, contour, and seed eroded areas. If needed, re-grade affected areas.
	Trash and Debris	Any trash and debris which exceed 1 cubic feet per 1,000 square feet. In general, there should be no visual evidence of dumping.	Remove trash and debris from site.
	Poisonous Vegetation and Noxious Weeds	Any poisonous or nuisance vegetation which may constitute a hazard to maintenance personnel or the public. Any evidence of noxious weeds as defined by State or local regulations.	Remove noxious weeds. Compliance with State or local eradication policies required. Apply requirements of adopted IPM policies for the use of herbicides.
	Tree Growth and Hazard Trees	Tree growth does not allow maintenance access or interferes with maintenance activity (i.e., slope mowing, silt removal, vactoring, or equipment movements). If dead, diseased, or dying trees are identified.	Remove hazardous tree that impede with maintenance access and activities. Remove trees that are damaging the pipe system and/or blocking drain inlet. Remove dead, diseased, or dying trees. Harvested trees should be recycled into mulch or other beneficial uses (e.g., alders for firewood).
	Weeds (Non-poisonous)	Weeds growing in more than 20% of the landscaped area (tree and shrubs only).	Remove weeds
	Insects	When insects such as wasps and hornets interfere with maintenance activities.	Destroy or remove insects from site. Apply insecticides in compliance with adopted IPM policies.

Pavement Sweeping

Pavement sweeping is performed as a means of removing sand, dirt, and litter from streets and curb gutters. Sweeping also reduces dust during dry weather. Pavement sweeping plays a large part in stormwater maintenance because it limits the amount of sediment washed into the municipal storm sewer system. The water quality procedure for street sweeping focuses on sediment removal and disposal. Reducing the amount of sediment washed into catch basins, curb inlets, detention facilities, drywells, and other facilities can save money because sweeping is generally cheaper that removing sediment from facilities. Sweeping also helps protect facilities from clogging with sediment.

Typically, the City sweeps the downtown area once a week and the whole city about three times per year. Most of the downtown area does not have water quality treatment. Pavement sweeping is the main source for pollution control.

Repair/Replacement Activities

Minor Culvert Repair (Not in a Stream)

This activity is for the replacement or repair of culverts and inlets. It applies only to structures that are in ditches that are specifically for storm drainage. These are ditches that do not carry water during dry weather. If there is any question about whether the ditch is a storm drain or a stream, consult with the Washington Department of Fish and Wildlife and the City of Camas Public Works Department.

Major Culvert Repair (at a Stream Crossing)

This activity is the replacement or repair of culverts and inlets bridging a stream or ditch with flowing water during dry weather. If there is any question about whether the ditch is a storm drain or a stream, consult the Washington Department of Fish and Wildlife and the City of Camas Public Works Department.

These projects must meet all regulatory requirements such as State Environmental Policy Act (SEPA), Shoreline Permit, Hydraulic Project Approval (HPA) and Flood Plain.

Vegetation Management

The City recognizes the special importance of the rivers, streams, wetlands, ponds, and stormwater control and treatment facilities. The sensitive nature of such habitat, their plant and animal communities, and their direct link with other waterways require that we establish specific policies to ensure their health. All landscape management decisions for controlling unwanted vegetation, diseases, and pests should follow the Integrated Pest Management (IPM) principles and decision-making rationale.

Integrated Pest Management (IPM) Principles

1. Correctly identify the pest problem and understand their life cycle. Refer to online resources such as Washington State Noxious Weed Control Board and Washington Invasive Species Council.
2. Every landscape has a population of some pest insects, weeds, and diseases. Once the pest has been identified and studied, determine if low levels of the pest are tolerable. Small numbers of certain pests may not be harmful. If this is the case, simply continue to monitor the pest population.
3. If pest exceed tolerance thresholds, choose a safe and effective control method.
    a. Cultural methods of vegetation and pest control are preferred and are first employed. Cultural control changes the pest's environment: landscape fabric, mulch, soil amendments, altering the irrigation method of duration, crop rotation, crop covers, etc.
    b. Mechanical means of vegetation and pest control are next in line of preference and are utilized where feasible. Mechanical means consist of digging, hand-pulling, mowing, tilling, trapping, etc.
    c. Biological methods of vegetation and pest control are considered before chemical means, where they are feasible. Biological control uses natural enemies: beneficial insects, managed grazing, bird boxes and perches, etc.
    d. Chemical methods are used only when no other feasible methods exist. Chemical control is the use of pesticides to remove vegetation and pests.
4. Observe and record the results of the control treatment. Evaluate the effectiveness. If necessary, modify maintenance practices to support a healthy landscape and prevent recurrence of the pest.

A licensed pesticide applicator is required for performing any chemical application in stormwater facilities. Applicators must be licensed in Washington State with an aquatic endorsement (WAC 16-228-1545). Applicator must submit a copy of their license to the City prior to starting work. Aquatic pesticide products are recommended. No chemical application shall be applied directly in the water. Do not apply pesticide when it is raining. Check the weather and ensure there are multiple dry days before and after application. Do not apply pesticide on windy days to prevent drift movement of pesticide from target areas.

For vegetated areas outside of stormwater facilities, Washington State pesticide application laws and rules are followed, Chapter 17.21 RCW and Chapter 16-228 WAC.

Plants and Groundcover

Use plants that will thrive in the growing conditions of each facility. Growing conditions are affected by moisture, soil conditions, and light. Plants native to western Washington are preferred. Recommended plants, seed mixes and groundcover list for biofiltration swales, bioretention systems, rain gardens, and other facility types are given in the respective BMP maintenance sections. It is best to reference the stormwater facility record drawings for vegetation replacements, if available. Fertilization of vegetated stormwater facilities should be avoided.

The City has adopted a list of approved plants for use in development projects, and to assist homeowners in choosing appropriate plantings. The list also has prohibited undesirable plants. Only plants approved for use on the City of Camas Plant Materials are allowed within the City's right-of-way.

Mulches and other ground coverings are useful during the installation and restoration of landscapes as well as their ongoing maintenance. Mulches meet a variety of needs. They suppress weeds, help to retain moisture around plants, reduce possible erosion and provide visual enhancement. Possible risk impacts to consider when using mulch are inadvertent introduction of non-native plants or migration of mulch material into waterways.

Possible scenarios where trees should be removed and/or trimmed in a stormwater facility (always check if the stormwater facility has a liner before tree removal):

- Trees that pose a risk to a stormwater structure due to root growth should be removed.
- Trees that are growing on spillways that would impede drainage should be removed.
- Hazardous trees should be removed.
- Trees/shrubs that hinder accessibility to access roads should be trimmed or removed.

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APPENDIX E

Stormwater Pollution Prevention Plan

Stormwater Pollution Prevention Plan

For
NE 13th Street Site Plan

Prepared For
Taz Kahn
3993 NW Currawong Court
Camas, WA 98607

Owner	Developer	Operator/Contractor
Taz Kahn 3993 NW Currawong Court Camas, WA 98607	Same as Owner	Unknown

Project Site Location
20101 NE 13th Street
Camas, WA 98607
Parcel #176148-000

SWPPP Prepared By
PLS Engineering, Inc.
604 W Evergreen Blvd
Vancouver, WA 98660
(360) 944-6519

SWPPP Preparation Date
August 2023

Approximate Project Construction Dates
March 2024

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Appendix A Site plans

- Vicinity map (with all discharge points)
- Site plan with TESC measures

Appendix B Construction BMPs

- Possibly reference in BMPs, but likely it will be a consolidated list so that the applicant can photocopy from the list from the SWMMWW.

Appendix C Alternative Construction BMP list

- List of BMPs not selected, but can be referenced if needed in each of the 12 elements

Appendix D General Permit

Appendix E Site Log and Inspection Forms

Appendix F Engineering Calculations

1.0 Introduction

This Stormwater Pollution Prevention Plan (SWPPP) has been prepared for the Monte Verde construction project in Camas, Washington. The site is located on Parcel 173184000. Current address for the site is 22205 NE 28th Street, Camas, WA 98607 and the existing site is approximately 8.61 acres. Current proposed development associated with this SWPPP includes the construction of 34 single family lots along with the associated infrastructure. The stormwater plan associated with this project provides for stormwater management of all runoff from the site using two private infiltration trenches, and one stormwater detention facility. Stormwater runoff from the pollution generating surfaces will be treated by a ConTech media cartridge before being infiltrated.

Construction activities will include excavation, grading, construction of paving and sidewalk to serve the site, construction of an infiltration trench to mitigate for impacts to stormwater runoff from the new paving, and installation of utilities to serve the site including sanitary sewer, storm sewer, potable water, electrical, phone, and cable TV. The purpose of this SWPPP is to describe the proposed construction activities and all temporary and permanent erosion and sediment control (TESC) measures, pollution prevention measures, inspection/monitoring activities, and recordkeeping that will be implemented during the proposed construction project. The objectives of the SWPPP are to:

1. Implement Best Management Practices (BMPs) to prevent erosion and sedimentation, and to identify, reduce, eliminate or prevent stormwater contamination and water pollution from construction activity.

2. Prevent violations of surface water quality, ground water quality, or sediment management standards.

3. Prevent, during the construction phase, adverse water quality impacts including impacts on beneficial uses of the receiving water by controlling peak flow rates and volumes of stormwater runoff at the Permittee's outfalls and downstream of the outfalls.

This SWPPP was prepared using the Ecology SWPPP Template downloaded from the Ecology website. This SWPPP was prepared based on the requirements set forth in the Construction Stormwater General Permit and the *Stormwater Management Manual for Western Washington* (SWMMWW). The report is divided into seven main sections with several appendices that include stormwater related reference materials. The topics presented in the each of the main sections are:

- Section 1 – INTRODUCTION. This section provides a summary description of the project, and the organization of the SWPPP document.

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- Section 2 – SITE DESCRIPTION. This section provides a detailed description of the existing site conditions, proposed construction activities, and calculated stormwater flow rates for existing conditions and post–construction conditions.

- Section 3 – CONSTRUCTION BMPs. This section provides a detailed description of the BMPs to be implemented based on the 12 required elements of the SWPPP (SWMMEW 2004).

- Section 4 – CONSTRUCTION PHASING AND BMP IMPLEMENTATION. This section provides a description of the timing of the BMP implementation in relation to the project schedule.

- Section 5 – POLLUTION PREVENTION TEAM. This section identifies the appropriate contact names (emergency and non-emergency), monitoring personnel, and the onsite temporary erosion and sedimentation control inspector

- Section 6 – INSPECTION AND MONITORING. This section provides a description of the inspection and monitoring requirements such as the parameters of concern to be monitored, sample locations, sample frequencies, and sampling methods for all stormwater discharge locations from the site.

- Section 7 – RECORDKEEPING. This section describes the requirements for documentation of the BMP implementation, site inspections, monitoring results, and changes to the implementation of certain BMPs due to site factors experienced during construction.

Supporting documentation and standard forms are provided in the following Appendices:

Appendix A – Site plans
Appendix B – Construction BMPs
Appendix C – Alternative Construction BMP list
Appendix D – General Permit
Appendix E – Site Log and Inspection Forms
Appendix F – Engineering Calculations

2.0 Site Description

2.1 Existing Conditions

Current Addresses for the site is 20101 NE 13th Street, Camas, WA 98607. The site is approximately 0.97 acres. The property's topography is moderately sloped from a high point at the NW corner of the site to low areas along at the South boundary of the site. The site has an existing house will be removed. The remaining area consists of grass, and trees, and landscaping.

The soils are mapped by the NRCS as Wind River gravelly loam (WrB) for the majority of the site, and Cove silty clay loam (CwA) at the SW corner and Eastern edge of the site.

2.2 Proposed Construction Activities

The project proposes to develop a gas station with a mini-mart and car wash on a single lot. Construction activities will include excavation, grading, construction of paving and sidewalk to serve the site, construction of stormwater facilities to mitigate for impacts to stormwater runoff from the new paving, and installation of utilities to serve the site including sanitary sewer, storm sewer, potable water, electrical, phone, and cable TV.

Temporary erosion and sediment control facilities will be installed prior to site construction to handle construction-phase stormwater runoff. The schedule and phasing of BMPs during construction is provided in Section 4.0.

Stormwater runoff has been calculated using Western Washington Hydrology Model (WWHM). The stormwater facilities were designed to treat and detain the runoff generated by the site prior to discharge.

After the site has been graded and all new utilities are installed, the building construction will commence. Trees will also be planted in the landscape areas noted in the Landscape Plan. Temporary seeding will occur over the lots to establish vegetative cover until such time as individual buildings are developed and permanent landscaping occurs.

Exhibit 9 APPEAL24-1001

3.0 Construction Stormwater BMPs

3.1 The 13 BMP Elements

3.1.1 Element #1 – Mark Clearing Limits

To protect adjacent properties and to reduce the area of soil exposed to construction, the limits of construction will be clearly marked before land-disturbing activities begin. Trees that are to be preserved, as well as all sensitive areas and their buffers, shall be clearly delineated, both in the field and on the plans. In general, natural vegetation and native topsoil shall be retained in an undisturbed state to the maximum extent possible. The BMPs relevant to marking the clearing limits that will be applied for this project include:

- Preserving Native Vegetation (BMP C101)
- Silt Fence (BMP C233)

Alternate BMPs for marking clearing limits are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Construction Stormwater permit (as provided in Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

3.1.2 Element #2 – Establish Construction Access

Construction access or activities occurring on unpaved areas shall be minimized, yet where necessary, access points shall be stabilized to minimize the tracking of sediment onto public roads, and wheel washing, street sweeping, and street cleaning shall be employed to prevent sediment from entering state waters. All wash wastewater shall be controlled on site. The specific BMPs related to establishing construction access that will be used on this project include:

- Stabilized Construction Entrance (BMP C105)

Alternate construction access BMPs are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Construction Stormwater permit (as provided in Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

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3.1.3 Element #3 – Control Flow Rates

In order to protect the properties and waterways downstream of the project site, stormwater discharges from the site will be controlled. The specific BMPs for flow control that shall be used on this project include:

- Downspout Full Infiltration - Infiltration Trenches (BMP T5.10B).
- Infiltration Trenches (BMP R5.11).

Alternate flow control BMPs are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Construction Stormwater permit (as provided in Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

The project site is located west of the Cascade Mountain Crest. As such, the project must comply with Minimum Requirement 7 (Ecology 2005).

In general, discharge rates of stormwater from the site will be controlled where increases in impervious area or soil compaction during construction could lead to downstream erosion, or where necessary to meet local agency stormwater discharge requirements (e.g. discharge to combined sewer systems).

3.1.4 Element #4 – Install Sediment Controls

All stormwater runoff from disturbed areas shall pass through an appropriate sediment removal BMP before leaving the construction site or prior to being discharged to an infiltration facility. The specific BMPs to be used for controlling sediment on this project include:

- Silt Fence (BMP C233)
- Storm Drain Inlet Protection (BMP C220)

Silt fencing and storm drain inlet protection will be adequate for sediment control during summer months. Alternate sediment control BMPs are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Construction Stormwater permit (as provided in Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

In addition, sediment will be removed from paved areas in and adjacent to construction work areas manually or using mechanical sweepers, as needed, to minimize tracking of sediments on vehicle tires away from the site and to minimize washoff of sediments from adjacent streets in runoff.

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Whenever possible, sediment laden water shall be discharged into onsite, relatively level, vegetated areas (BMP C240 paragraph 5, page 4-102).

In some cases, sediment discharge in concentrated runoff can be controlled using permanent stormwater BMPs (e.g., infiltration swales, ponds, trenches). Sediment loads can limit the effectiveness of some permanent stormwater BMPs, such as those used for infiltration or biofiltration; however, those BMPs designed to remove solids by settling (wet ponds or detention ponds) can be used during the construction phase. When permanent stormwater BMPs will be used to control sediment discharge during construction, the structure will be protected from excessive sedimentation with adequate erosion and sediment control BMPs. Any accumulated sediment shall be removed after construction is complete and the permanent stormwater BMP will be restabilized with vegetation per applicable design requirements once the remainder of the site has been stabilized.

The following BMPs will be implemented as end-of-pipe sediment controls as required to meet permitted turbidity limits in the site discharge(s). Prior to the implementation of these technologies, sediment sources and erosion control and soil stabilization BMP efforts will be maximized to reduce the need for end-of-pipe sedimentation controls.

- Construction Stormwater Filtration (BMP C251)
- Construction Stormwater Chemical Treatment (BMP C 250) (implemented only with prior written approval from Ecology).

3.1.5 Element #5 – Stabilize Soils

Exposed and unworked soils shall be stabilized with the application of effective BMPs to prevent erosion throughout the life of the project. The specific BMPs for soil stabilization that shall be used on this project include:

- Temporary and Permanent Seeding (BMP C120)
- Mulching (BMP C121)
- Nets and Blankets (BMP C122)
- Plastic Covering (BMP C123)
- Topsoiling (BMP C125)
- Surface Roughening (BMP C130)
- Dust Control (BMP C140)
- Early application of gravel base on areas to be paved

Alternate soil stabilization BMPs are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Construction Stormwater permit (as provided in Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

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The project site is located west of the Cascade Mountain Crest. As such, no soils shall remain exposed and unworked for more than 7 days during the dry season (May 1 to September 30) and 2 days during the wet season (October 1 to April 30). Regardless of the time of year, all soils shall be stabilized at the end of the shift before a holiday or weekend if needed based on weather forecasts.

In general, cut and fill slopes will be stabilized as soon as possible and soil stockpiles will be temporarily covered with plastic sheeting. All stockpiled soils shall be stabilized from erosion, protected with sediment trapping measures, and where possible, be located away from storm drain inlets, waterways, and drainage channels.

3.1.6 Element #6 – Protect Slopes

All cut and fill slopes will be designed, constructed, and protected in a manner that minimizes erosion. The following specific BMPs will be used to protect slopes for this project:

- Temporary and Permanent Seeding (BMP C120)

Alternate slope protection BMPs are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Construction Stormwater permit (as provided in Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

3.1.7 Element #7 – Protect Drain Inlets

All storm drain inlets and culverts made operable during construction or inlets near the site that could potentially receive surface runoff from the construction site shall be protected to prevent unfiltered or untreated water from entering the drainage conveyance system. However, the first priority is to keep all access roads clean of sediment and keep street wash water separate from entering storm drains until treatment can be provided. Storm Drain Inlet Protection (BMP C220) will be implemented for all drainage inlets and culverts that could potentially be impacted by sediment-laden runoff on and near the project site. The following inlet protection measures will be applied on this project:

Drop Inlet Protection

- Block and Gravel Drop Inlet Protection
- Gravel and Wire Drop Inlet Protection
- Catch Basin Filter

If the BMP options listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D), or if no BMPs are listed above but deemed necessary during construction, the Certified Erosion and Sediment Control Lead shall implement one or more of the alternative BMP inlet protection options listed in Appendix C.

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3.1.8 Element #8 – Stabilize Channels and Outlets

Where site runoff is to be conveyed in channels or discharged to a stream or some other natural drainage point, efforts will be taken to prevent downstream erosion. The specific BMPs for channel and outlet stabilization that shall be used on this project include:

- Outlet Protection (BMP C209)

Alternate channel and outlet stabilization BMPs are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Construction Stormwater permit (as provided in Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

The project site is located west of the Cascade Mountain Crest. As such, all temporary on-site conveyance channels shall be designed, constructed, and stabilized to prevent erosion from the expected peak 10-minute velocity of flow from a Type 1A, 10-year, 24-hour recurrence interval storm for the developed condition. Alternatively, the 10-year, 1-hour peak flow rate indicated by an approved continuous runoff simulation model, increased by a factor of 1.6, shall be used. Stabilization, including armoring material, adequate to prevent erosion of outlets, adjacent streambanks, slopes, and downstream reaches shall be provided at the outlets of all conveyance systems.

3.1.9 Element #9 – Control Pollutants

All pollutants, including waste materials and demolition debris, that occur onsite shall be handled and disposed of in a manner that does not cause contamination of stormwater. Good housekeeping and preventative measures will be taken to ensure that the site will be kept clean, well organized, and free of debris. If required, BMPs to be implemented to control specific sources of pollutants are discussed below.

Vehicles, construction equipment, and/or petroleum product storage/dispensing:

- All vehicles, equipment, and petroleum product storage/dispensing areas will be inspected regularly to detect any leaks or spills, and to identify maintenance needs to prevent leaks or spills.
- On-site fueling tanks and petroleum product storage containers shall include secondary containment.
- Spill prevention measures, such as drip pans, will be used when conducting maintenance and repair of vehicles or equipment.
- In order to perform emergency repairs on site, temporary plastic will be placed beneath and, if raining, over the vehicle.
- Contaminated surfaces shall be cleaned immediately following any discharge or spill incident.

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Chemical storage:

- Any chemicals stored in the construction areas will conform to the appropriate source control BMPs listed in Volume IV of the Ecology stormwater manual. In Western WA, all chemicals shall have cover, containment, and protection provided on site, per BMPC153 for Material Delivery, Storage and Containment in SWMMWW 2005
- Application of agricultural chemicals, including fertilizers and pesticides, shall be conducted in a manner and at application rates that will not result in loss of chemical to stormwater runoff. Manufacturers' recommendations for application procedures and rates shall be followed.

Excavation and tunneling spoils dewatering waste:

- Dewatering BMPs and BMPs specific to the excavation and tunneling (including handling of contaminated soils) are discussed under Element 10.

Demolition:

- Dust released from demolished sidewalks, buildings, or structures will be controlled using Dust Control measures (BMP C140).
- Storm drain inlets vulnerable to stormwater discharge carrying dust, soil, or debris will be protected using Storm Drain Inlet Protection (BMP C220 as described above for Element 7).
- Process water and slurry resulting from sawcutting and surfacing operations will be prevented from entering the waters of the State by implementing Sawcutting and Surfacing Pollution Prevention measures (BMP C152).

Concrete and grout:

- Process water and slurry resulting from concrete work will be prevented from entering the waters of the State by implementing Concrete Handling measures (BMP C151).

Sanitary wastewater:

- Portable sanitation facilities will be firmly secured, regularly maintained, and emptied when necessary.
- Wheel wash or tire bath wastewater shall be discharged to a separate on-site treatment system or to the sanitary sewer as part of Wheel Wash implementation (BMP C106).

Solid Waste:

- Solid waste will be stored in secure, clearly marked containers.

Other:

- Other BMPs will be administered as necessary to address any additional pollutant sources on site.

The facility does not require a Spill Prevention, Control, and Countermeasure (SPCC) Plan under the Federal regulations of the Clean Water Act (CWA).

3.1.10 Element #10 – Control Dewatering

3.1.13 Element #13 – Protect Low Impact Development BMPs

- Protect all bioretention and rain garden BMP's from sedimentation through installation and maintenance of erosion control BMP's on portions of the site that drain into them. Restore the BMP's to their fully functioning condition if they accumulate sediment during construction. Restoring the BMP must include removal of sediment and any sediment-laden bioretention/ rain garden soils, and replacing the removed soils with soils meeting the design specification.
- Prevent compacting bioretention and rain garden BMP's by excluding construction equipment and foot traffic. Protect completed lawn and landscaped areas from compaction by construction equipment.
- Control erosion and avoid introducing sediment from surrounding land uses onto permeable pavements. Do not allow muddy construction equipment on the base material or pavement. Do not allow sediment-laden runoff into permeable pavements or base materials.
- Pavements fouled with sediments or no longer passing an initial infiltration test must be cleaned using procedures from Book 4 of the manufacturer's procedures.
- Keep all heavy equipment off existing soils under LID facilities that have been excavated to final grade to retain the infiltration rate of the soils

3.2 Site Specific BMPs

Site specific BMPs are shown on the TESC Plan Sheets and Details in Appendix A. These site-specific plan sheets will be updated annually.

3.3 Additional Advanced BMPs

- The following BMPs are advanced and are only recommended if construction activities are complex enough to warrant them; or if the site has the potential for significant impacts to water quality. The following BMPs are directed at "end-of-pipe" treatment for sedimentation issues related to turbid runoff from construction sites. Effective BMPs are most often the simple BMPs and focus on the minimization of erosion before sedimentation is an issue. The following BMPs will most likely be implemented only after other BMP options are exhausted, or if the construction activity is large and off-site sedimentation or turbid runoff occurs or is inevitable.
- For BMP 250, written pre-approval, through Ecology is required (see SWMMWW 2005):
- BMP C250: Construction Stormwater Chemical Treatment
- BMP C251: Construction Stormwater Filtration.

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4.0 Construction Phasing and BMP Implementation

The BMP implementation schedule will be driven by the construction schedule. The following provides a sequential list of the proposed construction schedule milestones and the corresponding BMP implementation schedule. The list contains key milestones such as wet season construction.

The BMP implementation schedule listed below is keyed to proposed phases of the construction project and reflects differences in BMP installations and inspections that relate to wet season construction. The project site is located west of the Cascade Mountain Crest. As such, the dry season is considered to be from May 1 to September 30 and the wet season is considered to be from October 1 to April 30.

- Estimate of Construction start date: 3/01/24
- Estimate of Construction finish date: 9/30/27
- Mobilize equipment on site: 3/01/24
- Mobilize and store all ESC and soil stabilization products: 3/01/24
- Install ESC measures: 3/01/24
- Install stabilized construction entrance: 3/01/24
- Begin clearing and grubbing: 3/01/24
- Demolish existing structures: 3/01/24
- Begin site grading 3/01/24
- Site grading ends 3/30/24
- Excavate and install new utilities and services: 4/01/24
- Excavation for building foundations 3/06/24
- Begin building construction: 3/06/24
- Complete utility construction 3/06/24
- Begin implementing soil stabilization and sediment control BMPs throughout the site in preparation for wet season: 3/06/24
- Wet Season starts: 10/01/24
- Site inspections and monitoring conducted weekly and for applicable rain events as detailed in Section 6 of this SWPPP: 3/01/24
- Implement Element #12 BMPs and manage site to minimize soil disturbance during the wet season: 3/01/24
- Complete road paving 5/30/24
- Building construction complete: 9/06/25
- Dry Season starts: 5/01/24

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5.0 Pollution Prevention Team

5.1 Roles and Responsibilities

The pollution prevention team consists of personnel responsible for implementation of the SWPPP, including the following:

- Certified Erosion and Sediment Control Lead (CESCL) – primary contractor contact, responsible for site inspections (BMPs, visual monitoring, sampling, etc.); to be called upon in case of failure of any ESC measures.
- Resident Engineer – For projects with engineered structures only (sediment ponds/traps, sand filters, etc.): site representative for the owner that is the project's supervising engineer responsible for inspections and issuing instructions and drawings to the contractor's site supervisor or representative
- Emergency Ecology Contact – individual to be contacted at Ecology in case of emergency.
- Emergency Owner Contact – individual that is the site owner or representative of the site owner to be contacted in the case of an emergency.
- Non-Emergency Ecology Contact – individual that is the site owner or representative of the site owner than can be contacted if required.
- Monitoring Personnel – personnel responsible for conducting water quality monitoring; for most sites this person is also the Certified Erosion and Sediment Control Lead.

5.2 Team Members

Names and contact information for those identified as members of the pollution prevention team are provided in the following table.

Title	Name(s)	Phone Number
Certified Erosion and Sediment Control Lead (CESCL)	Unknown	
Resident Engineer	Travis Johnson	(360)944-6519
Emergency Ecology Contact	Unknown	
Emergency Owner Contact	Unknown	
Non-Emergency Ecology Contact	Unknown	
Monitoring Personnel	Unknown	

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6.0 Site Inspections and Monitoring

Monitoring includes visual inspection, monitoring for water quality parameters of concern, and documentation of the inspection and monitoring findings in a site log book. A site log book will be maintained for all on-site construction activities and will include:

- A record of the implementation of the SWPPP and other permit requirements;
- Site inspections; and,
- Stormwater quality monitoring.

For convenience, the inspection form and water quality monitoring forms included in this SWPPP include the required information for the site log book. This SWPPP may function as the site log book if desired, or the forms may be separated and included in a separate site log book. However, if separated, the site log book but must be maintained on-site or within reasonable access to the site and be made available upon request to Ecology or the local jurisdiction.

6.1 Site Inspection

All BMPs will be inspected, maintained, and repaired as needed to assure continued performance of their intended function. The inspector will be a Certified Erosion and Sediment Control Lead (CESCL) per BMP C160. The name and contact information for the CESCL is provided in Section 5 of this SWPPP.

Site inspection will occur in all areas disturbed by construction activities and at all stormwater discharge points. Stormwater will be examined for the presence of suspended sediment, turbidity, discoloration, and oily sheen. The site inspector will evaluate and document the effectiveness of the installed BMPs and determine if it is necessary to repair or replace any of the BMPs to improve the quality of stormwater discharges. All maintenance and repairs will be documented in the site log book or forms provided in this document. All new BMPs or design changes will be documented in the SWPPP as soon as possible.

6.1.1 Site Inspection Frequency

Site inspections will be conducted at least once a week and within 24 hours following any discharge from the site. For sites with temporary stabilization measures, the site inspection frequency can be reduced to once every month.

6.1.2 Site Inspection Documentation

The site inspector will record each site inspection using the site log inspection forms provided in Appendix E. The site inspection log forms may be separated from this SWPPP document, but will be maintained on-site or within reasonable access to the site and be made available upon request to Ecology or the local jurisdiction.

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6.2 Stormwater Quality Monitoring

The construction site will comply with the requirements set forth in the 2015 Construction Stormwater General Permit (revised 2017) seen in Appendix D. A Certified Erosion and Sediment Control Lead shall be on-site or on-call at all times.

The following text describes the monitoring for the proposed development.

6.2.1 Turbidity Sampling

The receiving water body, Lacamas Creek Watershed, is impaired for turbidity. Mandatory BMPs (Best Management Practices) and erosion control practices put in place by the permit will appropriately minimize the turbidity of the stormwater discharge. Monitoring requirements for the proposed project will include weekly turbidity sampling to monitor site discharges for water quality compliance as required by the NPDES Construction Stormwater General Permit, provided that site discharges occur. It should be noted that the site is designed such that all site runoff will be infiltrated so it is likely that discharges will be rare or may not occur at all. Sampling will be conducted at all discharge points at least once per calendar week.

Turbidity sampling during construction will be completed weekly in order to confirm that erosion control measures are meeting the water quality standards for turbidity (Where an applicable TMDL has not specified a waste load allocation for construction stormwater discharge, but has not excluded these discharges, compliance with special Conditions S4 (monitoring) and S9 (SWPPPs) will constitute compliance with the approved TMDL (S8.E.1.c)). Special Conditions S4 establishes that the key benchmark values that require action are 25 NTU for turbidity (equivalent to 32 cm transparency) and 250 NTU for turbidity (equivalent to 6 cm transparency). If the 25 NTU benchmark for turbidity (equivalent to 32 cm transparency) is exceeded, the following steps will be conducted:

1. Ensure all BMPs specified in this SWPPP are installed and functioning as intended.
2. Assess whether additional BMPs should be implemented, and document revisions to the SWPPP as necessary.
3. Sample discharge location daily until the analysis results are less than 25 NTU (turbidity) or greater than 32 cm (transparency).

If the turbidity is greater than 25 NTU (or transparency is less than 32 cm) but less than 250 NTU (transparency greater than 6 cm) for more than 3 days, additional treatment BMPs will be implemented within 24 hours of the third consecutive sample that exceeded the benchmark value. Additional treatment BMPs to be considered will include, but are not limited to, off-site treatment, infiltration, filtration and chemical treatment.

If the 250 NTU benchmark for turbidity (or less than 6 cm transparency) is exceeded at any time, the following steps will be conducted:

1. Notify Ecology by phone within 24 hours of analysis (see Section 5.0 of this SWPPP for contact information).
2. Continue daily sampling until the turbidity is less than 25 NTU (or transparency is greater than 32 cm).

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3. Initiate additional treatment BMPs such as off-site treatment, infiltration, filtration and chemical treatment within 24 hours of the first 250 NTU exceedance.
4. Implement additional treatment BMPs as soon as possible, but within 7 days of the first 250 NTU exceedance.
5. Describe inspection results and remedial actions taken in the site log book and in monthly discharge monitoring reports as described in Section 7.0 of this SWPPP.

In the event that Turbidity results are greater than 25 NTUs, or the site is determined to be out of compliance with surface water quality standards for turbidity, the following BMPs should be established, re-established or implemented as determined necessary by the Certified Erosion and Sediment Control lead (CESCL) in order to bring the site back into compliance:

BMP C105: Stabilized Construction Entrance / Exit (repair construction entrance as necessary)

BMP C106: Wheel Wash (repair wheel wash as necessary)

BMP C120: Temporary and permanent Seeding

BMP C124: Sodding

BMP C140: Dust Control

BMP C209: Outlet Protection

BMP C220: Storm Drain Inlet Protection (add more inlet protection, as necessary

BMP C233: Silt Fence (add more silt fencing as necessary)

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7.0 Reporting and Recordkeeping

7.1 Recordkeeping

7.1.1 Site Log Book

A site log book will be maintained for all on-site construction activities and will include:

- A record of the implementation of the SWPPP and other permit requirements;
- Site inspections; and,
- Stormwater quality monitoring.

For convenience, the inspection form and water quality monitoring forms included in this SWPPP include the required information for the site log book.

7.1.2 Records Retention

Records of all monitoring information (site log book, inspection reports/checklists, etc.), this Stormwater Pollution Prevention Plan, and any other documentation of compliance with permit requirements will be retained during the life of the construction project and for a minimum of three years following the termination of permit coverage in accordance with permit condition S5.C.

7.1.3 Access to Plans and Records

The SWPPP, General Permit, Notice of Authorization letter, and Site Log Book will be retained on site or within reasonable access to the site and will be made immediately available upon request to Ecology or the local jurisdiction. A copy of this SWPPP will be provided to Ecology within 14 days of receipt of a written request for the SWPPP from Ecology. Any other information requested by Ecology will be submitted within a reasonable time. A copy of the SWPPP or access to the SWPPP will be provided to the public when requested in writing in accordance with permit condition S5.G.

7.1.4 Updating the SWPPP

In accordance with Conditions S3, S4.B, and S9.B.3 of the General Permit, this SWPPP will be modified if the SWPPP is ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the site or there has been a change in design, construction, operation, or maintenance at the site that has a significant effect on the discharge, or potential for discharge, of pollutants to the waters of the State. The SWPPP will be modified within seven days of determination based on inspection(s) that additional or modified BMPs are necessary to correct problems identified, and an updated timeline for BMP implementation will be prepared.

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7.2 Reporting

7.2.1 Discharge Monitoring Reports

Discharge Monitoring Reports (DMRs) will be submitted to Ecology monthly. If there was no discharge during a given monitoring period, the Permittee shall submit the form as required, with the words "No discharge" entered in the place of monitoring results. The DMR due date is 15 days following the end of each month.

Water quality sampling results will be submitted to Ecology monthly on Discharge Monitoring Report (DMR) forms in accordance with permit condition S5.B. If there was no discharge during a given monitoring period, the form will be submitted with the words "no discharge" entered in place of the monitoring results. If a benchmark was exceeded, a brief summary of inspection results and remedial actions taken will be included. If sampling could not be performed during a monitoring period, a DMR will be submitted with an explanation of why sampling could not be performed.

7.2.2 Notification of Noncompliance

If any of the terms and conditions of the permit are not met, and it causes a threat to human health or the environment, the following steps will be taken in accordance with permit section S5.F:

1. Ecology will be immediately notified of the failure to comply.
2. Immediate action will be taken to control the noncompliance issue and to correct the problem. If applicable, sampling and analysis of any noncompliance will be repeated immediately and the results submitted to Ecology within five (5) days of becoming aware of the violation.
3. A detailed written report describing the noncompliance will be submitted to Ecology within five (5) days, unless requested earlier by Ecology.

Any time turbidity sampling indicates turbidity is 250 nephelometric turbidity units (NTU) or greater or water transparency is 6 centimeters or less, the Ecology regional office will be notified by phone within 24 hours of analysis as required by permit condition S5.A (see Section 5.0 of this SWPPP for contact information).

In accordance with permit condition S2.A, a complete application form will be submitted to Ecology and the appropriate local jurisdiction (if applicable) to be covered by the General Permit.

Appendix A – Site Plans

See Plans.

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Appendix B – Construction BMPs

Stabilized Construction Entrance (BMP C105)

Silt Fence (BMP C233)

Storm Drain Inlet Protection (BMP C220)

Infiltration Trench (BMP T7.20)

Temporary and Permanent Seeding (BMP C120)

Mulching (BMP C121)

Nets and Blankets (BMP C122)

Plastic Covering (BMP C123)

Topsoiling (BMP C125)

Dust Control (BMP C140)

Early application of gravel base on areas to be paved

Outlet Protection (BMP C209)

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Appendix C – Alternative BMPs

The following includes a list of possible alternative BMPs for each of the 12 elements not described in the main SWPPP text. This list can be referenced in the event a BMP for a specific element is not functioning as designed and an alternative BMP needs to be implemented.

Element #1 - Mark Clearing Limits
High Visibility Plastic or Metal Fence (BMP C103)
Stake and Wire Fence (BMP C104)
Element #2 - Establish Construction Access
Wheel Wash (BMP C106)
Water Bars (BMP C203)
Element #3 - Control Flow Rates
Wattles (BMP C235)

Element #4 - Install Sediment Controls
Straw Bale Barrier (BMP C230)
Gravel Filter Berm (BMP C232)
Straw Wattles (BMP C235)
Portable Water Storage Tanks (Baker Tanks)
Construction Stormwater Chemical Treatment (BMP C250)
Construction Stormwater Filtration (BMP C251)

Element #5 - Stabilize Soils
Polyacrylamide (BMP C126)

Element #6 - Protect Slopes
Straw Wattles (BMP C235)
Surface Roughening (BMP C240)

Element #8 - Stabilize Channels and Outlets
Level Spreader (BMP C206)
Check Dams (BMP C207)

Element #9 – Control Pollutants
Concrete Handling (BMP C151)
Construction Stormwater Chemical Treatment (BMP C250)
Construction Stormwater Filtration (BMP C251)

Element #10 - Control Dewatering
Vegetated Filtration (BMP C236)
Additional Advanced BMPs to Control Dewatering:

Appendix D – General Permit

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Appendix E – Site Inspection Forms (and Site Log)

The results of each inspection shall be summarized in an inspection report or checklist that is entered into or attached to the site log book. It is suggested that the inspection report or checklist be included in this appendix to keep monitoring and inspection information in one document, but this is optional. However, it is mandatory that this SWPPP and the site inspection forms be kept onsite at all times during construction, and that inspections be performed and documented as outlined below.

At a minimum, each inspection report or checklist shall include:

a. Inspection date/times

b. Weather information: general conditions during inspection, approximate amount of precipitation since the last inspection, and approximate amount of precipitation within the last 24 hours.

c. A summary or list of all BMPs that have been implemented, including observations of all erosion/sediment control structures or practices.

d. The following shall be noted:

   i. locations of BMPs inspected,

   ii. locations of BMPs that need maintenance,

   iii. the reason maintenance is needed,

   iv. locations of BMPs that failed to operate as designed or intended, and

   v. locations where additional or different BMPs are needed, and the reason(s) why

e. A description of stormwater discharged from the site. The presence of suspended sediment, turbid water, discoloration, and/or oil sheen shall be noted, as applicable.

f. A description of any water quality monitoring performed during inspection, and the results of that monitoring.

g. General comments and notes, including a brief description of any BMP repairs, maintenance or installations made as a result of the inspection.

h. A statement that, in the judgment of the person conducting the site inspection, the site is either in compliance or out of compliance with the terms and conditions of the SWPPP and the NPDES permit. If the site inspection indicates that the site is out of compliance, the inspection report shall include a summary of the remedial actions required to bring the site back into compliance, as well as a schedule of implementation.

i. Name, title, and signature of person conducting the site inspection; and the following statement: "I certify under penalty of law that this report is true, accurate, and complete, to the best of my knowledge and belief".

When the site inspection indicates that the site is not in compliance with any terms and conditions of the NPDES permit, the Permittee shall take immediate action(s) to: stop, contain, and clean up the unauthorized discharges, or otherwise stop the noncompliance; correct the problem(s); implement appropriate Best Management Practices (BMPs), and/or conduct maintenance of existing BMPs; and achieve compliance with all applicable standards and permit conditions. In addition, if the noncompliance causes a threat to human health or the environment, the Permittee shall comply with the Noncompliance Notification requirements in Special Condition S5.F of the permit.

Site Inspection Form

General Information			
Project Name:			
Inspector Name:		**Title:** **CESCL # :**	
Date:		**Time:**	
Inspection Type:	□ After a rain event □ Weekly □ Turbidity/transparency benchmark exceedance □ Other		
Weather			
Precipitation	Since last inspection	In last 24 hours	
Description of General Site Conditions:			

Inspection of BMPs							
Element 1: Mark Clearing Limits							
BMP:							
Location	Inspected			Functioning			Problem/Corrective Action
	Y	N		Y	N	NIP	
BMP:							
Location	Inspected			Functioning			Problem/Corrective Action
	Y	N		Y	N	NIP	
Element 2: Establish Construction Access							
BMP:							
Location	Inspected			Functioning			Problem/Corrective Action
	Y	N		Y	N	NIP	
BMP:							
Location	Inspected			Functioning			Problem/Corrective Action
	Y	N		Y	N	NIP	

Element 3: Control Flow Rates						
BMP:						
Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	
BMP:						
Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	
Element 4: Install Sediment Controls						
BMP:						
Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	
BMP:						
Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	
BMP:						
Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	
BMP:						
Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	
BMP:						
Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

Element 5: Stabilize Soils

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

Element 6: Protect Slopes

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

Element 7: Protect Drain Inlets

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

Element 8: Stabilize Channels and Outlets

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

Element 9: Control Pollutants						
BMP:						
Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	
BMP:						
Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	
Element 10: Control Dewatering						
BMP:						
Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	
BMP:						
Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	
BMP:						
Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

Stormwater Discharges From the Site		
	Observed?	Problem/Corrective Action

	Y	N
Location		
Turbidity		
Discoloration		
Sheen		
Location		
Turbidity		
Discoloration		
Sheen		

Water Quality Monitoring		
Was any water quality monitoring conducted?	□ Yes	□ No
If water quality monitoring was conducted, record results here:		
If water quality monitoring indicated turbidity 250 NTU or greater; or transparency 6 cm or less, was Ecology notified by phone within 24 hrs?	□ Yes	□ No
If Ecology was notified, indicate the date, time, contact name and phone number below:		
Date:		
Time:		
Contact Name:		
Phone #:		
General Comments and Notes		
Include BMP repairs, maintenance, or installations made as a result of the inspection.		
Were Photos Taken?	□ Yes	□ No
If photos taken, describe photos below:		

APPENDIX F

Environmental Documentation

CRITICAL AREAS REPORT

October 2, 2023

13th Street Gas Station
Camas, WA

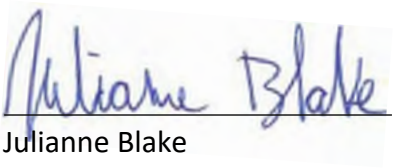
Prepared for

PAK USA Camas, LLC
c/o Taz Khan
3993 NW Currawong Court
Camas, WA 98607
(512) 779-4999

Prepared by
Ecological Land Services
1157 3rd Avenue, Suite 220A • Longview, WA 98632
(360) 578-1371 • Project Number 3934.01

SIGNATURE PAGE

The information in this report was compiled and prepared under the supervision and direction of the undersigned.



Julianne Blake
Biologist III

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APPENDICES

Appendix A – Routine Determination Method and Plant Indicator Rating Definitions
Appendix B – Wetland Determination Data Form
Appendix C – Precipitation Information

INTRODUCTION

Ecological Land Services, Inc. (ELS) was contracted by PAK USA Camas, LLC to complete a critical areas assessment for wetlands and fish and wildlife habitat conservation areas, for the purpose of future development. The site is approximately 0.97 acres and consists of Clark County Tax Parcel 176148000 located at 20101 NE 13th Street within the NW ¼ of Section 29, Township 2 North, and Range 3 East of the Willamette Meridian in Camas, Washington (Figure 1). Field work was conducted on August 29, 2023. This report summarizes the findings of the site visit in accordance with *Camas Municipal Code (CMC) Title 16 Environment* (2023).

SITE DESCRIPTION

The 0.97-acre site consists of Clark County Tax Parcel 176148000 and is accessed by a paved driveway off NE 13th Street. The site is zoned as Business Park (BP) and currently contains a single-family mobile home, shed, carport, and paved driveway. The site is bordered to the north by NE 13th Street, to the east by NW Friberg-Strunk Street, to the south by undeveloped land and commercial development in progress, and to the west by undeveloped land and a single-family residence (Figure 2).

Vegetation onsite consists primarily of regularly mowed grasses, ornamental shrubs, and coniferous and deciduous trees. Topography onsite is generally flat with NE 13th Street and NW Friberg-Strunk Street roughly two feet higher in elevation than the site. One Oregon white oak (*Quercus garryana,* FACU) was identified onsite along the southern property boundary.

METHODOLOGY

The property was evaluated for the presence of wetlands using the Routine Determination Method according to the U.S. Army Corps of Engineers' 1987 *Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers' Wetland Delineation Manual* (Environmental Laboratory 1987)*; Western Mountains, Valleys, and Coast Region (Version 2.0)* (Corps 2010). The Routine Determination Method and defining wetland criteria are discussed further in Appendix A. Wetlands are regulated as "Waters of the United States" by the U.S. Army Corps of Engineers (Corps) and as "Waters of the State" by the Washington Department of Ecology (Ecology), and locally by The City of Camas (City).

ELS biologists evaluated the property on August 29, 2023, to determine the presence or absence of critical areas including streams, wetlands, and priority habitats. One Oregon white oak (oak) was identified onsite, and no wetlands, streams, or other priority habitats were identified. Vegetation, soil, and hydrology data were collected from one test plot (TP) to determine whether wetlands were present onsite. No wetlands were present onsite. TP-1 was taken in the southwest corner of the site in an area with mapped hydric soils. The oak dripline and test plot location were mapped using a hand-held Global Positioning System (GPS) unit capable of sub-meter accuracy under ideal conditions.

VEGETATION

General vegetation consists primarily of regularly mowed grass and ornamental trees and shrubs (Photoplates 1 and 2). One Oregon white oak was observed along the southern site boundary. The plant indicator status following the plant scientific name is defined by the *National Wetland Plant List Indicator Rating Definitions* (Corps 2012) and can be found in Appendix A.

Dominant vegetation consisted of domestic apple trees (*Malus* spp.*,* assumed FAC), Japanese maple (*Acer palmatum*, UPL), rhododendron (*Rhododendron* spp., assumed FACU), Oregon white oak, osoberry (*Oemleria cerasiformis*, FACU), mowed English hawthorn saplings (*Crataegus monogyna*, FAC), swordfern (*Polystichum munitum*, FACU), and fescue grass (*Festuca* spp.*,* assumed FAC). The wetland determination data form contains vegetation information at TP-1 and is in Appendix B.

SOILS

The Natural Resources Conservation Service (NRCS) designates soils onsite as cove silty clay loam, thin solum, 0 to 3 percent slopes (CwA), and Wind River gravelly loam, 0 to 8 percent slopes (WrB) (Figure 3, NRCS 2023B). Of the two soil types found onsite, cove silty clay loam, thin solum, 0 to 3 percent slopes is designated as hydric.

According to soil profile descriptions developed by NRCS, cove silty clay loam, thin solum, is characterized as a poorly drained soil, forming on floodplains, with a depth to water table of 0 to 12 inches below ground surface (BGS). A typical soil profile includes silty clay loam from 0 to 14 inches, clay from 14-21 inches, and silt loam from 21 to 60 inches BGS. Wind River gravelly loam is categorized as a somewhat excessively drained soil with a typical soil profile of gravelly loam from 0 to 4 inches, coarse sandy loam from 4 to 24 inches, and loamy coarse sand from 24 to 60 inches BGS. Wind River gravelly loam forms on floodplains from alluvium parent material and has an average depth to water table of more than 80 inches.

Evaluated soils were characterized as loamy with a value of 4, and a chroma of 3, with no observations of redoximorphic concentrations and meeting no hydric soil indicators. Mapped hydric soils do not necessarily mean that an area is or is not a wetland—hydrology, hydrophytic wetland vegetation, and hydric soils must all be present to classify an area as a wetland. The test plot data form is in Appendix B.

HYDROLOGY

No evidence of wetland hydrology was observed at TP-1 or onsite.

PRECIPITATION

Precipitation data was gathered from the NOAA Regional Climate Centers *Clark County, Washington, WETS Station: Battle Ground*, which is located closest to the site. No rainfall occurred the day of the site visit or in the two weeks prior. Rainfall in June, July, and August was below exceedance levels and approximately 94 percent of August rainfall occurred prior to the site visit. Furthermore, review of the USACE Antecedent Precipitation Tool (APT) indicates rainfall

in the two months preceding the August 29th site visit was drier than normal with a score of 6. A copy of the APT data is provided in Appendix C. Table 1 summarizes the precipitation data.

Table 1. Precipitation Summary

Precipitation (inches)								
Date of Visit	Two Weeks Prior	3 Months Prior		30%	70%	DAREM[1]		
		30 Days Ending	Observed			Value	Weight	Total
8/29/23	8/15/23 – 8/28/23	8/29/23	0.05	0.25	0.99	1	3	3
		7/30/23	0.0	0.24	0.82	1	2	2
0.0	0.0	6/30/23	0.83	1.48	2.80	1	1	1
Rainfall 3 months prior was: **drier than normal** (sum 6-9), normal (sum 10-14), wetter than normal (sum 15-18).[1]								6
Year to Date Average Rainfall[2,3]: 50.06								
Year to Date Actual Rainfall[3]: 45.32								

[1] *Direct Antecedent Rainfall Evaluation Methods (Sumner et al 2009)*
[2] *Includes 94% of August Rainfall*
[3] *Based on a water year, October 2022 – August 2023*

Critical Area Inventories

National Wetlands Inventory

The National Wetlands Inventory (NWI) map does not indicate any wetlands onsite (Figure 4, USFWS 1988). ELS agrees with the NWI mapping, as no wetlands were identified onsite.

Clark County Critical Area Inventory

The Clark County Critical Area Inventory (CCCAI) map does not indicate any wetlands onsite but does indicate potential wetlands presence on the property to the south. Hydric soils are mapped along the eastern site boundary and the southwestern corner, and a habitat area is mapped over the majority of the eastern portion of the site (Figure 5). ELS partially agrees with the CCAI as no wetlands were identified onsite and one oak was observed in the vicinity of the mapped habitat area. The potential wetlands mapped to the south of the site are located in the footprint of a commercial development that has received permit approval. However, ELS does not agree with the extent of the mapped habitat area as only one oak was identified onsite and no other critical habitats were identified.

Washington Department of Natural Resources Stream Type

The Washington Department of Natural Resources (WDNR) Stream Type Map does not depict any streams onsite (Figure 6, WDNR 2023). ELS agrees with the WDNR mapping as no streams were observed onsite.

Priority Habitats and Species

The Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) maps indicate oak woodland and caves or cave-rich areas on the southern boundary of the site

and within 300 feet of the site to the southwest (Figure 7, WDFW 2023). ELS confirmed the presence of a single oak along the southern site boundary, but no oak woodlands or caves were observed onsite.

Critical area inventory maps are typically used to gather general information about a region and due to the large scale necessary for regional mapping, are limited in accuracy for localized analyses.

Critical Areas Summary

Priority Habitats

Oregon White Oak

Oregon white oaks are considered a priority habitat and are regulated by the Washington Department of Fish and Wildlife (WDFW) and locally by the City of Camas. According to WDFW's Management Recommendations for Washington's priority habitats: Oregon white oak woodlands (Larsen and Morgan, 1998), in urban or urbanizing areas west of the Cascades, priority oak habitat is defined as single oaks, stands of pure oak, or oak/conifer associations, one acre or greater in size. WDFW may also consider individual Oregon white oak trees a priority habitat when found to be particularly valuable to wildlife [i.e., contains many cavities, has a large diameter at breast height (DBH), is used by priority species, or has a large canopy]. The site is within the City of Camas. WDFW recommendation is that in urban and urbanizing areas, single trees should be maintained if they are deemed important to species highly associated with Oregon white oak. Oaks and their associated floras comprise distinct woodland ecosystems with various plant communities providing valuable habitat that contributes to wildlife diversity; oak woodlands provide a mix of feeding, resting, and breeding habitat for many wildlife species (Larsen and Morgan 1998).

The WDFW Priority Habitats and Species online mapping tool depicts oak woodlands within the vicinity of the observed oak along the southern site boundary. One oak tree measuring approximately 52 inches DBH was mapped along the southern site boundary during site reconnaissance (Figure 2). The oak has several live and dead branches, cavities, and has canopy connectivity with other trees in the vicinity but is not connected with other oaks. The oak location was mapped using a GPS system capable of submeter accuracy in ideal conditions. According to *CMC 16.61.010(3)(a)*, individual Oregon white oak trees with a twenty-inch DBH are considered a priority habitat.

Table 2: Oak Summary

Canopy Area	Diameter at Breast Height	Number of Trunks	Noteworthy Habitat Features
0.08 acres	52 inches	1	• Canopy is interconnected with adjacent trees, but not other oaks • Two large cavities

LIMITATIONS

ELS bases this report's determinations on standard scientific methodology and best professional judgment. In our opinion, local, state, and federal regulatory agencies should agree with our determinations. However, the information contained in this report should be considered preliminary and used at your own risk until it has been approved in writing by the appropriate regulatory agencies. ELS is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this report.

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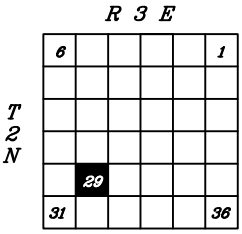
FIGURES AND PHOTOPLATES

WASHINGTON

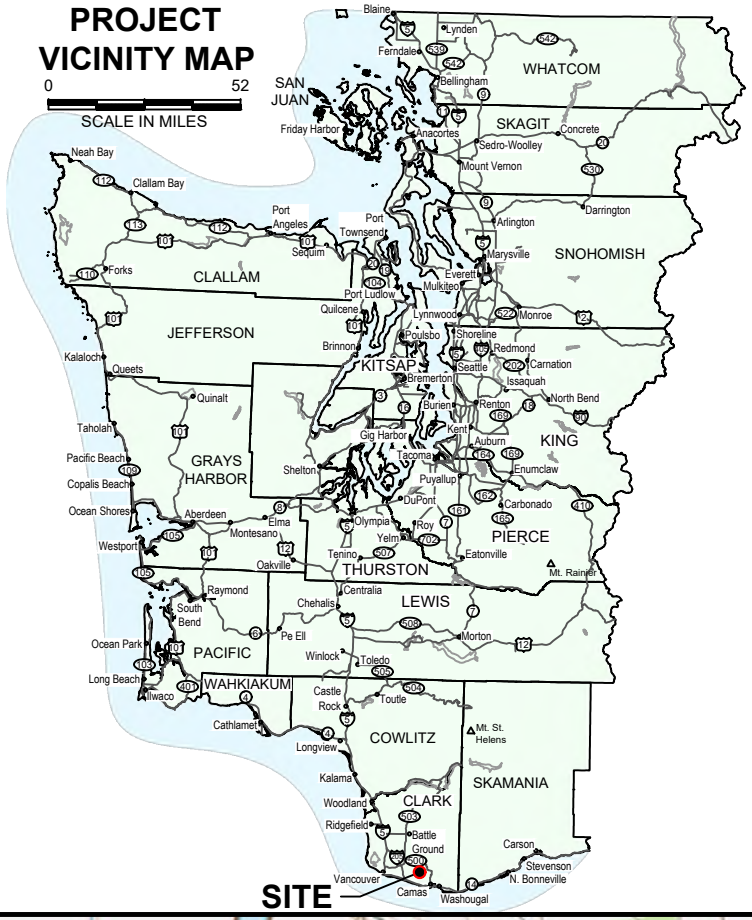
SITE

45.6321° Latitude
-122.4664° Longitude

LOCATION MAP



PROJECT VICINITY MAP



NOTE:
Quadrangle topographic map from USGS.

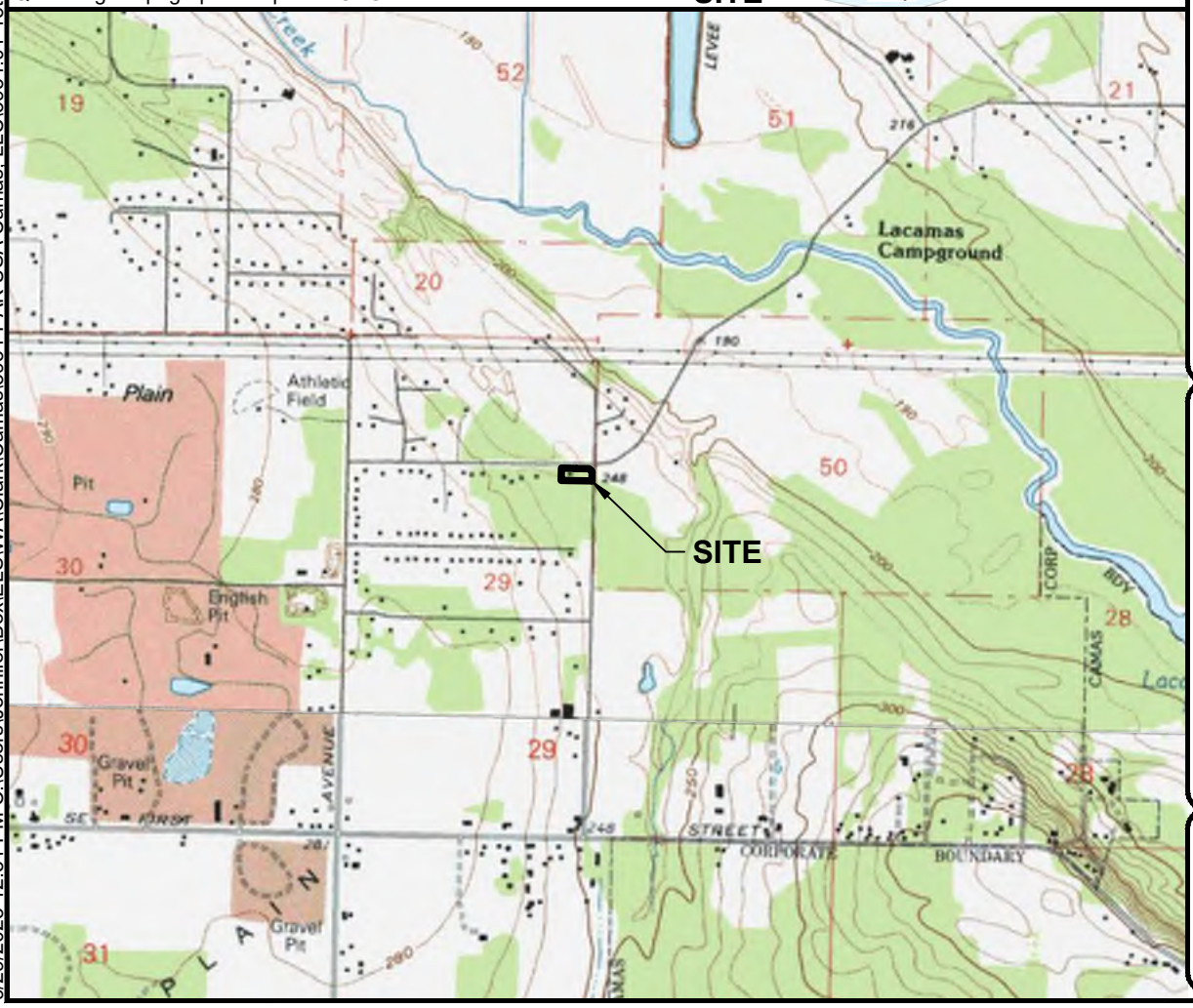


Figure 1
VICINITY MAP
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com

Ecological Land Services

SCALE IN FEET
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2000
4000

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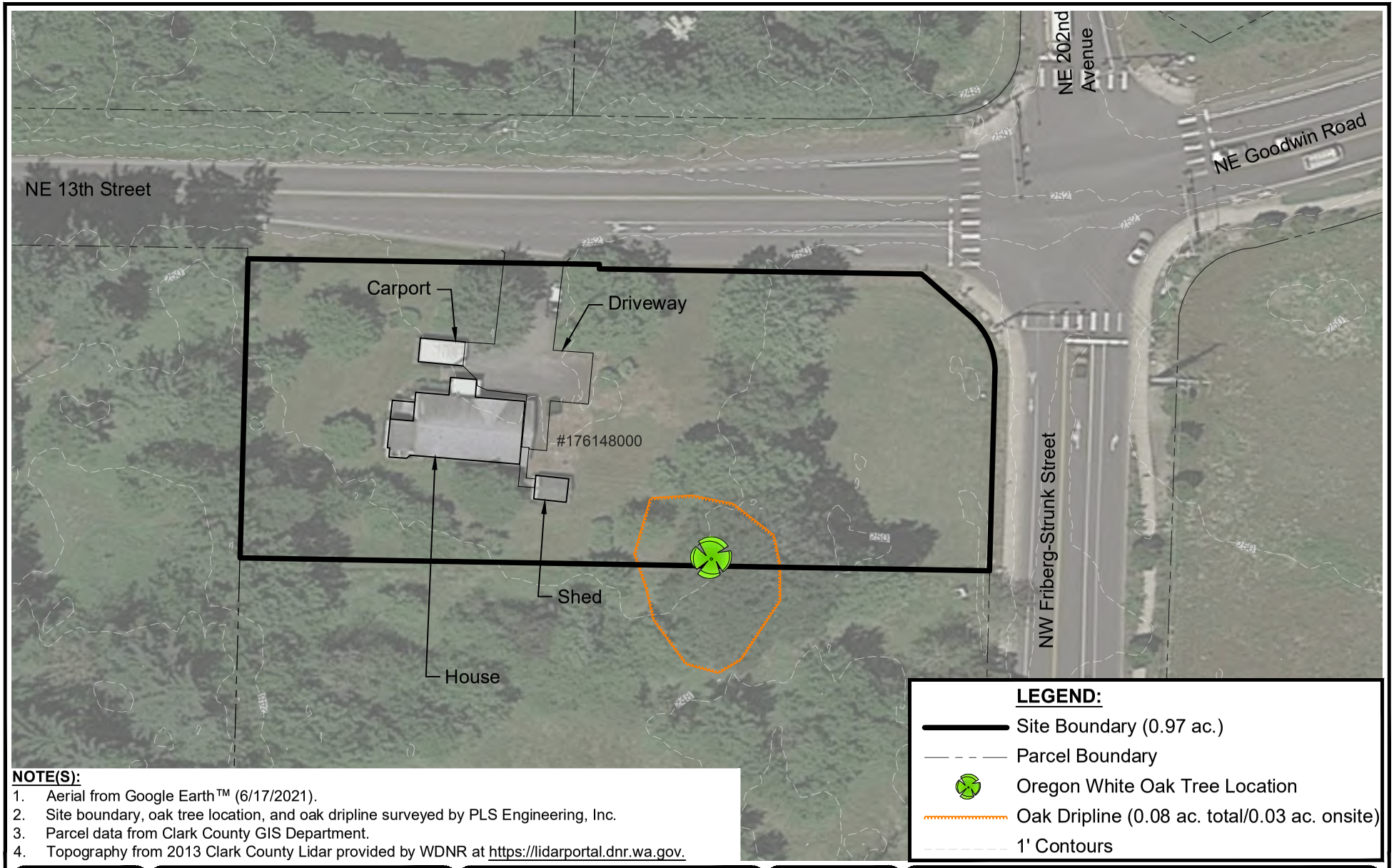

NOTE(S):

1. Aerial from Google Earth™ (6/17/2021).
2. Site boundary, oak tree location, and oak dripline surveyed by PLS Engineering, Inc.
3. Parcel data from Clark County GIS Department.
4. Topography from 2013 Clark County Lidar provided by WDNR at https://lidarportal.dnr.wa.gov.

N W E S

0 60 120
SCALE IN FEET

Ecological Land Services
1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

Figure 2
EXISTING CONDITIONS
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

Exhibit 9 APPEAL24-1001

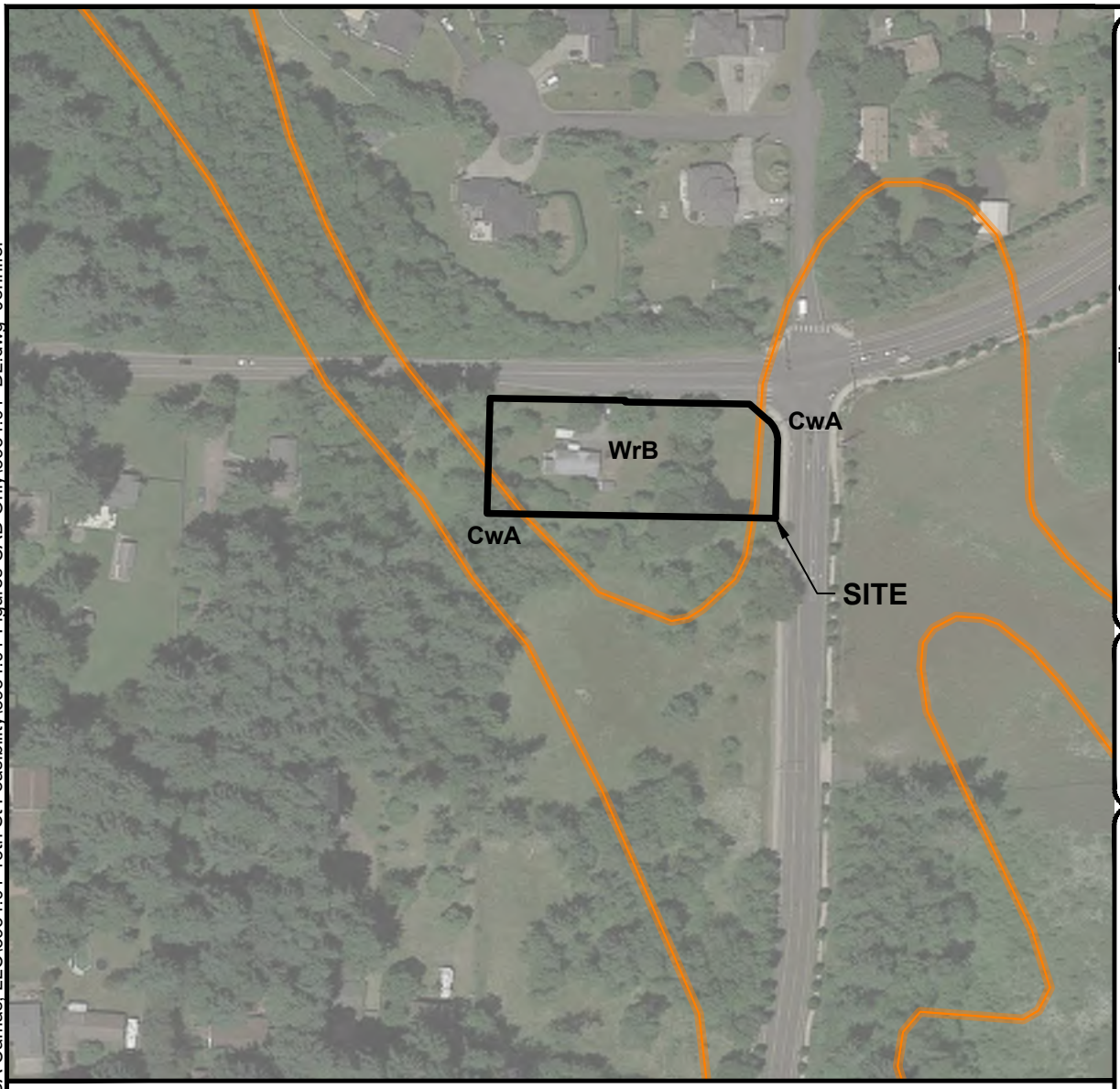

Figure 3
NRCS SOIL SURVEY
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

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Ecological Land Services

0 200 400
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W E
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LEGEND:

Site Boundary
NRCS Soil Boundary
CwA Cove silty clay loam, thin solum, 0 to 3 percent slopes. **Hydric.**
WrB Wind River gravelly loam, 0 to 8 percent slopes. Not hydric.

NOTE(S):
1. Map provided on-line by NRCS at web address: *http://websoilsurvey.nrcs.usda.gov/app/*

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No mapped wetlands indicated onsite by US Fish & Wildlife Service.

LEGEND:

Site Boundary

Wetlands

Riverine

NOTE(S):

1. Map provided on-line by US Fish & Wildlife Service at web address: *https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper*

Figure 4
USFWS NATIONAL WETLANDS INVENTORY
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
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www.eco-land.com

Ecological Land Services

0 200 400
SCALE IN FEET

N W E S

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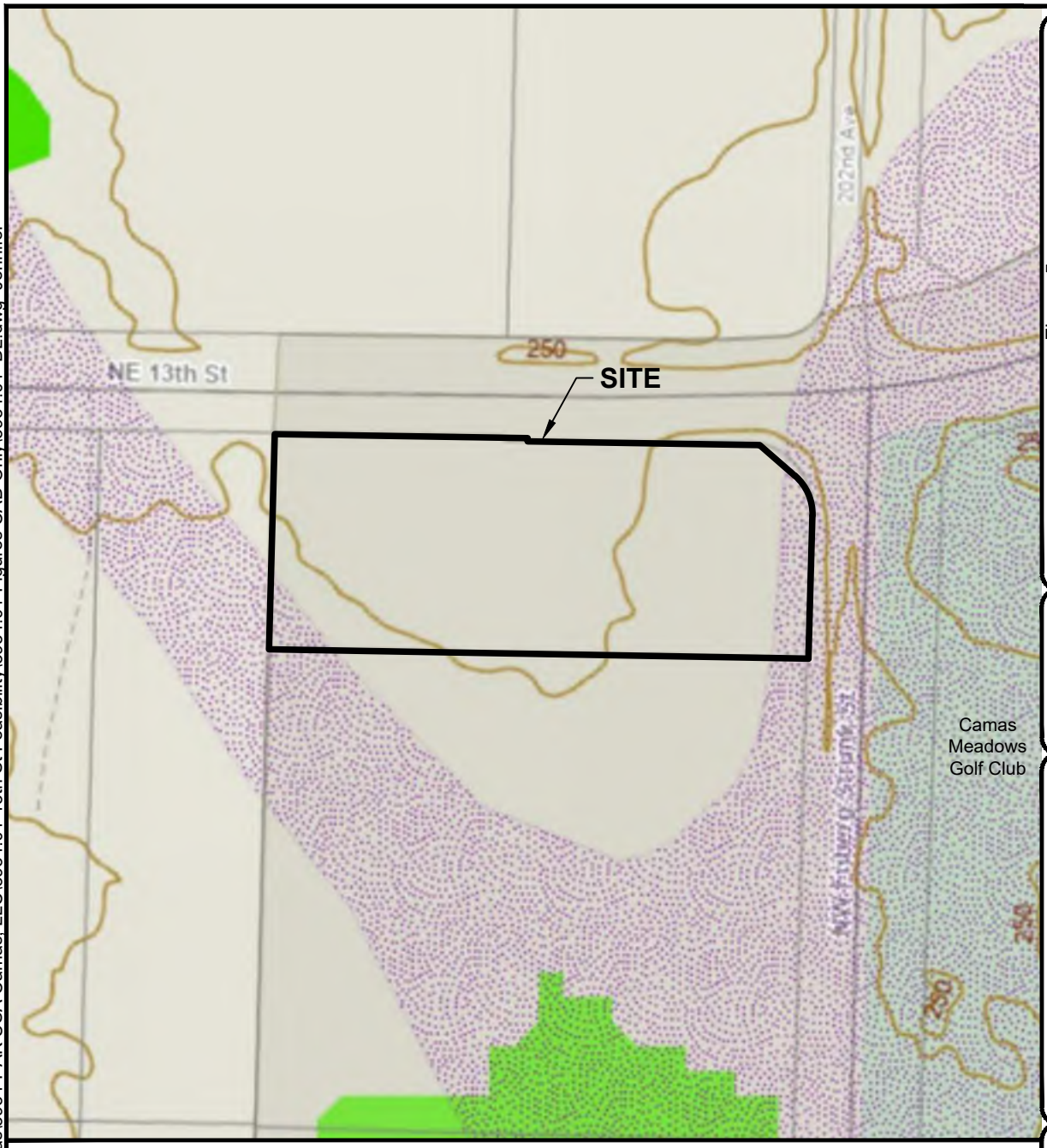

Figure 5
CLARK COUNTY CRITICAL AREAS
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com
Ecological Land Services

LEGEND:

Site Boundary

Slopes and Geologic Hazards Group Contour Lines
Contour Lines - 10 ft

Soils and Wetlands Inventory
Hydric Soils
Potential Wetlands Presence
Permitted Wetland

0 100 200
SCALE IN FEET

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NOTE(S):
1. Map provided on-line by Clark County at web address: *https://gis.clark.wa.gov/mapsonline/index.cfm?site=Environmental*

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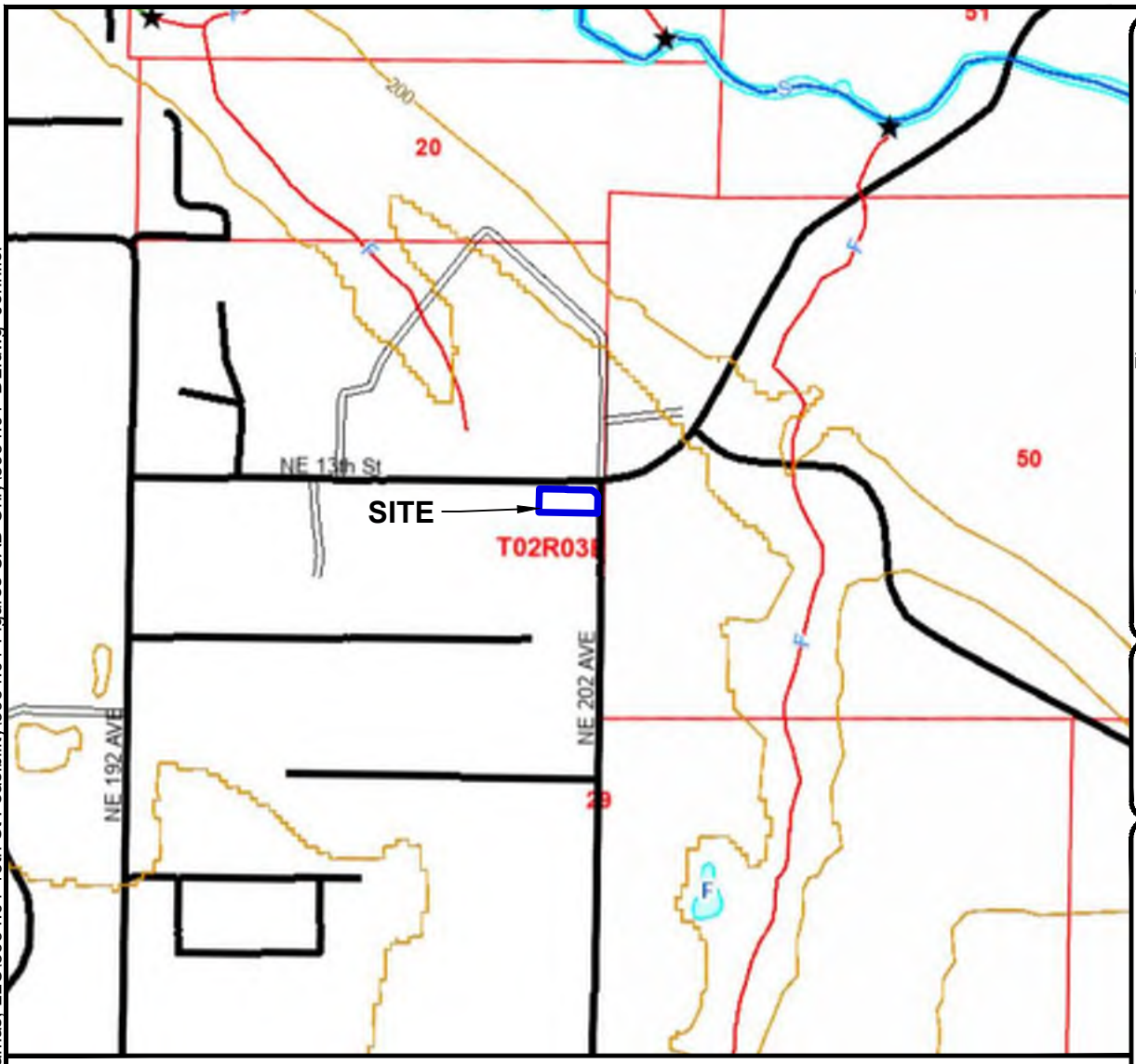

No mapped streams indicated onsite by the Washington State Department of Natural Resources (DNR).

LEGEND:

- Site Boundary
- 40-foot Contours
  - 40 ft. Contours
- Water Courses (FP)
  - Type S
  - Type F
  - Type N, Np, Ns
  - U, unknown
  - X, non-typed per WAC 222-16
- WRIA Boundaries
  - WRIA Boundaries
- DNR Roads
  - Paved Road
  - Unpaved Road/Surface Unknown
- Unpaved Road/Surface Unknown
  - Water Type Breaks (FP)

NOTE: Map provided on-line by Washington State Department of Natural Resources at web address: *http://fortress.wa.gov/dnr/app1/Fpars/viewer.htm*

Figure 6
WDNR STREAM TYPE MAP
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
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Ecological Land Services

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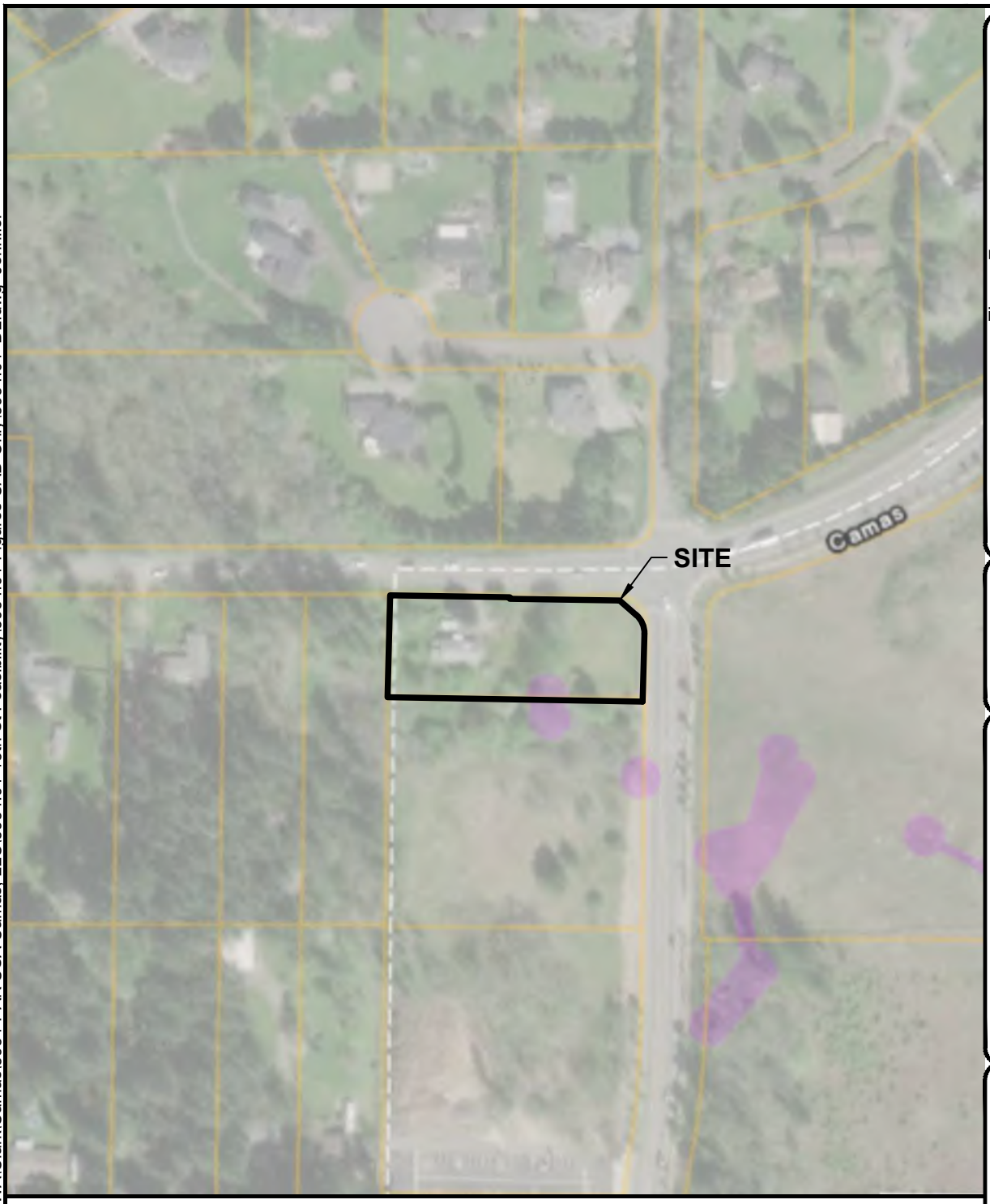

Figure 7
WDFW PRIORITY HABITAT AND SPECIES
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

1157 3rd Ave., Suite 220A
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Ecological Land Services

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LEGEND:

- Site Boundary
- Parcel Boundary
- Oak Woodland - Habitat Feature

By Township
Caves or Cave-rich Areas

NOTE: Map provided on-line by Washington State Department of Fish & Wildlife at web address:
http://apps.wdfw.wa.gov/phsontheweb/

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Photo 1 was taken facing east and shows general conditions onsite.

Photo 2 was taken facing west and shows general conditions onsite. The oak is visible on the left.

Photo 3 shows the onsite Oregon white oak.

Ecological
nd Services

1157 3rd Ave., Suite 220A
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Phone: (360) 578-1371
Fax: (360) 414-9305

DATE: 08.29.2023
DWN: JB
PRJ. MGR: JB
PROJ.#: 3934.01

Photoplate 1
13th Street Gas Station
Camas, WA
Section 29, Township 2N, Range 3E, W.M.

Exhibit 9 APPEAL24-1001

Photo 4 was taken facing north at TP-1 and shows general conditions onsite.

Photo 5 was taken facing west.

Photo 6 was taken facing west at TP-1.

Photo 7 was taken facing east at TP-1 and shows general conditions onsite.

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nd Services

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Fax: (360) 414-9305

DATE: 08.29.2023
DWN: JB
PRJ. MGR: JB
PROJ.#: 3934.01

Photoplate 2
13th Street Gas Station
Camas, WA
Section 29, Township 2N, Range 3E, W.M.

Exhibit 9 APPEAL24-1001

APPENDIX A

ROUTINE DETERMINATION METHOD AND PLANT INDICATOR RATING DEFINITIONS

Routine Determination Method

The Routine Determination Method is defined according to the U.S. Army Corps of Engineers' 1987 *Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers' Wetland Delineation Manual* (Environmental Laboratory 1987)*; Western Mountains, Valleys, and Coast Region (Version 2.0)* (Corps 2010). The Routine Determination Method examines three parameters – vegetation, soils, and hydrology – to determine if wetlands exist in a given area. Hydrology is critical in determining what is a wetland, but if often difficult to assess because hydrologic conditions can change periodically (hourly, daily, or seasonally). Consequently, it is necessary to determine if hydrophytic vegetation and hydric soils are present, which would indicate that water is present for a long enough duration to support a wetland plant community. By definition, wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Vegetation Indicator Status

The indicator status, following the scientific names of plant species, indicates the likelihood of the species to be found in wetlands according to the *National Wetland Plant List Indicator Rating Definitions* (Corps 2012). Listed from most likely to least likely to be found in wetlands, the indicator status categories are:

- **OBL** (obligate wetland) - occur almost always under natural conditions in wetlands.
- **FACW** (facultative wetland) - usually occur in wetlands, but occasionally found in non-wetlands.
- **FAC** (facultative) - equally likely to occur in wetlands or non-wetlands.
- **FACU** (facultative upland) - usually occur in non-wetlands, but occasionally found in wetlands.
- **UPL** (obligate upland) - occur almost always under natural conditions in non-wetlands.
- **NI** (no indicator) - insufficient data to assign to an indicator category.

APPENDIX B

WETLAND DETERMINATION DATA FORM

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: 13th Street Gas Station City/County: Camas/Clark Sampling Date: 08/29/2023
Applicant/Owner: PAK USA Camas, LLC State: WA Sampling Point: TP-1
Investigator(s): J. Blake Section, Township, Range: S29, T2N, R3E
Landform (hillslope, terrace, etc.): Floodplains Local relief: (concave, convex, none): Convex Slope (%): 0-3%
Subregion (LRR): LRRA MLRA2 Lat: 45.6318544 Long: -122.4669931 Datum: NAD83
Soil Map Unit Name: Cove silty clay loam, thin solum, 0 to 3 percent slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☐ No☒ (If no, explain Remarks.)
Are Vegetation☐, Soil☐, or Hydrology☐ significantly disturbed? Are "Normal Circumstances" present? Yes☒ No☐
Are Vegetation☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** Yes☐ No☒
Hydric Soils Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	

Remarks: TP-1 is located in the southwest corner of the site in an area with mapped hydric soils. TP-1 does not meet all three wetland indicators and is therefore in uplands. Hydrologic conditions were not typical for this time of year, as antecedent rainfall was determined to be drier than normal for the two months prior to the site visit.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Malus* spp.*	20%	yes	FAC
2. *Fraxinus latifolia*	20%	yes	FACW
3. *Robinia pseudoacacia*	20%	yes	FACU
4. *Crataegus monogyna*	15%	yes	FAC
50% = 38 20% = 15	75%	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
50% = ___ 20% = ___	%	=Total Cover	
Herb Stratum (Plot size: 5 ft radius)			
1. *Festuca* spp*	93%	yes	FAC
2. *Iris* spp.*	5%	no	FACW
3. *Rubus ursinus*	2%	no	FACU
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
11.	%		
50% = 50 20% = 20	100%	=Total Cover	
Woody Vine Stratum (Plot size: 15 ft radius)			
1. *Rubus armeniacus*	5%	yes	FAC
2.	%		
50% = 3 20% = 1	5%	=Total Cover	

% Bare Ground in Herb Stratum 0%

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC 83 (A/B)

Prevalence Index worksheet

Total % Cover of:		Multiply by:	
OBL species		x 1=	
FACW species		x 2=	
FAC species		x 3=	
FACU species		x 4=	
UPL species		x 5=	
Column Totals:	(A)		(B)

Prevalence Index = B/A=

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 – Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes☒ No☐

Remarks: *Festuca* spp.* and *Malus* spp.* indicator statuses assumed FAC. *Iris* spp.* indicator status assumed FACW.

SOIL

Sampling Point: TP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/3	100%		%			Loam	
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosal (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Minerals (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and Wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: Hardpan
Depth (inches):6

Hydric Soil Present? Yes☐ No☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (min. of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (Inches): _____
Water Table Present?	Yes ☐	No ☒	Depth (Inches): _____
Saturation Present? (Includes Capillary fringe)	Yes ☐	No ☒	Depth (Inches): _____

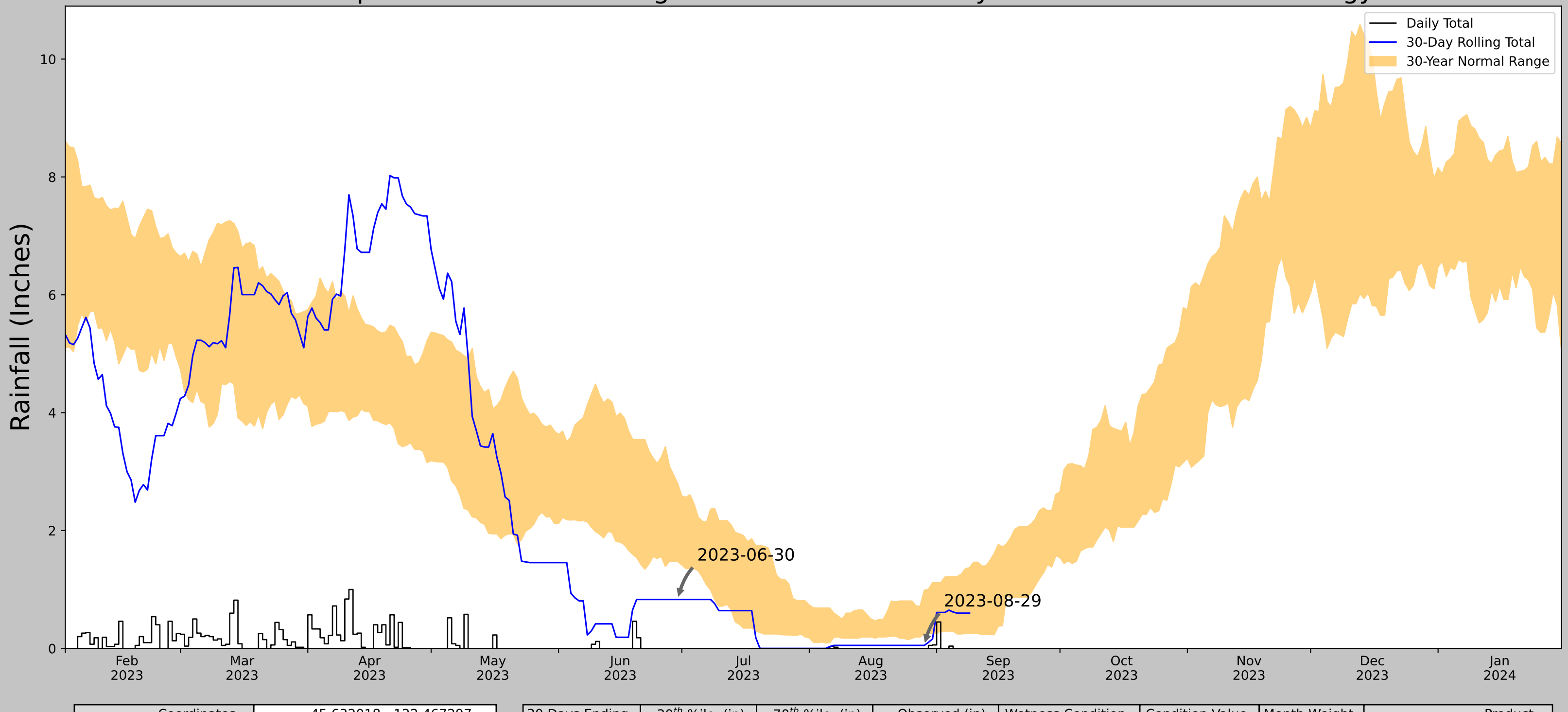
Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrologic conditions were not typical for this time of year, as antecedent rainfall was determined to be drier than normal for the two months prior to the site visit.

APPENDIX C

PRECIPITATION INFORMATION



Coordinates	45.632018, -122.467297
Observation Date	2023-08-29
Elevation (ft)	253.44
Drought Index (PDSI)	Severe drought
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-08-29	0.253543	0.986221	0.051181	Dry	1	3	3
2023-07-30	0.24252	0.814961	0.0	Dry	1	2	2
2023-06-30	1.475197	2.795276	0.830709	Dry	1	1	1
Result							Drier than Normal - 6

US Army Corps of Engineers.

ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
BATTLE GROUND	45.7717, -122.5286	284.121	10.094	30.681	4.852	11318	69
BATTLE GROUND 0.8 N	45.794, -122.5443	316.929	1.716	32.808	0.828	0	1
BATTLE GROUND 1.2 NE	45.7958, -122.5275	361.877	1.666	77.756	0.879	0	20
VANCOUVER 4 NNE	45.6775, -122.6514	220.144	8.8	63.977	4.523	4	0
MERWIN DAM	45.955, -122.5625	224.081	12.769	60.04	6.513	31	0

Exhibit 9 APPEAL 24-1001

OAK BANK USE PLAN

October 2, 2023

13th Street Gas Station
Camas, WA

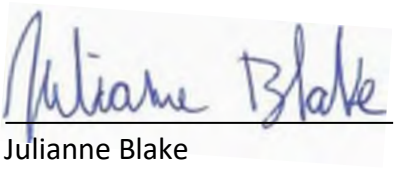
Prepared for

PAK USA Camas, LLC
c/o Taz Khan
3993 NW Currawong Court
Camas, WA 98607
(512) 779-4999

Prepared by
Ecological Land Services
1157 3rd Avenue, Suite 220A • Longview, WA 98632
(360) 578-1371 • Project Number 3934.01

SIGNATURE PAGE

The information in this report was compiled and prepared under the supervision and direction of the undersigned.



Julianne Blake
Biologist III

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PROJECT DESCRIPTION **2**
EXISTING CONDITIONS **2**
EXISTING AND SURROUNDING LAND USES 2
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AVOIDANCE AND MINIMIZATION **3**
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IMPACTED PRIORITY HABITAT FUNCTIONS **3**
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Figure 2 Existing Conditions
Figure 3 Proposed Conditions
Figure 4 Terrace Oak Bank Service Area
Figure 5 Terrace Oak Bank Site Design

INTRODUCTION

Ecological Land Services, Inc. (ELS) was contracted by PAK USA Camas, LLC to prepare this Oak Bank Use Plan to address Oregon white oak (oak) impacts resulting from the construction of a fuel station, convenience store, and associated parking lot. The site is approximately 0.97 acres and consists of Clark County Tax Parcel 176148000 located at 20101 NE 13th Street within the NW ¼ of Section 29, Township 2 North, and Range 3 East of the Willamette Meridian in Camas, Washington (Figure 1). Field work was conducted on August 29, 2023. The project will remove one existing oak (*Quercus garryana*) and impact 0.08 acres (3,456 square feet) of oak canopy. Canopy impacts will be offset by purchasing 0.238 credits from Terrace Oak Bank (Bank). This Bank Use Plan was prepared according to the *Camas Municipal Code (CMC) Title 16 Environment* (2023) and Washington Department of Fish and Wildlife's (WDFW) *Management recommendations for Washington's priority habitats: Oregon white oak woodlands (1998)*.

RESPONSIBLE PARTIES

PROPERTY OWNER/APPLICANT
PAK USA Camas, LLC
Taz Khan
3993 NW Currawong Court
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(512) 779-4999
tkhanusa@gmail.com

PROJECT ENGINEER
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scott@plsengineering.com

MITIGATION BANK
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Cornell Rotschy
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Vancouver, Washington 98665
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cornellr@rotschyinc.com

BIOLOGICAL CONSULTANT
Ecological Land Services, Inc.
Julianne Blake – Biologist III
1157 3rd Avenue, Suite 220A
Longview, Washington 98632
(360) 578-1371
Julianne@eco-land.com

PROJECT DESCRIPTION

The project area is approximately 0.97 acres and consists of Clark County Tax Parcel 176148000 located at 20101 NE 13th Street within the NW ¼ of Section 29, Township 2 North, and Range 3 East of the Willamette Meridian in Camas, Washington (Figure 1). The project consists of constructing a fuel station, convenience store, and associated parking lot. The parking lot will contain electric vehicle charging stations and vacuum pumps as well as pedestrian crossing areas (Figure 3). The existing oak will be removed as part of the project, removing 0.08 acres (3,546 square feet) of oak canopy. Canopy impacts will be mitigated by purchasing 0.238 credits from Terrace Oak Bank. Construction is anticipated to start upon receipt of all necessary permits.

Best management practices (BMPs) that will be completed prior to construction include designating staging and stockpile areas outside of critical areas and associated buffers, establishing a standard construction entrance, and installing silt fencing to prevent sedimentation. When site preparation is complete, construction will occur. A water truck will be available to prevent dust blowing during construction, if needed. Equipment used may include haul trucks, bulldozers, excavators, pavers, and hand tools. Upon completion of construction activities, disturbed areas that will not be paved will be seeded with a native grass seed mix.

EXISTING CONDITIONS

EXISTING AND SURROUNDING LAND USES

The 0.97-acre site consists of Clark County Tax Parcel 176148000 and is accessed by a paved driveway off NE 13th Street. The site is zoned as Business Park (BP) and currently contains a single-family mobile home, shed, carport, and paved driveway. The site is bordered to the north by NE 13th Street, to the east by NW Friberg-Strunk Street, to the south by undeveloped land and commercial development in progress, and to the west by undeveloped land and a single-family residence (Figure 2).

EXISTING CRITICAL AREAS

A site visit was completed by ELS in August 2023 following the appropriate technical manuals: *The Routine Determination Method according to the Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (U.S. Army Corps of Engineers 2010). During the field visit, no wetlands were identified onsite (ELS 2023).

The WDFW Priority Habitats and Species online mapping tool depicts oak woodlands within the vicinity of the observed oak along the southern site boundary. One oak measuring approximately 52 inches diameter at breast height (DBH) was mapped along the southern site boundary during site reconnaissance (Figure 2). The oak has several live and dead branches, cavities, and has canopy connectivity with other trees in the vicinity but is not connected with other oaks. The oak location was mapped using a GPS system capable of submeter accuracy in ideal conditions. According to *CMC 16.61.010(3)(a)*, individual Oregon white oak trees with a twenty-inch DBH are considered a priority habitat.

Table 1. Oak Summary

Total Canopy Area	DBH	Number of Trunks	Noteworthy Habitat Features
0.08 acres 3,456 square feet	52 inches	1	• Canopy is interconnected with adjacent trees, but not other oaks • Two large cavities

Avoidance and Minimization

The preferred mitigation sequencing of first avoidance, then minimization, and finally compensation for unavoidable impacts was taken into consideration during the design process of this project; however, due to the single oak tree being located in an area of the site needed for a required driveway, avoiding Oregon white oak impacts altogether is not feasible. The Oregon white oak proposed for removal is the only oak tree onsite.

Unavoidable Oregon White Oak Impacts

Removal of the oak will result in the loss of 0.08 acres (3,456 square feet) of Oregon white oak priority habitat as measured by the oak canopy coverage (drip line). The following table summarizes proposed oak impacts.

Table 2. Oak Impact Summary

Identifier	DBH	Canopy Coverage	Total Impact
Oregon White Oak (Single Mature Tree)	52 inches	0.08 acres 3,456 square feet	0.08 acres 3,456 square feet

Impacted Priority Habitat Functions

ELS assessed the functions provided by the oak during a site visit on August 29, 2023. The functional assessment is based on Washington Department of Fish and Wildlife's (WDFW) *Management Recommendations for Washington's Priority Habitats, Oregon White Oak Woodlands* (Guidance) (Larsen and Morgan 1998).

Habitat Functions

Oak woodlands are considered "priority habitat and species" by WDFW and are protected locally by the City of Camas Municipal Code (*CMC*). According to *CMC 16.61.010(3)(a)*, individual Oregon white oak trees with a twenty-inch DBH are considered a priority habitat.

In urban or urbanizing areas west of the Cascades, WDFW defines priority oak habitat as single oaks, or stands of pure oak, or oak/conifer associations, 1 acre or greater in size. WDFW may also consider individual Oregon white oak trees a priority habitat when found to be particularly valuable to wildlife (i.e., contains many cavities, has a large DBH, is used by priority species, or has a large canopy) (Larsen and Morgan 1998). The project site is within the City of Camas (City). WDFW recommendation is that in urban and urbanizing areas, single trees should be maintained

if they are deemed important to species highly associated with Oregon white oak. Oaks and their associated flora comprise distinct woodland ecosystems with various plant communities providing valuable habitat that contributes to wildlife diversity. Oak woodlands provide a mix of feeding, resting, and breeding habitat for many wildlife species (Larsen and Morgan 1998).

The oak proposed for removal has several live and dead branches, cavities, and has canopy connectivity with other trees in the vicinity but is not connected with other oaks. Due to the placement of the oak within the City boundaries and lack of habitat connectivity, larger animals or those not adapted to urban conditions are not likely to be present. Therefore, removing the oak would likely result in habitat loss and a food source only for birds and small mammals that are well adapted to urban conditions.

OREGON WHITE OAK MITIGATION SELECTION RATIONALE

The Oregon white oak proposed for removal is located in the service area for the Terrace Oak Bank (Bank). The oak tree is approximately 4 miles southeast of the Bank, in the Lacamas Creek Watershed which is in the southeastern portion of the service area (Figure 4). The proposed oak removal will be mitigated by purchasing credits from the Bank at ratios specified in the Terrace Oak Bank's Mitigation Banking Instrument (MBI).

Rationale for selecting this mitigation bank is as follows:

- The oak onsite does not provide habitat for other priority species that should be replaced onsite. Habitat functions will be impacted for species common to urban areas, which can be fully replaced at the Bank.

- The habitat functions lost from the proposed oak removal correspond directly with the habitat creation purpose, goals, and objectives at the Bank which identifies 13.93 acres of existing Oregon white oak woodland WDFW Priority Habitat that will be restored to pre-agricultural conditions through creation, enhancement, and preservation. Creation and enhancement will be accomplished through planting oak saplings and/or native understory plantings, removing of Douglas-fir, and establishing a conservation easement over the entire 13.93 acres.

The 2008 *Compensatory Mitigation for Losses of Aquatic Resources, Final Rule* (Corps) recommends purchasing mitigation bank credits for ecological considerations (lower risk of failure and lower temporal loss of resources and services) and to avoid the maintenance and contingency issues and outright failures that often accompany permittee-responsible mitigation sites. Use of the Terrace Oak Bank substantially lowers the risk of failure and temporal loss of resource functions and services over newly established, permittee-responsible mitigation sites and offsite mitigation is anticipated to be more meaningful and beneficial to the watershed's habitat functions.

Functions Provided at Oak Bank

The general goal of the Bank is to restore the approximately 13.93 acres to a state similar to its pre-agricultural condition through creation, enhancement, and preservation of an existing Oregon white oak woodland. All functions related to oak habitat are expected to increase as a result of design implementation. The primary ecological goals of the Bank are as follows:

- Removal of all existing impervious surfaces, including buildings, large equipment, gravel and paved areas, and debris, followed by replanting oak saplings and native understory species.
- Removal of invasive species in creation, enhancement, and preservation areas, primarily English ivy (*Hedera helix*) and Himalayan blackberry (*Rubus armeniacus*).
- Removal of Douglas-fir (*Pseudotsuga menziesii*) overstory as recommended by WDFW to reduce competition and further degradation of the Oregon white oak woodland from shading.
- Replanting of both creation and enhancement areas with oak saplings and and native understory species to augment and expand existing Oregon white oak habitat.
- Preserve the Bank through a conservation easement.

Wildlife Habitat

The proposed development site plan will provide diverse habitat for a variety of large and small mammals, songbirds, waterfowl, amphibians, and insects by improving the condition of the existing Oregon White Oak habitat through creation and enhancement that includes replanting of oaks and native understory, removing invasive species, non-native debris, and impervious surfaces, and eliminating Douglas-fir encroachment.

Anticipated Functional Lift

The creation, enhancement, and Douglas-fir stand release activities proposed in the Bank will provide a variety of benefits lifting overall habitat functions. Invasive species eradication and installing oak trees and native understory in open areas will increase the site's potential to provide habitat by providing improved and increased diversity of plant species, structure, and interspersion of habitat. Removing Douglas-fir competition will allow the existing oaks to increase branching and smaller oak trees to become better established. The changes will increase acorn production, provide additional food for wildlife, and support a greater diversity of wildlife species as will removing impervious surfaces and debris. All functions impacted by removing an oak tree at the project site will be fully mitigated at the Bank.

Proposed Mitigation Credits

As stated in the MBI (October 28th, 2020), the local jurisdiction with regulatory authority will determine both how impacts are measured[1] and the mitigation ratios required. The mitigation

[1] i.e., square foot of canopy area/root zone, DBH, etc.

credits required for impacts to Oregon white oak will be determined by using the local jurisdiction's mitigation ratio (6:1) and multiplying this ratio by a "risk reduction factor" of 0.5. Impacts to high functioning Oregon White Oak Priority Habitat stands will be determined by the regulatory agencies on a case-by-case basis. Table 3 summarizes the impact type, mitigation ratio, and total credits proposed for compensation.

Table 3. Credits for Oak Impacts at Terrace Oak Bank

Impact Type	Impact Amount	Mitigation Ratio	Risk Reduction Multiplier	Mitigation Area Required	Proposed Credit Purchase
Canopy loss	0.08 acres (3,456 sq. ft.)	6:1	0.5	0.238 acres (10,368 sq. ft.)	0.238 credits

Credit Purchase or Transfer Timing

Following permit issuance, PAK USA Camas, LLC, as the applicant, will enter into a Buy/Sell Agreement with Terrace Oak Bank, for purchase of mitigation credits (in the quantity specified in Table 3) that would appropriately mitigate for the proposed project impacts. The actual purchase of credits will occur upon permit issuance. Prior to impacting the project oak, the applicant will submit proof of transfer of mitigation credits to project managers for the City of Camas. Proof of the mitigation transfer will be provided in the form of a notification letter to the approving agencies. Upon service of this notification, the mitigation requirement to purchase 0.238 mitigation credits will be fully satisfied.

Confirmation of Mitigation Credit Availability

Proof of the current number of available mitigation credits at the Terrace Oak Bank site will be confirmed by the approving agency, City of Camas and through the advising members of the Oak Bank Review Team.

Chair:
Brent Davis, Wetland and Habitat Review Program Manager
Clark County Community Development
P.O. Box 9810
Vancouver, WA 98666-9810
(360) 397-2375 ext. 4152
brent.davis@clark.wa.gov

Advisory Members:
Dave Howe, Area Habitat Biologist
Washington Department of Fish and Wildlife
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Ridgefield, WA 98642
(360) 906-6729
david.howe@dfw.wa.gov

Carlo Abbruzzese, Pacific Cascade Region Natural Areas Manager
Washington Department of Natural Resources
2508 NW 126th Circle
Vancouver, WA 98685
(360) 577-2025
carlo.abbruzzese@dnr.wa.gov

LIMITATIONS

ELS bases this report's determinations on standard scientific methodology and best professional judgment. In our opinion, local, state, and federal regulatory agencies should agree with our determinations. However, the information contained in this report should be considered preliminary and used at your own risk until it has been approved in writing by the appropriate regulatory agencies. ELS is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this report.

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Ecological Land Services, Inc. (ELS). 2023. *Critical Areas Report for 13th Street Gas Station, Camas, Washington*. September 26, 2023.

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Interagency Review Team for Washington State. February 19, 2009. *Using Credits from Wetland Mitigation Banks: Guidance to Applicants on Submittal Contents for Bank Use Plans*. Online http://www.ecy.wa.gov/programs/sea/wetlands/mitigation/banking/pdf/mitig_plan_guidance.pdf. Accessed August 2023.

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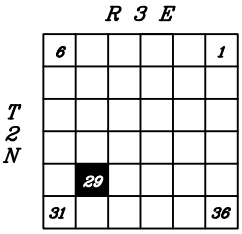
FIGURES

WASHINGTON

SITE

45.6321° Latitude
-122.4664° Longitude

LOCATION MAP



PROJECT VICINITY MAP

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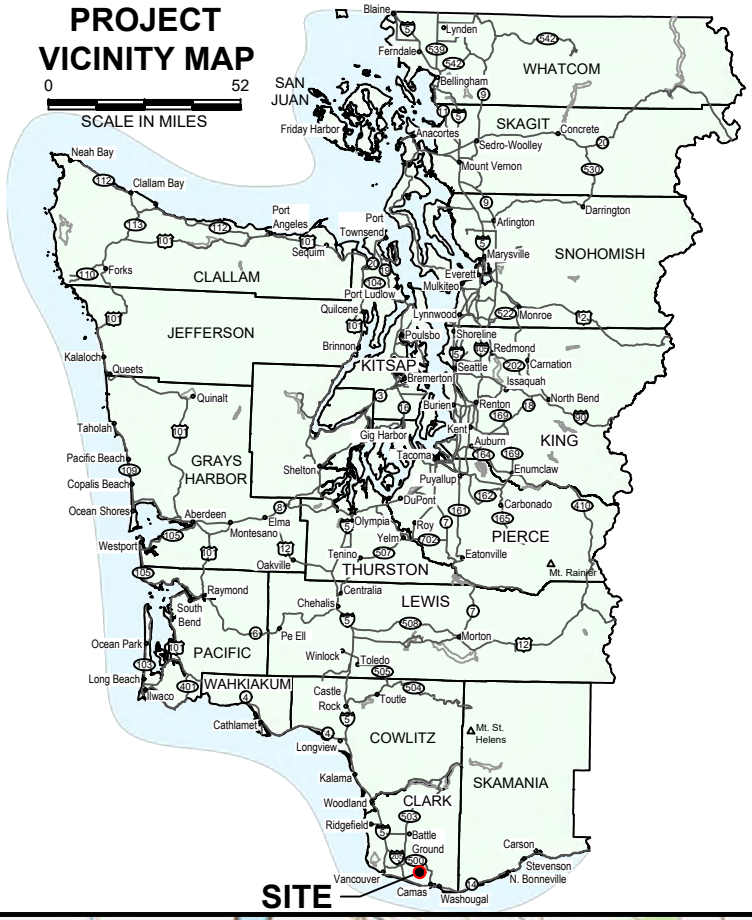

NOTE:
Quadrangle topographic map from USGS.

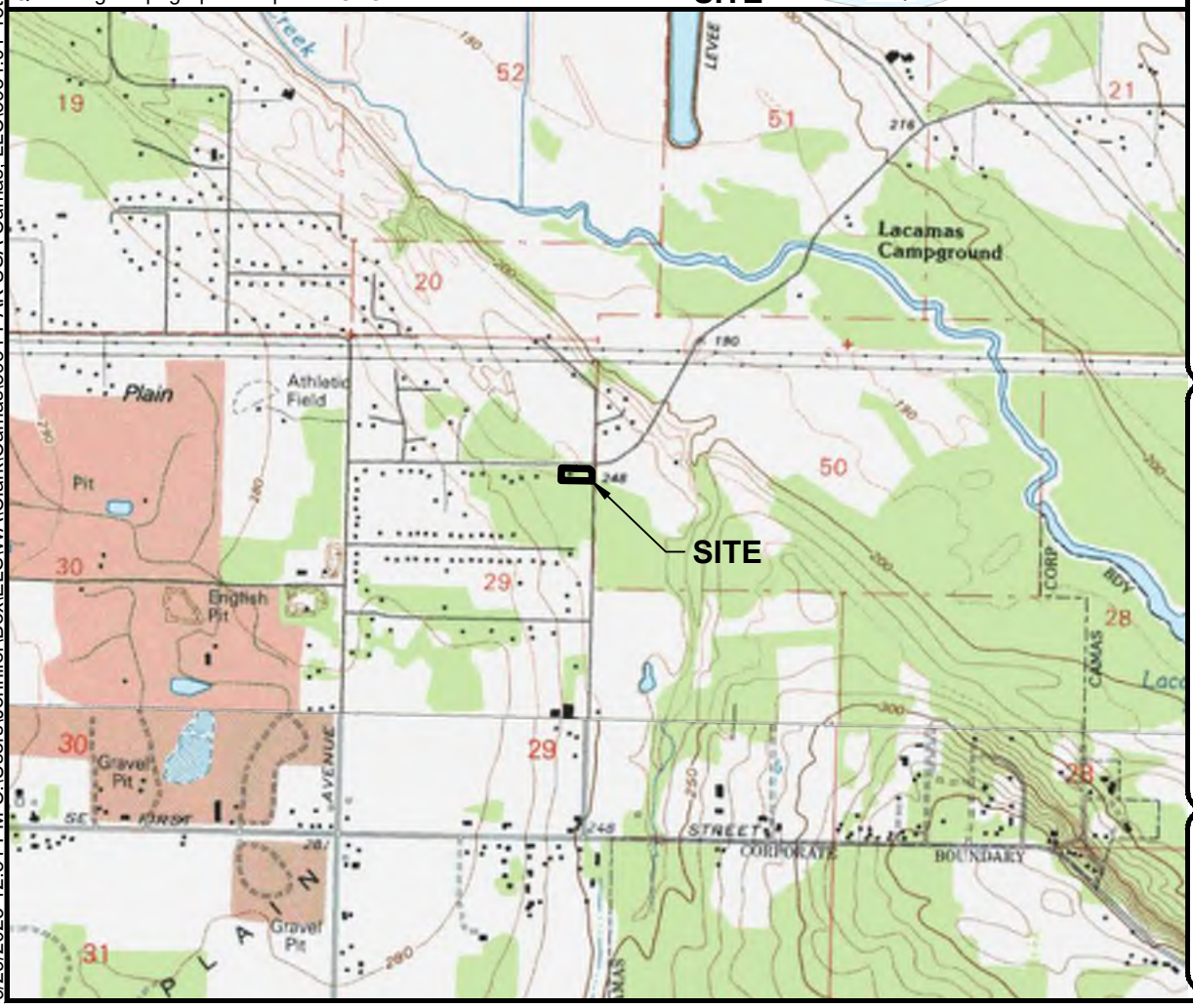

Figure 1
VICINITY MAP
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com
Ecological Land Services

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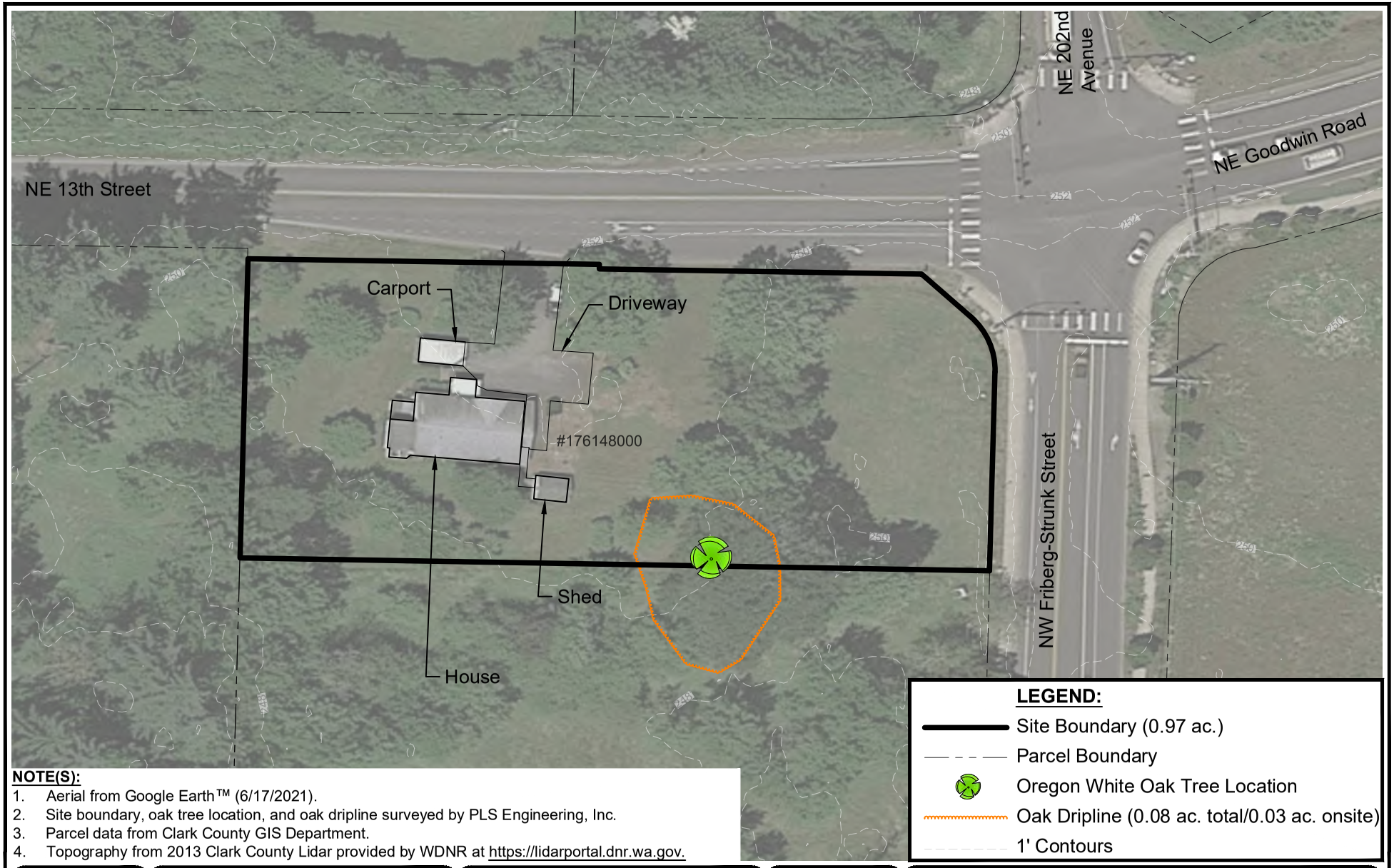

NOTE(S):

1. Aerial from Google Earth™ (6/17/2021).
2. Site boundary, oak tree location, and oak dripline surveyed by PLS Engineering, Inc.
3. Parcel data from Clark County GIS Department.
4. Topography from 2013 Clark County Lidar provided by WDNR at https://lidarportal.dnr.wa.gov.

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DATE: 9/29/23
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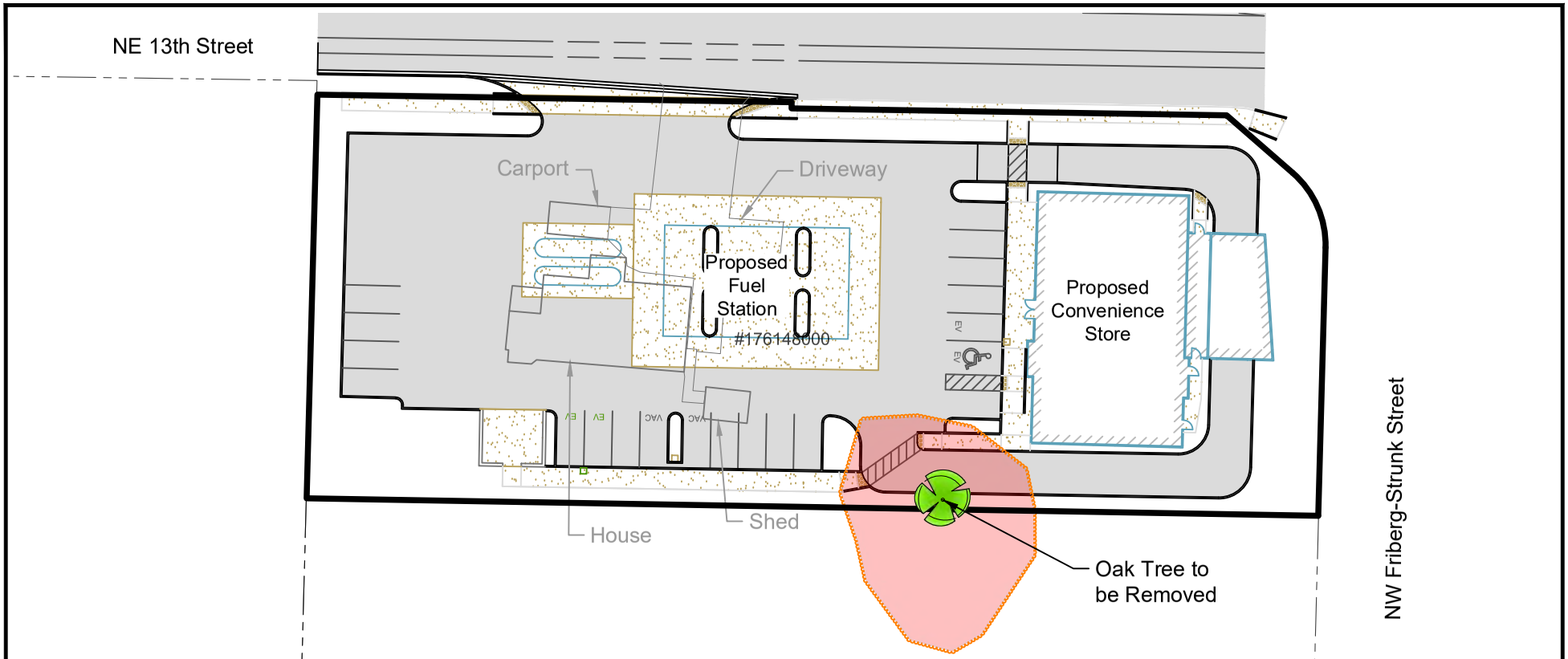
Figure 2
EXISTING CONDITIONS
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

Exhibit 9 APPEAL24-1001



NOTE(S):

1. Site boundary, oak tree location, and oak dripline surveyed by PLS Engineering, Inc.
2. Parcel, ditch, and culvert data from Clark County GIS Department.
3. Site plan by PLS Engineering.

LEGEND:

- Site Boundary (0.97 ac.)
- Parcel Boundary
- Oregon White Oak Tree Location
- Oak Dripline (0.08 ac. total/0.03 ac. onsite)

LEGEND:

- Proposed Asphalt
- Proposed Concrete
- Oak Dripline Impact (3,546 sq. ft./0.08 ac.)

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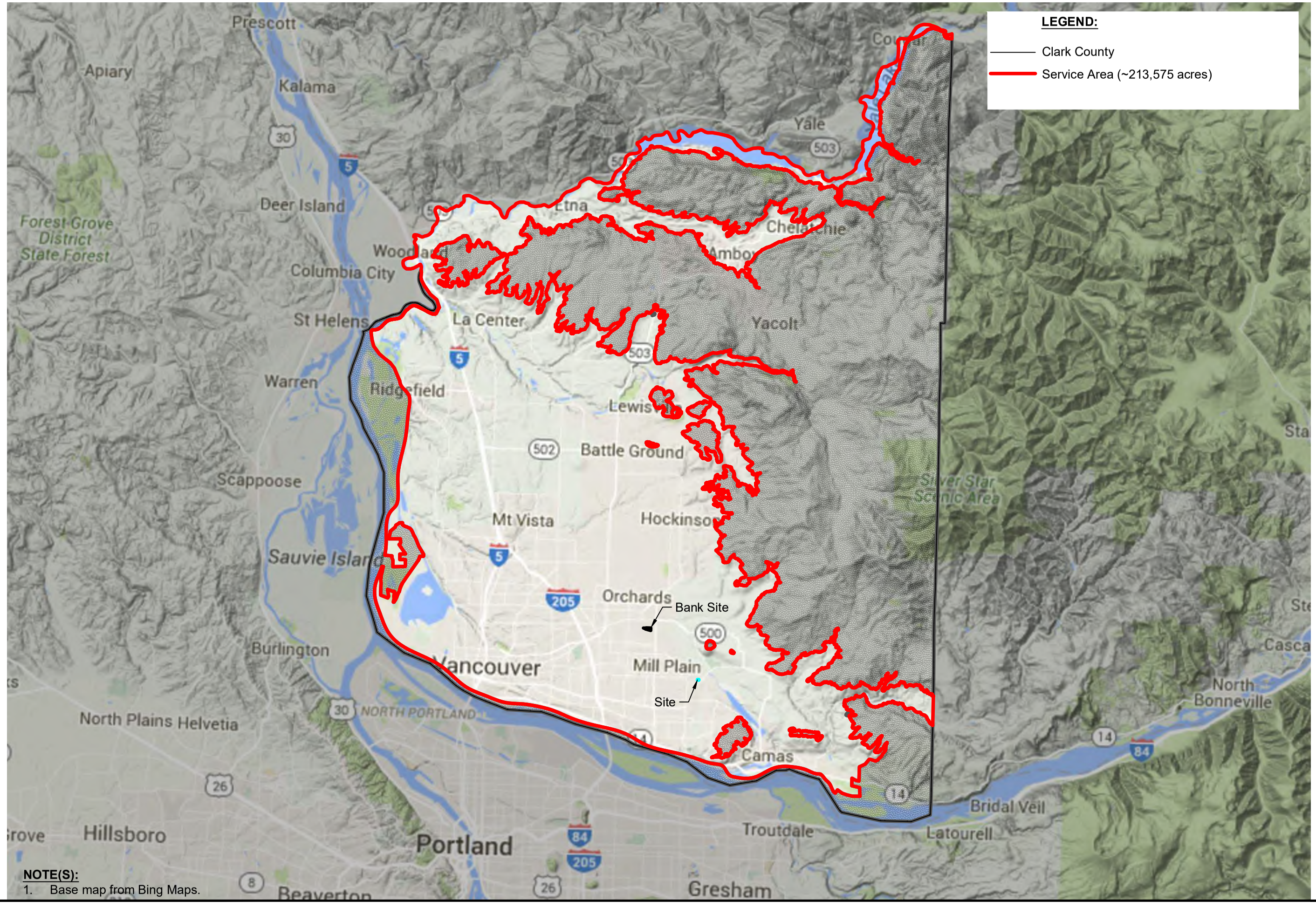
PROJECT NO: 3934.01

Figure 3
PROPOSED CONDITIONS
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

Exhibit 9 APPEAL24-1001



NOTE(S):

1. Base map from Bing Maps.

Figure 4
TERRACE OAK BANK SERVICE AREA
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/26/23
DWN: JKJ
REQ. BY: JB
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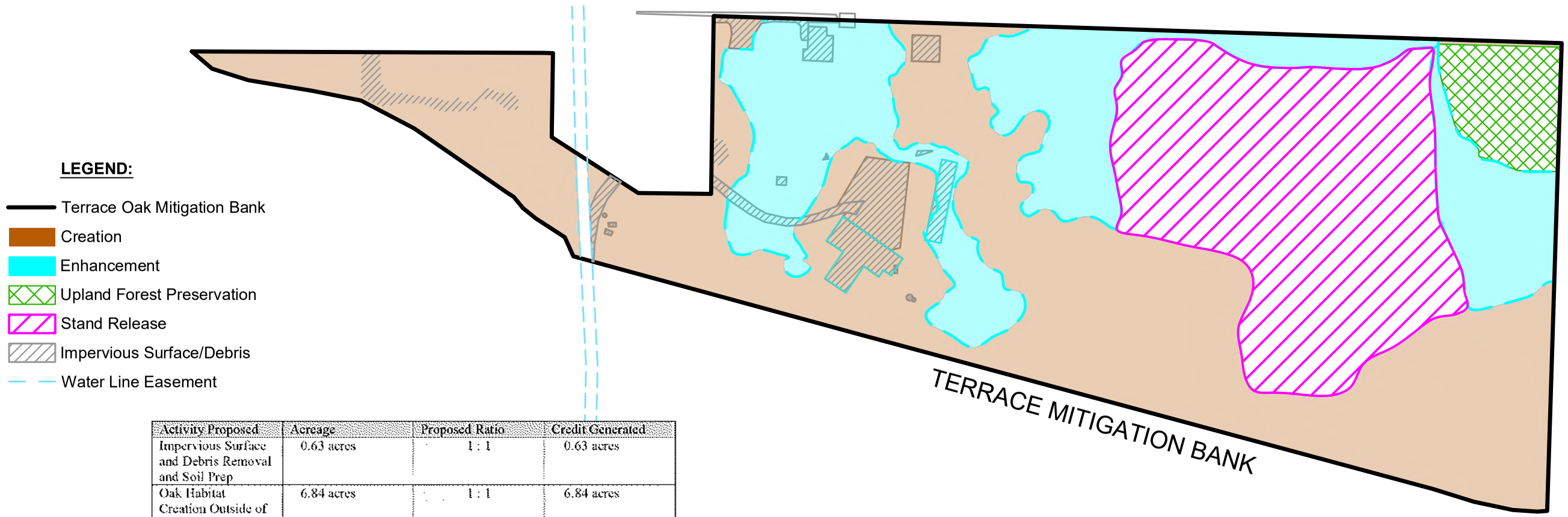

Activity Proposed	Acreage	Proposed Ratio	Credit Generated
Impervious Surface and Debris Removal and Soil Prep	0.63 acres	1 : 1	0.63 acres
Oak Habitat Creation Outside of Existing Oak Stand	6.84 acres	1 : 1	6.84 acres
Douglas Fir Stand Release	3.34 acres	0.4 : 1	8.35 acres
Enhancement of Existing Oak Stand	3.20 acres	0.4 : 1	8.00 acres
Upland Forest Preservation	0.50 acres	0.5 : 1	1.00 acres
Totals	14.51 acres[1]		24.82 acres

[1] Total acreage includes areas of activity overlap and does not include 0.05 acres of water line easement, so is not reflective of the 13.93 acres represented in the legal survey of Oak Bank area.

Table 2. Oak Mitigation Bank Activity Descriptions.

Activity Proposed	Type of Activity/Area
Impervious Surface and Debris Removal and Soil Prep	• Includes: • Buildings, driveways, gravel pads or any other impervious area to be removed (regardless of whether oak tree canopy already covers the area) • Removal of debris piles throughout the site • Loosening of soils following impervious/debris removal
Oak Habitat Creation Outside of Existing Oak Stand	• Includes open areas of all types not currently covered by oak canopy • Areas to be replanted with oak saplings and native understory
Douglas Fir Stand Release	• Includes area of dense fir canopy within existing oak stand • Douglas fir over-story to be removed through harvest or tree girdling/snag creation
Enhancement of Existing Oak Stand	• Includes areas of existing oak canopy • Enhancement areas will have non-natives removed and understory planted with native shrubs typically associated with oak woodlands
Upland Forest Preservation	• Includes areas of deciduous forest adjacent to oak canopy, providing upland forest habitat • Area will be preserved through administration of a conservation easement

Figure 5
TERRACE OAK BANK SITE DESIGN
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/26/23
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Exhibit 9 APPEAL24-1001

TRAFFIC ANALYSIS REPORT

FOR

NE 13TH STREET GAS STATION

NE 13TH STREET

CAMAS

SUBMITTED BY

CHARBONNEAU ENGINEERING LLC

September 2023

Project 23-24

TRAFFIC ANALYSIS REPORT

FOR

NE 13TH STREET GAS STATION

NE 13TH STREET

CAMAS

Prepared By

CHARBONNEAU Engineering LLC

9-13-23

September 2023

Project 23-24

8516 SW 61st Avenue, Portland, OR 97219 Phone: 971.322.8003

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- City of Vancouver Trip Assignment within Concurrency Corridor Intersections
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INTRODUCTION

This traffic analysis has been prepared to evaluate and document the operations and safety conditions for the NE 13th Street Gas Station development being planned in Camas, Washington. The development will construct a gas station with eight fueling positions, market, and car wash totaling 1,189 square feet. One single-family home will be demolished on the site.

The site is located at address #20101 NE 13th Street, on a 0.95-acre property (tax lot #176148-000). Currently a single-family home occupies the property. Figure 'a' in the appendix is a vicinity map highlighting the project location.

Both the City of Camas and City of Vancouver specified the transportation elements that needed to be addressed within the Pre-Application staff report (Camas – File #PA22-32). Therefore, it was necessary to evaluate several intersections in terms of traffic operations, safety, and for concurrency purposes.

TRAFFIC ANALYSIS CONSIDERATIONS

In order to address and evaluate the required transportation elements the following major tasks were performed.

- Inventory and record pertinent information such as traffic control devices, circulation patterns, lane conditions, pedestrian & bicycle facilities, transit zones, parking, and street characteristics.
- Record data on typical weekdays during the AM and PM peak traffic hours.
- Collect traffic count data at three study intersections.
- Address the City of Vancouver's concurrency needs including the number of trips distributed within the designated corridors and the associated proportionate share fees.
- Level of service (LOS) analysis of the study intersections and site access intersection to measure the approach delays for comparison to the City of Camas standards.
- Determination of vehicular queuing at the site access.
- Review intersection sight distance at the proposed access location.
- Documentation of the proposed access spacing and compare to the City's standards.
- Review traffic crash data furnished by WSDOT. Determine the intersection crash rates for the study intersections and verify if safety improvements are needed.

SITE DESCRIPTION, STREETS, ACCESS, AND CRITICAL INTERSECTIONS

Development of the NE 13th Street Gas Station facility includes construction of an eight fueling position gas station, market, and car wash totaling 1,189 square feet. The site consists of a 0.95-acre parcel that is situated within the southwest intersection corner at NE 13th Street and NW Friberg-Strunk Street.

Access to the proposed development will be provided with a separate driveway connection to NE 13th Street. No access will occur on NW Friberg-Strunk Street. The proposed access will be controlled by stop signing on the approach to NE 13th Street. The project site plan (Figure 'b') illustrates the access location.

The study intersections in the area include NE 13th Street at NE 192nd Avenue and at NW Friberg-Strunk Street and SE 1st Street at NW Friberg-Strunk Street. Each of the locations are controlled by signalization.

Northeast 192nd Avenue at NE 13th Street is configured as a tee-shaped design with single-lane approaches on the south and east legs. The north leg includes a separate left turn lane and southbound through lane. A marked pedestrian crosswalk is in place on the intersection's north leg.

NE 13th Street at NW Friberg-Strunk Street is a four-way design with separate right turn lanes on the west and south legs. The east approach includes a separate left turn lane. The north leg has a single lane approach. Pedestrian crosswalks occur on each approach.

NW Friberg-Strunk Street at SE 1st Street is a four-way design with a separate right turn lane on the north leg. The east and west approaches include separate left turn lanes. The south leg has a single lane approach. Pedestrian crosswalks occur on each approach.

The existing and proposed lane configurations and traffic control are presented in Figure `c` in the report's appendix.

Southeast 13th Street is classified as a minor arterial within the Camas City limits and the City's minimum access spacing is 660 feet. The travel speed is posted at 35 MPH along the project site's frontage. The street grade is flat and the alignment is tangent. There is one travel lane in each direction with narrow paved/gravel surfaced shoulders of approximately one foot wide. Drainage ditches are present adjacent to the shoulders.

TRAFFIC OPERATIONAL ANALYSIS

In order to evaluate traffic flow and delay the study intersections were analyzed for level of service (LOS) conditions, delay, queuing, and safety. The intersections evaluated included NE 13th Street at NE 192nd Avenue and at NW Friberg-Strunk Street, and SE 1st Street at NW Friberg-Strunk Street. The site access at NE 13th Street was also evaluated.

To perform the LOS analysis new traffic counts were conducted. The counts were collected in August 2023 during the AM peak (7:00-9:00 AM) and PM peak (4:00-6:00 PM) traffic hours. Figure 1 illustrates the existing traffic volume data for the AM & PM peak hours.

Union High School is located approximately a half-mile south of the gas station/market site was not in session when the traffic counts were recorded. Therefore, to account for the

school's trips it was necessary to model the school's traffic. Using an enrollment of 1,970 students as provided by the school district, the trips were calculated using the ITE trip generation rates (LUC #525) for public high schools. Figure 2 illustrates the school's traffic assignments for the AM & PM peak hours.

Figure 3 presents the year 2023 traffic flow for the combined (existing plus modeled high school) traffic scenario.

In-Process traffic was accounted for in the project and is presented on Figure 4. Several approved (and not yet built) development projects were identified by the City. These included the following;

- Camas Heights – NE 28th St
- Green Mountain B1 South Phase
- Panattoni Industrial Bldg-Lot 6
- Lacamas Tech Center
- Village at Camas Meadows
- Parklands at Camas Meadows
- Green Mountain Estates
- Oak Tree Station

Three years of traffic growth at 2% per year was added to the existing traffic to account for future conditions. Figure 5 represents the year 2026 background traffic scenario and incorporates three years of growth traffic at 2% per year, in-process traffic, and existing traffic plus the modeled high school traffic.

Pass-By traffic is permitted in the trip generation calculations according to the ITE Trip Generation Handbook for the gas station use (LUC #945). These are trips that access the site from existing traffic flow within the area. Figure 6 illustrates these trips, which are included with the total traffic scenario.

VEHICULAR TRIP GENERATION

Trip rates presented in the Institute of Transportation Engineers (ITE) Trip Generation manual, 11th edition (year 2021) were utilized to estimate the site's trip generation. The trip generation is summarized in Table 1 (following page).

Trip rates for ITE land use code #945 (gas station w/market) and land use code #948 (automated car wash) was applied for the trip generation calculations. Trip credits were taken into account for the existing single-family home that occupies the property is also listed in the table.

Table 1 Trip Generation Summary

ITE Land Use	Units	Weekday						
		ADT	AM Peak Hour			PM Peak Hour		
			Total	Enter	Exit	Total	Enter	Exit
PROPOSED SITE TRIPS								
Gas Station with Market (#945)	8 fueling positions							
Generation Rate [1]		265.12	16.06	50%	50%	18.42	50%	50%
Total Driveway Trips		**2,121**	**128**	64	64	**147**	74	73
Pass-By Trips[2] (AM=62%; PM=56%)			79	40	39	82	41	41
Automated Car Wash (#948)	1,189 sq. ft.							
Generation Rate [1,3,4]		142.00	9.94	50%	50%	14.20	50%	50%
Total Driveway Trips		**169**	**12**	6	6	**17**	9	8
EXISTING SITE TRIPS (TRIP CREDITS)								
Single-Family (#210)	1 single-family home							
Generation Rate [1]		9.43	0.70	26%	74%	0.94	63%	37%
Total Driveway Trips		**-9**	**-1**	0	-1	**-1**	-1	0
Net Total Trips[5]		**2,281**	**139**	70	69	**163**	82	81
Site Pass-by Trips		**0**	**79**	40	39	**82**	41	41
Net New Trips[6]		**2,281**	**60**	30	30	**81**	41	40

[1] Source: *Trip Generation* , 11th Edition, ITE, 2021, average rates.

[2] Pass-by percentages based on Trip Generation Handbook, 3rd Edition, ITE, 2017.

[3] ADT rate estimated as 10 times the PM peak hour rate.

[4] AM peak rate estimated as 70% of PM peak rate. AM peak distribution is reverse of PM peak distribution.

[5] Net Total Trips = Proposed Total Site Trips - Existing Total Site Trips.

[6] Net New Trips = Net Total Trips - Site Pass-by Trips.

Development of project is expected to generate a net of 2,281 daily trips, 60 net AM peak hour trips, and 81 net PM peak hour trips.

The NE 13th Street Gas Station trip distribution was based on the existing count data and engineering judgment. This information is presented on Figure 7. The corresponding trip assignments are presented on Figures 8a and 8b for the AM & PM peak hours, respectively. Figure 9 illustrates the year 2026 total traffic conditions.

CAPACITY ANALYSIS

Capacity analyses were performed to determine the levels of service for the weekday peak hours. Synchro v11.1 software was used to determine the approach delays and level of service (LOS) for the site access study intersections. The program is based on the year 2016 Highway Capacity Manual methodology. Table 2 summarizes the analysis results. Copies of the capacity analysis summaries are included in the appendix.

Table 2 Capacity Analysis Summary

Intersection	Type of Control	Peak Hour	Traffic Scenario											
			2023 Adjusted Existing				2026 Background				2026 Total			
			Crit. Mov't	LOS	Delay	v/c	Crit. Mov't	LOS	Delay	v/c	Crit. Mov't	LOS	Delay	v/c
NE 192nd Avenue & NE 13th Street	Signal	AM	-	C	20.5	0.56	-	D	41.1	0.70	-	D	50.4	0.75
		PM	-	C	34.6	0.65	-	F	81.8	0.82	-	F	100.6	0.86
	Mitigated [1]	*AM*	-	-	-	-	-	-	-	-	-	-	-	-
		PM	-	-	-	-	-	D	35.8	0.71	-	D	41.2	0.73
Site Access & NE 13th Street	Two-way Stop	AM	NB	C	17.9	0.00	NB	C	24.0	0.01	NB	D	30.8	0.36
		PM	NB	A	0.0	0.00	NB	A	0.0	0.00	NB	D	31.1	0.40
NW Friberg-Strunk St & NE 13th Street	Signal	AM	-	B	13.2	0.27	-	B	17.7	0.35	-	B	17.7	0.35
		PM	-	B	16.3	0.27	-	C	23.2	0.36	-	C	23.1	0.37
NW Friberg-Strunk St & SE 1st St/NW Lake Rd	Signal	AM	-	C	25.7	0.28	-	C	24.5	0.30	-	C	24.9	0.30
		PM	-	B	16.7	0.29	-	B	17.6	0.33	-	B	17.7	0.33

Notes: 2016 Highway Capacity Manual methodology used in analysis, Synchro v11. NB - Northbound, Crit. Mov't - Critical movement or critical approach.

[1] Mitigation: Widen NE 13th Street approach at NE 192nd Avenue to provide a separate westbound left turn lane and westbound shared through-right lane.

With the exception of NE 13th Street at NE 192nd Avenue the analysis has documented that the study intersections will operate acceptable at LOS `D` or better in the year 2026 total traffic scenario and meet the City's level of service standards.

At NE 13th Street and NE 192nd Avenue the analysis determined that the intersection will operate at LOS `F` during the PM peak hour in the year 2026 background and total traffic scenarios. The failing condition is attributed to the growth and in-process traffic. The City has recognized and documented in the TSP that future improvements will be necessary on NE 13th Street (Goodwin Road) to accommodate heavier traffic. A year 2035 improvement is listed in Table 6 within the TSP that proposes street widening which should mitigate the issue. Specifically the current study finds that adding a separate westbound left turn lane at the NE 192nd Avenue signal will mitigate the failing condition to acceptable LOS `D`. However, no mitigation is proposed in conjunction with the gas station & market development as the failure is due to the background traffic conditions.

Generally, LOS 'A', 'B', 'C', and 'D' are desirable service levels ranging from no vehicle delays to average or longer than average delays in the peak hours. Level 'E' represents long delays indicating signalization warrants need to be reviewed and signals considered only if warrants are met. Level 'F' indicates that intersection improvements, such as widening and signalization, may be required. According to the Highway Capacity Manual (HCM*)*, the following delay times are associated with the LOS at stop controlled unsignalized and signalized intersections.

Level of Service criteria defined in Highway Capacity Manual

Level of Service (LOS)	Unsignalized Control Stopped Delay (sec/veh)	Signalized Control Stopped Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 and ≤ 15	> 10 and ≤ 20
C	> 15 and ≤ 25	> 20 and ≤ 35
D	> 25 and ≤ 35	> 35 and ≤ 55
E	> 35 and ≤ 50	> 55 and ≤ 80
F	> 50	> 80

QUEUING ANALYSIS

Queue lengths at the proposed site access intersection with NE 13th Street were assessed based on the 95th percentile demand values for the year 2026 total traffic scenarios. Both the AM & PM peak hour results were established in the Synchro analysis. Copies of the reports are included in the appendix.

During the AM peak hour the northbound site access approach is expected to experience a queue of one to two vehicles. For the westbound to southbound left turn from NE 13th Street into the site the projected queue is one car.

During the PM peak hour the northbound site access approach is expected to experience a queue of two vehicles. For the westbound to southbound left turn from NE 13th Street into the site the projected queue is one car.

INTERSECTION SIGHT DISTANCE

The development's access on NE 13th Street was analyzed for intersection sight distance requirements in accordance with the AASHTO standards. Northeast 13th Street has a posted speeds of 35 MPH and therefore the intersection sight distance standard is 390 feet.

A review of the sight distance at the site's access revealed that there are no restrictions in either direction along NE 13th Street and over 500 feet of sightline is available. Therefore, the intersection sight distance standard is met.

For safety reasons the sightlines must be maintained and potential obstructions due to street grade, buildings, parking, signing, fencing, landscaping, above ground utilities, or other objects shall not be permitted.

LEFT TURN LANE REQUIREMENTS

A left turn lane warrant was assessed for the westbound to southbound movement from NE 13th Street for traffic entering the site. The AM & PM peak hours were evaluated for the year 2026 total traffic scenario.

The turn lane is not warranted in the PM peak hour.

The warrant curve shown on Exhibit 1310-7a in the appendix indicates that a left turn is marginally met based on a 40 MPH travel speed. However, the travel speed on NE 13th Street is 35 MPH which if plotted indicates the warrant would not be met. It is also noted that the queuing analysis for the westbound left turn movement has confirmed that up to one vehicle may queue to make a left turn resulting in a LOS `A` condition. As a result adding a westbound left turn lane on NE 13th Street is not proposed in conjunction with gas station, market, and car wash development.

The warrant figure is included in the appendix.

ACCESS SPACING & SPACING STANDARDS

The proposed access location was assessed for conformance to the City's access spacing standards. NE 13th Street is classified as a minor arterial and the City's minimum spacing is 660 feet.

The proposed access spacing will occur at approximately 200 feet west of the signalized intersection at Friberg-Strunk Street and therefore does not meet the spacing standard. Placing the site access any further to the west is not viable from an operational standpoint because trucks (including gas tanker trucks) need the turning capability to maneuver on-site in order to exit the lot. It is noted that the pre-application staff report indicates that the City would support the substandard spacing condition if the design is supported by a deviation request. The request will be presented in a separate document.

ACCIDENT HISTORY

Crash data for study intersections was obtained from WSDOT staff and reviewed to help identify if there were any traffic safety issues. The study period covered five years from January 2018 through December 2022 for the intersections at NE 13th Street/NE 192nd Avenue, NE 13th Street/Friberg-Strunk Street, and SE 1st Street/Friberg-Strunk Street.

The crash rates presented in Table 3 are based on the number of accidents per million entering vehicles (MEV) per year. Typically, an intersection is not considered unsafe unless its accident rate exceeds the threshold value of 1.0 accidents per MEV.

The study intersections did not experience a crash rate greater than 0.27 crashes per MEV/year and therefore no safety improvements are proposed.

Table 3 Crash Rate Results

Intersection	Crash History (Years)	Number of Crashes	Crashes per year	Annual Traffic Entering (veh/yr)	Crash rate per M.E.V.*
NE 192nd Ave & NE 13th St	5.26	9	1.7	6391700	**0.27**
NW Friberg-Strunk St & NE 13th St	5.26	3	0.6	3944592	**0.14**
SE 1st St & NW Friberg-Strunk St	5.26	5	1.0	5774444	**0.16**

* M.E.V. - million entering vehicles.

PEDESTRIANS, BICYCLES, & BUSES

No sidewalk is present on NE 13th Street adjacent to the project site's frontage. Sidewalk will be constructed with the development along the property's NE 13th Street frontage (south street side). Sidewalk is present on Friberg-Strunk Street.

Bike lanes are not provided on NE 13th Street. Bike lanes are present on Friberg-Strunk Street. Additional bicycle lanes are not planned with the development.

C-Tran does not provide transit service in the immediate area of the development. It does provide service between the Camas City Center and the 99th Street Transit Center in Vancouver.

CITY OF VANCOUVER CONCURRENCY DOCUMENTATION

Table 4 lists the City of Vancouver's intersections that are identified for future improvements. The table includes the number of peak hour site trips that will impact the locations, cost per trip, and the proportionate share fee equating to $153,050.

Table 4 Proportionate Share Project Intersections & Fees

Intersection	Cost Per Trip	Peak Trips	Proportionate Share
AM PEAK HOUR			
Grove St / Columbia House Blvd / SR-14 WB off-ramp	$600.00	0	$0.00
PM PEAK HOUR			
137th Avenue - from NE 49th St to Fourth Plain Blvd	$3,000.00	0	$0.00
Fourth Plain Boulevard & NE 152nd Avenue	$333.00	0	$0.00
Leiser Rd/St. Helens Av/MacArthur Blvd (future)	$2,000.00	0	$0.00
SE 176th Avenue & SE 20th Street	$400.00	0	$0.00
NE 192nd Avenue & NE 13th Street	$400.00	57	$22,800.00
SE 192nd Avenue & SE 34th Street	$150.00	13	$1,950.00
SE 192nd Avenue & SR-14 ramp terminals	$2,000.00	13	$26,000.00
MacArthur Boulevard & Andresen Road roundabout	$2,285.00	0	$0.00
MacArthur Boulevard & Devine Road roundabout	$2,226.00	0	$0.00
NE 172nd Avenue & NE 18th Street	$300.00	20	$6,000.00
NE 179th Place & NE 18th Street	$900.00	20	$18,000.00
NE 187th Avenue & NE 18th Street	$1,200.00	24	$28,800.00
NE 162nd Avenue and NE 9th Street	$1,500.00	0	$0.00
NE 172nd Avenue and NE 9th Street	$4,100.00	0	$0.00
NE 192nd Avenue and NE 9th Street	$1,100.00	33	$36,300.00
NE 187th Avenue & SE 1st Street	$1,100.00	12	$13,200.00
PROPORTIONATE SHARE TOTAL			**$153,050.00**

Table 5 provides a summary of the development's trips that are projected to travel in the City's adopted Transportation Management Zone (TMZ) corridors during the PM peak hour.

Table 5 Number of Site Generated Trips Using Adopted TMZ Corridors

TMZ Corridor	Limits of Corridor	PM Peak Hour Trips
Fourth Plain Boulevard	Mill Plain Boulevard to I-5	0
	I-5 to Andresen Road	0
	Andresen Road to I-205	0
	I-205 to NE 162nd Avenue	0
Burton Road / NE 28th Street	NE 18th Street to NE 112th Avenue	0
	NE 112th Avenue to NE 138th Avenue	0
	NE 138th Avenue to NE 162nd Avenue	0
NE 18th Street	NE 112th Avenue to NE 138th Avenue	4
	NE 138th Avenue to NE 162nd Avenue	8
Mill Plain Boulevard	Fourth Plain Boulevard to I-5	0
	I-5 to Andresen Road	0
	Andresen Road to I-205	0
	I-205 to NE 136th Avenue	4
	NE 136th Avenue to NE 164th Avenue	8
	NE 164th Avenue to NE 192nd Avenue	8
St. Johns / Ft. Van Way	Mill Plain Boulevard to NE 63rd Street	0
Andresen Road	Mill Plain Boulevard to SR-500	0
	SR-500 to NE 78th Street	0
NE 112th Avenue	Mill Plain Boulevard to NE 28th Street	0
	NE 28th Street to NE 51st Street	0
NE 136th / 137th Avenue	Mill Plain Boulevard to NE 28th Street	0
	NE 28th Street to Fourth Plain Boulevard	0
NE 162nd/164th Avenue	SE 1st Street to Fourth Plain Boulevard	0
	SR-14 to SE 1st Street	0
SE 192nd Avenue	SR-14 to NE 18th Street	57

Table 6 lists the number of site trips projected to impact the Mill Plain Blvd corridor intersections.

Table 6 Number of Site Generated Trips Impacting the Mill Plain Boulevard Corridor Intersections

Intersection	PM Peak Hour											
	SB			WB			NB			EB		
	R	T	L	R	T	L	R	T	L	R	T	L
Mill Plain Boulevard & Chkalov Drive/112th Avenue	-	-	-	-	-	-	-	-	-	-	-	-
Mill Plain Boulevard & SE 117th Avenue	-	-	-	-	-	-	-	-	-	-	-	-
Mill Plain Boulevard & SE 120th Avenue	-	-	-	-	-	-	-	-	-	-	-	-
Mill Plain Boulevard & SE 123rd/124th Avenue	-	-	-	-	-	-	-	-	-	-	-	-
Mill Plain Boulevard & SE 126th Avenue	-	-	-	-	-	-	-	-	-	-	-	-
Mill Plain Boulevard & Park Plaza Drive	-	-	-	-	-	-	-	-	-	-	-	-
Mill Plain Boulevard & SE 136th Avenue	-	-	-	-	2	-	-	-	-	-	2	-
Mill Plain Blvd. & Hearthwood Blvd./Park Crest Avenue	-	-	-	-	2	-	-	-	-	-	2	-
Mill Plain Boulevard & SE 164th Avenue	-	-	-	-	4	-	-	-	-	-	4	-
Mill Plain Boulevard & SE 172nd Avenue	-	-	-	-	4	-	-	-	-	-	4	-
Mill Plain Boulevard & SE 192nd Avenue	4	6	-	-	-	-	-	7	-	-	-	4

SUMMARY AND RECOMMENDATIONS

Development of the NE 13th Street Gas Station facility includes construction of a gas station with eight fueling positions, market, and car wash totaling 1,189 square feet. One existing home on the property will be demolished. The project will generate a net of 2,281 daily trips, 60 AM peak hour trips, and 81 PM peak hour trips.

The site is situated in the southwest corner of the intersection at NE 13th Street and Friberg-Strunk Street. Access to the proposed development will be provided with one driveway on NE 13th Street. The driveway will be controlled by stop signing. Intersection sight distance at the access point exceeds the minimum standard (390 feet) as over 500 feet of sightline is available in both directions on NE 13th Street. For safety reasons the sightlines must be maintained and potential obstructions due to street grade, buildings, parking, signing, fencing, landscaping, above ground utilities, or other objects shall not be permitted.

The capacity analysis has determined that only one intersection will fail. The signalized intersection at NE 13th Street and NE 192nd Avenue will operate at LOS `F` during the PM peak hour in the year 2026 background and total traffic scenarios. The failing condition is attributed to the growth and in-process traffic. The City has recognized and documented in the TSP that long range future improvements will be necessary on NE 13th Street (Goodwin Road) to accommodate heavier traffic. A year 2035 improvement is listed in Table 6 within the TSP that proposes street widening which should mitigate the issue. Specifically, the current study finds that adding a separate left turn lane on the westbound approach will mitigate the failing condition to acceptable LOS `D`. However, no mitigation is proposed in conjunction with the gas station & market development as the failure is due to the background traffic conditions.

No new traffic signals are proposed in conjunction with the proposed development.

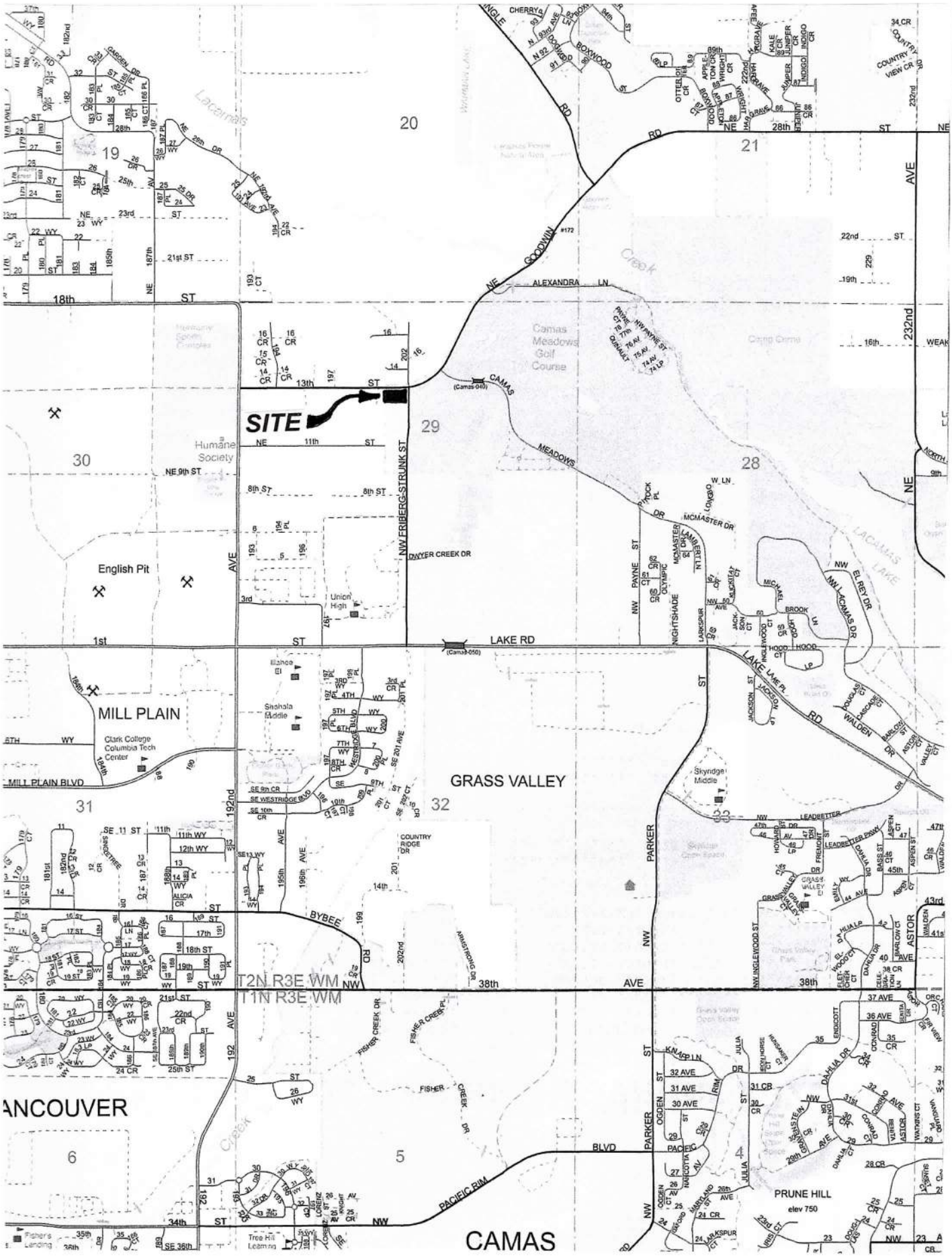
A left turn lane warrant was assessed for the westbound to southbound movement from NE 13th Street for traffic entering the site. The AM & PM peak hours were evaluated for the year 2026 total traffic scenario. The turn lane is not warranted in the PM peak hour. The warrant curve (Exhibit 1310-7a in the appendix) indicates that a left turn is marginally met based on a 40 MPH travel speed. However, the travel speed on NE 13th Street is 35 MPH which if plotted indicates the warrant would not be met. It is also noted that the queuing analysis for the westbound left turn movement has confirmed that up to one vehicle may queue to make a left turn resulting in a LOS `A` condition. Considering these factors adding a westbound left turn lane on NE 13th Street is not proposed in conjunction with the development.

The City of Vancouver's concurrency requirements are documented and referenced in Tables #4, #5, & #6.

Based on the findings of the traffic analysis no off-site improvements to the transportation system are recommend.

APPENDIX

- Vicinity Map — Figure `a`
- Site Plan — Figure `b`
- Lane Configuration & Traffic Control — Figure `c`
- Traffic Flow Figures
  - Figure 1 — Year 2023 Existing Traffic (without Union H.S. traffic)
  - Figure 2 — Union High School Modeled Peak Hour Traffic
  - Figure 3 — Year 2023 Existing Traffic (with Union H.S. traffic)
  - Figure 4 — In-Process Traffic (eight projects)
  - Figure 5 — Year 2023 Background Traffic
  - Figure 6 — Pass-By Trips
  - Figure 7 — Trip Distribution
  - Figure 8a — Trip Assignment, AM Peak Hour
  - Figure 8b — Trip Assignment, PM Peak Hour
  - Figure 9 — Year 2023 Total Traffic
- Traffic Count Data
- In-Process Traffic Flow Maps (eight development projects)
- Left Turn Lane Warrant
- Peak Hour Signal Warrant
- Crash History Summary
- City of Vancouver Trip Distribution within Concurrency Corridor Intersections
- City of Vancouver Trip Assignment within Concurrency Corridor Intersections
- Year 2035 Acknowledged TSP Mitigation, Friberg at Goodwin/13th Street Improvements
- Synchro Capacity Analysis Reports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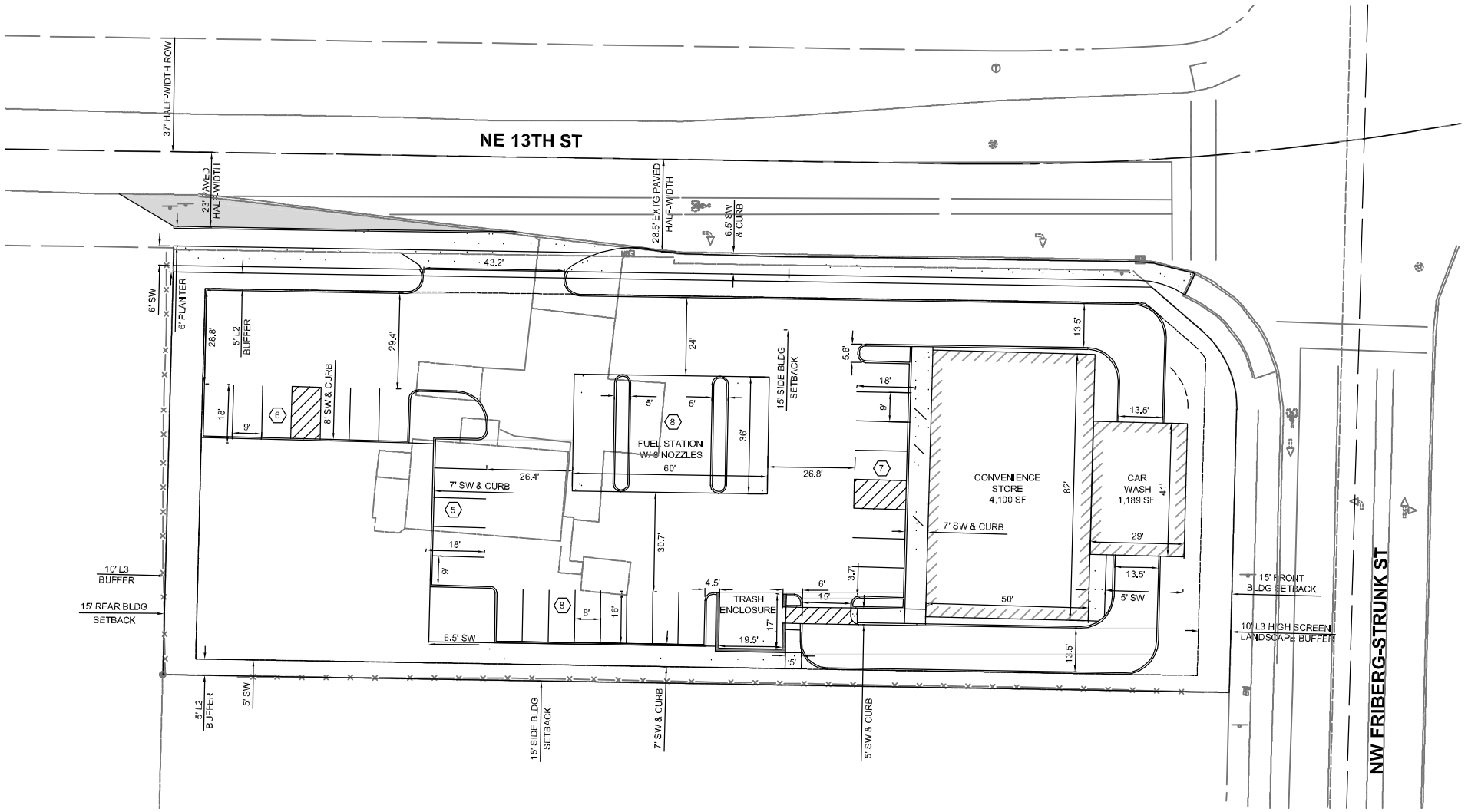
PLOT DATE: 09.08.23 FILE: 2324flow.dwg



CHARBONNEAU ENGINEERING LLC 332
PROJECT: 23-24

NOTES: NO SCALE

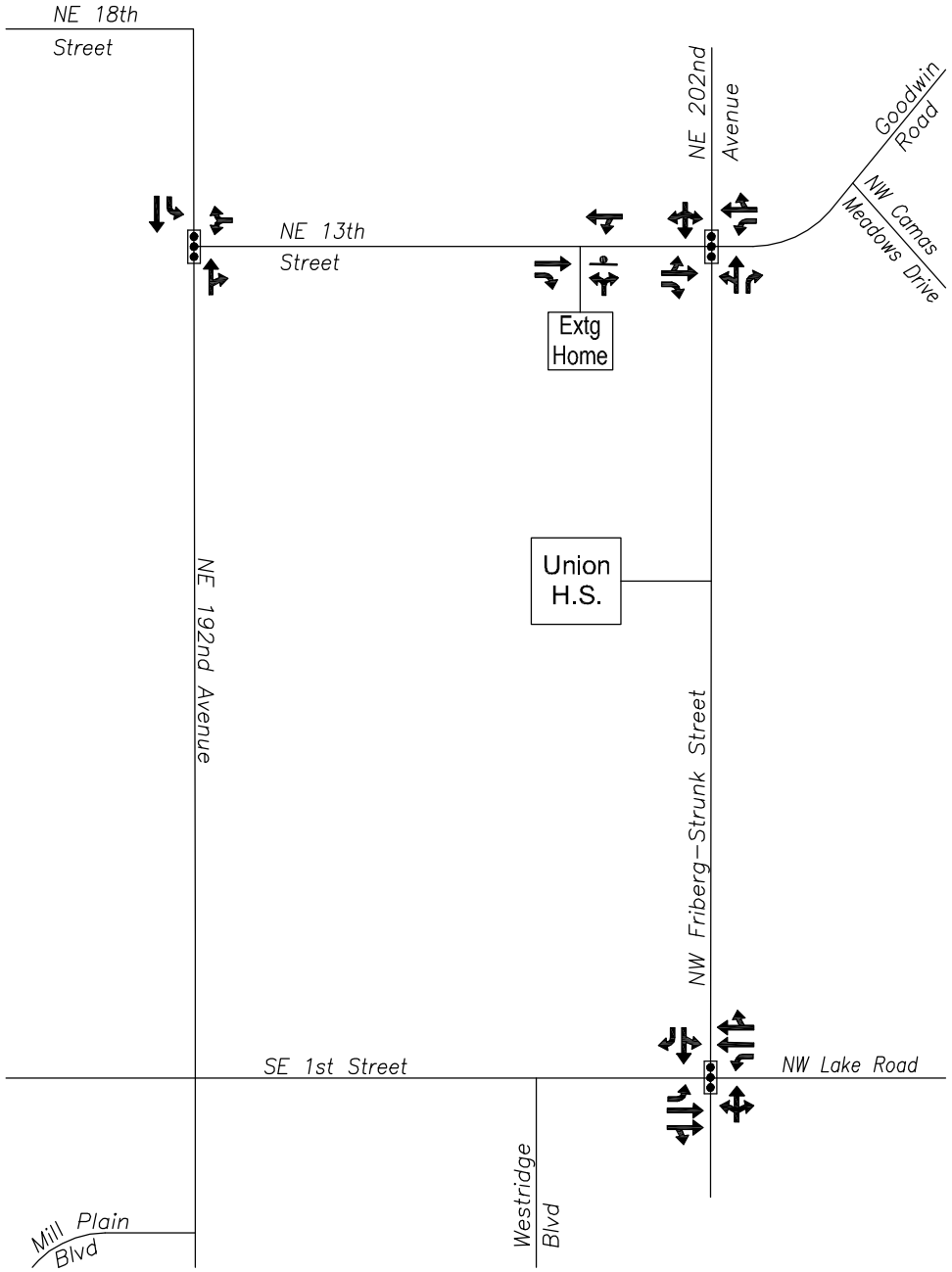
N

SITE PLAN
13TH STREET GAS STATION

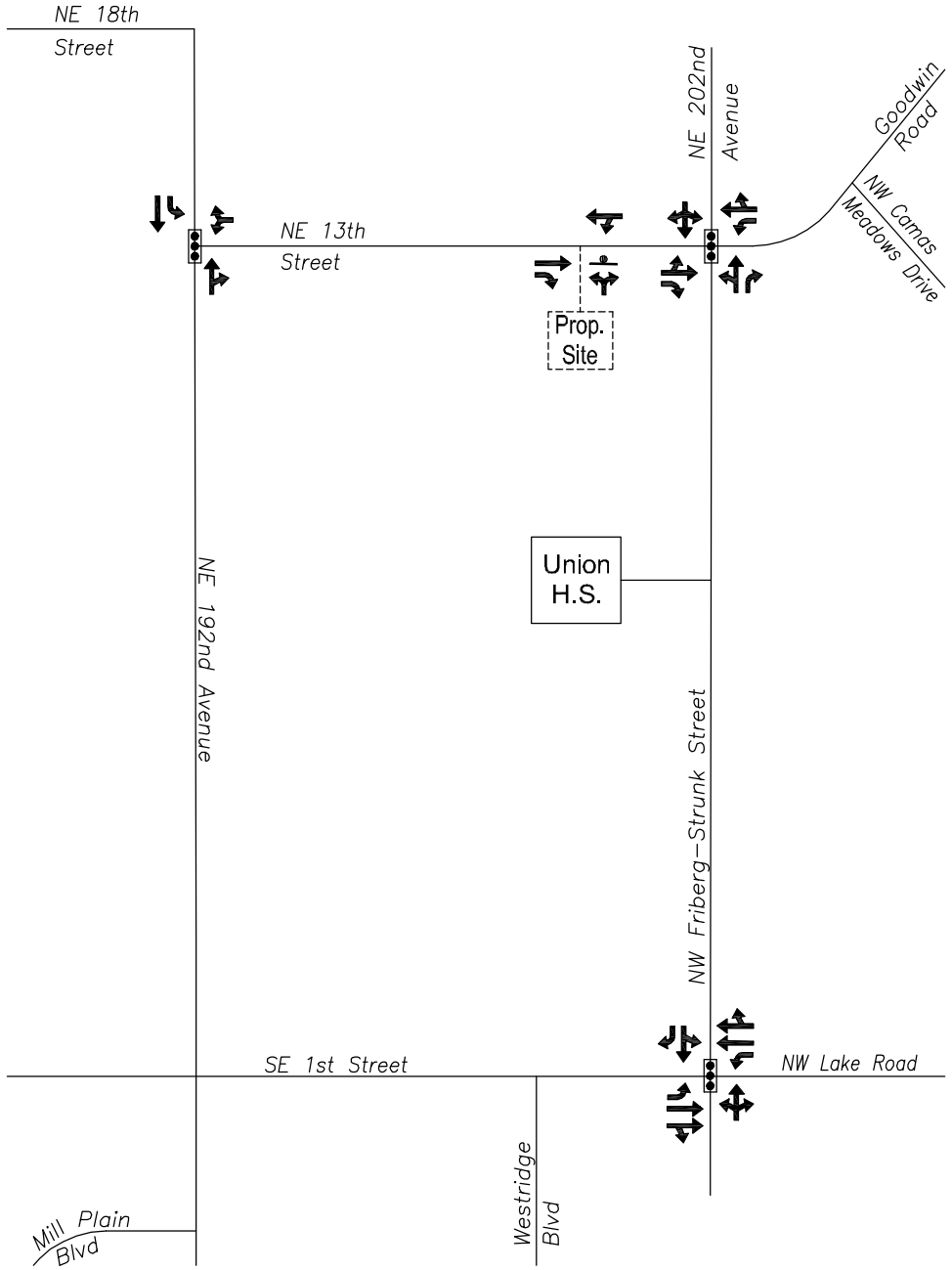
FIGURE
b

Exhibit 10 APPEAL24-1001

PLOT DATE: 09.08.23 FILE: 2324flow.dwg



EXISTING



PROPOSED

333 CHARBONNEAU ENGINEERING LLC

PROJECT: 23-24

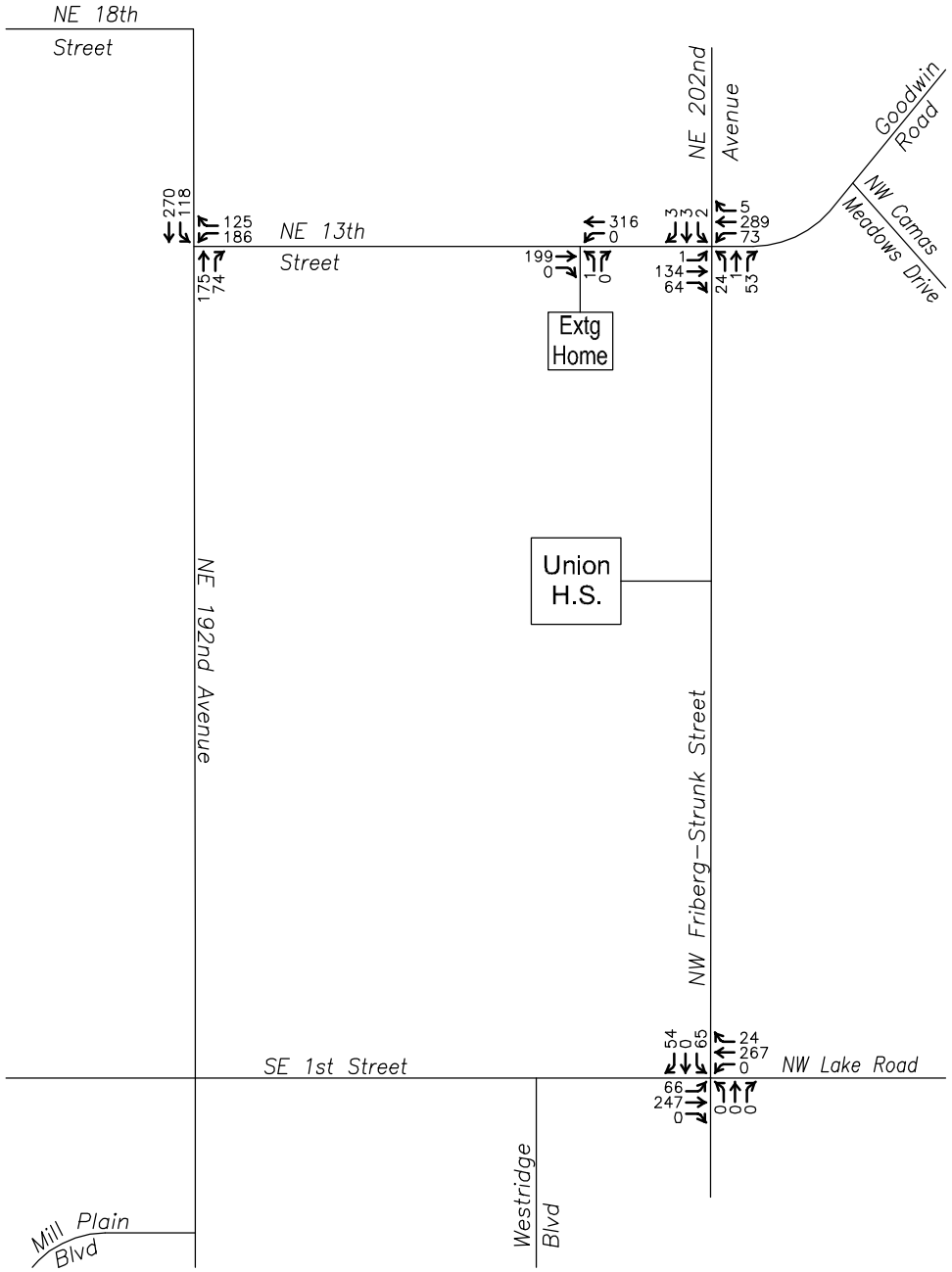
NOTES:

LANE CONFIGURATIONS AND TRAFFIC CONTROL
13TH STREET GAS STATION

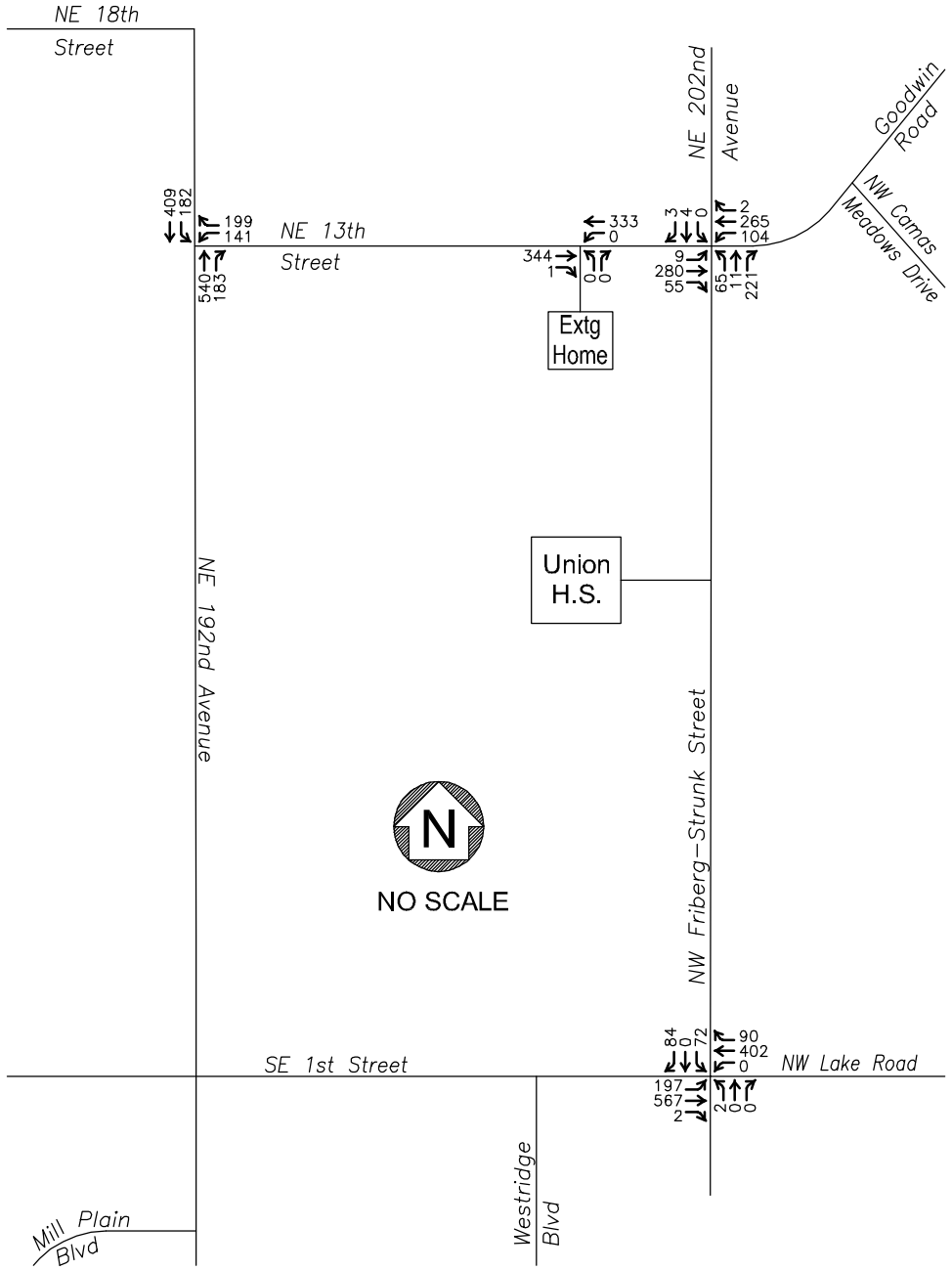
FIGURE C

Exhibit 10 APPEAL24-1001

PLOT DATE: 09.08.23 FILE: 2324flow.dwg



AM PEAK HOUR

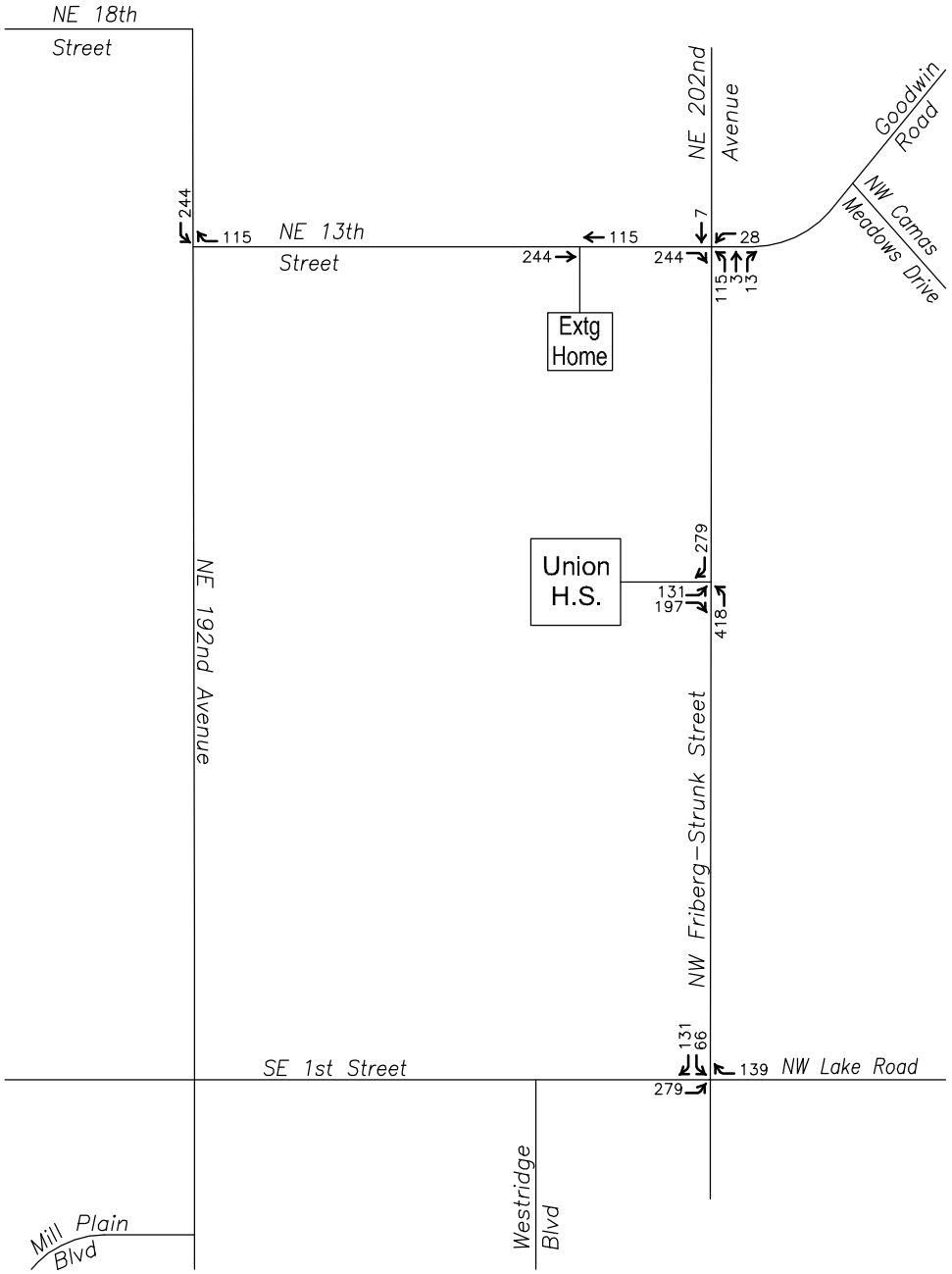


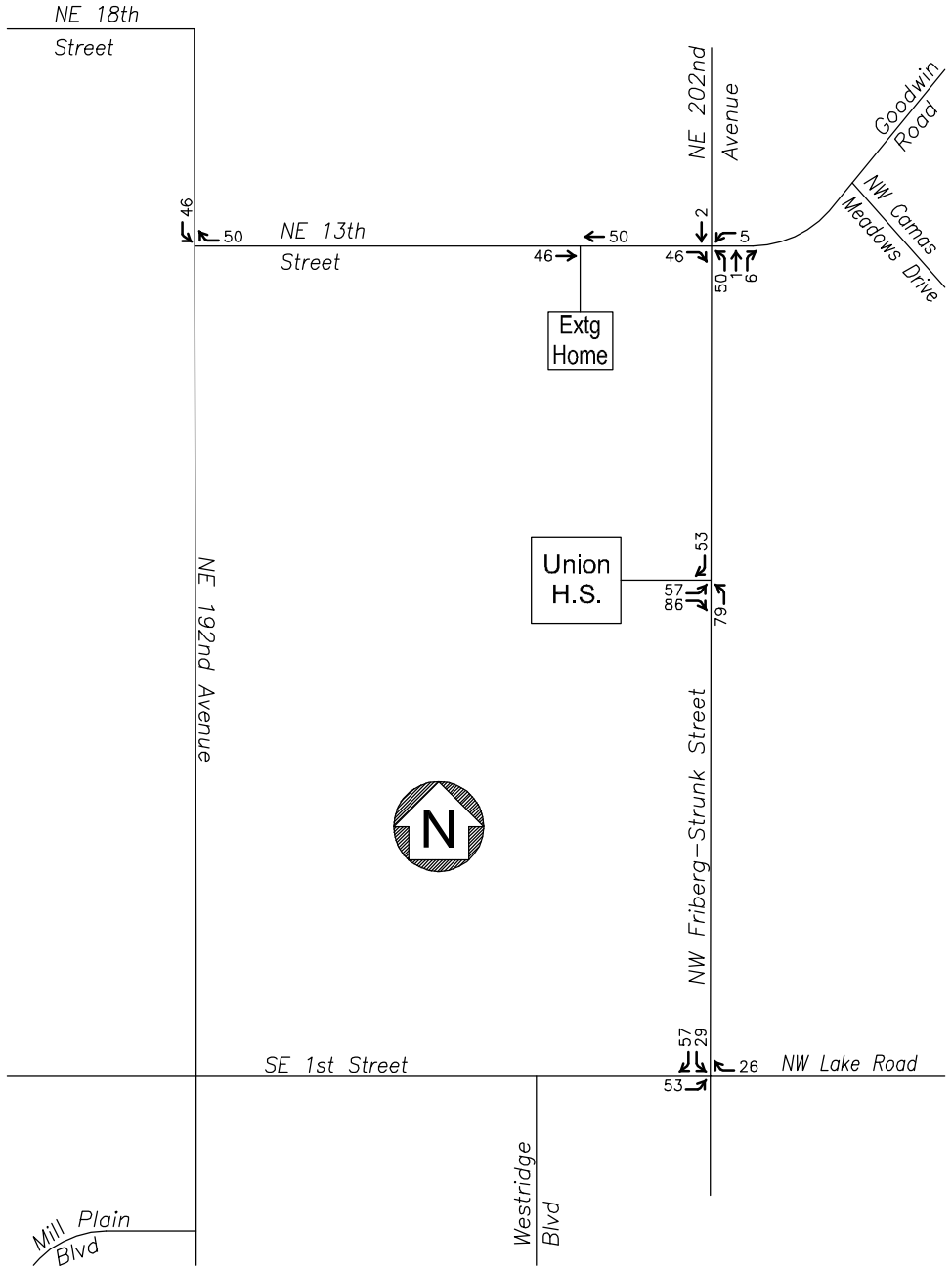
PM PEAK HOUR

334 CHARBONNEAU ENGINEERING LLC PROJECT: 23-24	NOTES:	2023 EXISTING TRAFFIC - WITHOUT UNION HIGH SCHOOL TRAFFIC - 13TH STREET GAS STATION
		FIGURE 1

Exhibit 10 APPEAL24-1001

PLOT DATE: 09.08.23 FILE: 2324flow.dwg





335 CHARBONNEAU ENGINEERING LLC
PROJECT: 23-24

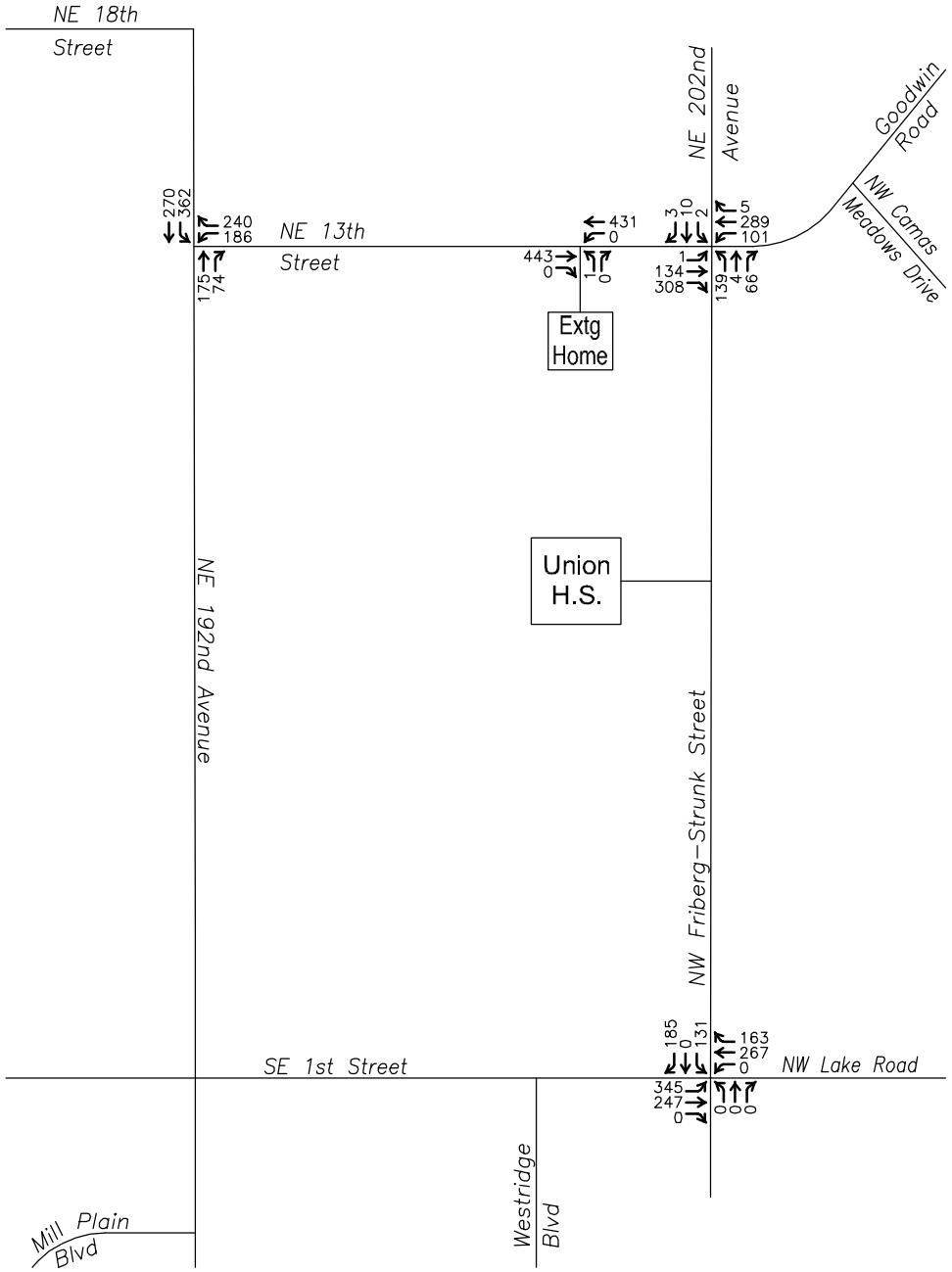
NOTES: The Union HS trip generation is based on High School (ITE 525) trip rates and an enrollment of 1,970 students.

UNION HIGH SCHOOL TRAFFIC
- MODELED -
13TH STREET GAS STATION

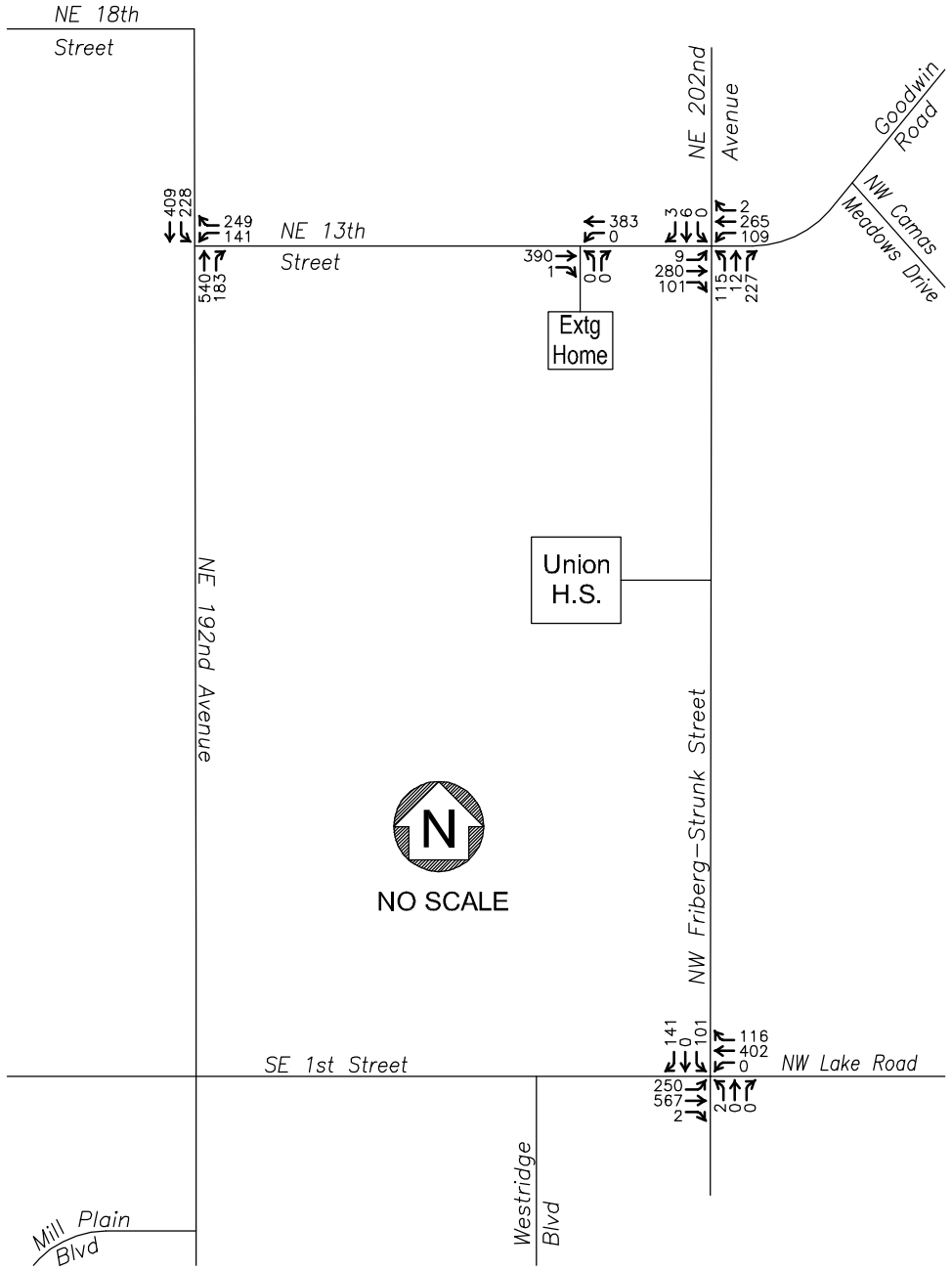
FIGURE
2

Exhibit 10 APPEAL24-1001

PLOT DATE: 09.08.23 FILE: 2324flow.dwg



AM PEAK HOUR



PM PEAK HOUR

336 CHARBONNEAU ENGINEERING LLC
PROJECT: 23-24

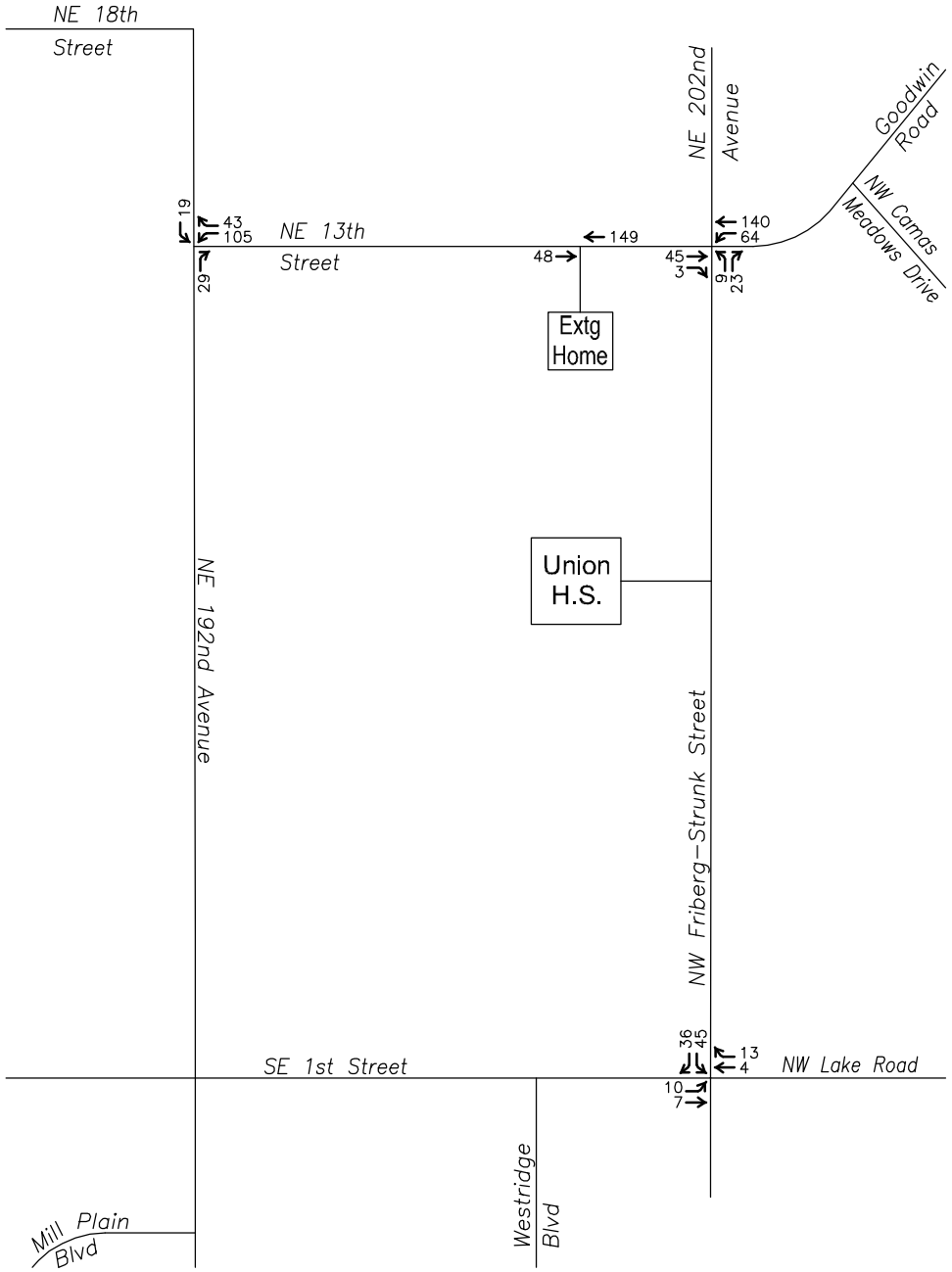
NOTES:

2023 ADJUSTED EXISTING TRAFFIC - WITH UNION HIGH SCHOOL TRAFFIC - 13TH STREET GAS STATION

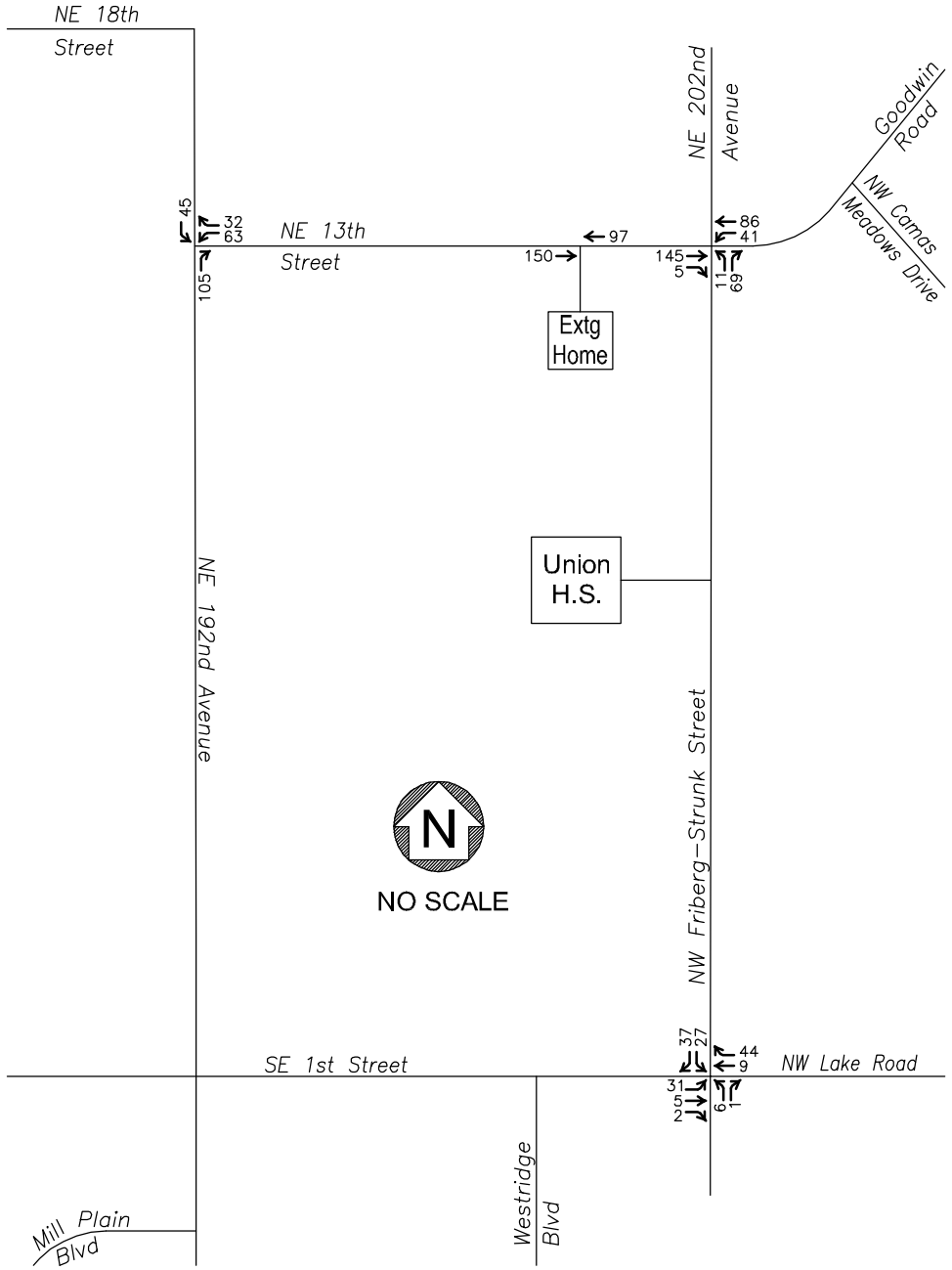
FIGURE 3

Exhibit 10 APPEAL24-1001

PLOT DATE: 09.08.23 FILE: 2324flow.dwg



AM PEAK HOUR



PM PEAK HOUR

337 CHARBONNEAU ENGINEERING LLC

PROJECT: 23-24

NOTES:

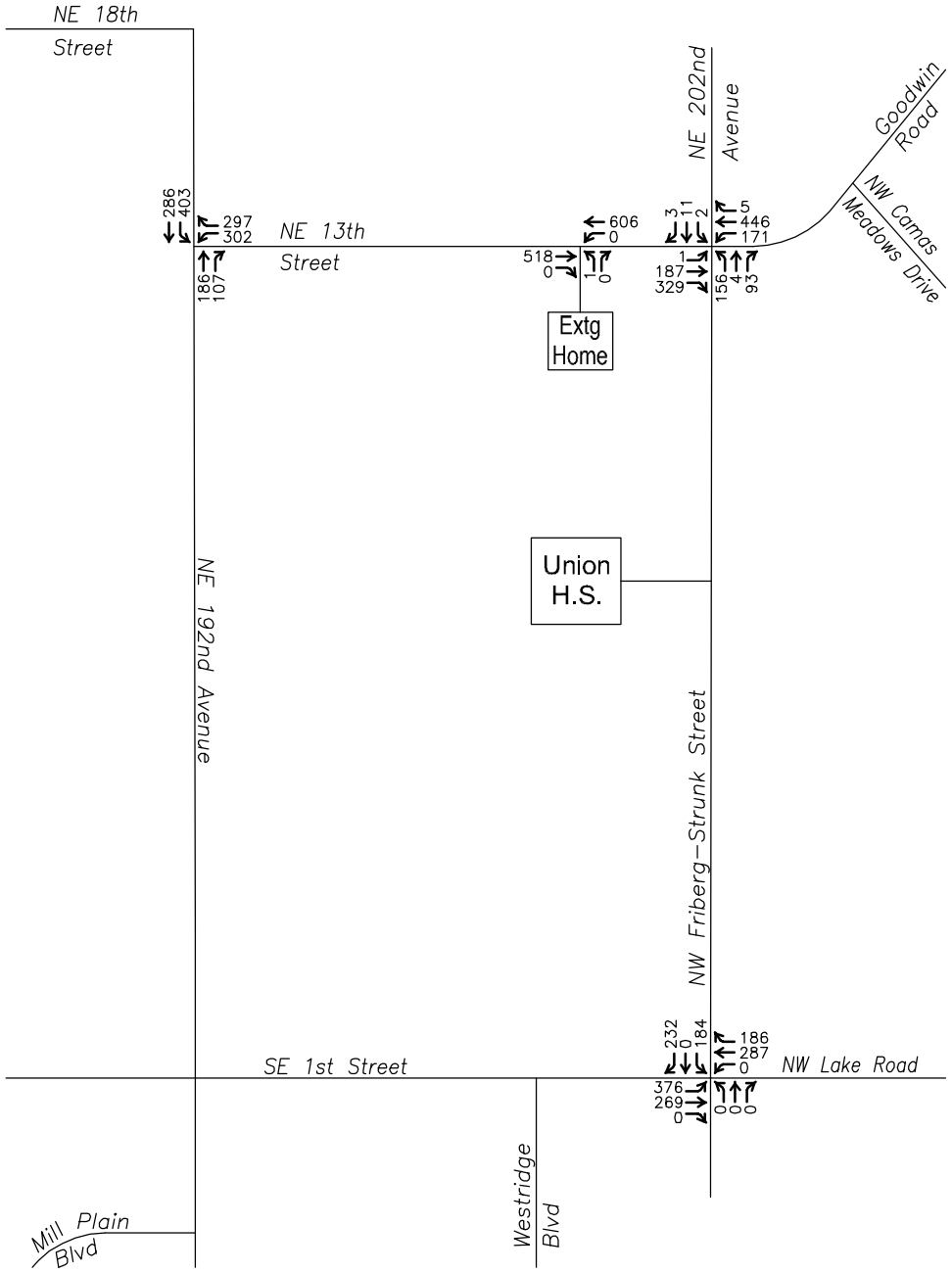
IN-PROCESS TRAFFIC

13TH STREET GAS STATION

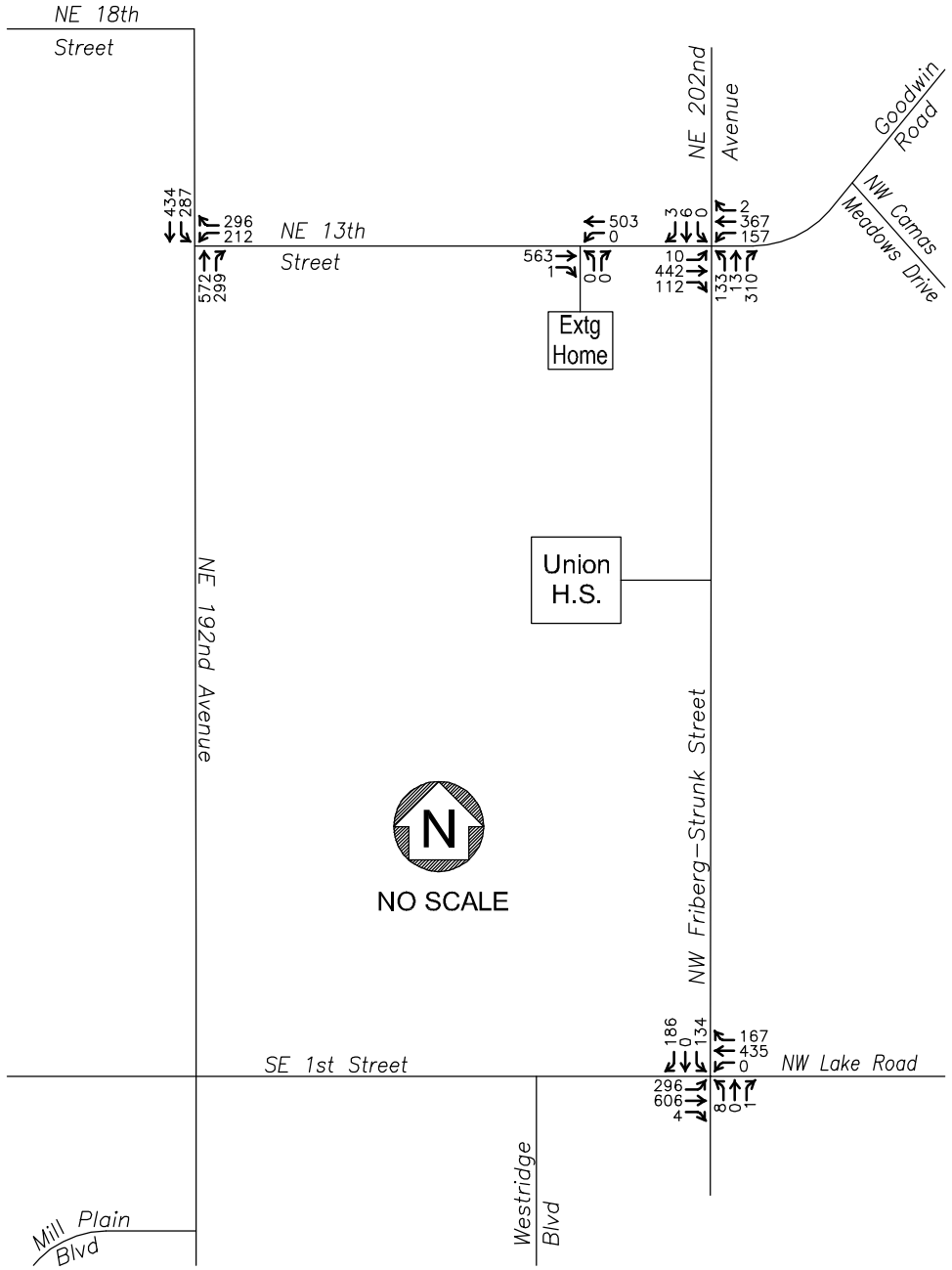
FIGURE 4

Exhibit 10 APPEAL24-1001

PLOT DATE: 09.12.23 FILE: 2324flow.dwg



AM PEAK HOUR



PM PEAK HOUR

338 CHARBONNEAU ENGINEERING LLC

PROJECT: 23-24

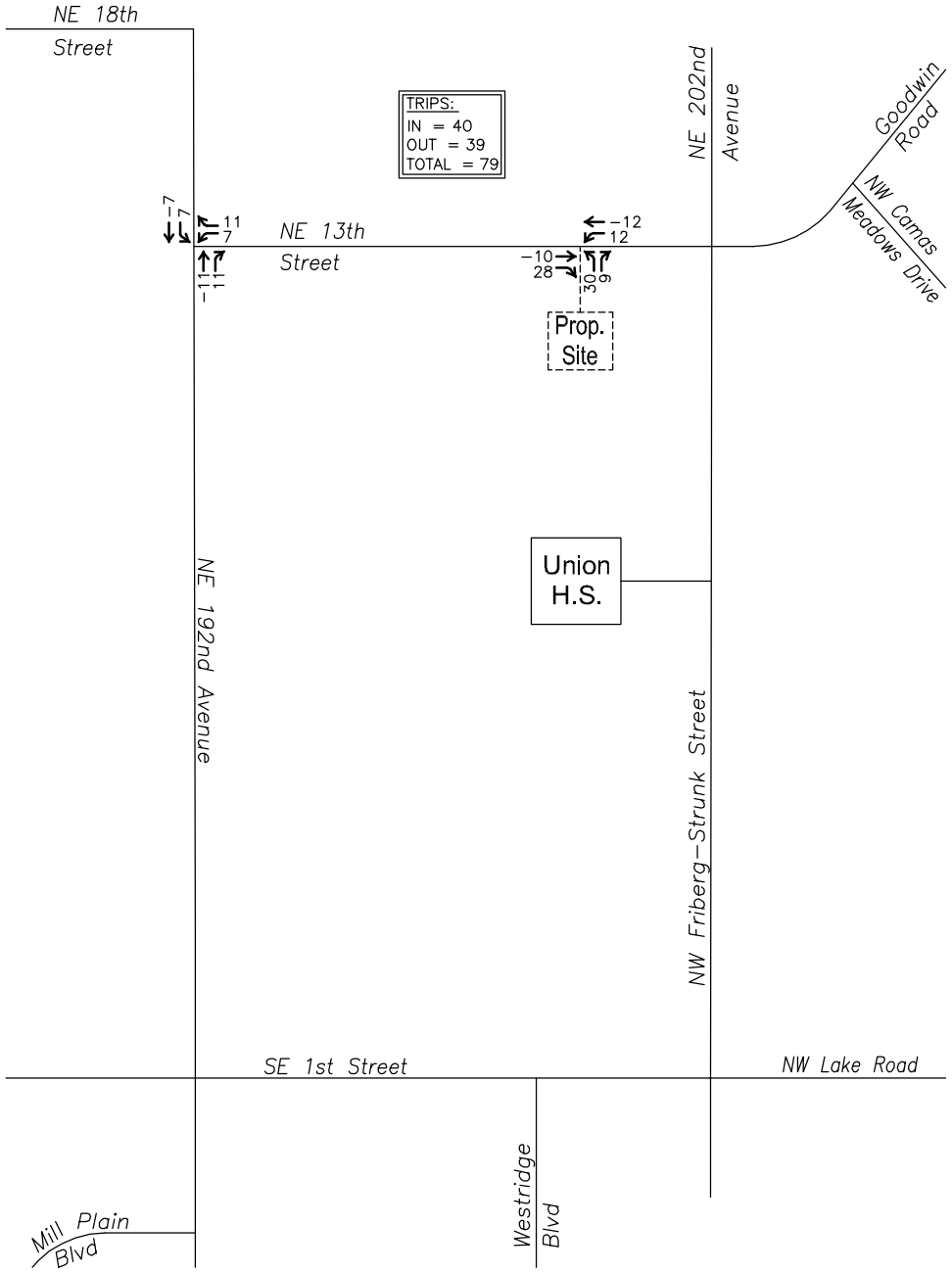
NOTES: 2026 Background Traffic = 2023 Adjusted Existing Traffic + growth (2%/yr for 3 yrs) + In-process Traffic.

2026 BACKGROUND TRAFFIC
13TH STREET GAS STATION

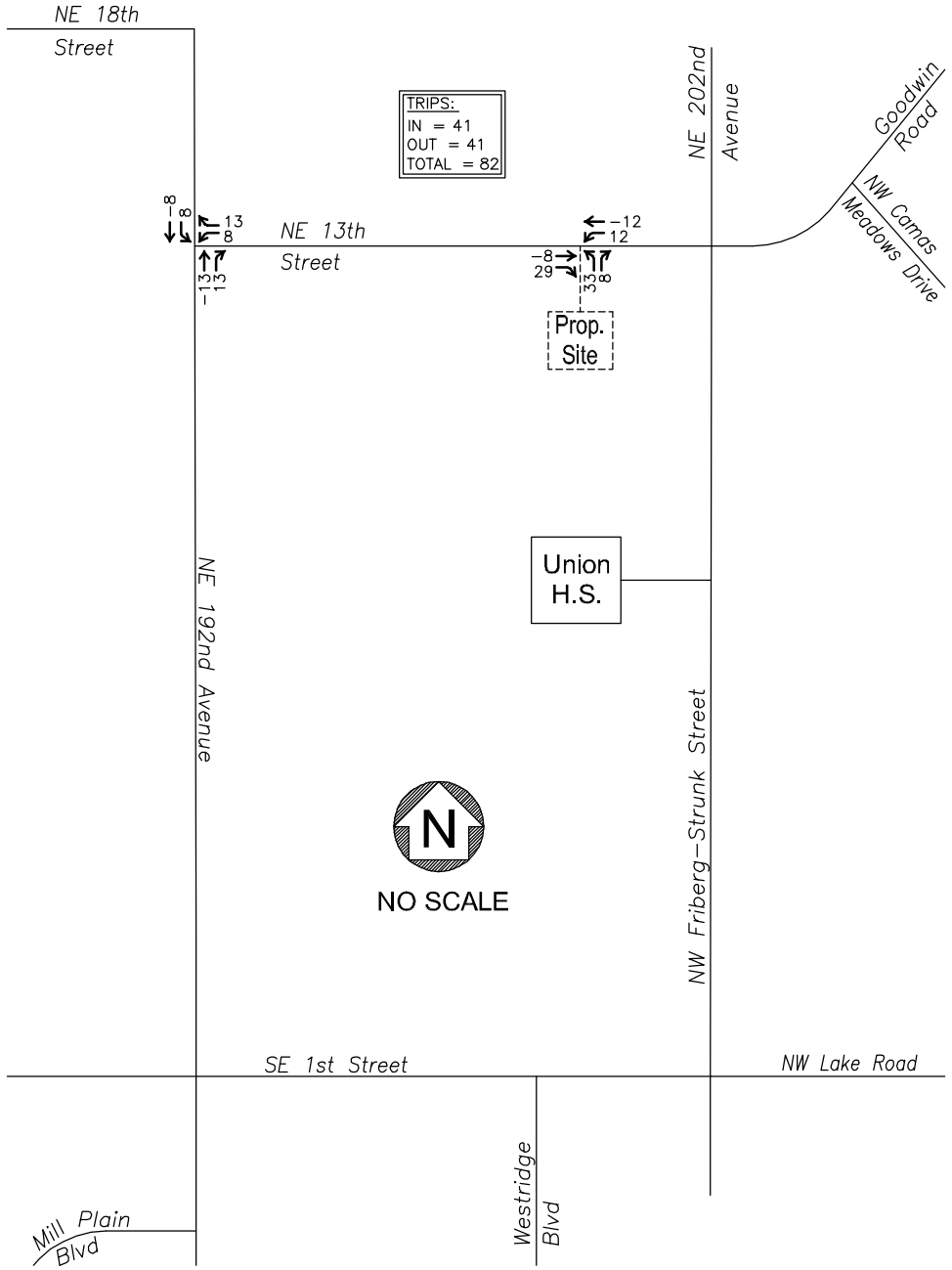
FIGURE 5

Exhibit 10 APPEAL24-1001

PLOT DATE: 09.08.23 FILE: 2324flow.dwg



AM PEAK HOUR



PM PEAK HOUR

339 CHARBONNEAU ENGINEERING LLC
PROJECT: 23-24

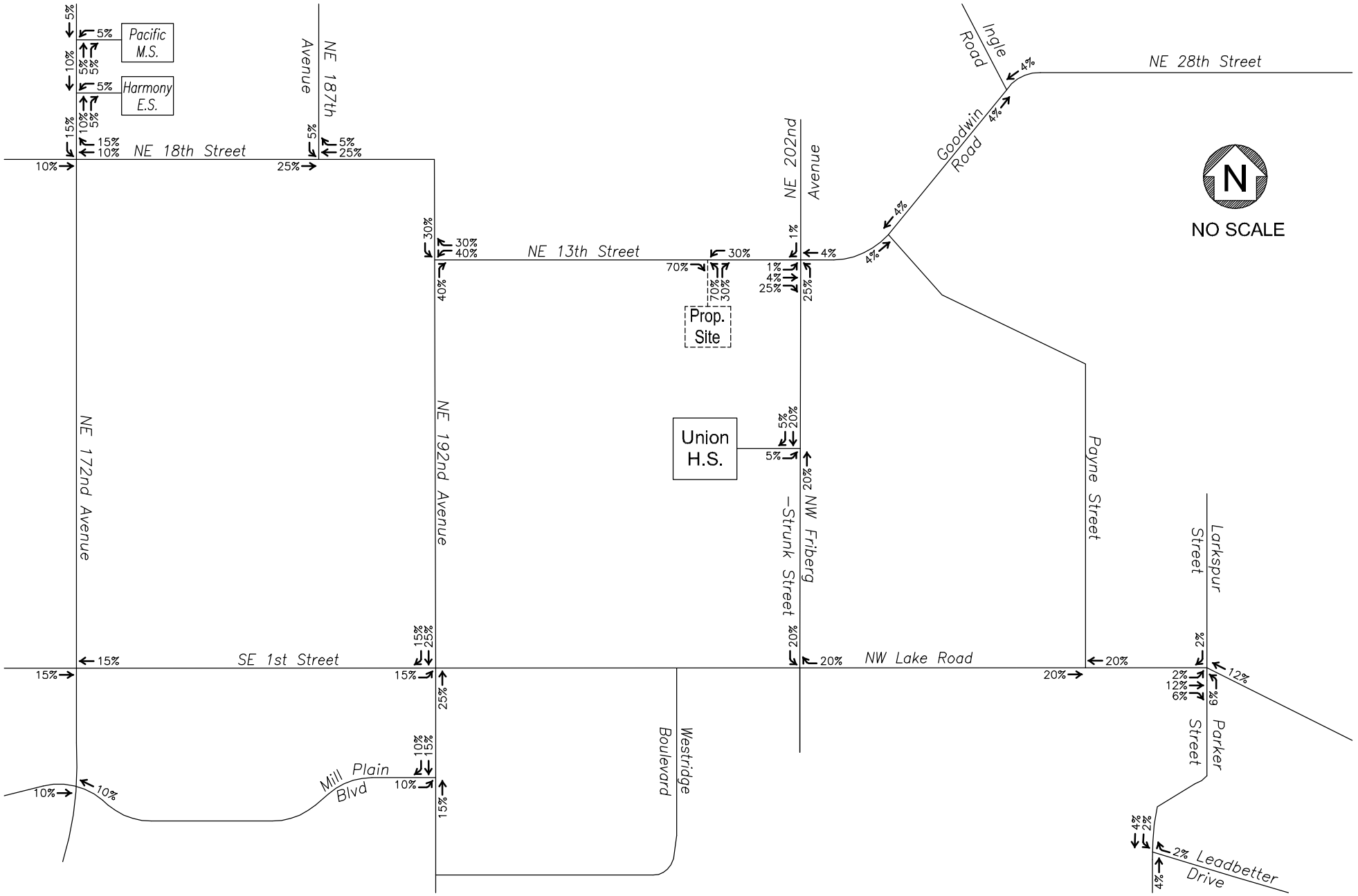
NOTES: Pass-by trips based on rates published in the *ITE Trip Generation Handbook*.

PASS-BY TRIPS
13TH STREET GAS STATION

FIGURE 6

Exhibit 10 APPEAL24-1001

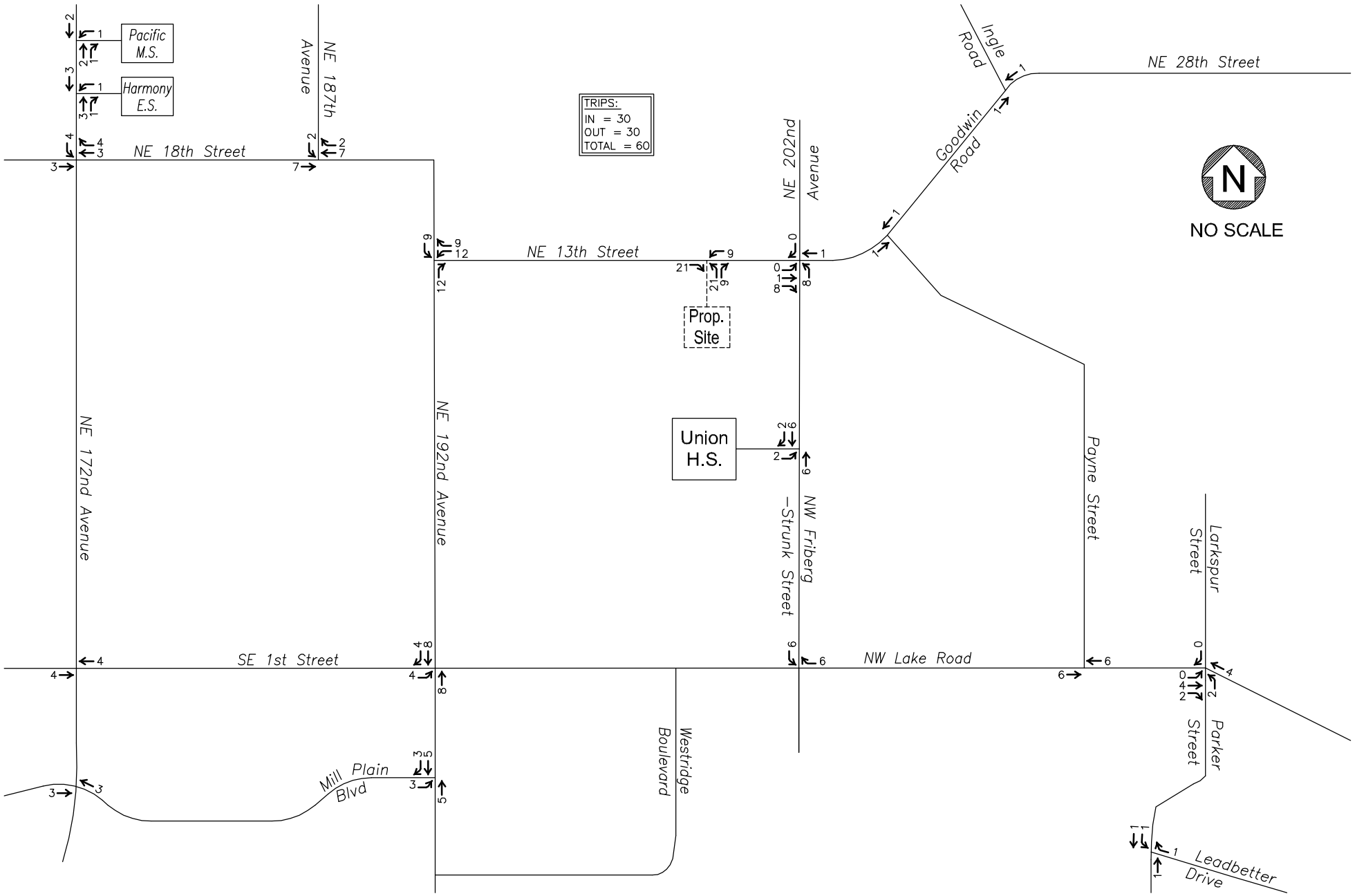
PLOT DATE: 09.08.23 FILE: 2324flow.dwg



340 CHARBONNEAU ENGINEERING LLC PROJECT: 23-24	NOTES: The site's trip distribution is based on existing traffic patterns and engineering judgment.	NEW TRIP DISTRIBUTION AM PEAK HOUR AND PM PEAK HOUR 13TH STREET GAS STATION	FIGURE 7

Exhibit 10 APPEAL24-1001

PLOT DATE: 09.08.23 FILE: 2324flow.dwg



CHARBONNEAU ENGINEERING LLC
341
PROJECT: 23-24

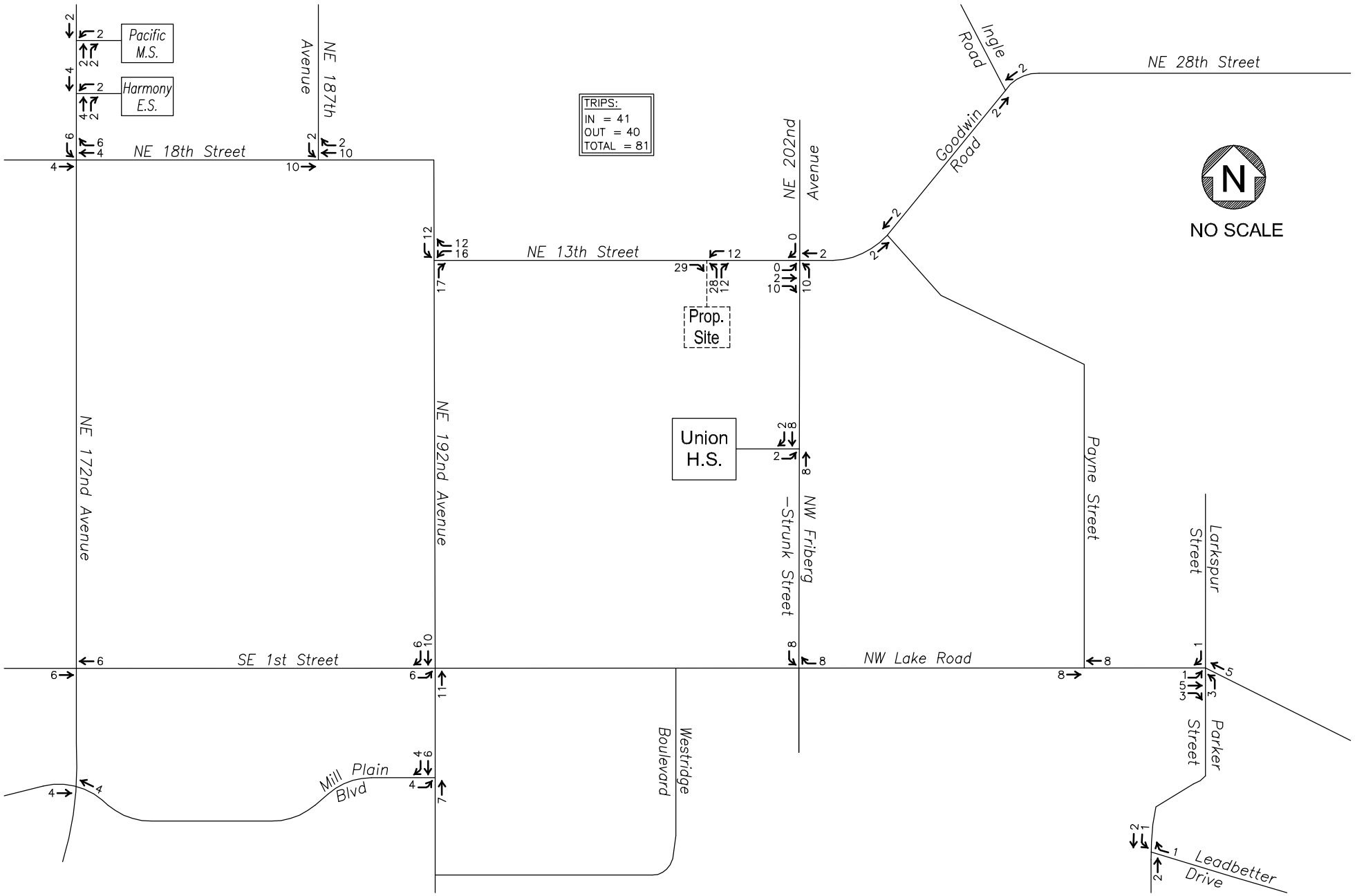
NOTES: The site's trip generation is based on Gas Station with Market (ITE 945) and Automated Car Wash (ITE 948) trip rates.

NEW TRIP ASSIGNMENT
AM PEAK HOUR
13TH STREET GAS STATION

FIGURE
8a

Exhibit 10 APPEAL24-1001

PLOT DATE: 09.08.23 FILE: 2324flow.dwg



CHARBONNEAU ENGINEERING LLC 342

PROJECT: 23-24

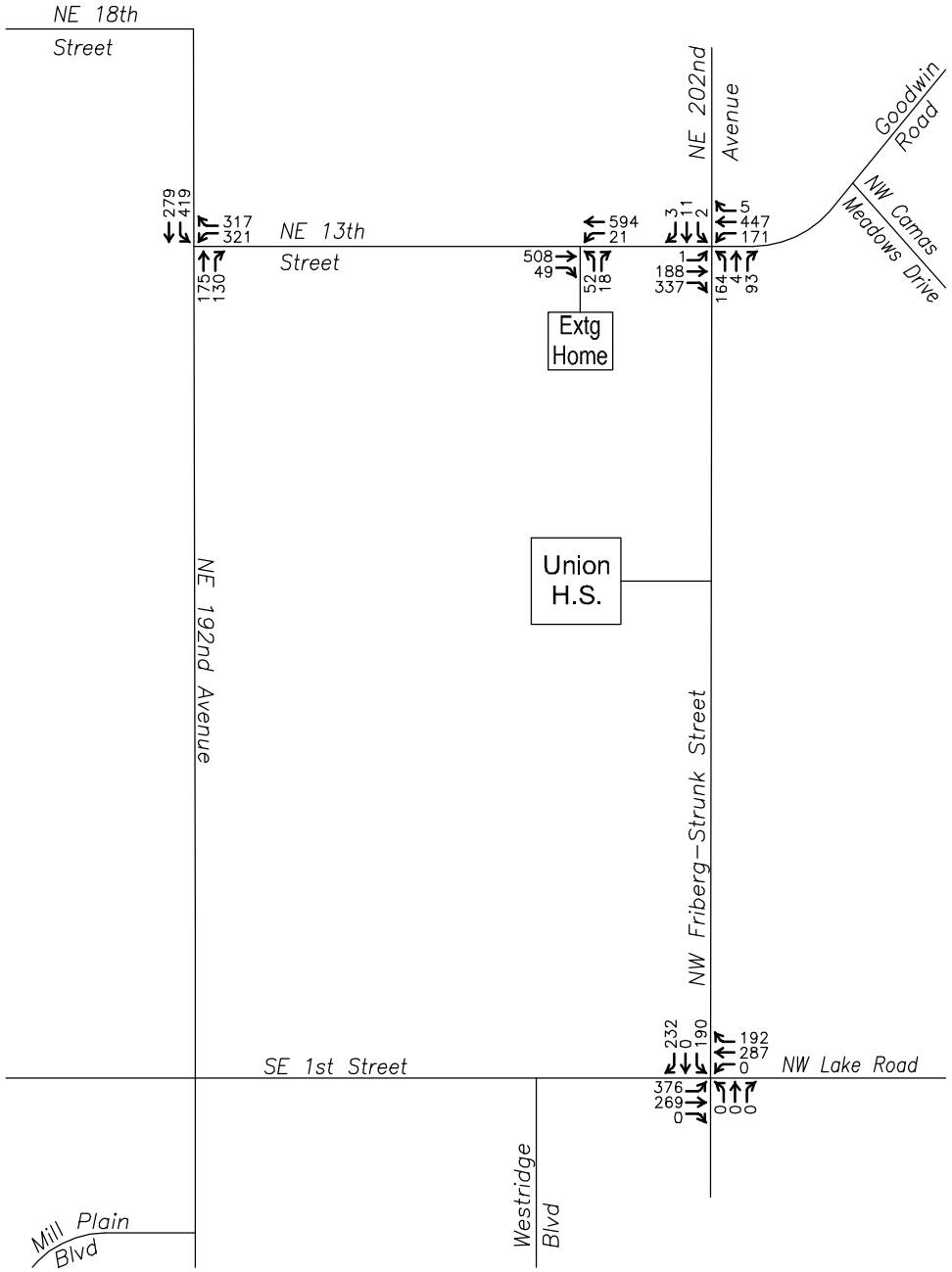
NOTES: The site's trip generation is based on Gas Station with Market (ITE 945) and Automated Car Wash (ITE 948) trip rates.

NEW TRIP ASSIGNMENT PM PEAK HOUR 13TH STREET GAS STATION

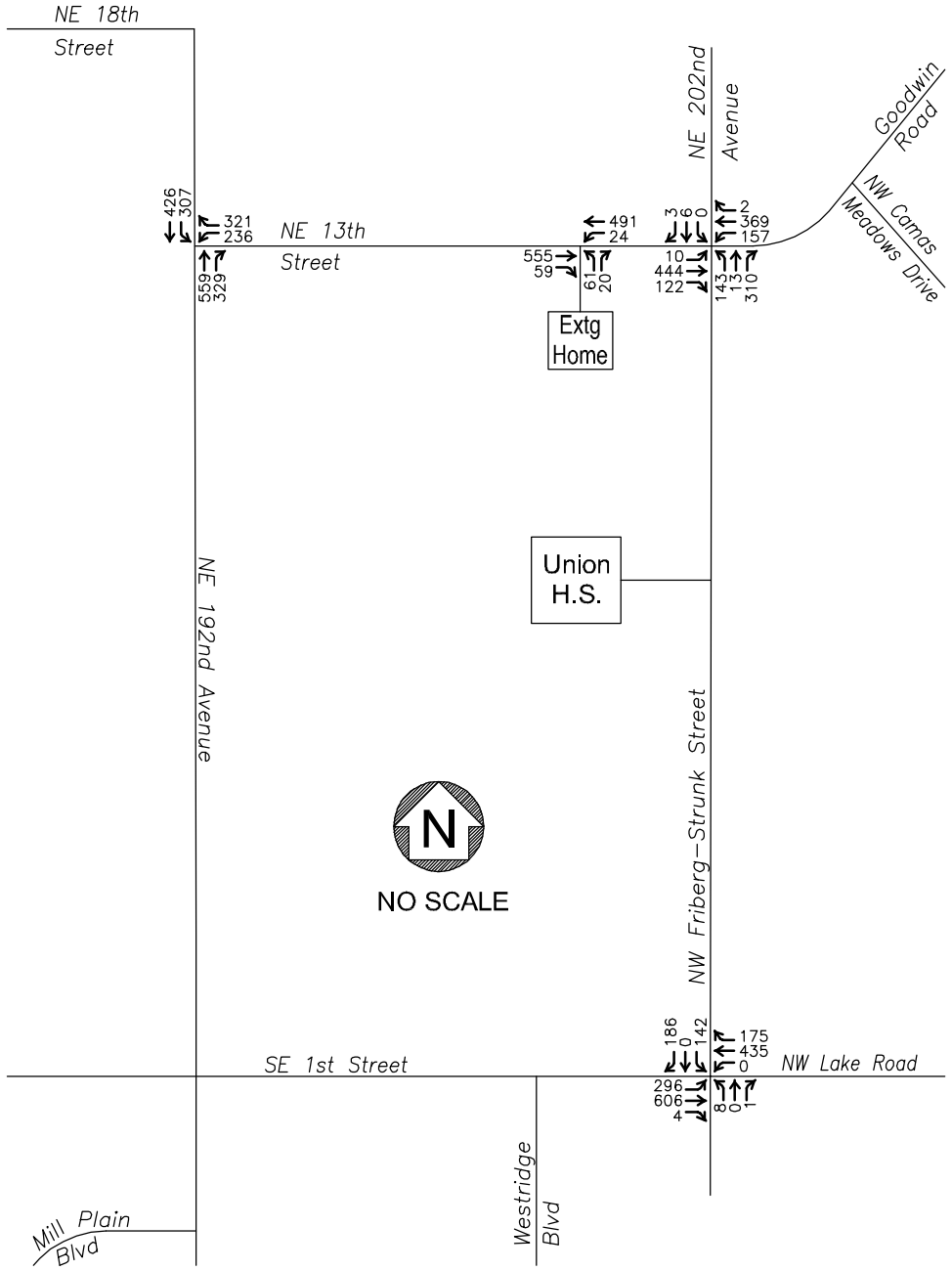
FIGURE 8b

Exhibit 10 APPEAL24-1001

PLOT DATE: 09.12.23 FILE: 2324flow.dwg



AM PEAK HOUR



PM PEAK HOUR

343 CHARBONNEAU ENGINEERING LLC

PROJECT: 23-24

NOTES: 2026 Total Traffic = 2026 Background Traffic + Pass-by Traffic + New Trip Assignment.

2026 TOTAL TRAFFIC
13TH STREET GAS STATION

FIGURE 9

Exhibit 10 APPEAL24-1001

File Name: NE 192nd Ave at NE 13th St
Start Date: 8/1/2023
Start Time: 7:00 AM
Site Code: 1

Peak Hour: 7:55-8:55AM
Peak 15-min: 8:40-8:55AM

ALL VEHICLES	Northbound NE 192nd Ave					Southbound NE 192nd Ave					Eastbound NE 13th St					Westbound NE 13th St						
Time Period	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	5-min Total	Hourly Totals
7:00 AM	0	16	4	0	0	3	12	0	0	0	0	0	0	0	0	11	0	8	0	0	54	824
7:05 AM	0	11	1	0	0	1	17	0	0	0	0	0	0	0	0	11	0	7	0	0	48	836
7:10 AM	0	9	7	0	0	3	18	0	0	0	0	0	0	0	0	11	0	9	0	0	57	851
7:15 AM	0	11	4	0	0	4	17	0	0	0	0	0	0	0	0	6	0	10	0	0	52	882
7:20 AM	0	12	2	0	0	7	16	0	0	0	0	0	0	0	0	14	0	4	0	0	55	906
7:25 AM	0	18	6	0	0	9	19	0	0	0	0	0	0	0	0	10	0	6	0	0	68	919
7:30 AM	0	13	5	0	0	9	17	0	0	0	0	0	0	0	0	16	0	13	0	0	73	938
7:35 AM	0	22	2	0	0	17	15	0	0	0	0	0	0	0	0	10	0	14	0	0	80	935
7:40 AM	0	8	2	0	0	16	19	0	0	0	0	0	0	0	0	15	0	14	0	0	74	933
7:45 AM	0	13	4	0	0	9	24	0	0	0	0	0	0	0	0	15	0	20	0	0	85	937
7:50 AM	0	13	8	0	0	15	26	0	0	0	0	0	0	0	0	15	0	12	0	0	89	945
7:55 AM	0	14	7	0	0	15	25	0	0	0	0	0	0	0	0	15	0	13	0	0	89	948
8:00 AM	0	13	4	0	0	10	16	0	0	0	0	0	0	0	0	11	0	12	0	0	66	945
8:05 AM	0	17	4	0	0	10	17	0	0	0	0	0	0	0	0	8	0	7	0	0	63	
8:10 AM	0	15	12	0	0	9	29	0	0	0	0	0	0	0	0	13	0	10	0	0	88	
8:15 AM	0	14	7	0	0	6	17	0	0	0	0	0	0	0	0	19	0	13	0	0	76	
8:20 AM	0	16	5	0	0	4	18	0	0	0	0	0	0	0	0	16	0	9	0	0	68	
8:25 AM	0	14	11	0	0	9	27	0	0	0	0	0	0	0	0	18	0	8	0	0	87	
8:30 AM	0	11	10	0	0	5	25	0	0	0	0	0	0	0	0	16	0	3	0	0	70	
8:35 AM	0	19	3	0	0	8	21	0	0	0	0	0	0	0	0	13	0	14	0	0	78	
8:40 AM	0	15	2	0	0	8	22	0	0	0	0	0	0	0	0	18	0	13	0	0	78	
8:45 AM	0	18	3	0	0	16	27	0	0	0	0	0	0	0	0	14	0	15	0	0	93	
8:50 AM	0	9	6	0	0	18	26	0	0	0	0	0	0	0	0	25	0	8	0	0	92	
8:55 AM	0	16	7	0	0	12	17	0	0	0	0	0	0	0	0	19	0	15	0	0	86	

Time Period	NB Left	NB Thru	NB Right	NB U-Turn	NB RTOR	SB Left	SB Thru	SB Right	SB U-Turn	SB RTOR	EB Left	EB Thru	EB Right	EB U-Turn	EB RTOR	WB Left	WB Thru	WB Right	WB U-Turn	WB RTOR
Cars	0	167	72	0	0	113	248	0	0	0	0	0	0	0	0	184	0	121	0	0
Trucks	0	8	2	0	0	5	22	0	0	0	0	0	0	0	0	2	0	4	0	0
Peak Vols	0	175	74	0	0	118	270	0	0	0	0	0	0	0	0	186	0	125	0	0
Trucks %	4.0%					7.0%					0%					1.9%				
Peds	0					1					0					1				

PHF= 0.90

Exhibit 10 APPEAL24-1001

File Name: NE 192nd Ave at NE 13th St
Start Date: 8/1/2023
Start Time: 4:00 PM
Site Code: 1

Peak Hour: 4:30-5:30PM
Peak 15-min: 4:45-5:00PM

ALL VEHICLES	Northbound NE 192nd Ave					Southbound NE 192nd Ave					Eastbound NE 13th St					Westbound NE 13th St						
Time Period	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	5-min Total	Hourly Totals
4:00 PM	0	40	12	0	0	4	28	0	0	0	0	0	0	0	0	7	0	14	0	0	105	1547
4:05 PM	0	36	10	0	0	12	21	0	0	0	0	0	0	0	0	19	0	10	0	0	108	1577
4:10 PM	0	22	11	0	0	18	43	0	0	0	0	0	0	0	0	21	0	13	0	0	128	1601
4:15 PM	0	51	16	0	0	10	24	0	0	0	0	0	0	0	0	19	0	9	0	0	129	1611
4:20 PM	0	43	11	0	0	19	23	0	0	0	0	0	0	0	0	10	0	11	0	0	117	1629
4:25 PM	0	44	9	0	0	12	29	0	0	0	0	0	0	0	0	7	0	13	0	0	114	1648
4:30 PM	0	46	15	0	0	16	27	0	0	0	0	0	0	0	0	9	0	14	0	0	127	1654
4:35 PM	0	47	12	0	0	20	28	0	0	0	0	0	0	0	0	8	0	15	0	0	130	1643
4:40 PM	0	37	19	0	0	13	33	0	0	0	0	0	0	0	0	12	0	18	0	0	132	1642
4:45 PM	0	38	21	0	0	21	32	0	0	0	0	0	0	0	0	13	0	20	0	0	145	1650
4:50 PM	0	45	15	0	0	10	30	0	0	0	0	0	0	0	0	12	0	27	0	0	139	1630
4:55 PM	0	50	19	0	0	16	57	0	0	0	0	0	0	0	0	10	0	21	0	0	173	1600
5:00 PM	0	47	9	0	0	14	36	0	0	0	0	0	0	0	0	13	0	16	0	0	135	1546
5:05 PM	0	50	17	0	0	8	42	0	0	0	0	0	0	0	0	8	0	7	0	0	132	
5:10 PM	0	41	17	0	0	19	36	0	0	0	0	0	0	0	0	12	0	13	0	0	138	
5:15 PM	0	37	11	0	0	22	38	0	0	0	0	0	0	0	0	22	0	17	0	0	147	
5:20 PM	0	51	15	0	0	11	27	0	0	0	0	0	0	0	0	12	0	20	0	0	136	
5:25 PM	0	51	13	0	0	12	23	0	0	0	0	0	0	0	0	10	0	11	0	0	120	
5:30 PM	0	37	13	0	0	14	25	0	0	0	0	0	0	0	0	10	0	17	0	0	116	
5:35 PM	0	50	16	0	0	16	28	0	0	0	0	0	0	0	0	13	0	6	0	0	129	
5:40 PM	0	42	12	0	0	19	33	0	0	0	0	0	0	0	0	15	0	19	0	0	140	
5:45 PM	0	44	14	0	0	15	35	0	0	0	0	0	0	0	0	10	0	7	0	0	125	
5:50 PM	0	33	10	0	0	16	31	0	0	0	0	0	0	0	0	7	0	12	0	0	109	
5:55 PM	0	41	14	0	0	11	26	0	0	0	0	0	0	0	0	12	0	15	0	0	119	

Time Period	NB Left	NB Thru	NB Right	NB U-Turn	NB RTOR	SB Left	SB Thru	SB Right	SB U-Turn	SB RTOR	EB Left	EB Thru	EB Right	EB U-Turn	EB RTOR	WB Left	WB Thru	WB Right	WB U-Turn	WB RTOR
Cars	0	540	174	0	0	182	405	0	0	0	0	0	0	0	0	139	0	197	0	0
Trucks	0	0	9	0	0	0	4	0	0	0	0	0	0	0	0	2	0	2	0	0
Peak Vols	0	540	183	0	0	182	409	0	0	0	0	0	0	0	0	141	0	199	0	0
Trucks %	1.2%					0.7%					0%					1.2%				
Peds	0					0					0					0				

PHF= 0.90

Exhibit 10 APPEAL24-1001

File Name: NW Friberg-Strunk St at NE 13th St
Start Date: 8/1/2023
Start Time: 7:00 AM
Site Code: 2

Peak Hour: 7:30-8:30AM
Peak 15-min: 7:35-7:50AM

ALL VEHICLES	Northbound NE Friberg-Strunk St					Southbound NE 202nd Ave					Eastbound NE 13th St					Westbound NE Goodwin Rd						
Time Period	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	5-min Total	Hourly Totals
7:00 AM	4	0	3	0	0	0	0	1	0	0	0	6	1	0	0	4	12	1	0	0	32	571
7:05 AM	1	0	4	0	0	0	0	1	0	0	0	2	0	0	0	0	18	0	0	0	26	592
7:10 AM	2	0	4	0	0	0	0	0	0	0	0	5	2	0	0	7	16	0	0	0	36	601
7:15 AM	2	0	6	0	0	0	0	1	0	0	0	11	2	0	0	3	12	0	0	0	37	622
7:20 AM	1	0	4	0	0	0	0	0	0	0	0	6	4	0	0	12	15	0	0	0	42	636
7:25 AM	0	0	2	0	0	0	0	2	0	0	0	8	2	0	0	6	18	0	0	0	38	635
7:30 AM	2	0	3	0	0	0	0	1	0	0	0	8	8	0	0	4	24	0	0	0	50	652
7:35 AM	4	0	5	0	0	0	1	0	0	0	0	8	9	0	0	4	19	1	0	0	51	652
7:40 AM	0	0	5	0	0	0	1	0	0	0	0	10	13	0	0	8	31	1	0	0	69	647
7:45 AM	5	0	8	0	0	0	0	0	0	0	0	10	5	0	0	9	35	0	0	0	72	634
7:50 AM	2	0	7	0	0	0	1	0	0	0	0	13	5	0	0	4	18	1	0	0	51	625
7:55 AM	4	0	5	0	0	1	0	1	0	0	0	16	7	0	0	8	25	0	0	0	67	632
8:00 AM	2	0	4	0	0	0	0	1	0	0	0	10	4	0	0	12	20	0	0	0	53	628
8:05 AM	2	0	2	0	0	0	0	0	0	0	0	7	3	0	0	4	17	0	0	0	35	
8:10 AM	1	1	5	0	0	0	0	0	0	0	0	16	6	0	0	7	21	0	0	0	57	
8:15 AM	0	0	2	0	0	0	0	0	0	0	0	11	1	0	0	5	32	0	0	0	51	
8:20 AM	0	0	4	0	0	1	0	0	0	0	0	10	2	0	0	2	21	1	0	0	41	
8:25 AM	2	0	3	0	0	0	0	0	0	0	1	15	1	0	0	6	26	1	0	0	55	
8:30 AM	0	1	4	0	0	1	0	1	0	0	0	17	3	0	0	3	19	1	0	0	50	
8:35 AM	6	0	4	0	0	0	0	0	0	0	0	10	2	0	0	7	17	0	0	0	46	
8:40 AM	1	0	6	0	0	0	0	0	0	0	0	7	2	0	0	9	31	0	0	0	56	
8:45 AM	2	0	1	0	0	2	1	0	0	0	1	11	7	0	0	5	33	0	0	0	63	
8:50 AM	2	0	1	0	0	0	0	0	0	0	0	14	6	0	0	10	25	0	0	0	58	
8:55 AM	2	0	5	0	0	1	0	1	0	0	0	8	10	0	0	6	29	1	0	0	63	

Time Period	NB Left	NB Thru	NB Right	NB U-Turn	NB RTOR	SB Left	SB Thru	SB Right	SB U-Turn	SB RTOR	EB Left	EB Thru	EB Right	EB U-Turn	EB RTOR	WB Left	WB Thru	WB Right	WB U-Turn	WB RTOR
Cars	24	1	51	0	0	2	3	3	0	0	1	127	62	0	0	70	286	5	0	0
Trucks	0	0	2	0	0	0	0	0	0	0	0	7	2	0	0	3	3	0	0	0
Peak Vols	24	1	53	0	0	2	3	3	0	0	1	134	64	0	0	73	289	5	0	0
Trucks %	2.6%					0.0%					4.5%					1.6%				
Peds	0					0					0					0				

PHF= 0.85

Exhibit 10 APPEAL24-1001

File Name: NW Friberg-Strunk St at NE 13th St
Start Date: 8/1/2023
Start Time: 4:00 PM
Site Code: 2

Peak Hour: 4:40-5:40PM
Peak 15-min: 4:40-4:55PM

ALL VEHICLES	Northbound NE 192nd Ave					Southbound NE 192nd Ave					Eastbound NE 13th St					Westbound NE 13th St						
Time Period	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	5-min Total	Hourly Totals
4:00 PM	8	0	16	0	0	0	0	0	0	0	0	15	2	0	0	5	16	0	0	0	62	982
4:05 PM	4	0	18	0	0	0	0	0	0	0	2	16	2	0	0	7	24	0	0	0	73	988
4:10 PM	2	2	26	0	0	0	0	0	0	0	0	20	4	0	0	5	26	0	0	0	85	997
4:15 PM	13	0	18	0	0	0	0	0	0	0	1	21	6	0	0	4	40	0	0	0	103	992
4:20 PM	1	0	22	0	0	0	1	0	0	0	0	28	0	0	0	8	15	0	0	0	75	977
4:25 PM	3	1	19	0	0	0	0	0	0	0	0	19	4	0	0	4	17	0	0	0	67	982
4:30 PM	6	0	15	0	0	0	0	0	0	0	0	28	4	0	0	3	22	0	0	0	78	1016
4:35 PM	6	1	9	0	0	0	0	0	0	0	0	23	2	0	0	13	20	0	0	0	74	1001
4:40 PM	8	1	25	0	0	0	0	0	0	0	0	26	6	0	0	7	21	0	0	0	94	1019
4:45 PM	11	0	19	0	0	0	0	0	0	0	0	31	6	0	0	11	26	0	0	0	104	1008
4:50 PM	4	0	15	0	0	0	0	0	0	0	0	27	6	0	0	6	30	0	0	0	88	982
4:55 PM	3	0	12	0	0	0	0	0	0	0	1	22	3	0	0	11	27	0	0	0	79	970
5:00 PM	4	0	20	0	0	0	0	1	0	0	0	23	3	0	0	5	12	0	0	0	68	969
5:05 PM	3	3	21	0	0	0	1	0	0	0	0	20	3	0	0	8	23	0	0	0	82	
5:10 PM	5	5	14	0	0	0	0	0	0	0	0	20	3	0	0	8	25	0	0	0	80	
5:15 PM	7	1	15	0	0	0	0	0	0	0	1	25	6	0	0	6	25	2	0	0	88	
5:20 PM	6	1	19	0	0	0	1	0	0	0	4	18	4	0	0	7	20	0	0	0	80	
5:25 PM	6	0	26	0	0	0	0	0	0	0	2	23	7	0	0	11	26	0	0	0	101	
5:30 PM	3	0	16	0	0	0	1	1	0	0	1	11	5	0	0	9	16	0	0	0	63	
5:35 PM	5	0	19	0	0	0	1	1	0	0	0	34	3	0	0	15	14	0	0	0	92	
5:40 PM	7	1	16	0	0	0	0	4	0	0	0	25	6	0	0	7	17	0	0	0	83	
5:45 PM	3	0	17	0	0	1	4	1	0	0	0	21	4	0	0	12	15	0	0	0	78	
5:50 PM	5	0	14	0	0	1	1	0	0	0	0	25	3	0	0	8	19	0	0	0	76	
5:55 PM	2	0	20	0	0	0	0	1	0	0	0	25	4	0	0	8	18	0	0	0	78	

Time Period	NB Left	NB Thru	NB Right	NB U-Turn	NB RTOR	SB Left	SB Thru	SB Right	SB U-Turn	SB RTOR	EB Left	EB Thru	EB Right	EB U-Turn	EB RTOR	WB Left	WB Thru	WB Right	WB U-Turn	WB RTOR
Cars	65	11	219	0	0	0	4	3	0	0	9	280	55	0	0	104	262	2	0	0
Trucks	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
Peak Vols	65	11	221	0	0	0	4	3	0	0	9	280	55	0	0	104	265	2	0	0
Trucks %	0.7%					0.0%					0.0%					0.8%				
Peds	4					4					1					3				

PHF= 0.89

Exhibit 10 APPEAL24-1001

File Name: NW Friberg-Strunk St at SE 1st St
Start Date: 8/1/2023
Start Time: 4:00 PM
Site Code: 3

Peak Hour: 7:35-8:35AM
Peak 15-min: 7:45-8:00AM

	Northbound N/A					Southbound NE Friberg-Strunk St					Eastbound SE 1st St					Westbound NW Lake Rd						
Time Period	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	5-min Total	Hourly Totals
7:00 AM	0	0	0	0	0	3	0	2	0	0	2	12	0	0	0	0	15	4	0	0	38	637
7:05 AM	0	0	0	0	0	1	0	1	0	0	5	13	0	0	0	0	18	1	0	0	39	674
7:10 AM	0	0	0	0	0	3	0	1	0	0	2	14	0	0	0	0	15	3	0	0	38	692
7:15 AM	0	0	0	0	0	5	0	2	0	0	7	13	0	0	0	0	10	4	0	0	41	705
7:20 AM	0	0	0	0	0	5	0	4	0	0	2	17	0	0	0	0	22	2	0	0	52	708
7:25 AM	0	0	0	0	0	5	0	8	0	0	4	9	0	0	0	0	13	0	0	0	39	710
7:30 AM	1	0	0	0	0	5	0	2	0	0	2	12	0	0	0	0	13	3	0	0	38	713
7:35 AM	0	0	0	0	0	6	0	3	0	0	5	16	0	0	0	0	18	3	0	0	51	723
7:40 AM	0	0	0	0	0	9	0	6	0	0	9	15	0	0	0	0	26	0	0	0	65	711
7:45 AM	0	0	0	0	0	5	0	7	0	0	9	23	0	0	0	0	26	5	0	0	75	701
7:50 AM	0	0	0	0	0	5	0	8	0	0	7	25	0	0	0	0	25	2	0	0	72	685
7:55 AM	0	0	0	0	0	7	0	4	0	0	7	32	0	0	0	0	37	2	0	0	89	678
8:00 AM	0	0	0	0	0	7	0	5	0	0	3	32	0	0	0	0	26	2	0	0	75	672
8:05 AM	0	0	0	0	0	9	0	5	0	0	2	18	0	0	0	0	21	2	0	0	57	
8:10 AM	0	0	0	0	0	6	0	2	0	0	5	12	0	0	0	0	22	4	0	0	51	
8:15 AM	0	0	0	0	0	5	0	5	0	0	2	16	0	0	0	0	16	0	0	0	44	
8:20 AM	0	0	0	0	0	2	0	3	0	0	5	21	0	0	0	0	21	2	0	0	54	
8:25 AM	0	0	0	0	0	3	0	2	0	0	5	16	0	0	0	0	14	2	0	0	42	
8:30 AM	0	0	0	0	0	1	0	4	0	0	7	21	0	0	0	0	15	0	0	0	48	
8:35 AM	0	0	0	0	0	2	0	3	0	0	2	15	0	0	0	0	11	6	0	0	39	
8:40 AM	1	0	0	0	0	3	0	6	0	0	7	16	0	0	0	1	19	2	0	0	55	
8:45 AM	0	0	0	0	0	2	0	6	0	0	5	21	0	0	0	0	24	1	0	0	59	
8:50 AM	1	0	0	0	0	4	0	14	0	0	2	23	0	0	0	0	18	3	0	0	65	
8:55 AM	0	0	0	0	0	4	0	7	0	0	11	28	0	0	0	0	26	7	0	0	83	

Time Period	NB Left	NB Thru	NB Right	NB U-Turn	NB RTOR	SB Left	SB Thru	SB Right	SB U-Turn	SB RTOR	EB Left	EB Thru	EB Right	EB U-Turn	EB RTOR	WB Left	WB Thru	WB Right	WB U-Turn	WB RTOR
Cars	0	0	0	0	0	63	0	53	0	0	64	240	0	0	0	0	265	24	0	0
Trucks	0	0	0	0	0	2	0	1	0	0	2	7	0	0	0	0	2	0	0	0
Peak Vols	0	0	0	0	0	65	0	54	0	0	66	247	0	0	0	0	267	24	0	0
Trucks %	0%					2.5%					2.9%					0.7%				
Peds	0					7					2					1				

PHF= 0.77

Exhibit 10 APPEAL24-1001

File Name: NW Friberg-Strunk St at SE 1st St
Start Date: 8/1/2023
Start Time: 4:00 PM
Site Code: 3

Peak Hour: 4:45-5:45PM
Peak 15-min: 5:10-5:25PM

ALL VEHICLES	Northbound N/A					Southbound NE Friberg-Strunk St					Eastbound SE 1st St					Westbound NW Lake Rd						
Time Period	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	5-min Total	Hourly Totals
4:00 PM	0	0	0	0	0	2	0	3	0	0	15	53	0	0	0	0	46	10	0	0	129	1294
4:05 PM	1	0	0	0	0	2	0	6	0	0	15	34	0	0	0	0	29	4	0	0	91	1277
4:10 PM	0	0	0	0	0	1	0	7	0	0	25	31	1	0	0	0	28	3	0	0	96	1308
4:15 PM	0	0	0	0	0	1	0	7	0	0	17	54	1	0	0	0	24	7	0	0	111	1343
4:20 PM	0	0	0	0	0	7	0	6	0	0	16	47	0	0	0	0	28	5	0	0	109	1356
4:25 PM	0	0	0	0	0	5	0	5	0	0	21	42	0	0	0	0	36	7	0	0	116	1373
4:30 PM	0	0	0	0	0	1	0	3	0	0	15	35	0	0	0	0	26	6	0	0	86	1386
4:35 PM	0	0	0	0	0	10	0	8	0	0	14	37	0	0	0	0	33	10	0	0	112	1415
4:40 PM	0	0	0	0	0	6	0	7	0	0	22	42	0	0	0	0	35	6	0	0	118	1401
4:45 PM	0	0	0	0	0	6	0	12	0	0	17	48	1	0	0	0	36	11	0	0	131	1416
4:50 PM	0	0	0	0	0	8	0	6	0	0	15	39	0	0	0	0	22	5	0	0	95	1399
4:55 PM	0	0	0	0	0	7	0	4	0	0	12	38	0	0	0	0	34	5	0	0	100	1401
5:00 PM	0	0	0	0	0	3	0	8	0	0	11	33	0	0	0	0	49	8	0	0	112	1409
5:05 PM	0	0	0	0	0	4	0	6	0	0	20	45	0	0	0	0	39	8	0	0	122	
5:10 PM	2	0	0	0	0	4	0	10	0	0	18	44	0	0	0	0	43	10	0	0	131	
5:15 PM	0	0	0	0	0	4	0	8	0	0	15	56	0	0	0	0	35	6	0	0	124	
5:20 PM	0	0	0	0	0	9	0	7	0	0	15	53	1	0	0	0	35	6	0	0	126	
5:25 PM	0	0	0	0	0	9	0	5	0	0	26	49	0	0	0	0	29	11	0	0	129	
5:30 PM	0	0	0	0	0	4	0	4	0	0	19	57	0	0	0	0	24	7	0	0	115	
5:35 PM	0	0	0	0	0	7	0	5	0	0	11	41	0	0	0	0	26	8	0	0	98	
5:40 PM	0	0	0	0	0	7	0	9	0	0	18	64	0	0	0	0	30	5	0	0	133	
5:45 PM	0	0	0	0	0	6	0	10	0	0	15	48	0	0	0	0	30	5	0	0	114	
5:50 PM	0	0	0	0	0	5	0	10	0	0	16	36	0	0	0	0	23	7	0	0	97	
5:55 PM	0	0	0	0	0	5	0	7	0	0	20	45	0	0	0	0	27	4	0	0	108	

Time Period	NB Left	NB Thru	NB Right	NB U-Turn	NB RTOR	SB Left	SB Thru	SB Right	SB U-Turn	SB RTOR	EB Left	EB Thru	EB Right	EB U-Turn	EB RTOR	WB Left	WB Thru	WB Right	WB U-Turn	WB RTOR
Cars	2	0	0	0	0	72	0	84	0	0	197	565	2	0	0	0	400	90	0	0
Trucks	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0
Peak Vols	2	0	0	0	0	72	0	84	0	0	197	567	2	0	0	0	402	90	0	0
Trucks %	0.0%					0.0%					0.3%					0.4%				
Peds	0					0					0					0				

PHF= 0.93

Exhibit 10 APPEAL24-1001

TRAFFIC VOLUMES

Year 2023 Background Conditions

AM & PM Peak Hours

Figure 5

Camas Heights

10/22/2021

0% Build-Out Camas Heights Subdivision - 8/24/23

0% Build-Out Camas Heights Subdivision - 8/24/23

CURRENT PROPOSED DEVELOPMENT PLAN

The B1 South Phase consists of 124 attached units and 2 single-family detached homes and is expected to be completed by 2020. It is located in the southwest portion of the overall site, directly south of Phase 1. Access will be provided via the neighborhood collector built with Phase 1, which connects to NE Ingle Road. In the future, this neighborhood collector will connect to Phase 3 of the site.

Trip Generation

Trip generation estimates for the proposed development were generated based on information provided in the standard reference manual *Trip Generation, 9th Edition* published by the Institute of Transportation Engineers (ITE – Reference 2). Table 1 summarizes the daily, weekday AM, and weekday PM peak-hour trips for the B1 South Phase assumed development.

Table 1: Trip Generation Estimate – B1 South Phase

Land Use	ITE Code	Size	Daily	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Residential Condominium/ Townhouse	230	124 units	720	55	9	46	65	43	22
Single-Family Detached Housing	210	2 units	20	2	1	1	2	1	1
Total Residential (126 units)			**740**	**57**	**10**	**47**	**67**	**44**	**23**

Table 2 summarizes the overall master plan trip generation and then deducts for the cumulative Phase 1[1], Phase 2[1] Phase 3, and B1 South Phase trips to summarize the number of net new trips that will remain vested.

[1] While previous traffic analysis assumed 215 units in Phase 1, Phase 1 as platted consists of 201 units. While previous traffic analysis assumed 230 units in Phase 2, Phase 2 is now platted for 228 units. The updated trip totals are shown in Table 2.

Exhibit 10 APPEAL24-1001

Table 2: Master Plan Trip Generation and Build-out Debiting (Includes Phase 1, 2 and 3)

Land Use	ITE Code	Size	Daily	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Apartment	220	536 units	3,570	275	55	220	330	215	115
Single-Family Detached Housing	210	764 units	7,270	575	145	430	765	480	285
Total Residential (1,300 units)			**10,840**	**850**	200	650	1,095	695	400
Internalization (6% Daily,54% PM)			630	0	0	0	60	30	30
Shopping Center	820	90,000 square feet	6,340	145	90	55	560	270	290
Internalization (10% Daily, 11% PM)			*630*	*0*	*0*	*0*	*60*	*30*	*30*
Pass-By Trips (34%)			*1,940*	*50*	*25*	*25*	*170*	*85*	*85*
Total Vested Trips			17,180	995	290	705	1,655	965	690
Less Internalization			*1,260*	*0*	*0*	*0*	*120*	*60*	*60*
Less Pass-by trips			*1,940*	*50*	*25*	*25*	*170*	*85*	*85*
Vested Net New Trips for Full Build-out			***13,980***	***945***	***265***	***680***	***1,365***	***820***	***545***
Deduct for Net New Trips for Phase 1			*1,914*	*150*	*40*	*110*	*200*	*125*	*75*
Deduct for Net New Trips for Phase 2			*2,170*	*170*	*40*	*130*	*230*	*145*	*85*
Deduct for Net New Trips for Phase 3			*1,514*	*120*	*30*	*90*	*160*	*100*	*60*
Deduct for Net New Trips for B1 South Phase[1]			*740*	*55*	*10*	*45*	*70*	*45*	*25*
Remaining Trips			**7,642**	**450**	**145**	**305**	**705**	**405**	**300**

[1]Consistent with the accounting for the other phases, peak hour trips have been rounded to the nearest five trips for the overall trip generation debiting.

As seen in Table 2, after accounting for Phase 1, Phase 2, Phase 3 and B1 South Phase development, a total of 7,642 daily; 450 weekday AM peak hour; and 705 weekday PM peak hour trips remain in the master plan approval.

Trip Distribution and Assignment

The distribution of site-generated trips onto the study area roadway system was estimated utilizing the trip distribution provided in the Master Plan TIA. *Appendix C* illustrates the trip assignment.

EVALUATION OF OUTSTANDING MITIGATION NEEDS

The Master Plan TIA identified recommended mitigations for intersections not meeting standards under background and/or total traffic conditions. As part of each phase's transportation compliance letter, the TIA recommended evaluation of the following:

- Need for an eastbound right-turn lane at NE 199th Avenue/NE 58th Street (SR 500). As part of the Phase 3 Transportation Compliance Letter, this recommendation was adapted to provide a proportionate share contribution to a future roundabout, per direction from WSDOT.
- NE Ingle Road/NE Goodwin Road operations (including traffic signal warrant analysis).

Exhibit 10 APPEAL24-1001

- Assessment of proportionate share contribution at NE 192nd Avenue/NE 13th Street.

NE 199th Avenue/NE 58th Street (SR 500)

The Master Plan TIA recommended that future subdivision applications provide an updated assessment as to the potential need for providing a right-turn taper or lane at NE 199th Avenue/NE 58th Street (SR 500), considering both the need for a right-turn taper or lane and delay with the northbound left-turn. Based on subsequent discussions with WSDOT and Clark County staff, WSDOT has identified a single-lane roundabout as the preferred mitigation at the intersection in lieu of installation of a westbound right-turn lane. Recognizing the cost of designing and constructing a roundabout exceeds the impacts associated with the Green Mountain Master Plan and represents an "ultimate" long-term improvement need, WSDOT and Clark County will coordinate to administer a proportionate share impact mitigation methodology.

Payment of proportionate share mitigation towards the future roundabout will allow Green Mountain Master Plan development (as well as other subsequent development) a basis to satisfy transportation concurrency while providing a funding mechanism to allow the public agencies to advance intersection improvements. The proportionate cost share of intersection improvements attributable to Green Mountain B1 South Phase will be based on weekday PM peak hour trips through the intersection. The B1 South Phase is projected to add 14 site-generated trips to the intersection during the weekday PM peak hour (refer to Appendix C).

NE Ingle Road/NE Goodwin Road

In the Master Plan TIA, the intersection of NE Ingle Road/NE Goodwin Road was projected to not meet City of Camas intersection operating standards in the 2029 background conditions during the weekday PM peak hour and the 2029 total traffic conditions during both the weekday AM and PM peak hours. Therefore, the following series of mitigations were recommended in conjunction with the Master Plan development:

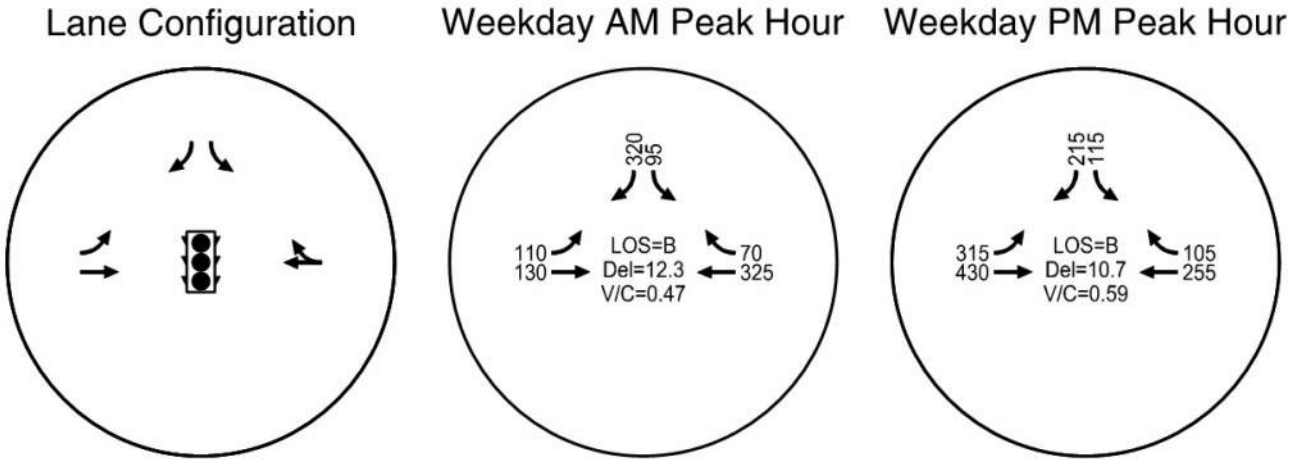
- Construct an eastbound left-turn lane on NE Goodwin Road at NE Ingle Road with the first Phase 1 trip *(completed)*.
- Construct a westbound right-turn lane on NE Goodwin Road at NE Ingle Road with the 203rd Phase 1 trip (prior to occupancy of 203rd single family home on site). The right-turn lane should provide at least 100 feet of storage *(this improvement was reprioritized after signalization of NE Goodwin Road at NE Ingle Road. It is anticipated that the right-turn lane will be constructed prior to or in-conjunction with completion of the phase that fronts Goodwin Road in the turn-lane area)*.

Exhibit 10 APPEAL24-1001

- Construct a three-lane roadway section (with center two-way left-turn lane) on NE Goodwin Road along the site frontage in conjunction with standard frontage improvements as adjacent development occurs *(will be constructed with Phase 2 development)*.
- Upon completion of Phase 1 site development (including construction of the eastbound left-turn lane on NE Goodwin Road at NE Ingle Road with Phase 1), the developer shall monitor the need for installation of a traffic signal with each future subdivision application at the intersection and construct a traffic signal when the intersection no longer satisfies City of Camas performance standard (LOS "D" and v/c of 0.90 or better) *and* the intersection volumes meet traffic signal warrants (subject to direction from the City of Camas) *(recommended with Phase 3 site development)*.

Signalized intersection operations are provided in Exhibit 1 assuming Phase 1, Phase 2, Phase 3 and B1 South Phase site development as well as approved background traffic. Given ongoing construction activity in the area, traffic counts previously collected in October 2016 for the Phase 2 TCL were used with four years of growth added[2] to inform an updated operations analysis. The count sheets are provided in *Appendix D*. *Appendix E* contains the 2020 total traffic conditions traffic operations worksheets.

Exhibit 1: NE Ingle Road/NE Goodwin Road 2020 Total Traffic Lane Configuration and Operations



As seen in Exhibit 1, with buildout of the B1 South Phase and the prior approved master plan development phases, the intersection is projected to satisfy City of Camas performance standard (LOS "D" and v/c of 0.90 or better).

[2] Based on direction provided in the original traffic study, a 1% growth was applied to City of Camas roadways.

Exhibit 10 APPEAL24-1001

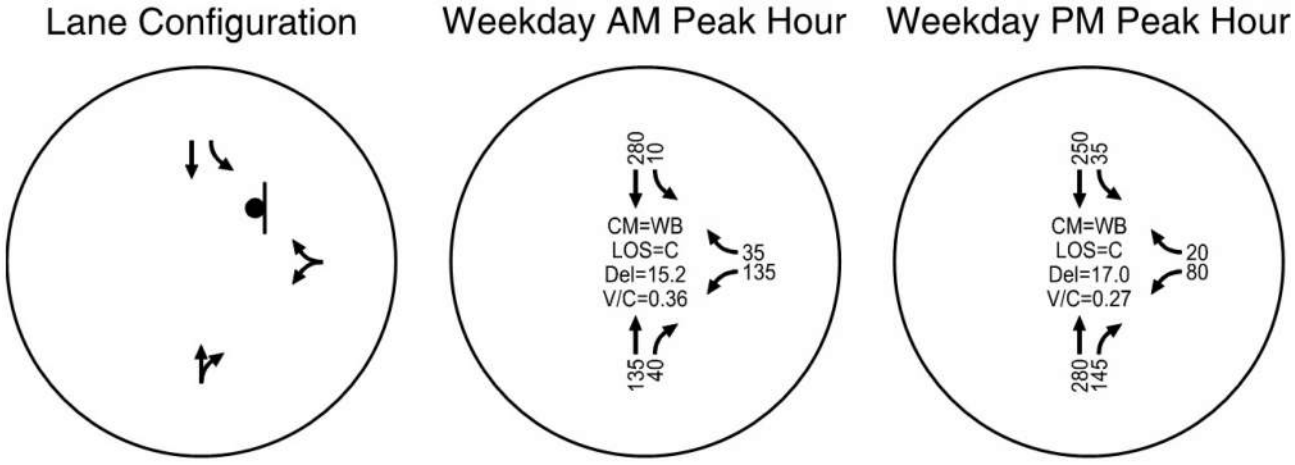
NE 192nd Avenue/NE 13th Street

The Master Plan TIA identified a proportionate cost sharing methodology to fund future construction of a northbound right-turn lane and a westbound right-turn lane on NE 13th Avenue at NE 192nd Avenue, provided in *Appendix F*. Under this methodology, each weekday PM peak hour trip would be assessed a fee of $391. Based on the B1 South Phase trip assignment (refer to *Appendix C*), the B1 South Phase adds 31 trips to the intersection of NE 192nd Avenue/NE 13th Street and therefore should be responsible for contributing $12,121 towards future improvements at the intersection.

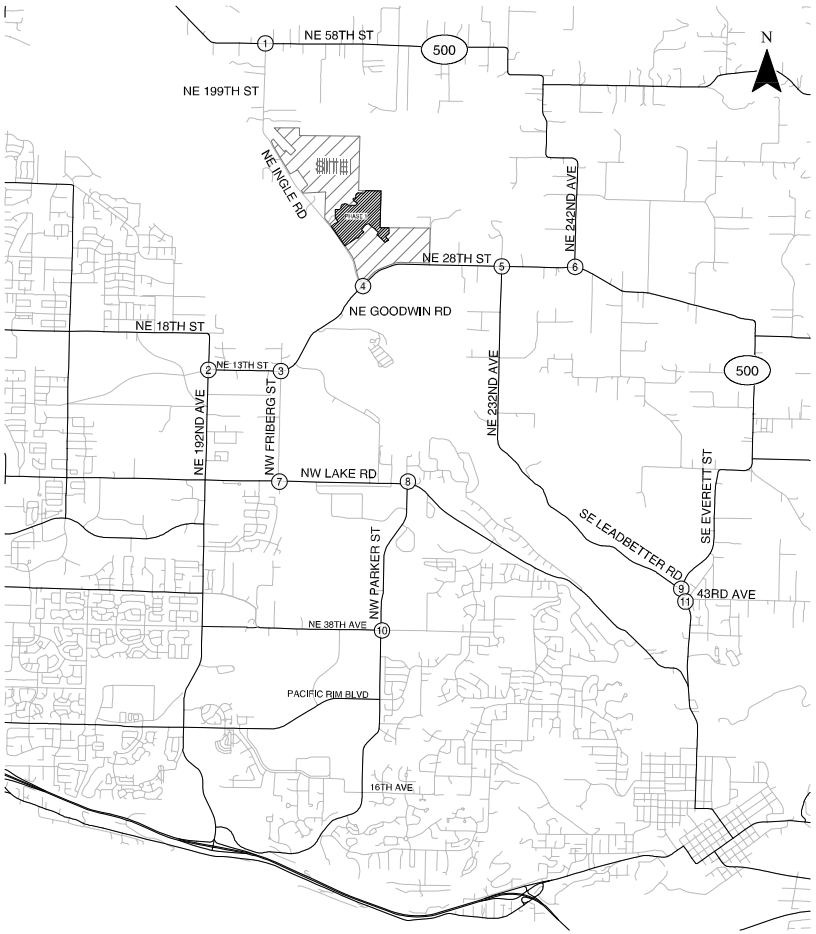
ON-SITE CIRCULATION AND OPERATIONS

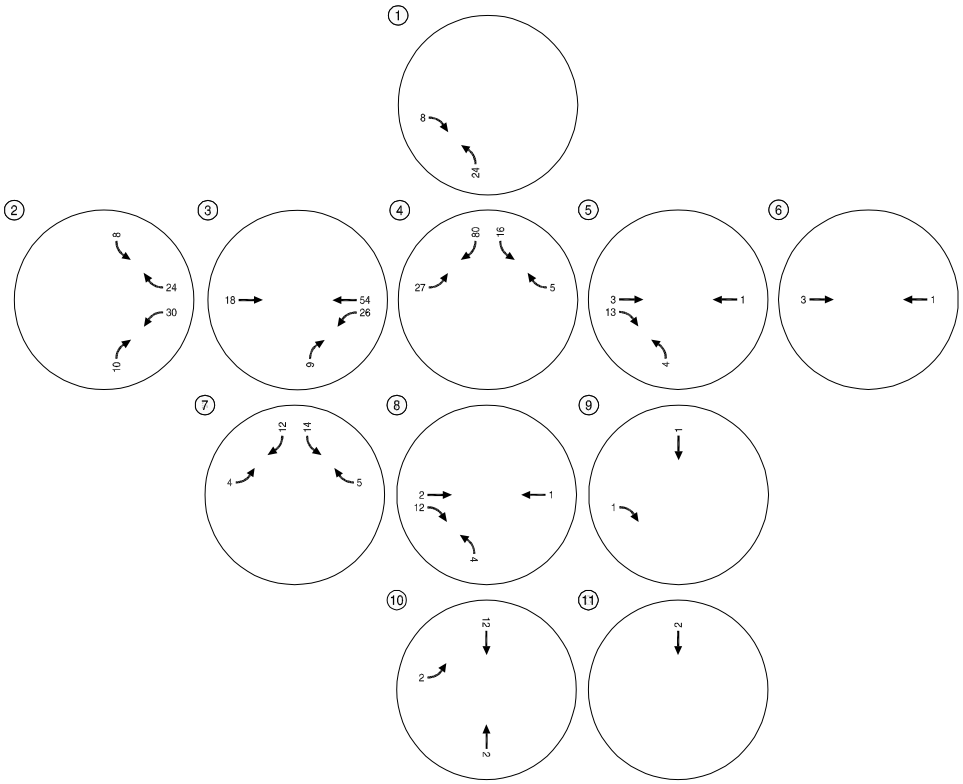
As seen in Figure 2, the B1 South Phase is located in the southwest portion of the overall site, immediately south of Phase 1. Access will be provided via a local roadway off the neighborhood circulator that connects to NE Ingle Road, developed with Phase 1. The neighborhood circulator will be located along the east edge of the B1 South Phase and connect to Phase 2 and NE 28th Street in the future. All trips were assumed to utilize the neighborhood circulator access on NE Ingle Road developed with Phase 1. The Phase 1 access was analyzed in the April 2015 memorandum *Phase 1 Access Assessment*, provided in *Appendix G*. Operations were reassessed with the additional B1 South Phase trips, as well as through trips on NE Ingle Road associated with prior approved phases and background growth. The weekday AM and PM peak hour operations are shown in Exhibit 2. *Appendix E* contains the traffic operations worksheets.

Exhibit 2: NE Ingle Road Neighborhood Circulator Site Access – 2020 Total Traffic Lane Configuration and Operations



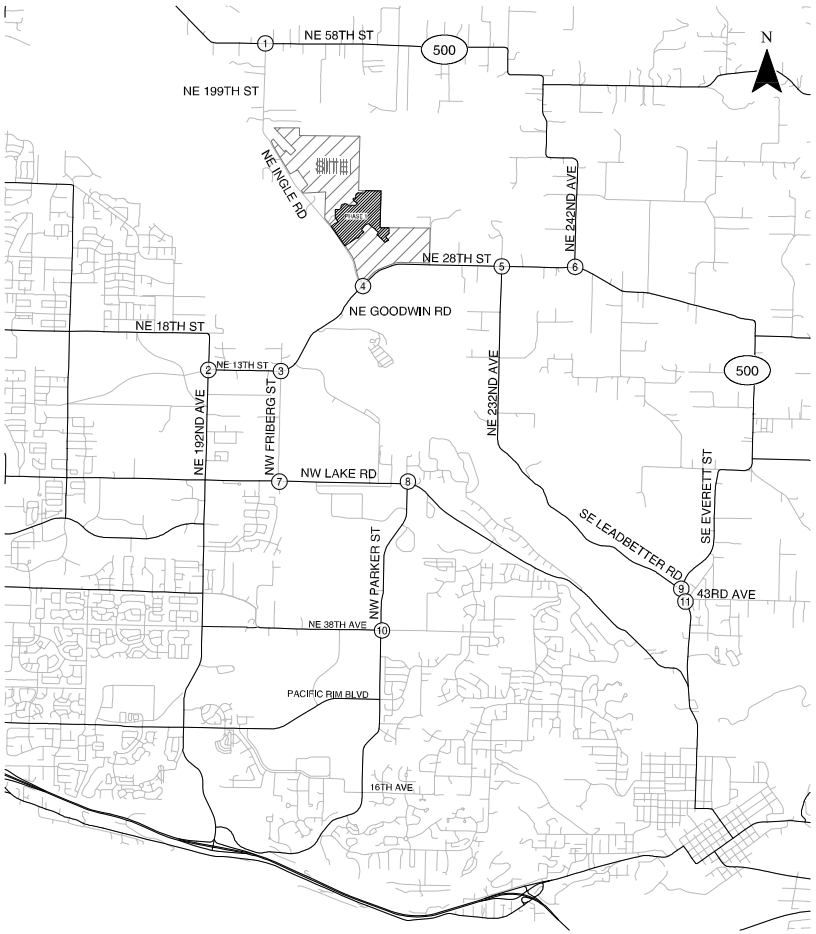
As seen in the exhibit, the access is projected to operate acceptably during both the weekday AM and PM peak hours. The anticipated 95th percentile queueing is provided in Table 3. Queues are rounded up to the nearest 25 feet.

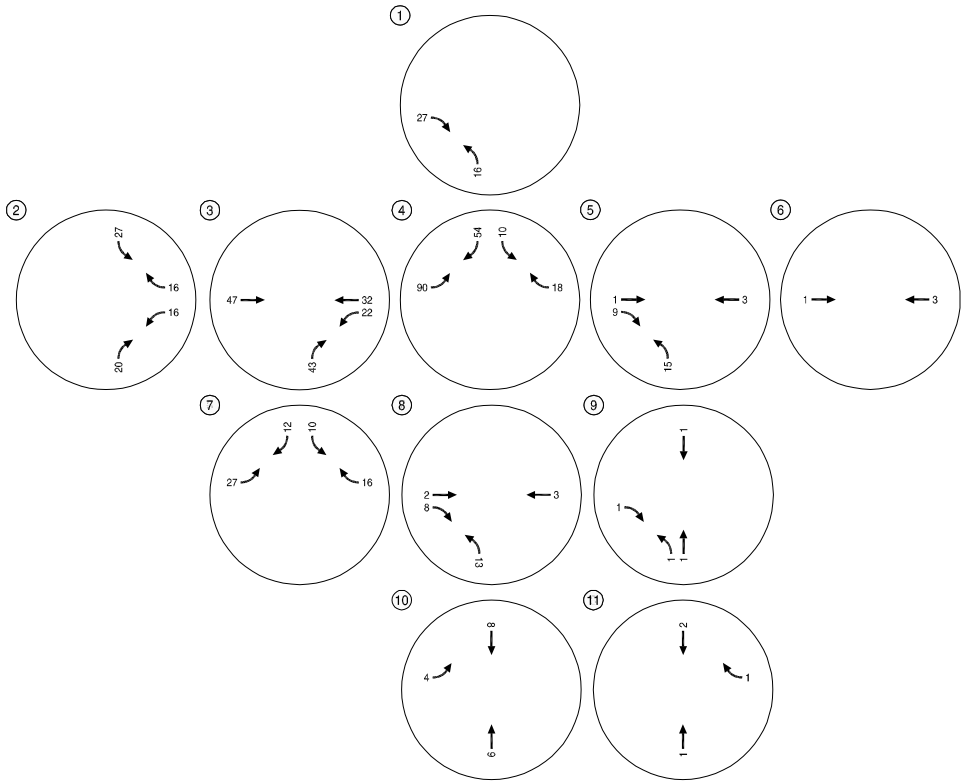




Total Estimated Trip Assignment - Phase 1
Weekday AM Peak Hour
Camas, Washington

Figure 7





Total Estimated Trip Assignment - Phase 1
Weekday PM Peak Hour
Camas, Washington

Figure 8

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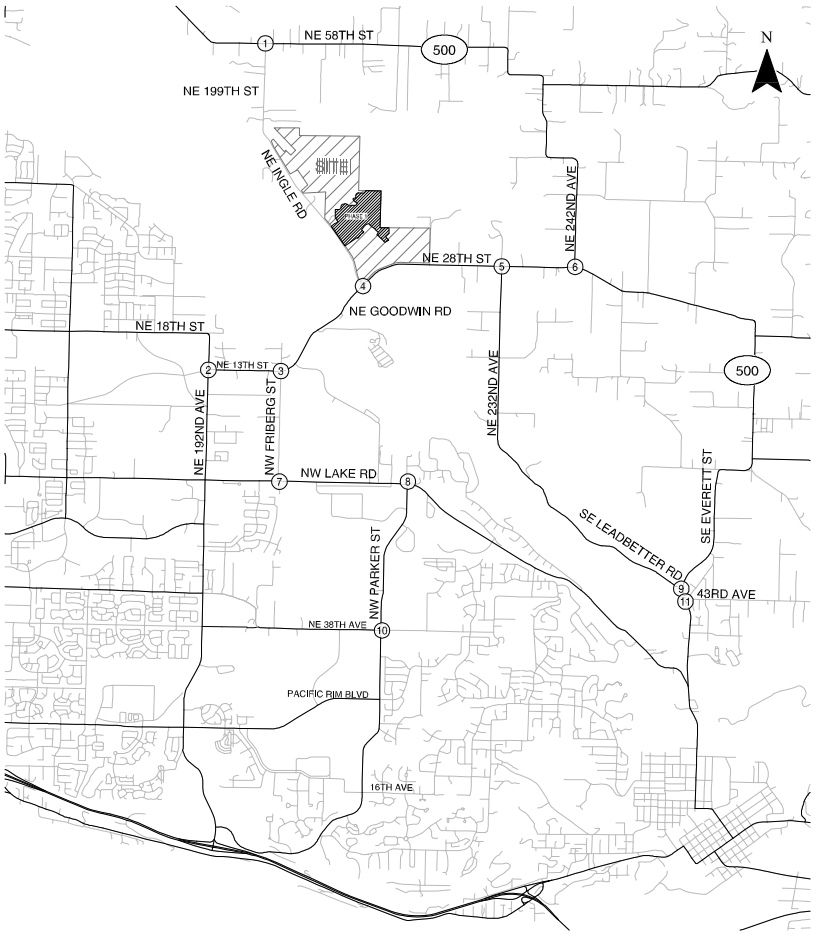

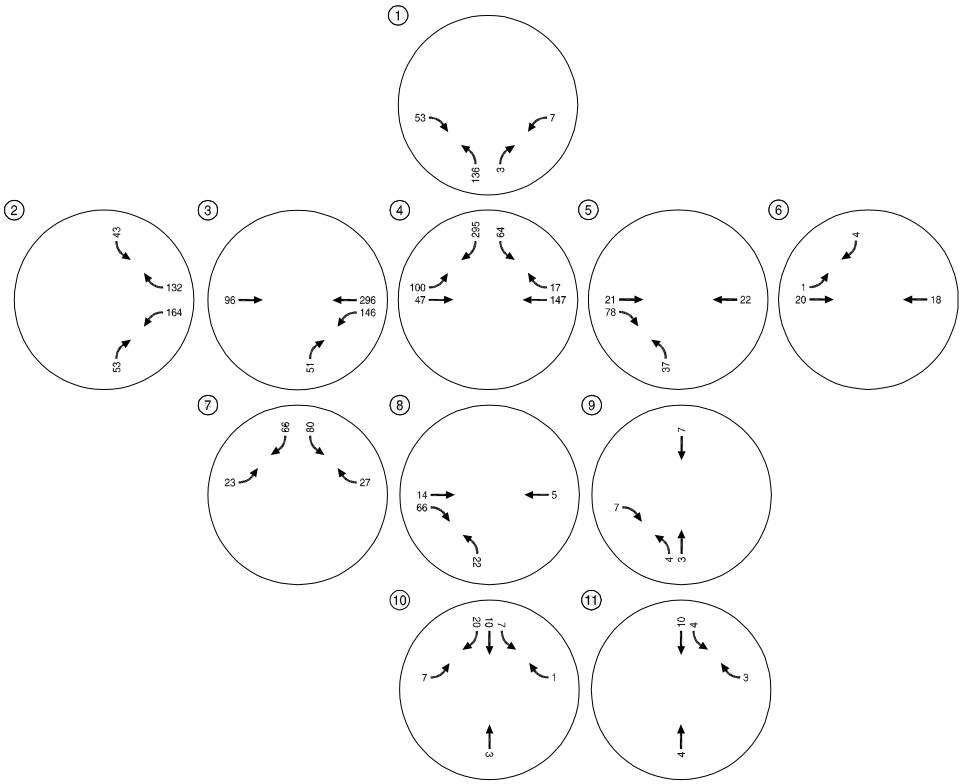

Total Estimated Trip Assignment - Full Build-Out
Weekday AM Peak Hour
Camas, Washington

Figure 9

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

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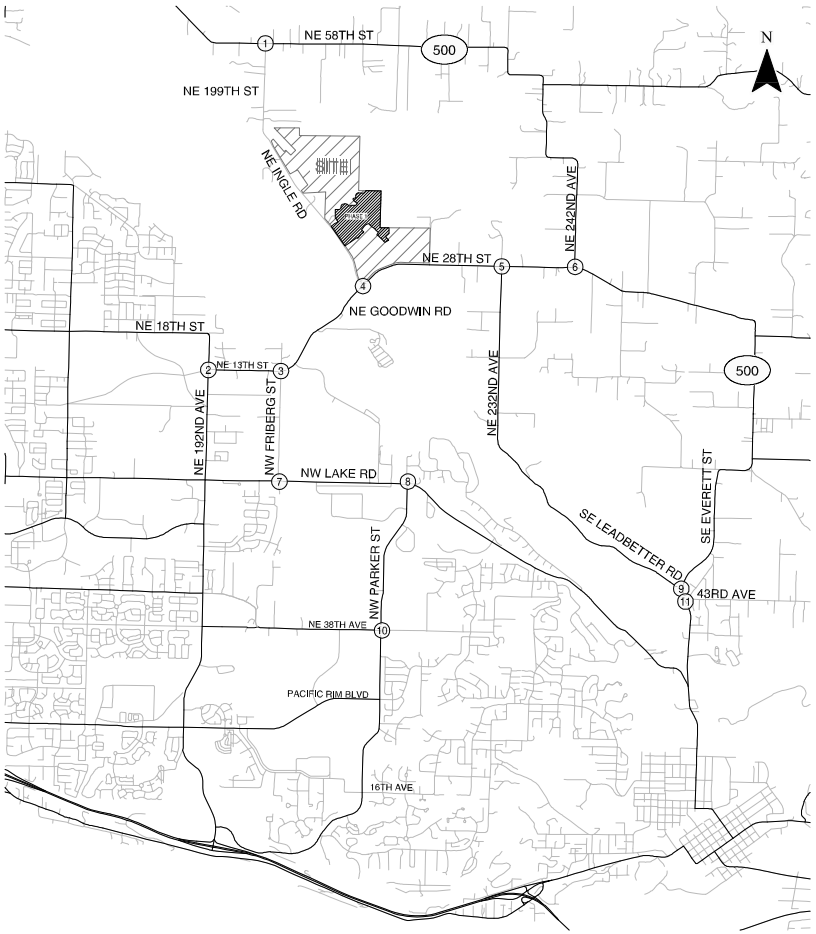
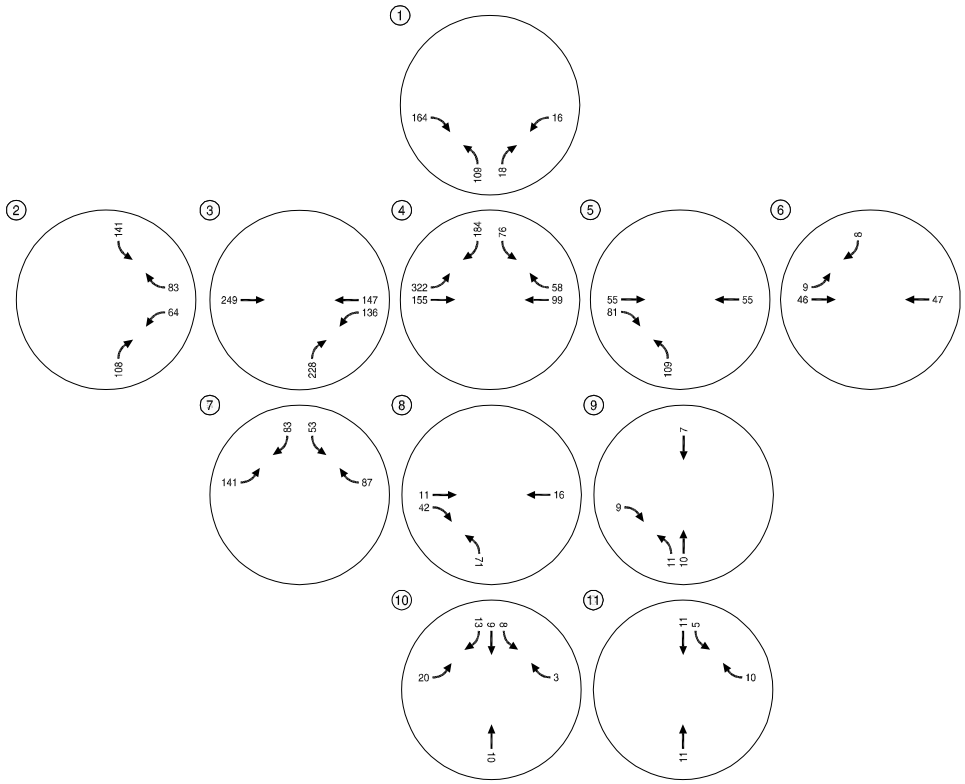
Exhibit 10 APPEAL24-1001

90% Build-Out Green Mountain PRD Phase 1 8/24/23





Total Estimated Trip Assignment - Full Build-Out
Weekday PM Peak Hour
Camas, Washington

Figure
10

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

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Exhibit 10 APPEAL24-1001

40% Build-Out 8/24/23

Lacamas Tech Center
Camas, WA

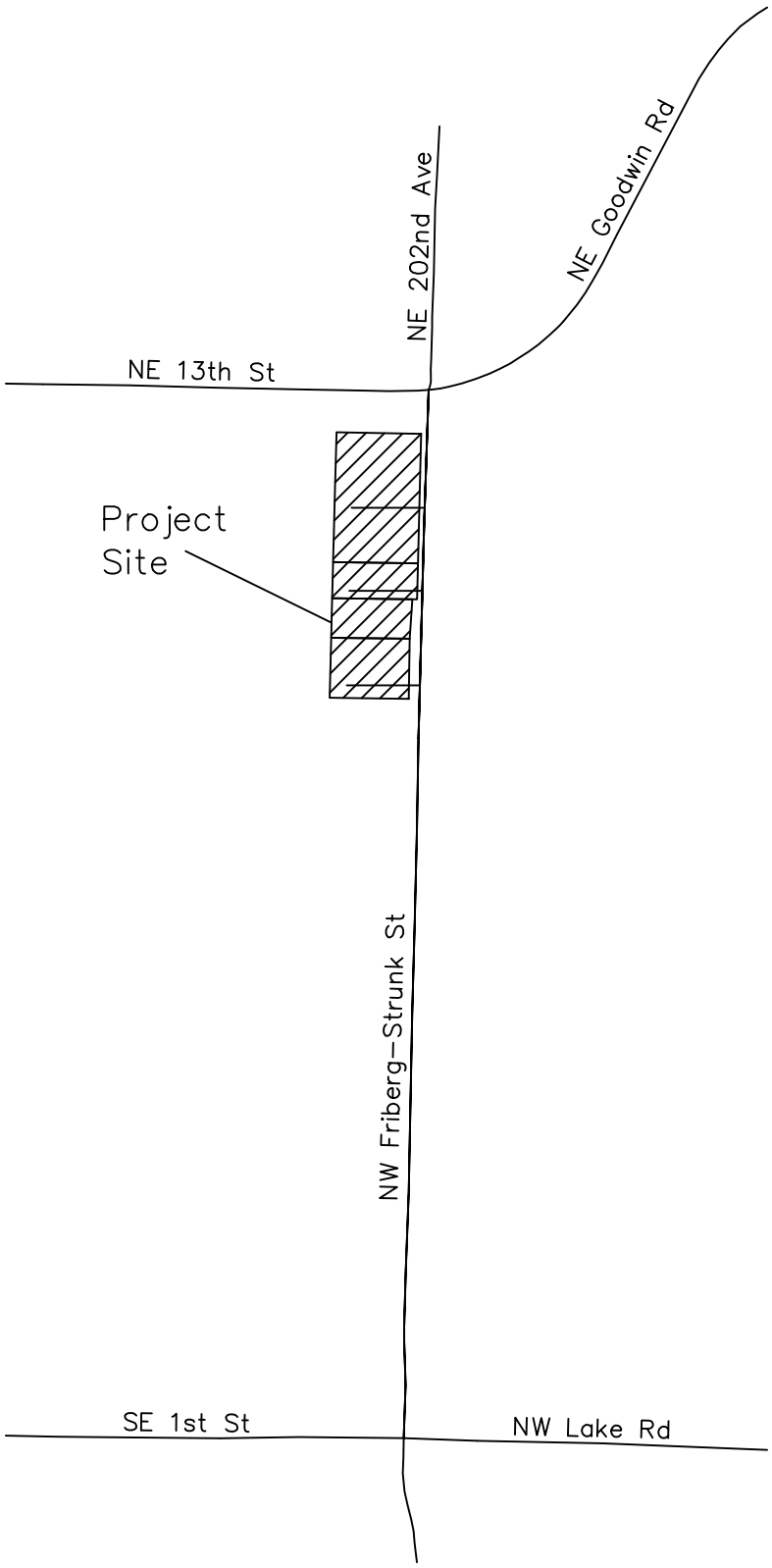


FIGURE 1
Site Vicinity Map

NOT TO SCALE

18047_Figures.Dwg

Lacamas Tech Center
Camas, WA

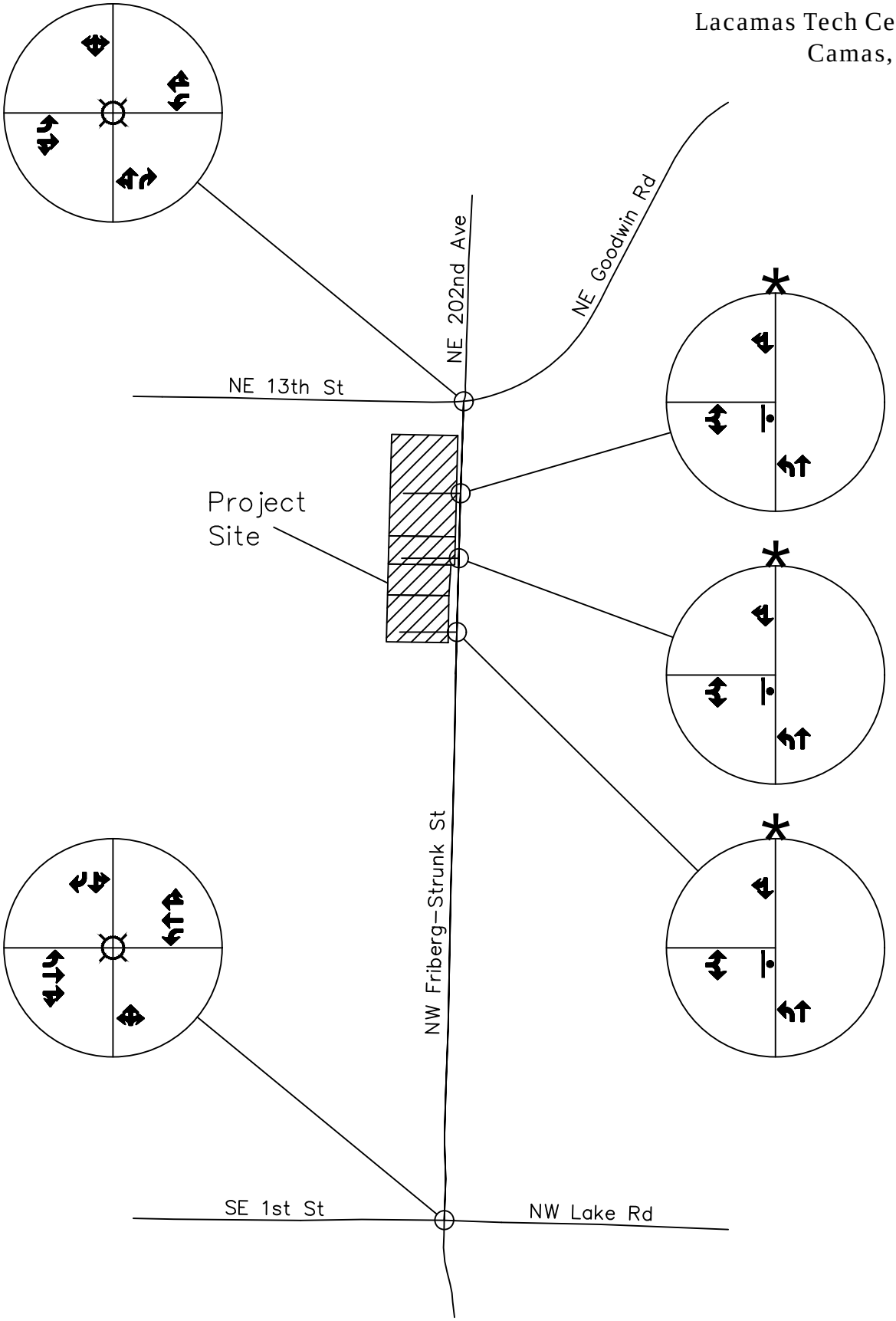


FIGURE 3
Existing Lane Configuration and Traffic Control

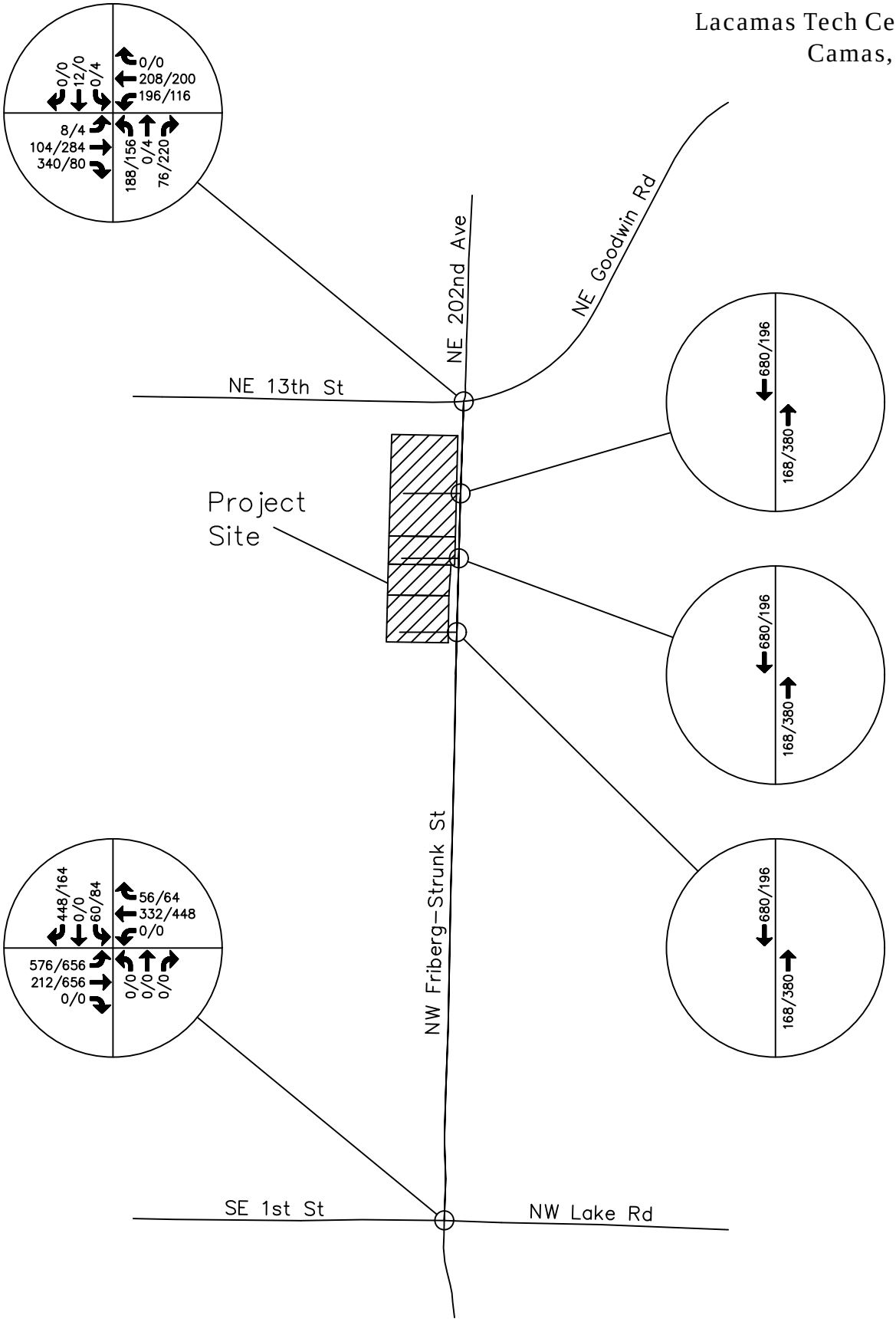
LEGEND

Lane Usage
Traffic Signal
Stop Sign
2025 "With Project" Lane Configuration and Traffic Control

NOT TO SCALE

18047_Figures.Dwg

Lacamas Tech Center
Camas, WA



LEGEND

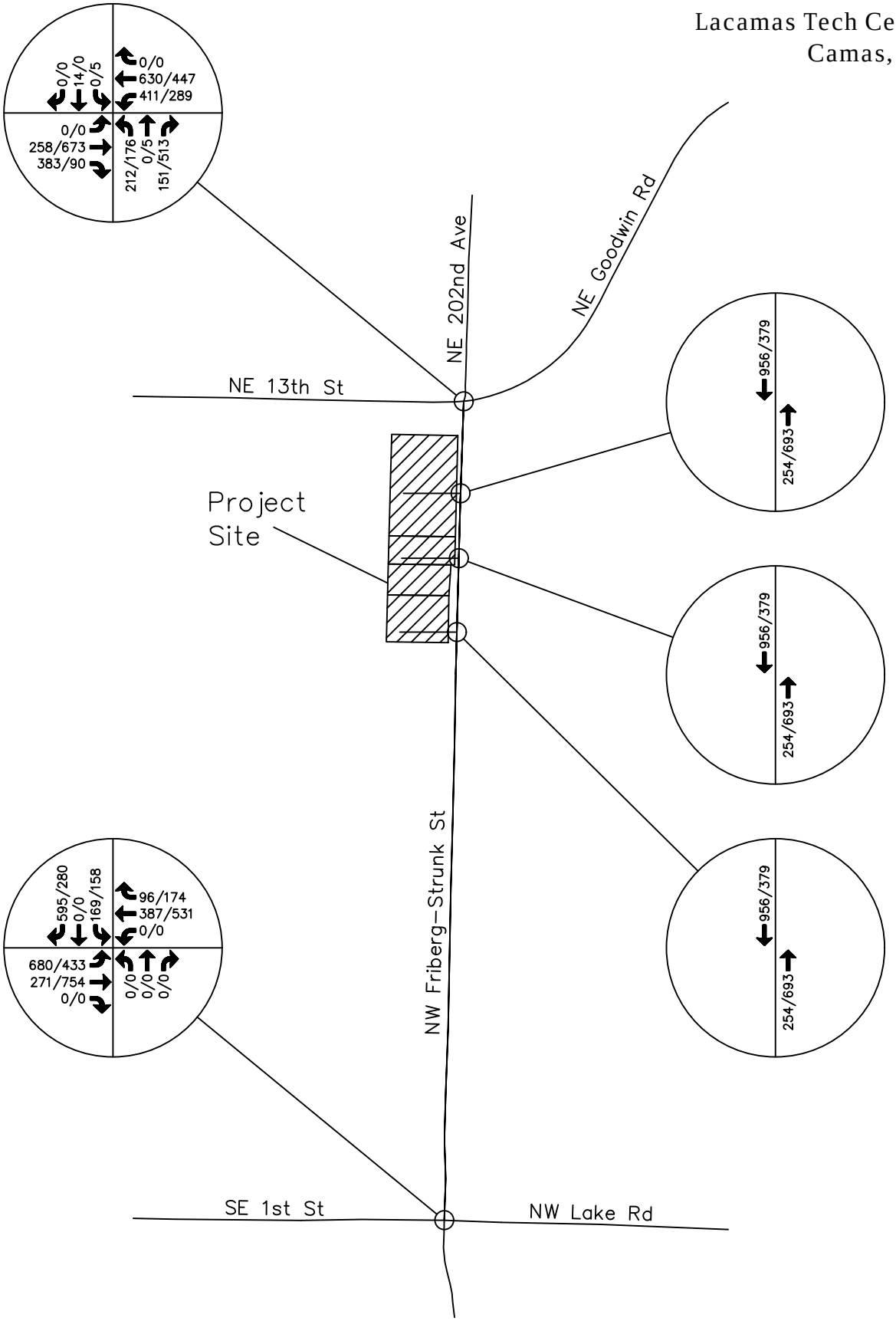
128/200 A.M./P.M. Peak Hour Traffic Volume

NOT TO SCALE

FIGURE 4
Existing A.M. and P.M.
Peak Hour Traffic Volumes

18047_Figures.Dwg

Lacamas Tech Center
Camas, WA



LEGEND

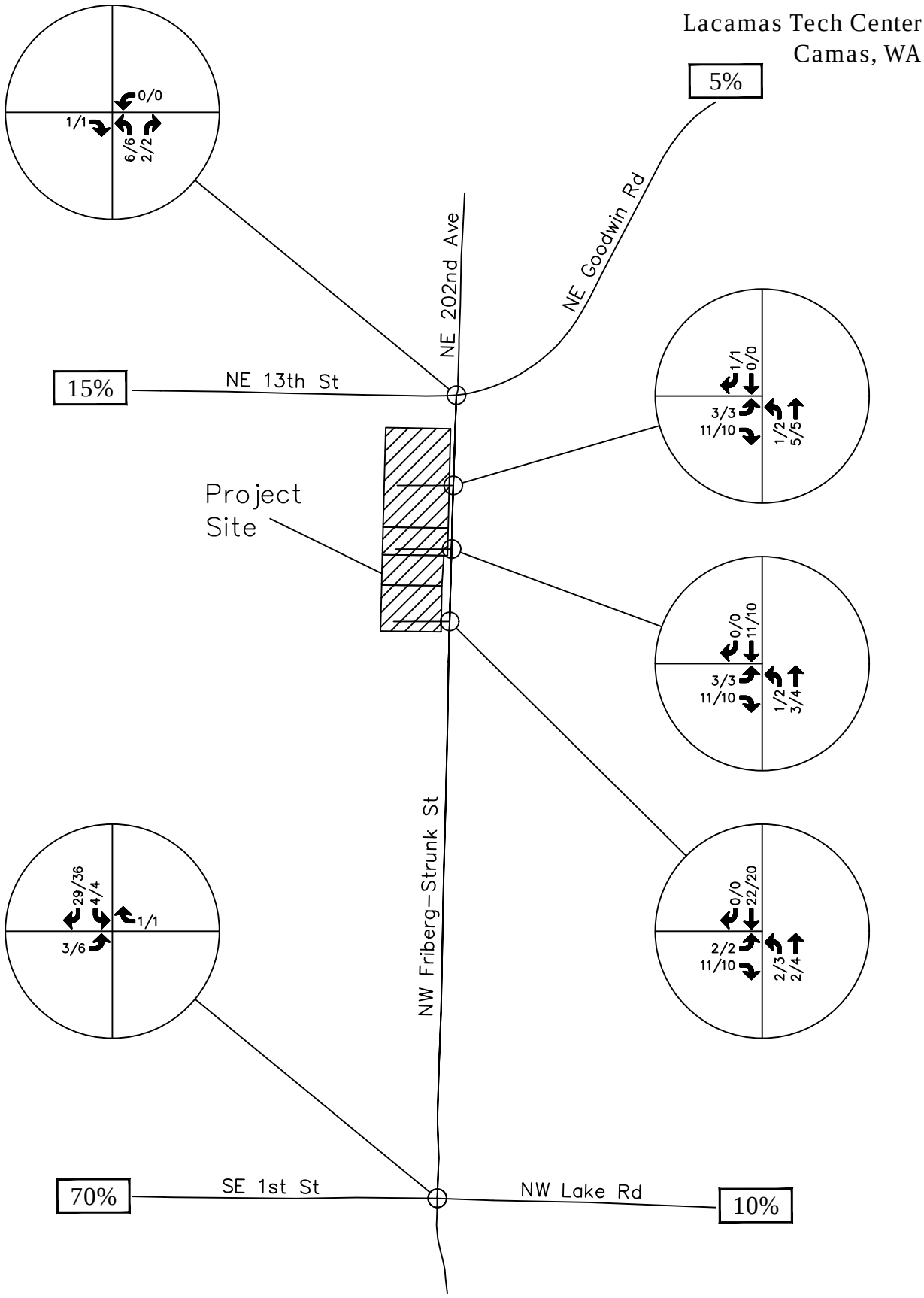
128/200 A.M./P.M. Peak Hour Traffic Volume

NOT TO SCALE

FIGURE 5
2025 "Without Project"
A.M. and P.M. Peak Hour Traffic Volumes

18047_Figures.Dwg

Lacamas Tech Center
Camas, WA



LEGEND

128/200 A.M./P.M. Peak Hour Traffic Volume

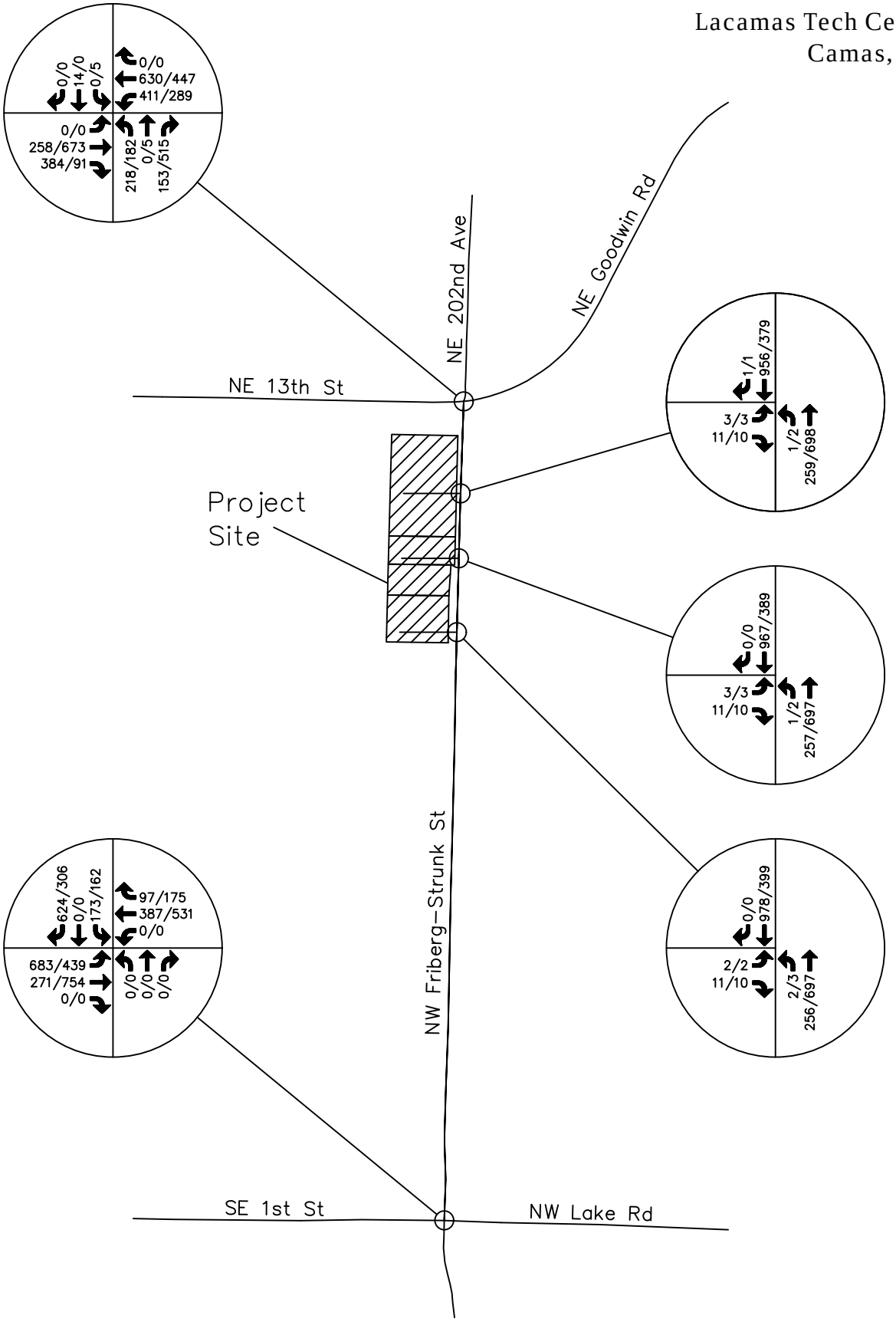
10% Peak Hour Trip Distribution

NOT TO SCALE

FIGURE 6
Trip Distribution and Assignment
Traffic Volumes

18047_Figures.Dwg

Lacamas Tech Center
Camas, WA



LEGEND

128/200 A.M./P.M. Peak Hour Traffic Volume

NOT TO SCALE

FIGURE 7
2022 "With Project"
A.M. and P.M. Peak Hour Traffic Volumes

18047_Figures.Dwg

0% Build-Out 8/24/23

Oak Tree Station TIA
Camas, WA

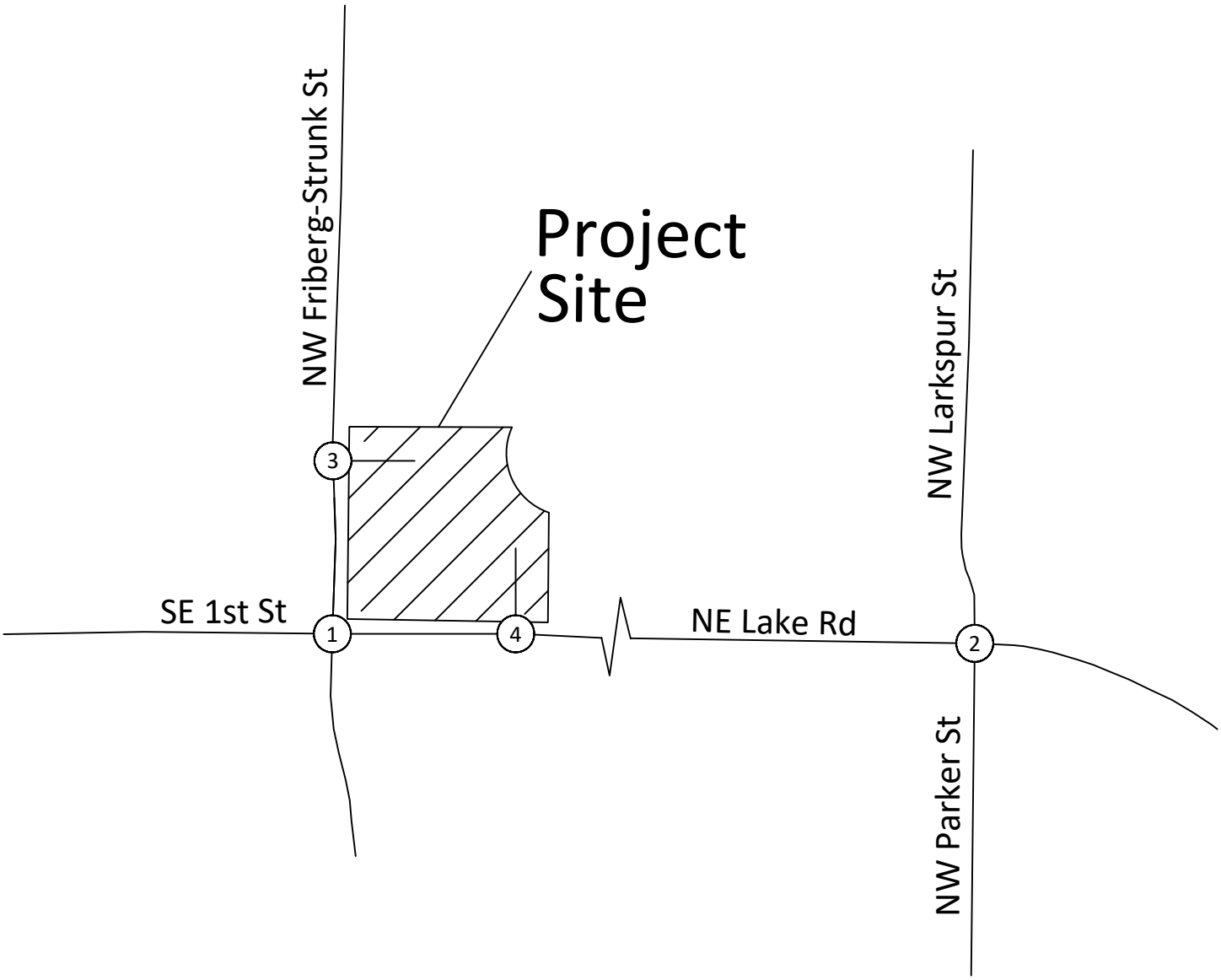
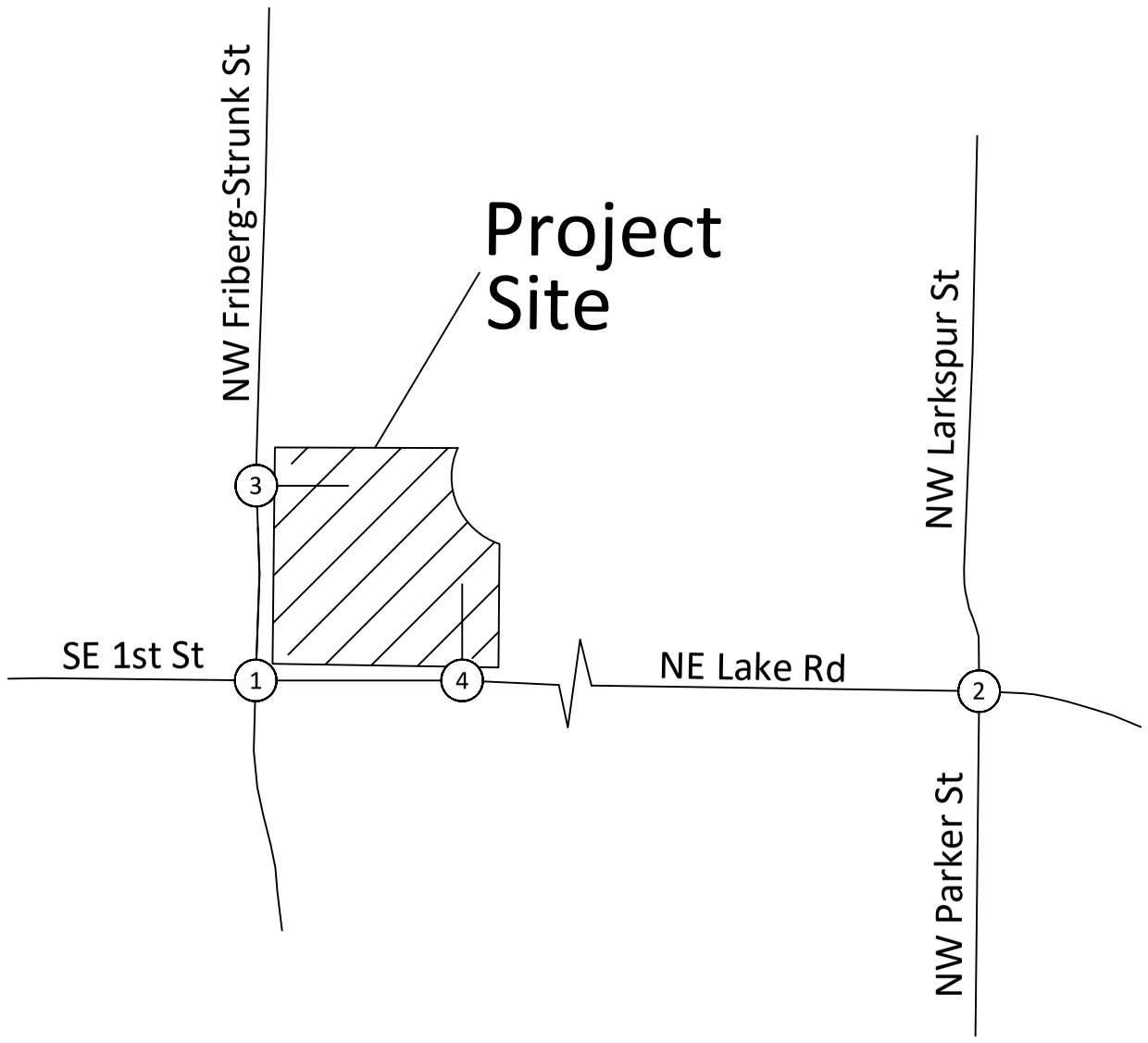
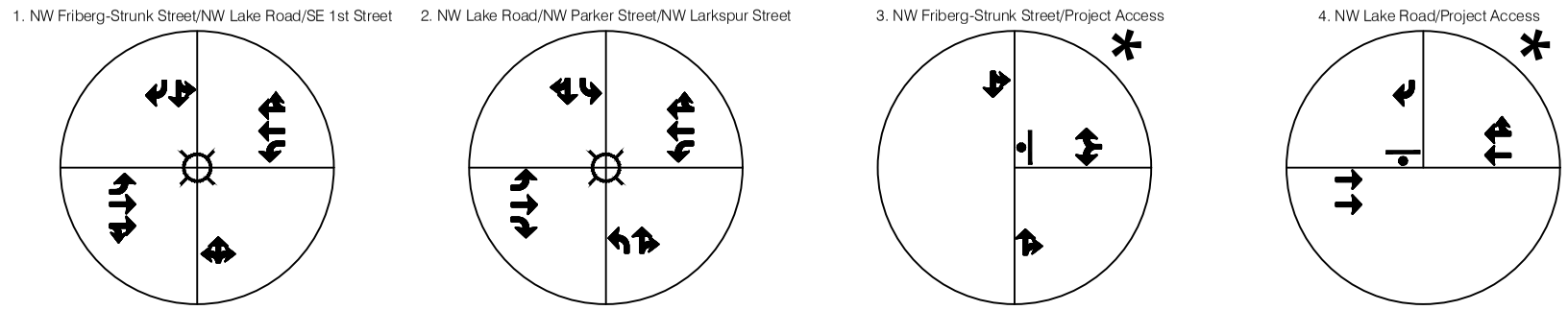


FIGURE 1
Vicinity Map

NOT TO SCALE

22047_Figures.Dwg





LEGEND

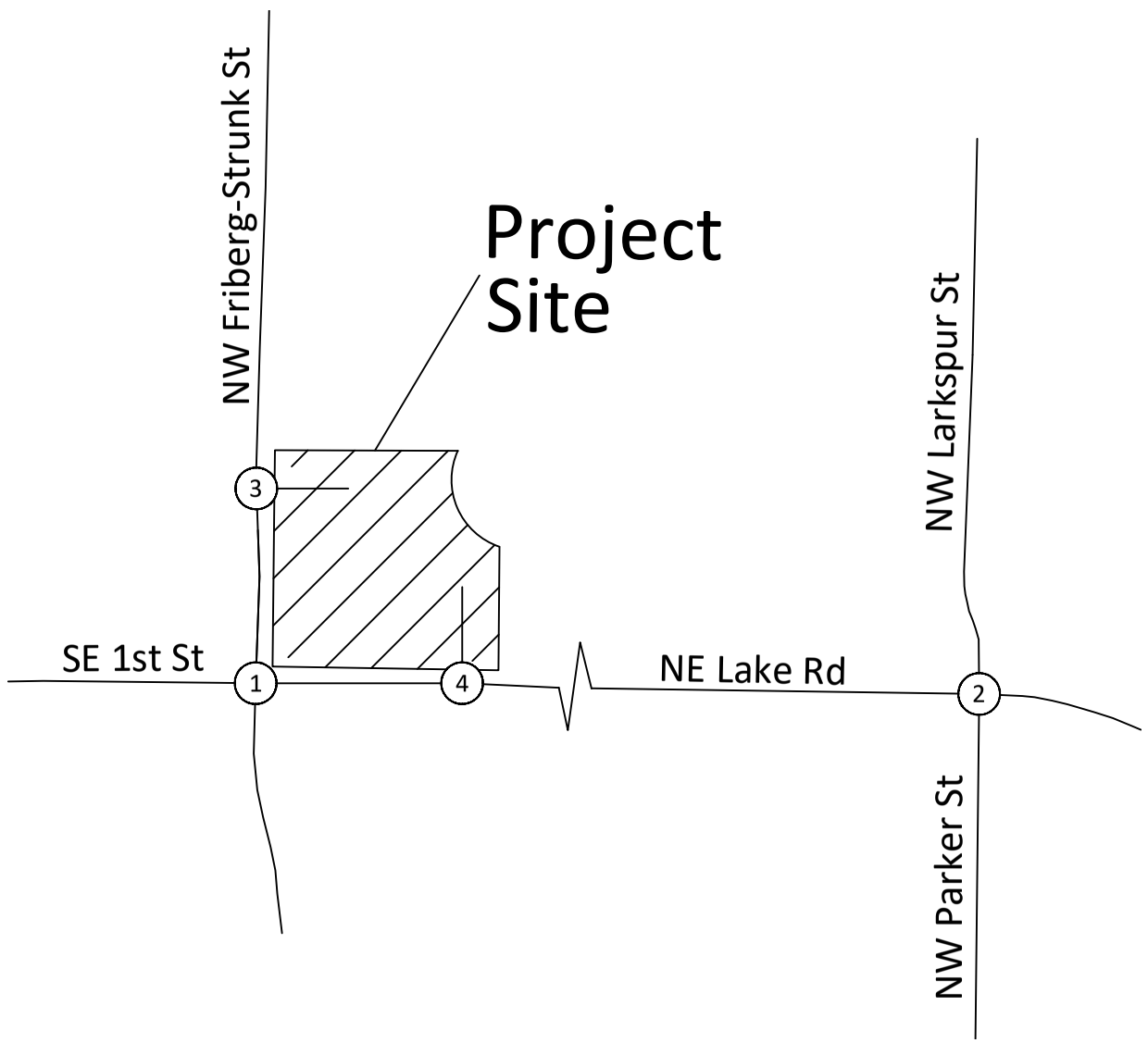
NOT TO SCALE

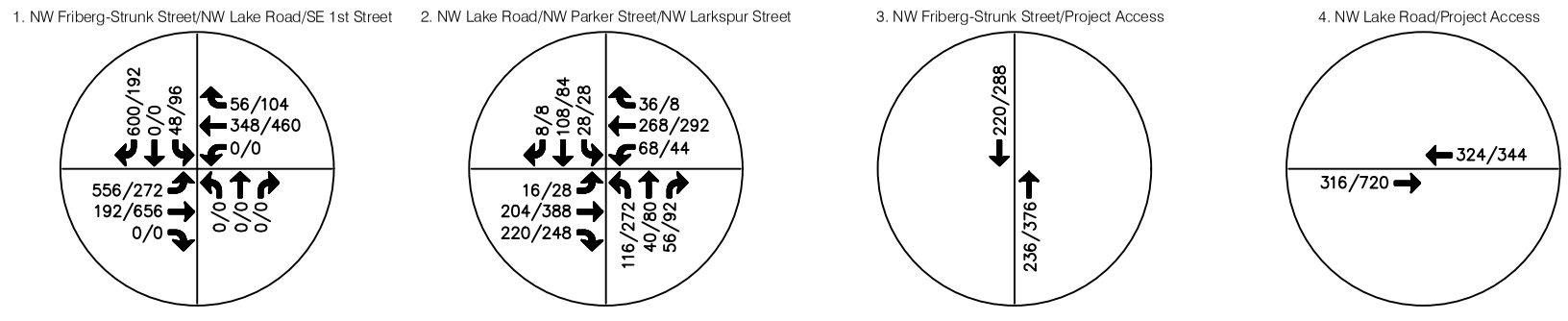
- Lane Usage
- Traffic Signal
- Stop Sign
- Roundabout
- * 2027 "With Project" Lane Configuration

FIGURE 3
Existing Lane Configuration and Traffic Control

22047_Figures.Dwg

Exhibit 10 APPEAL24-1001





LEGEND

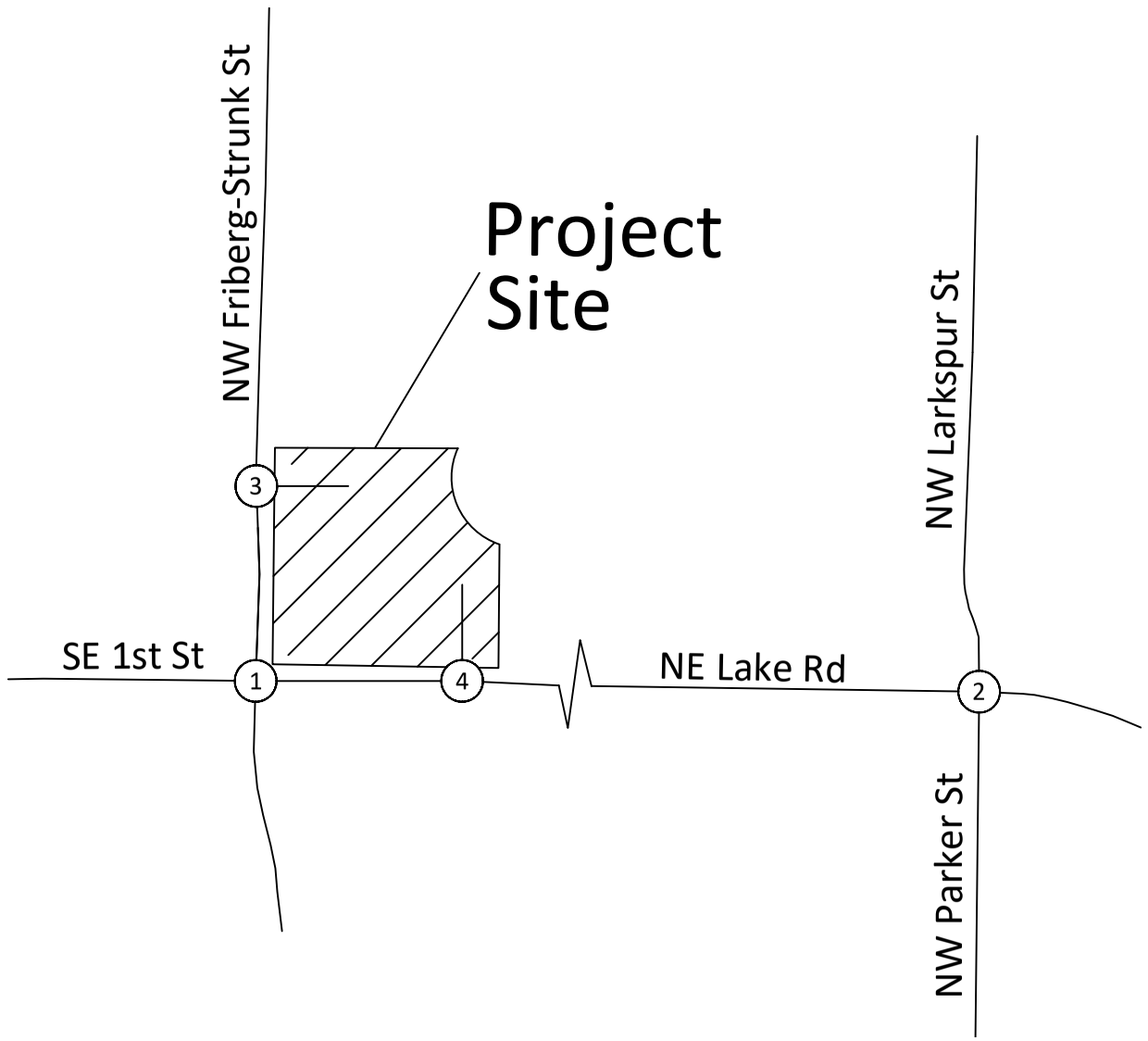
128/200 A.M./P.M. Peak Hour Traffic Volume

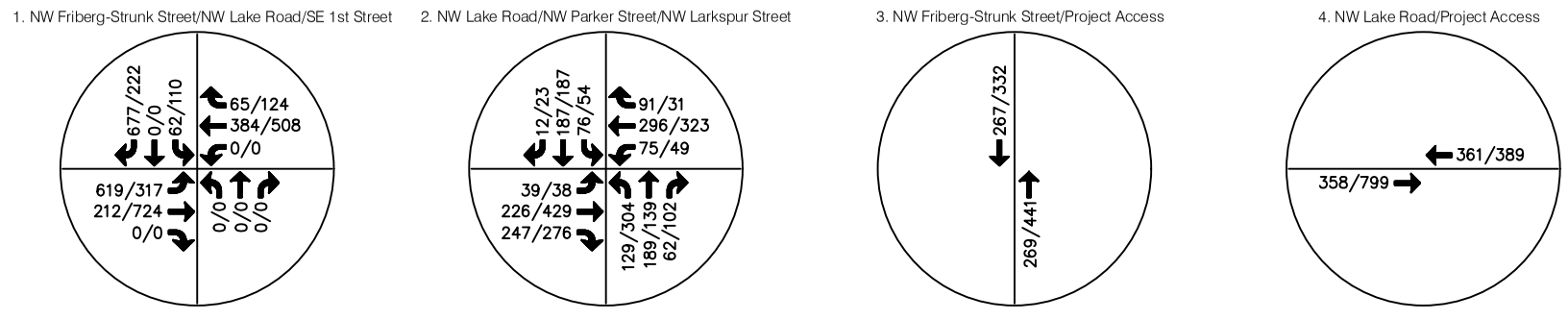
NOT TO SCALE

FIGURE 4
Existing A.M. and P.M.
Peak Hour Traffic Volumes

22047_Figures.Dwg

Exhibit 10 APPEAL24-1001





LEGEND

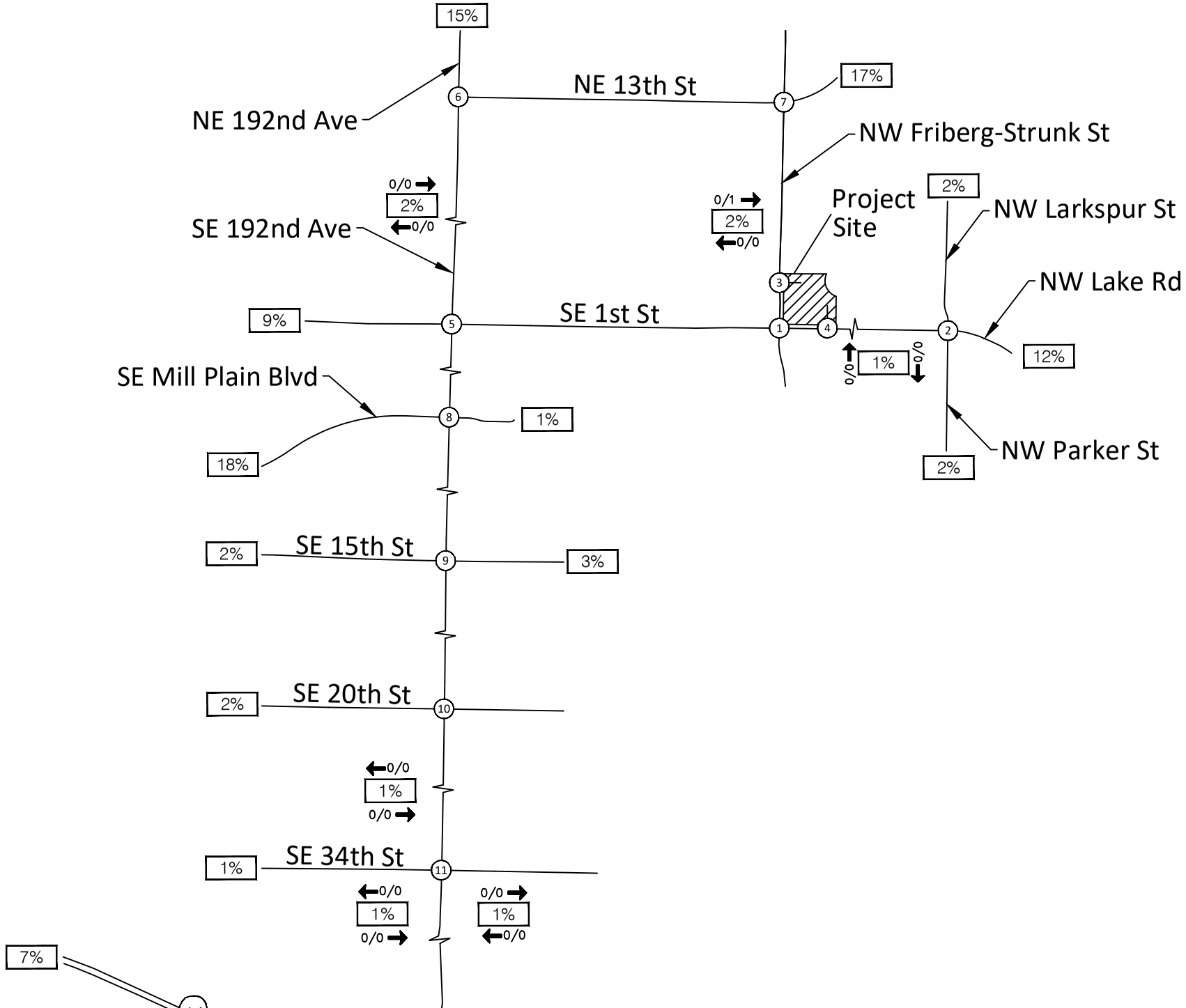
128/200 A.M./P.M. Peak Hour Traffic Volume

NOT TO SCALE

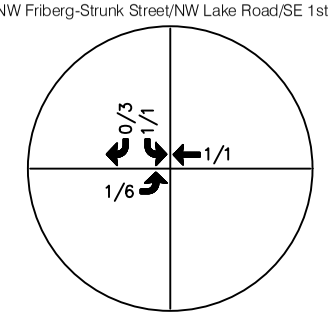
FIGURE 5
2027 "Without Project"
A.M. and P.M. Peak Hour Traffic Volumes

22047_Figures.Dwg

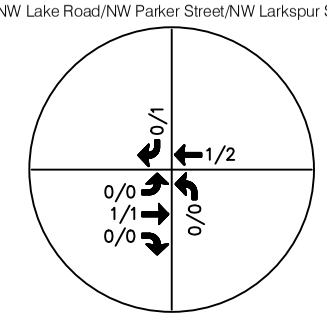
Exhibit 10 APPEAL24-1001



1. NW Friberg-Strunk Street/NW Lake Road/SE 1st Street



2. NW Lake Road/NW Parker Street/NW Larkspur Street



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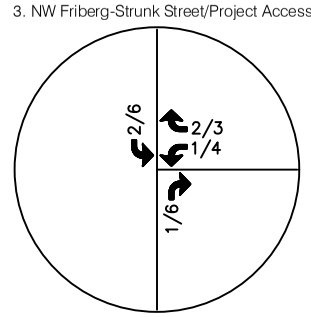

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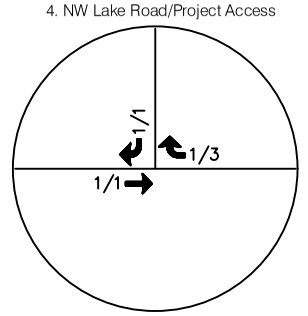
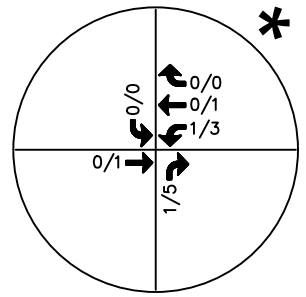


5. SE 192nd Avenue/SE 1st Street



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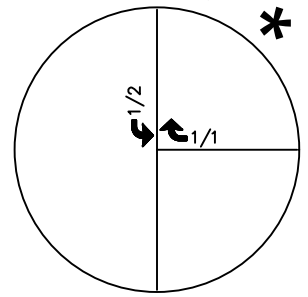
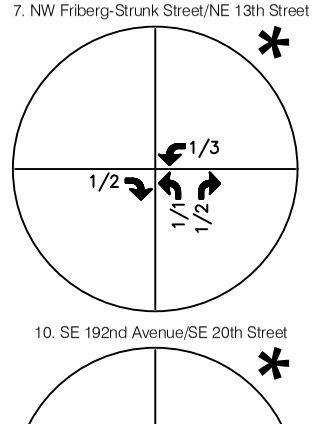
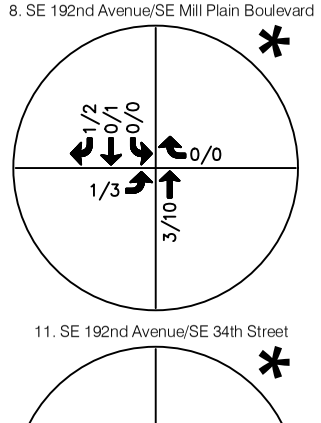


7. NW Friberg-Strunk Street/NE 13th Street



8. SE 192nd Avenue/SE Mill Plain Boulevard



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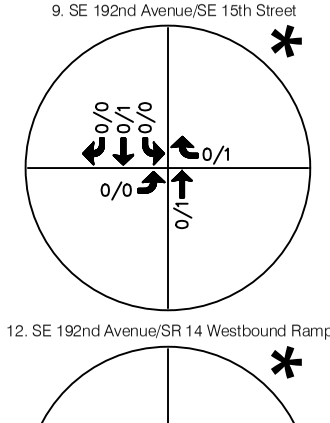

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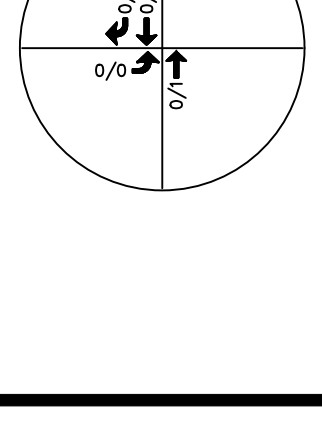
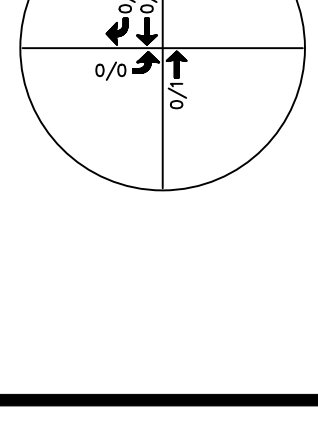
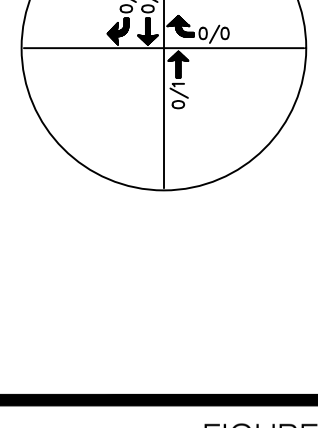


11. SE 192nd Avenue/SE 34th Street



12. SE 192nd Avenue/SR 14 Westbound Ramps



LEGEND

128/200 A.M./P.M. Peak Hour Traffic Volume

10% Peak Hour Trip Distribution

* Not Study Area Intersections. Shown for Trip Distribution and Assignment Purposes Only

NOT TO SCALE

FIGURE 6a
Phase 1
Trip Distribution and Assignment
Net Traffic Volumes

22047_Figures.Dwg

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Oak Tree Station TIA
Camas, WA

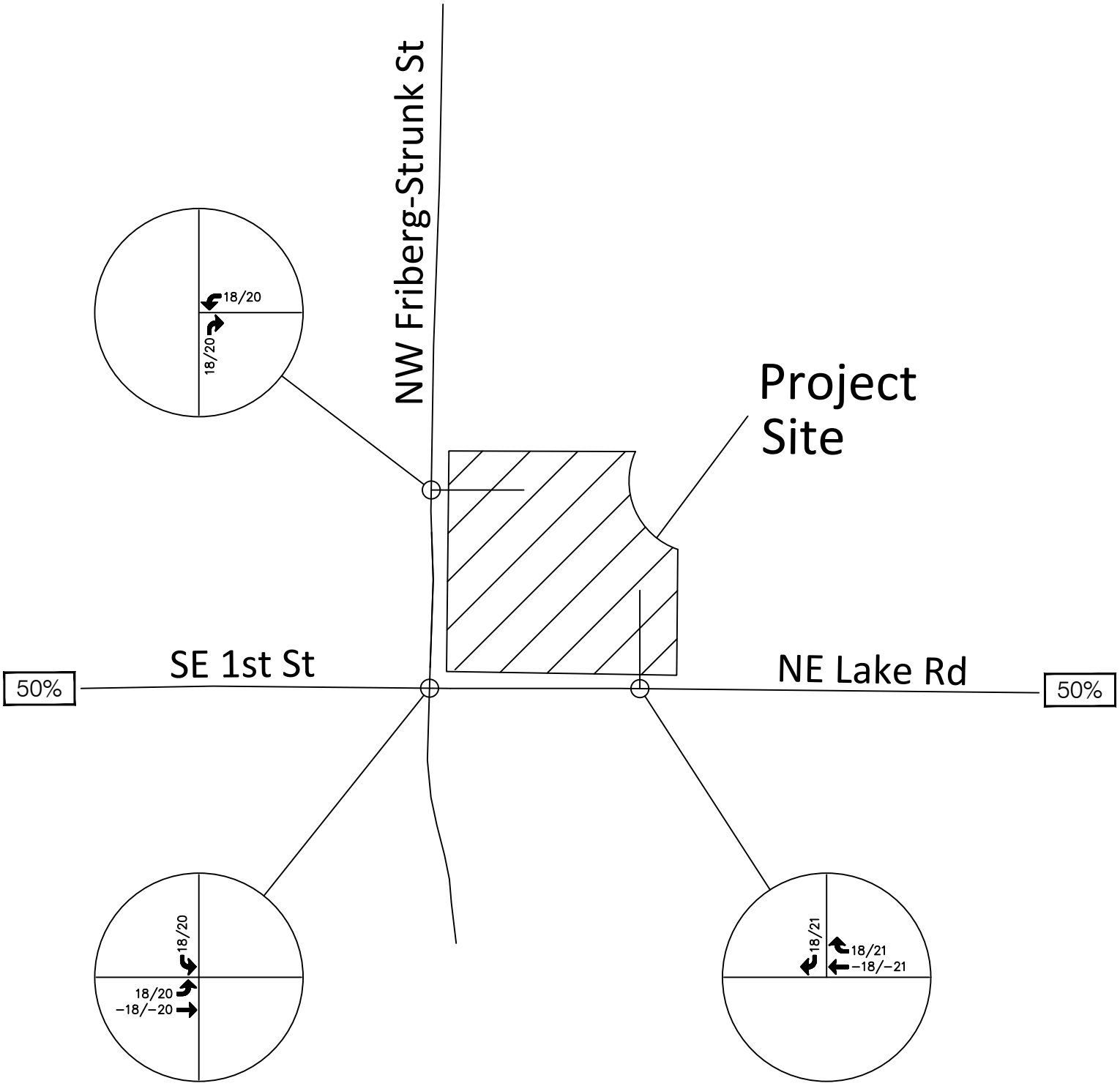
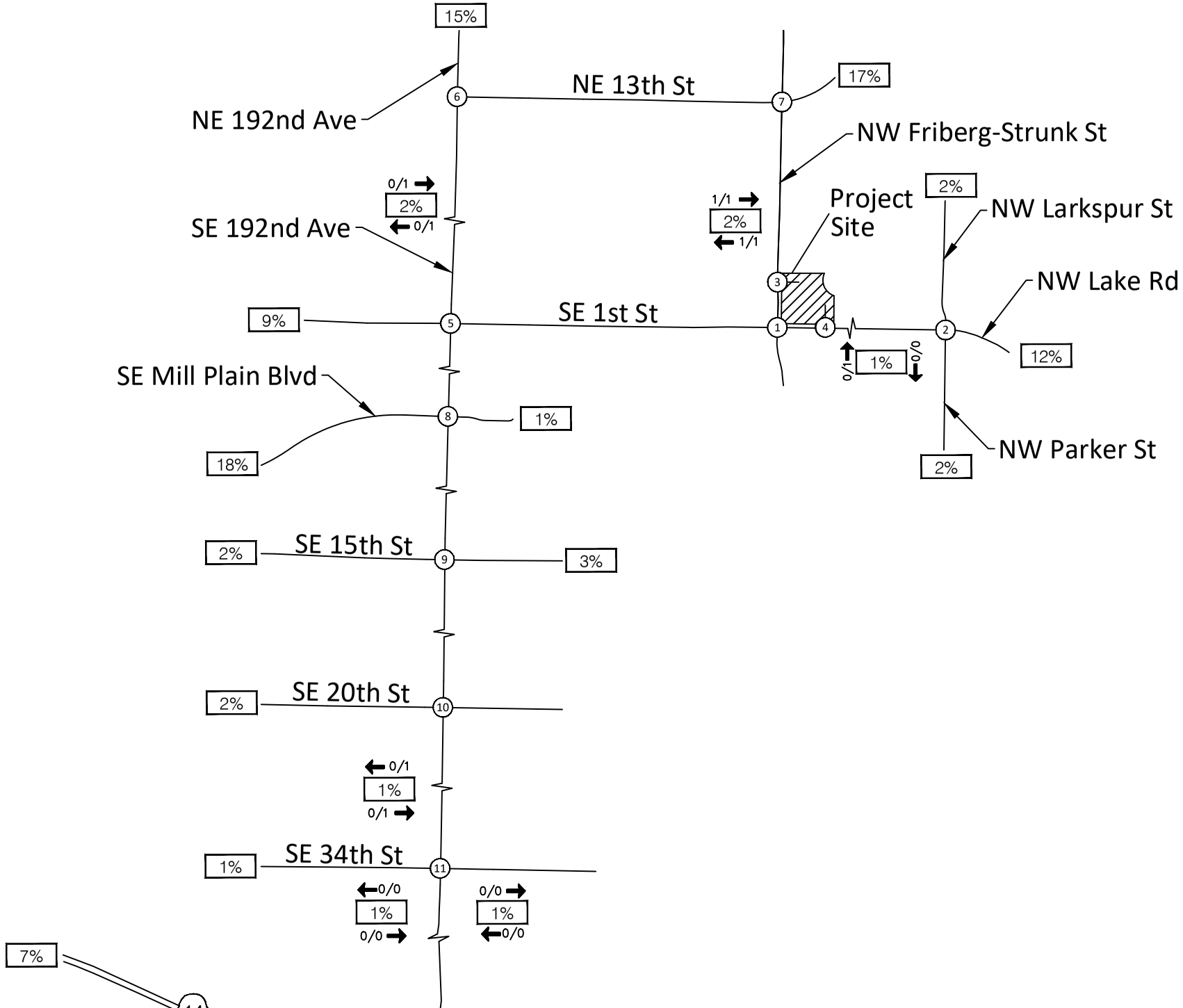


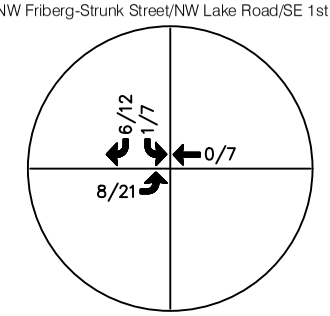
FIGURE 6b
Phase 1 Pass-By/Diverted Trips
Trip Distribution and Assignment
Net Traffic Volumes

NOT TO SCALE

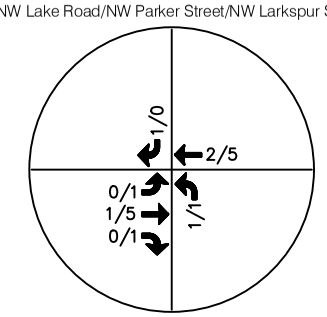
22047_Figures.Dwg



1. NW Friberg-Strunk Street/NW Lake Road/SE 1st Street



2. NW Lake Road/NW Parker Street/NW Larkspur Street



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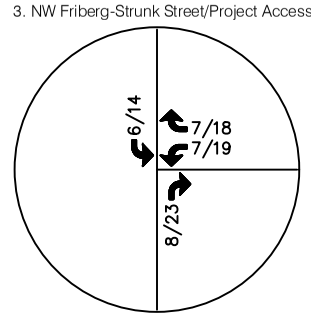
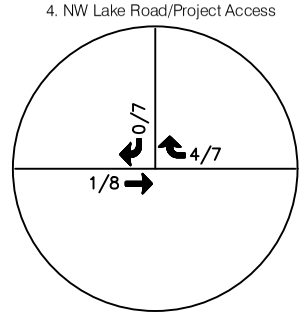


4. NW Lake Road/Project Access



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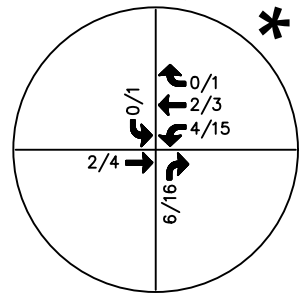
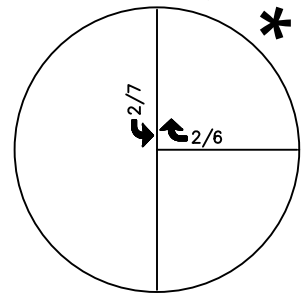
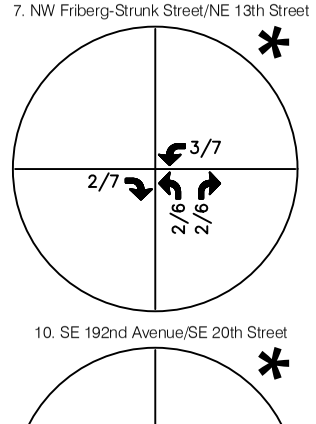


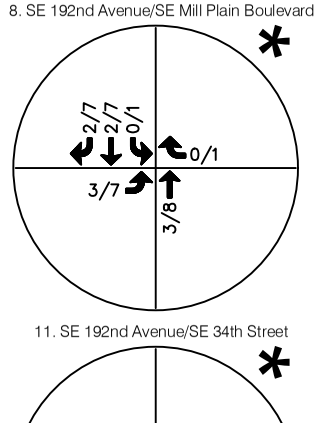
6. NE 192nd Avenue/NE13th Street



7. NW Friberg-Strunk Street/NE 13th Street



8. SE 192nd Avenue/SE Mill Plain Boulevard



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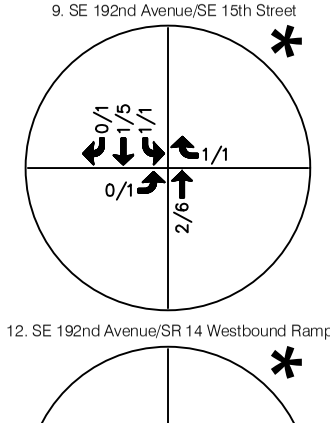

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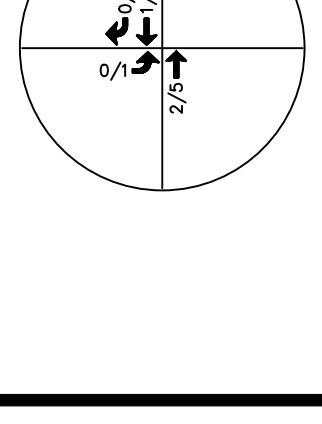
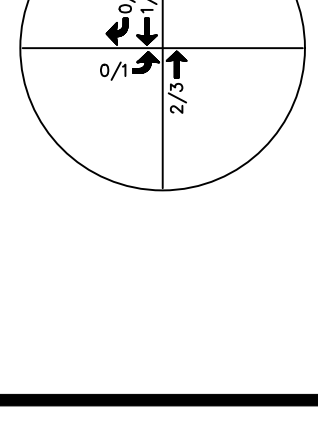
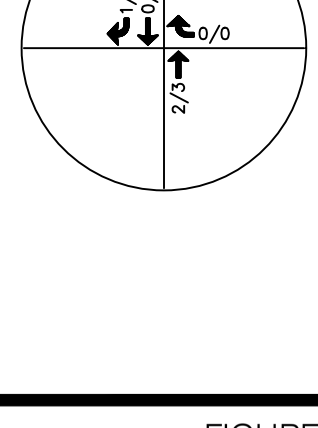


11. SE 192nd Avenue/SE 34th Street



12. SE 192nd Avenue/SR 14 Westbound Ramps



LEGEND

128/200 A.M./P.M. Peak Hour Traffic Volume

10% Peak Hour Trip Distribution

* Not Study Area Intersections. Shown for Trip Distribution and Assignment Purposes Only

NOT TO SCALE

FIGURE 6c
Phase 2
Trip Distribution and Assignment
Traffic Volumes

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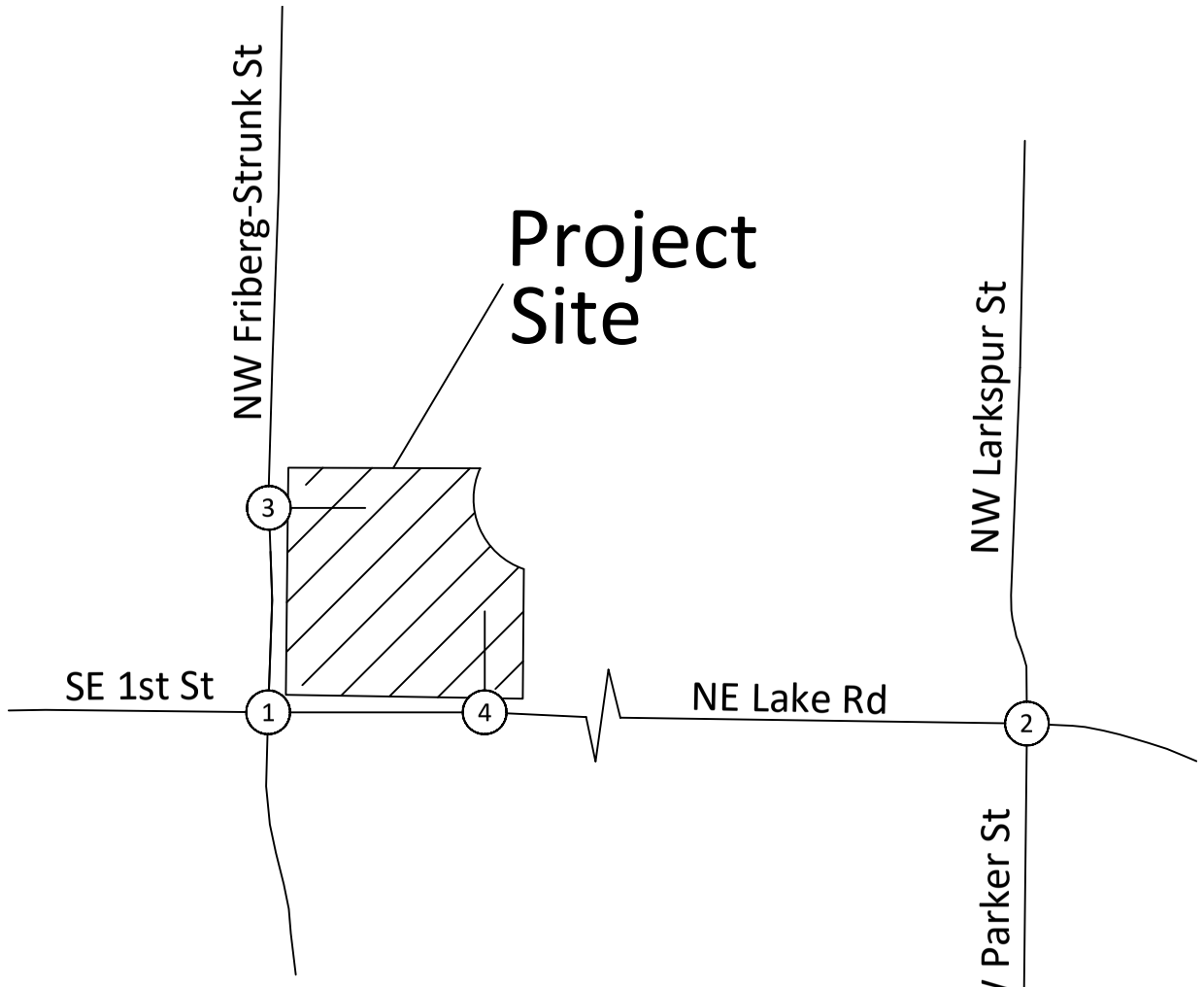
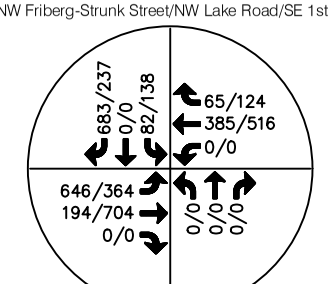
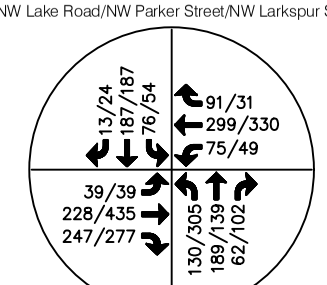


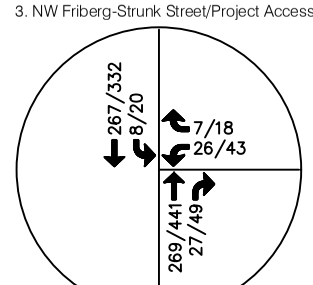
1. NW Friberg-Strunk Street/NW Lake Road/SE 1st Street



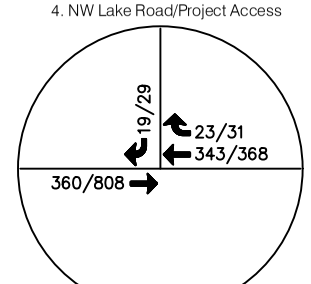
2. NW Lake Road/NW Parker Street/NW Larkspur Street



3. NW Friberg-Strunk Street/Project Access



4. NW Lake Road/Project Access



LEGEND

128/200 A.M./P.M. Peak Hour Traffic Volume

NOT TO SCALE

FIGURE 7
2027 "With Project"
A.M. and P.M. Peak Hour Traffic Volumes

22047_Figures.Dwg

Exhibit 10 APPEAL24-1001

0% Build-Out 8/24/23

GOODWIN ROAD INDUSTRIAL
TRAFFIC IMPACT ANALYSIS

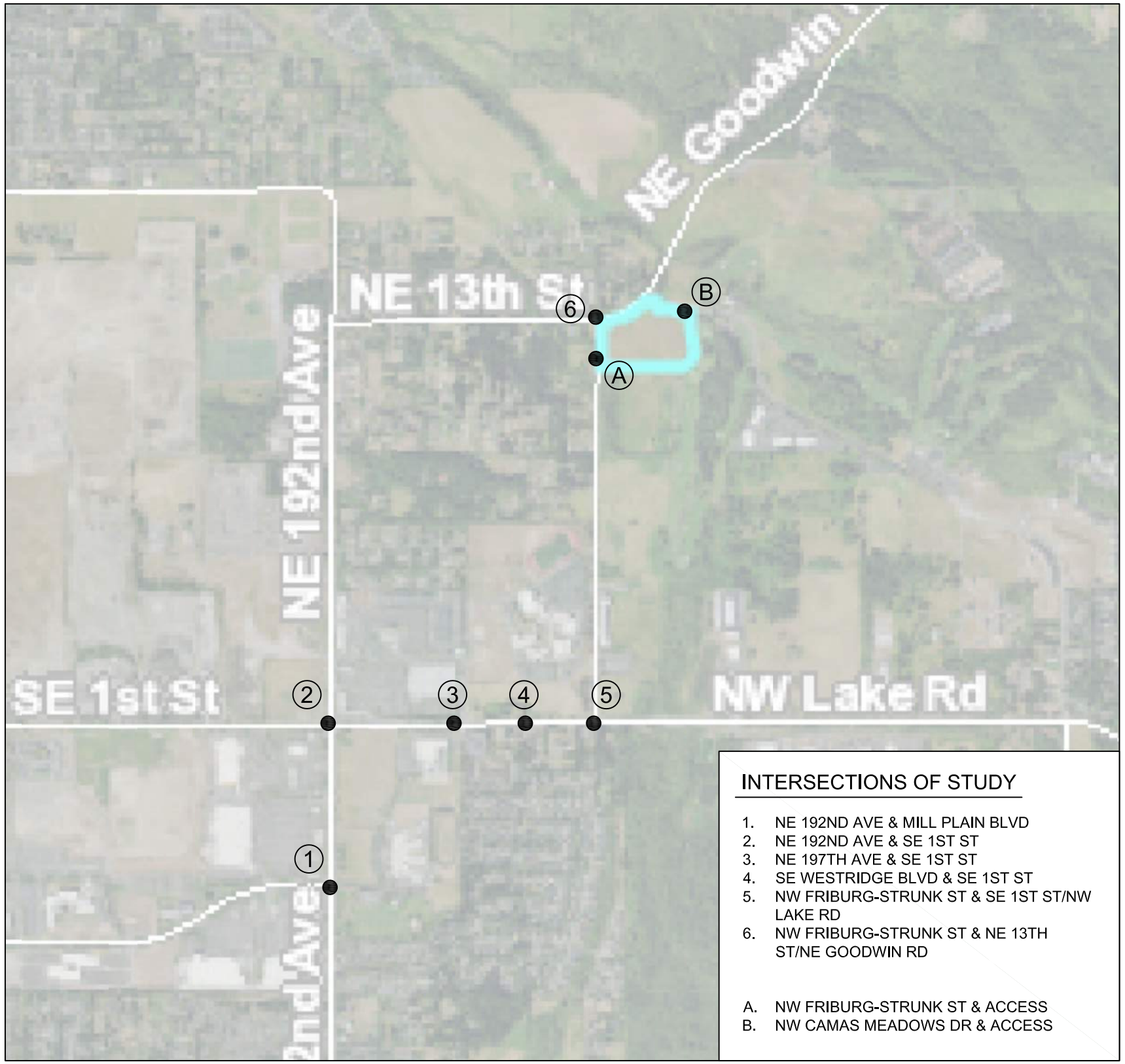
1. INTRODUCTION

The main goals of this study focus on the analysis of existing roadway conditions and forecasts of newly generated project traffic. The first task includes the review of general roadway information on the adjacent street system, baseline vehicular volumes, and entering sight distance data. Forecasts of future traffic and dispersion patterns on the street system are then determined using established trip generation and distribution techniques. As a final step, appropriate conclusions and mitigation measures are defined.

2. PROJECT DESCRIPTION

The Goodwin Road Industrial project is a proposed warehouse facility comprising up to 185,000 square feet. The subject site, located in the city of Camas, is bordered to the west by NW Friburg-Strunk Street and is located on the southern corner of the NE Goodwin Road & NW Camas Meadows Drive intersection. The site is comprised within 11.14-acre tax parcel #: 172974000. Access to and from the site is proposed via one driveway extending east from NW Friburg-Strunk Street and one driveway extending south from NW Camas Meadows Drive. Figure 1 below shows the vicinity map and adjacent street system. A conceptual site plan illustrating the proposed site layout is presented in Figure 2.

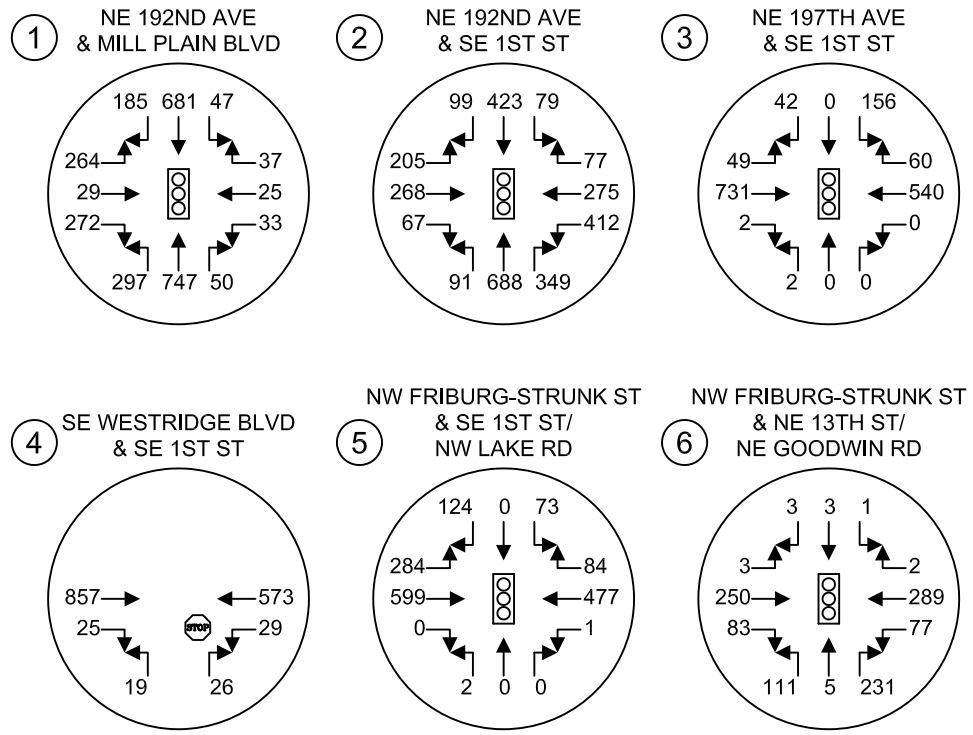
N

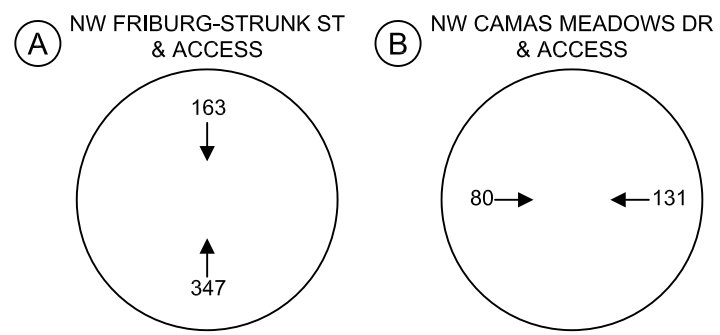


INTERSECTIONS OF STUDY

1. NE 192ND AVE & MILL PLAIN BLVD
2. NE 192ND AVE & SE 1ST ST
3. NE 197TH AVE & SE 1ST ST
4. SE WESTRIDGE BLVD & SE 1ST ST
5. NW FRIBURG-STRUNK ST & SE 1ST ST/NW LAKE RD
6. NW FRIBURG-STRUNK ST & NE 13TH ST/NE GOODWIN RD

A. NW FRIBURG-STRUNK ST & ACCESS
B. NW CAMAS MEADOWS DR & ACCESS





HEATH & ASSOCIATES
TRAFFIC AND CIVIL ENGINEERING

GOODWIN INDUSTRIAL
EXISTING PM PEAK HOUR VOLULMES
FIGURE 3

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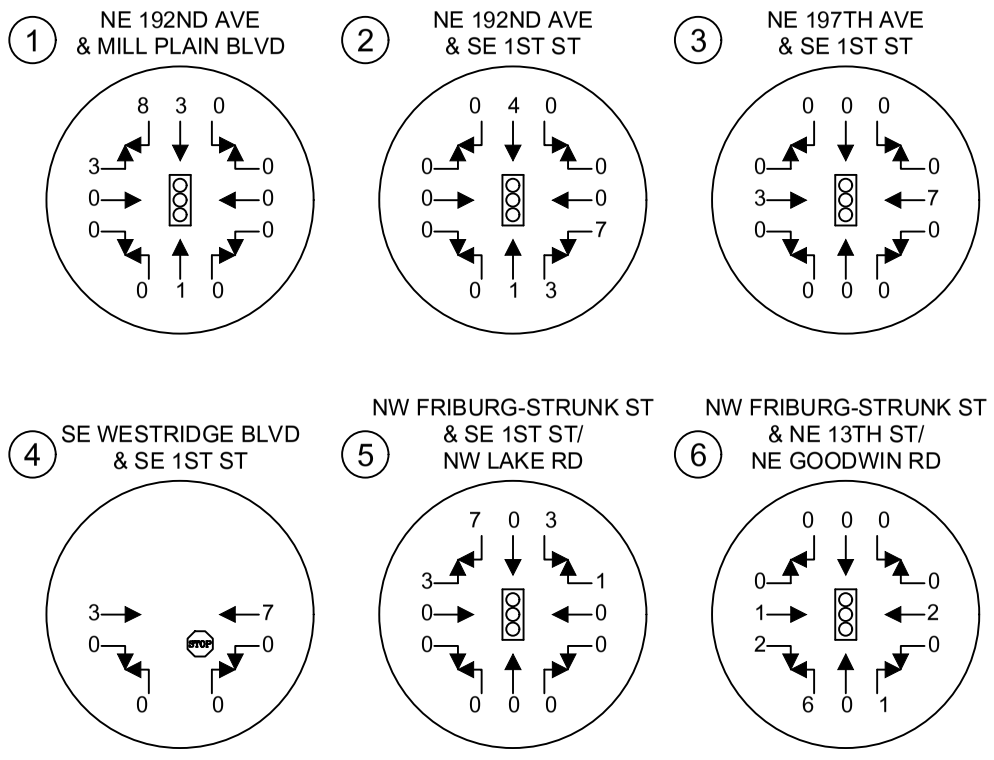
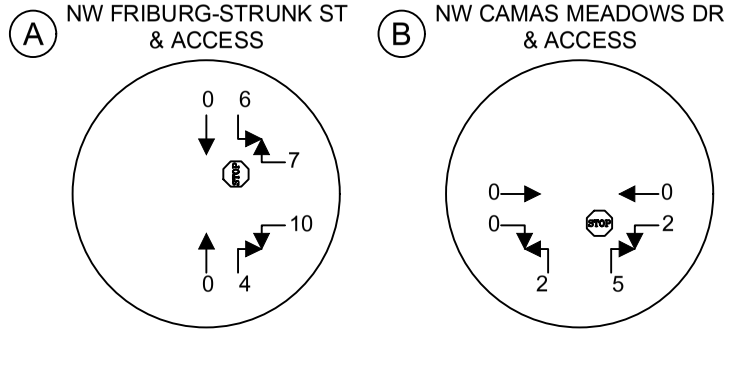
N

INTERSECTIONS OF STUDY

1. NE 192ND AVE & MILL PLAIN BLVD
2. NE 192ND AVE & SE 1ST ST
3. NE 197TH AVE & SE 1ST ST
4. SE WESTRIDGE BLVD & SE 1ST ST
5. NW FRIBURG-STRUNK ST & SE 1ST ST/NW LAKE RD
6. NW FRIBURG-STRUNK ST & NE 13TH ST/NE GOODWIN RD

A. NW FRIBURG-STRUNK ST & ACCESS
B. NW CAMAS MEADOWS DR & ACCESS





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GOODWIN INDUSTRIAL
PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT
FIGURE 4

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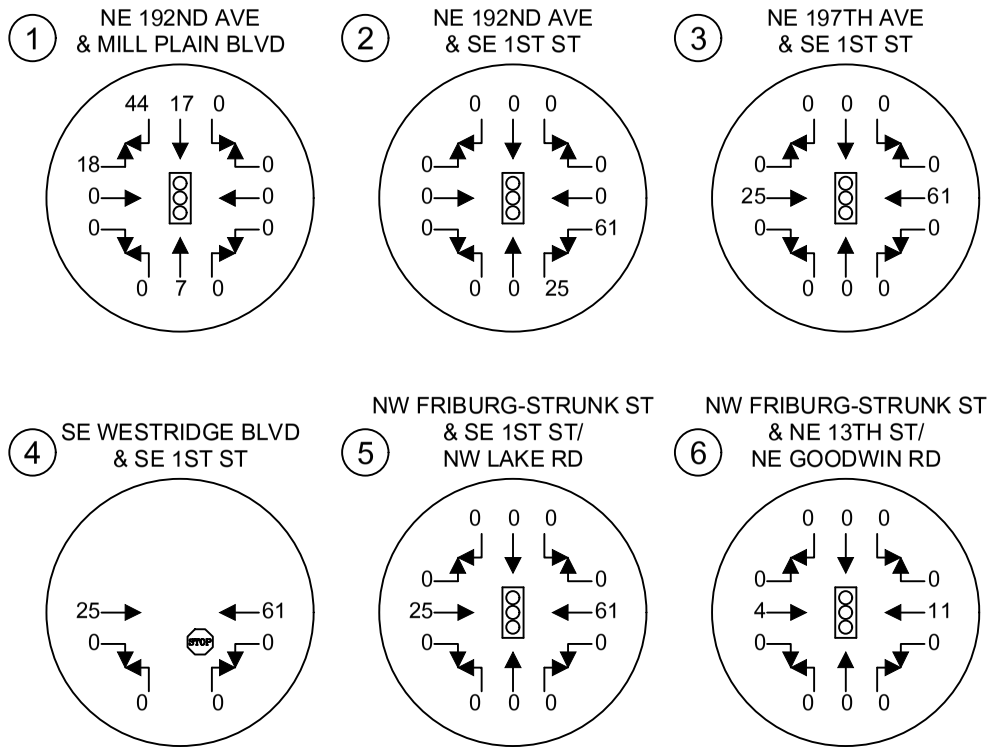
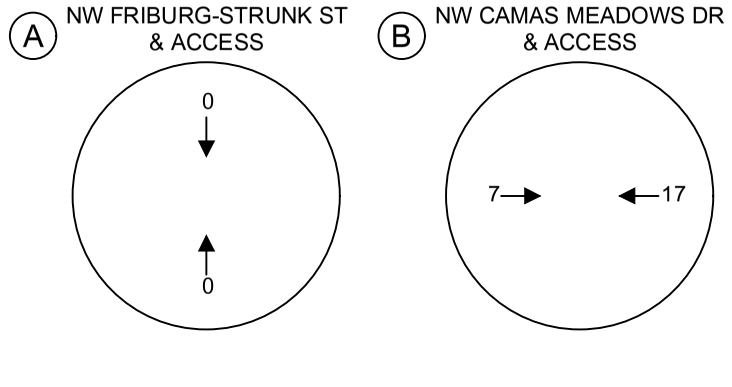
INTERSECTIONS OF STUDY

1. NE 192ND AVE & MILL PLAIN BLVD
2. NE 192ND AVE & SE 1ST ST
3. NE 197TH AVE & SE 1ST ST
4. SE WESTRIDGE BLVD & SE 1ST ST
5. NW FRIBURG-STRUNK ST & SE 1ST ST/NW LAKE RD
6. NW FRIBURG-STRUNK ST & NE 13TH ST/NE GOODWIN RD

A. NW FRIBURG-STRUNK ST & ACCESS
B. NW CAMAS MEADOWS DR & ACCESS





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GOODWIN INDUSTRIAL
PM PEAK HOUR PIPELINE VOLUMES
FIGURE 5

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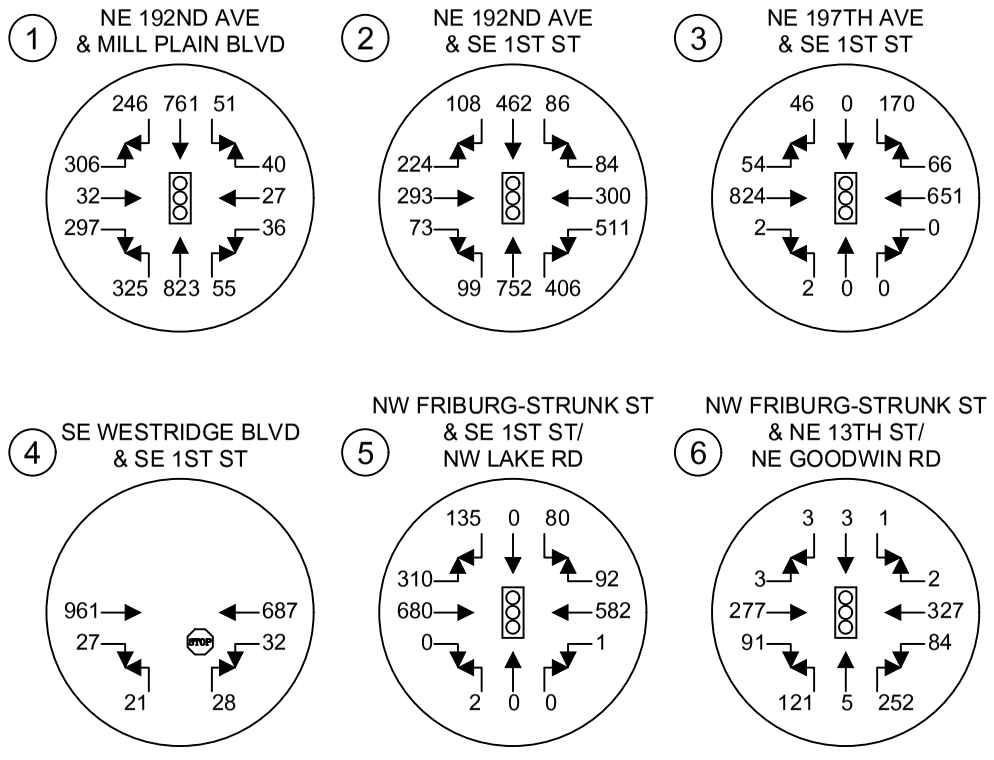
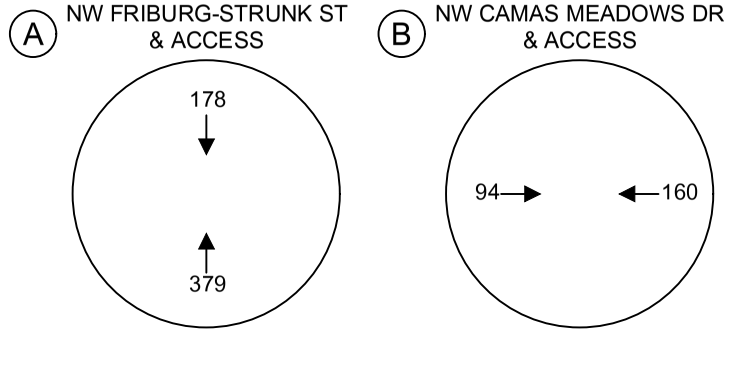
INTERSECTIONS OF STUDY

1. NE 192ND AVE & MILL PLAIN BLVD
2. NE 192ND AVE & SE 1ST ST
3. NE 197TH AVE & SE 1ST ST
4. SE WESTRIDGE BLVD & SE 1ST ST
5. NW FRIBURG-STRUNK ST & SE 1ST ST/NW LAKE RD
6. NW FRIBURG-STRUNK ST & NE 13TH ST/NE GOODWIN RD

A. NW FRIBURG-STRUNK ST & ACCESS
B. NW CAMAS MEADOWS DR & ACCESS





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GOODWIN INDUSTRIAL
FORECAST 2025 PM PEAK HOUR BACKGROUND VOLUMES
FIGURE 6

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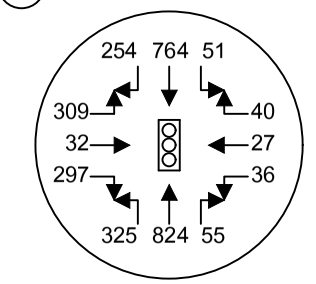
N

INTERSECTIONS OF STUDY

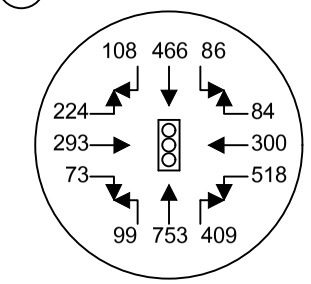
1. NE 192ND AVE & MILL PLAIN BLVD
2. NE 192ND AVE & SE 1ST ST
3. NE 197TH AVE & SE 1ST ST
4. SE WESTRIDGE BLVD & SE 1ST ST
5. NW FRIBURG-STRUNK ST & SE 1ST ST/NW LAKE RD
6. NW FRIBURG-STRUNK ST & NE 13TH ST/NE GOODWIN RD

A. NW FRIBURG-STRUNK ST & ACCESS
B. NW CAMAS MEADOWS DR & ACCESS

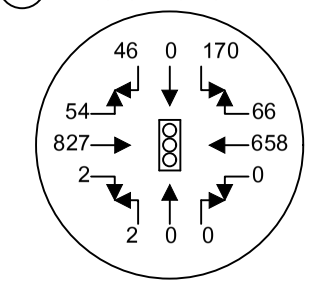
1 NE 192ND AVE & MILL PLAIN BLVD



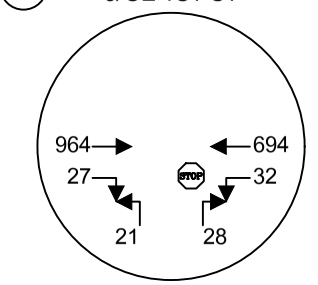
2 NE 192ND AVE & SE 1ST ST



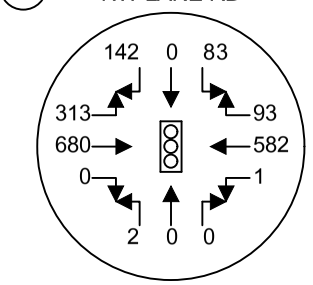
3 NE 197TH AVE & SE 1ST ST



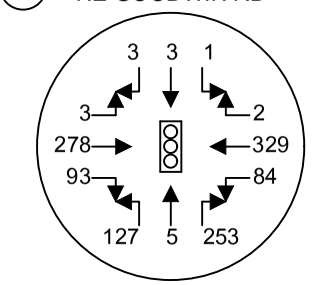
4 SE WESTRIDGE BLVD & SE 1ST ST



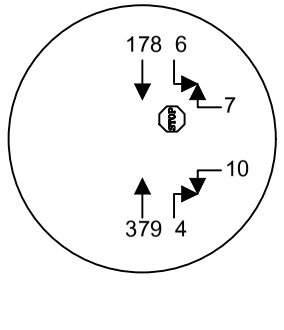
5 NW FRIBURG-STRUNK ST & SE 1ST ST/ NW LAKE RD



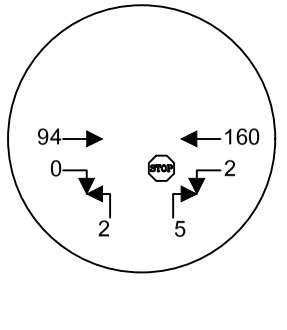
6 NW FRIBURG-STRUNK ST & NE 13TH ST/ NE GOODWIN RD



A NW FRIBURG-STRUNK ST & ACCESS



B NW CAMAS MEADOWS DR & ACCESS



HEATH & ASSOCIATES
TRAFFIC AND CIVIL ENGINEERING

GOODWIN INDUSTRIAL

FORECAST 2025 PM PEAK HOUR VOLUMES WITH PROJECT
FIGURE 7

PO Box 397 Puyallup, WA 98371 (253) 770 1401 heathtraffic.com

Exhibit 10 APPEAL24-1001

80% Build-Out 8/24/23

Parklands at Camas Meadows TIA
Camas, WA

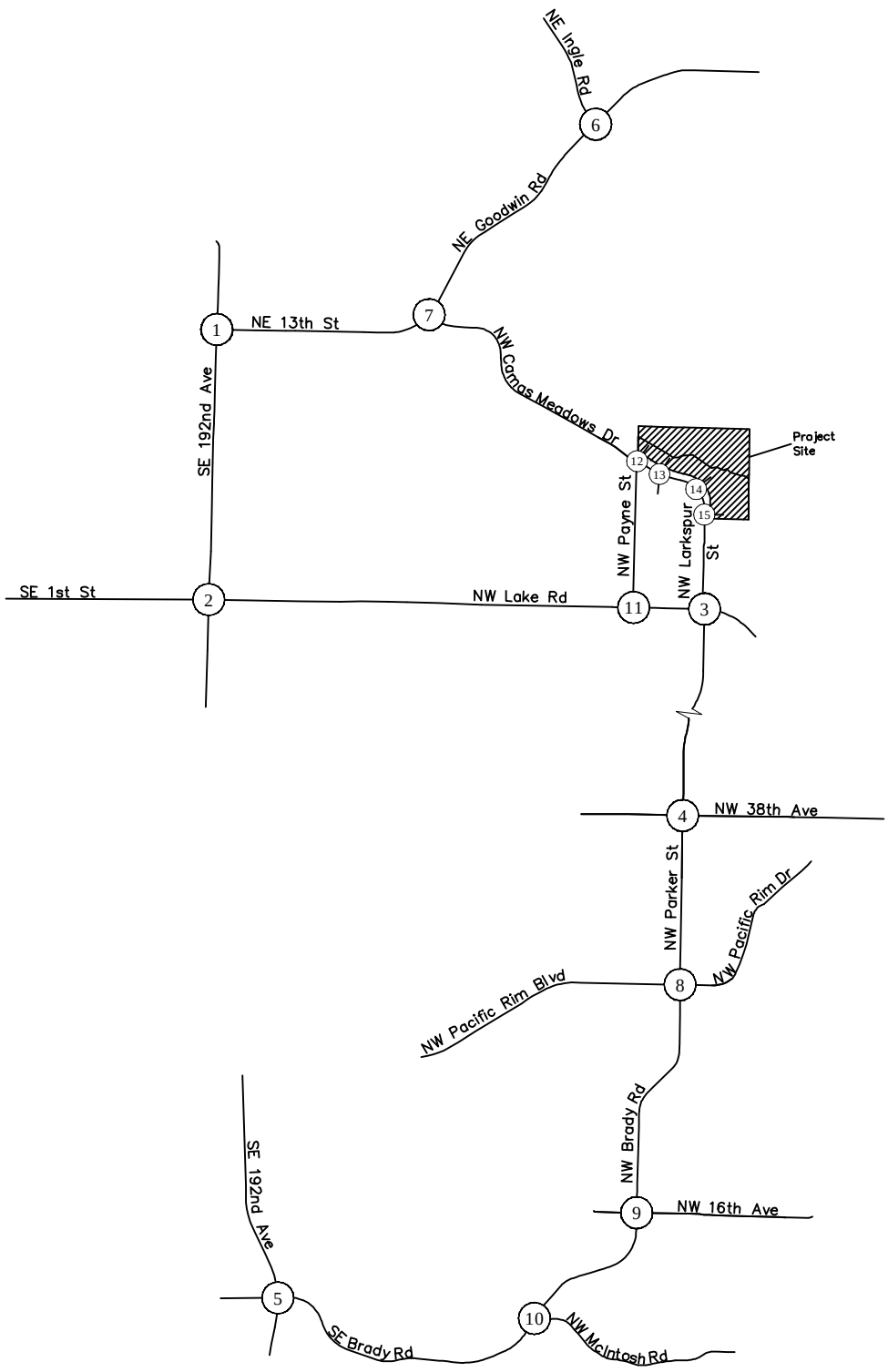
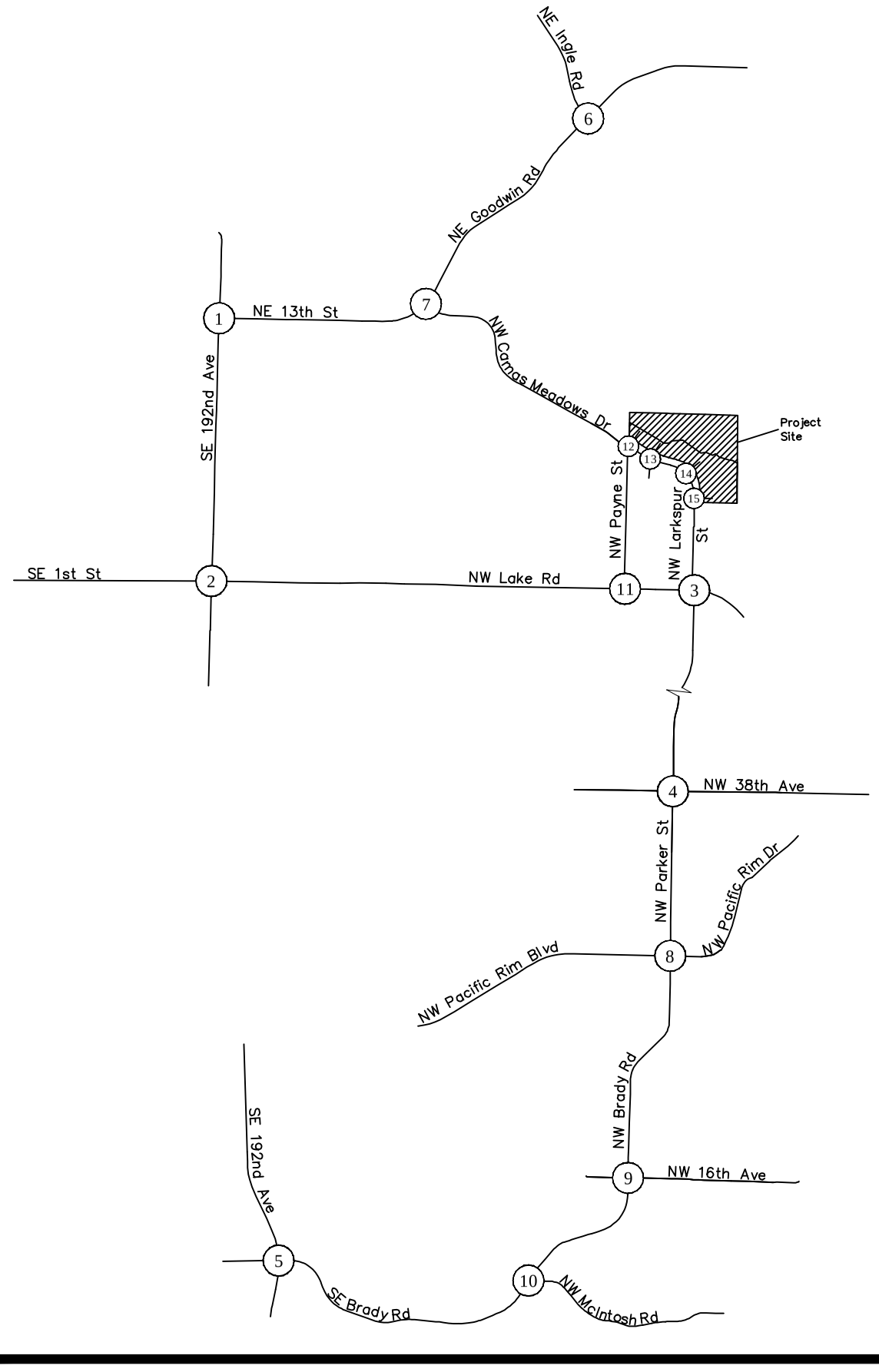


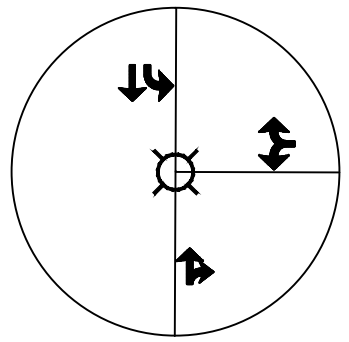
FIGURE 1
Site Vicinity Map

NOT TO SCALE

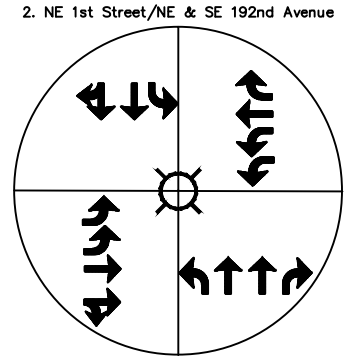
315021.0Figures.Dwg



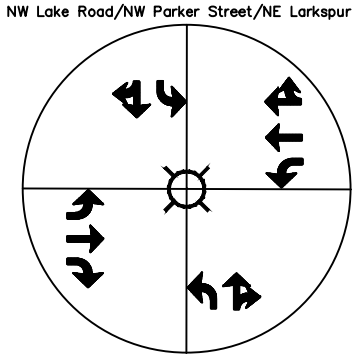
1. NE 13th Street/NE 192nd Avenue



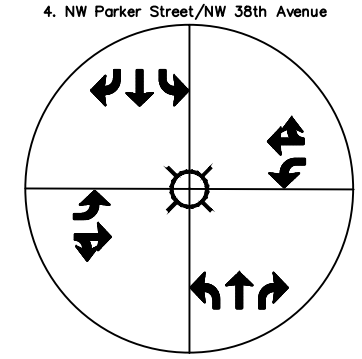
2. NE 1st Street/NE & SE 192nd Avenue



3. NW Lake Road/NW Parker Street/NE Larkspur Street



4. NW Parker Street/NW 38th Avenue



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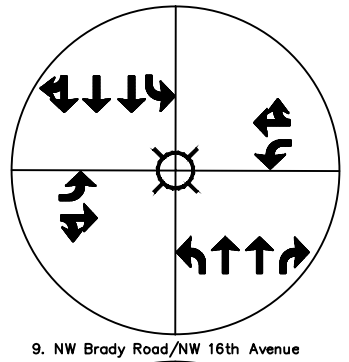
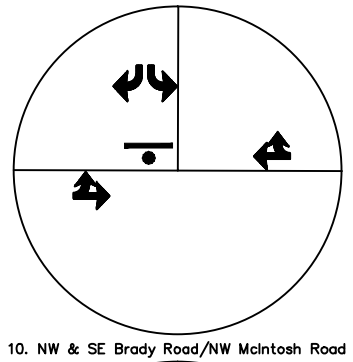
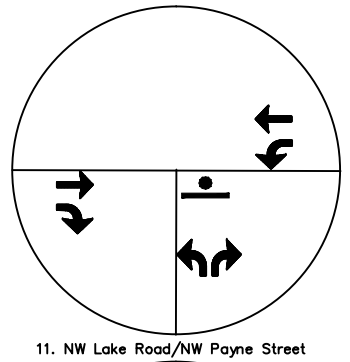


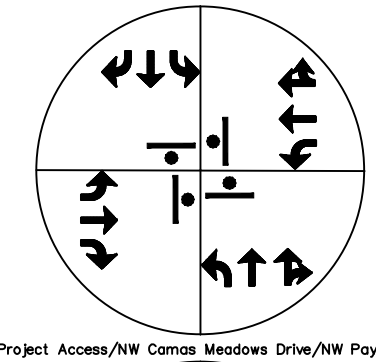
6. NE Goodwin Road/NE Ingle Road



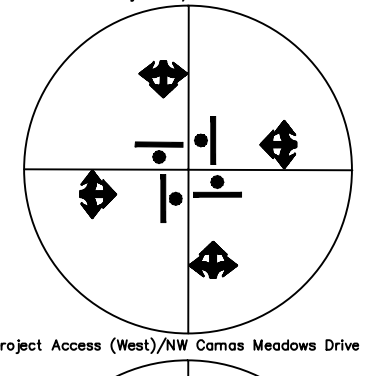
7. NE Goodwin Road/NW Camas Meadows Drive



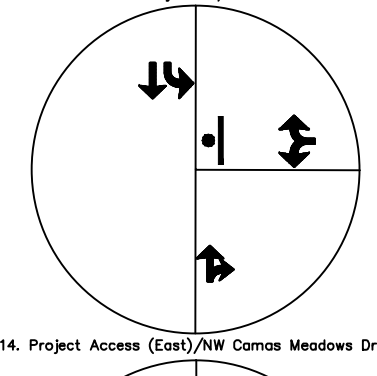
8. NW Parker Street/NW Pacific Rim Boulevard/NW Pacific Rim Drive



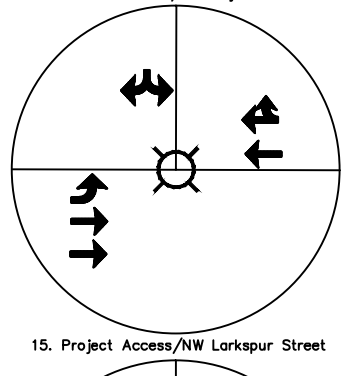
9. NW Brady Road/NW 16th Avenue



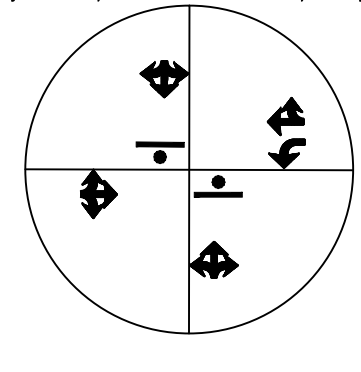
10. NW & SE Brady Road/NW McIntosh Road



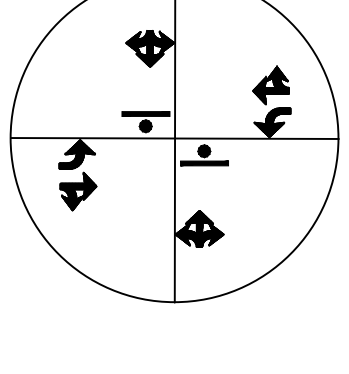
11. NW Lake Road/NW Payne Street



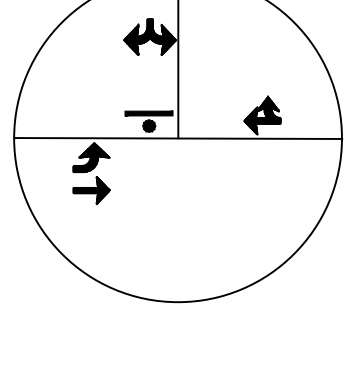
12. Project Access/NW Camas Meadows Drive/NW Payne Street



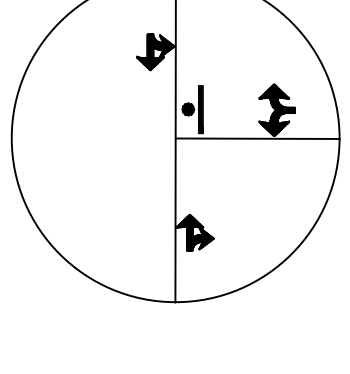
13. Project Access (West)/NW Camas Meadows Drive



14. Project Access (East)/NW Camas Meadows Drive



15. Project Access/NW Larkspur Street



NOT TO SCALE

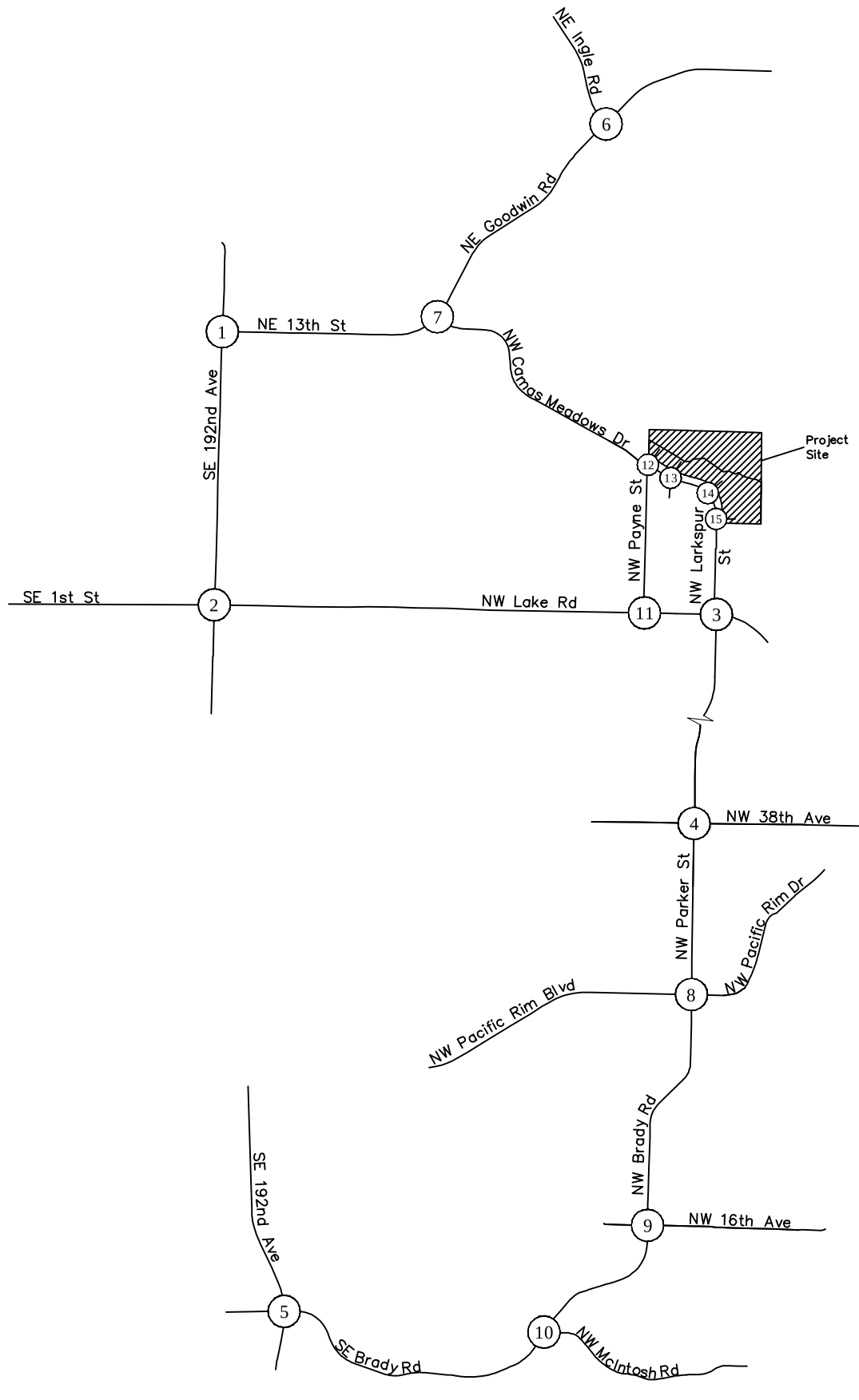
LEGEND

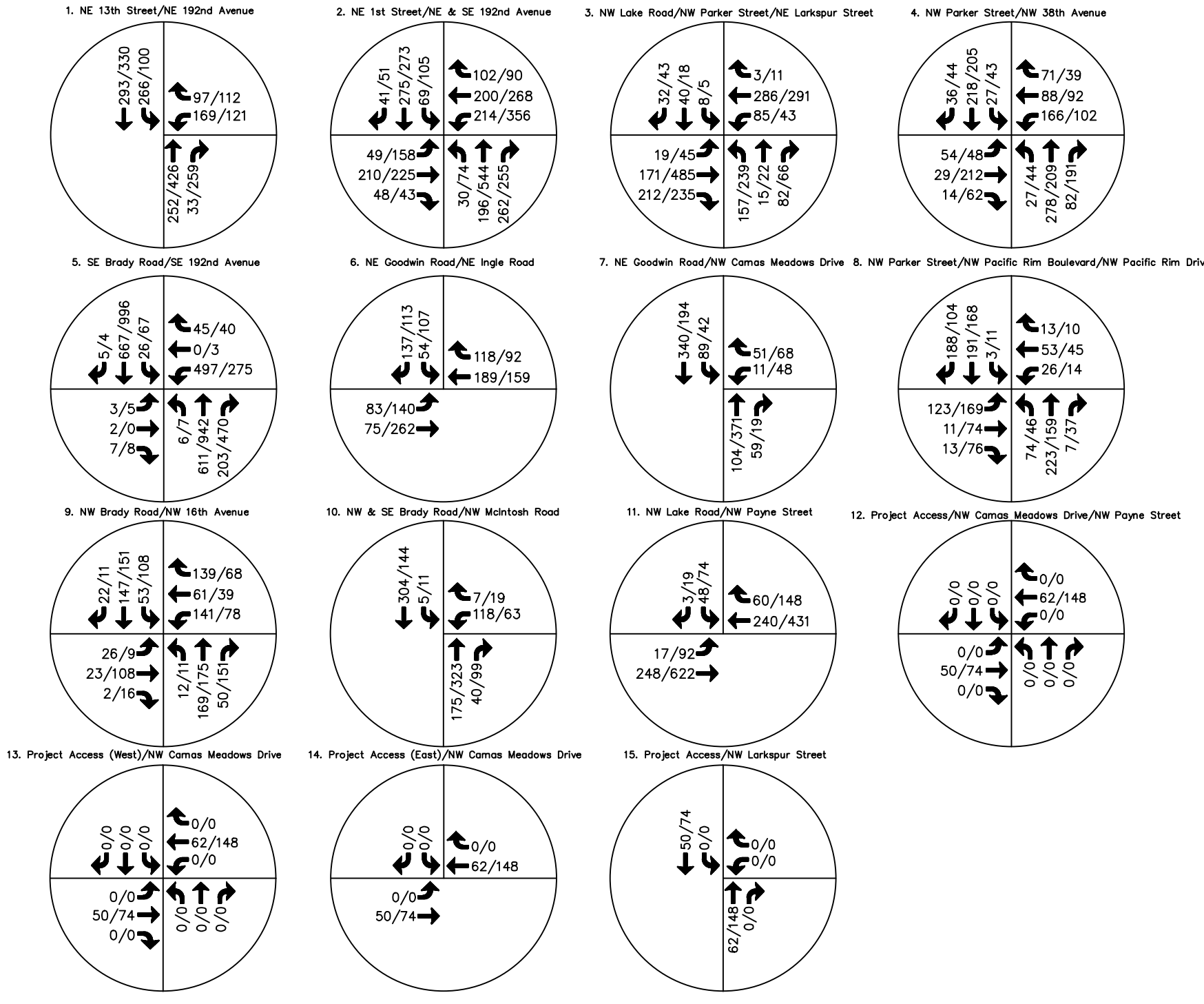
- Lane Usage
- Traffic Signal
- Stop Sign

FIGURE 3
Existing Lane Configuration and Traffic Control

315021.0Figures.Dwg

Exhibit 10 APPEAL24-1001





LEGEND

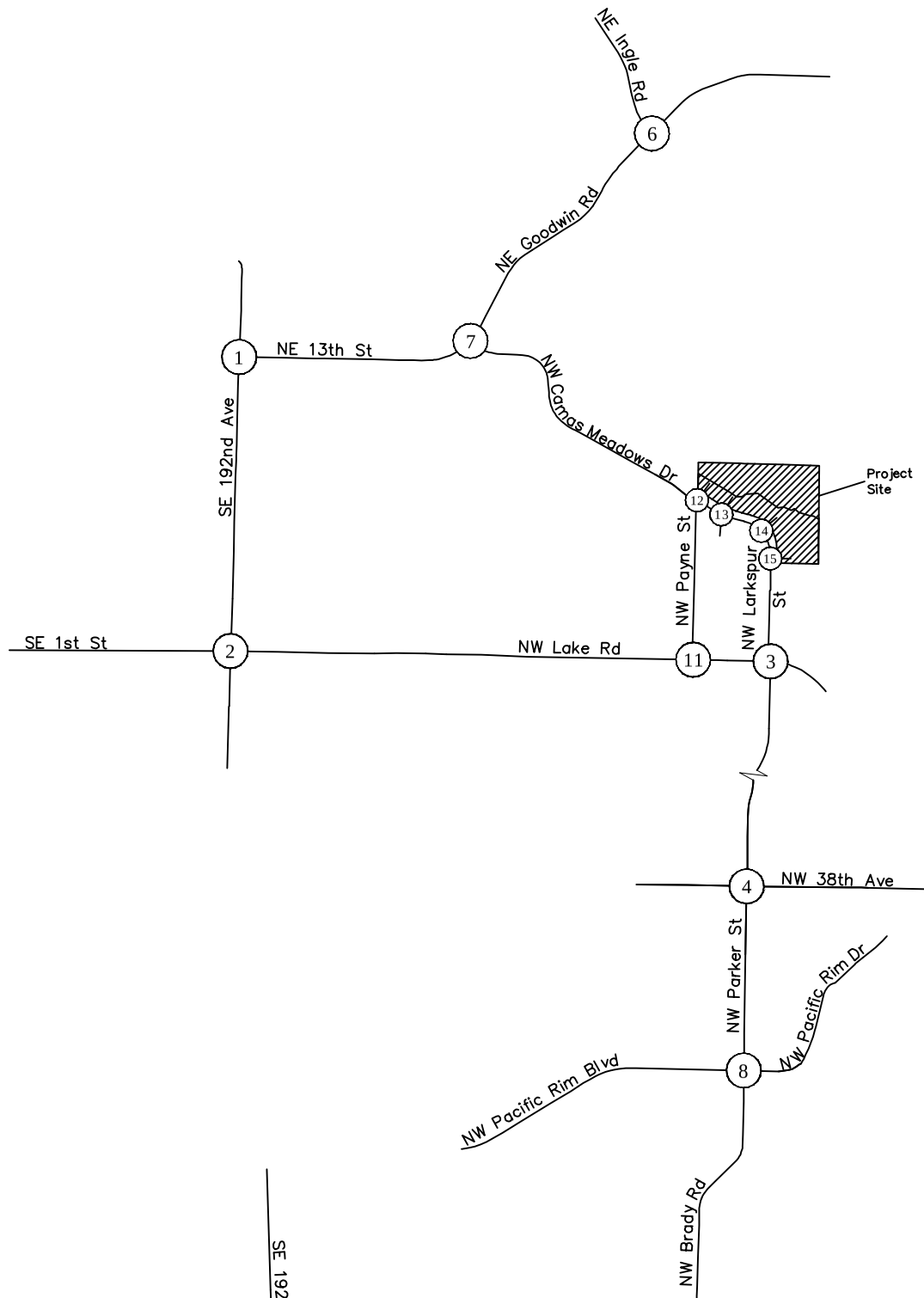
128/200 A.M./P.M. Peak Hour Traffic Volume

NOT TO SCALE

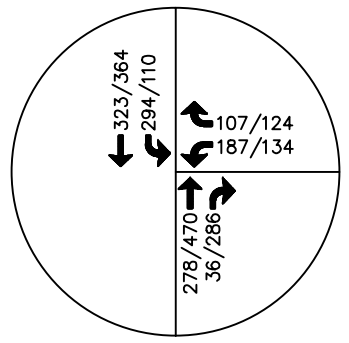
FIGURE 4
2015 Existing A.M. and P.M. Peak Hour Traffic Volumes

315021.0Figures.Dwg

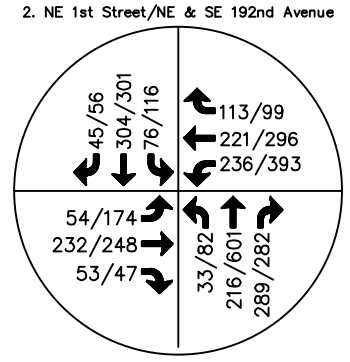
Exhibit 10 APPEAL24-1001



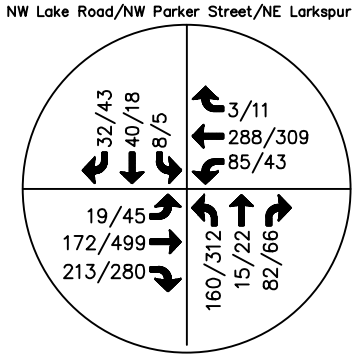
1. NE 13th Street/NE 192nd Avenue



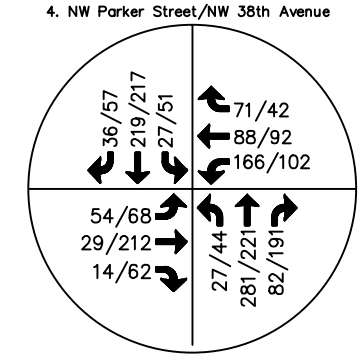
2. NE 1st Street/NE & SE 192nd Avenue



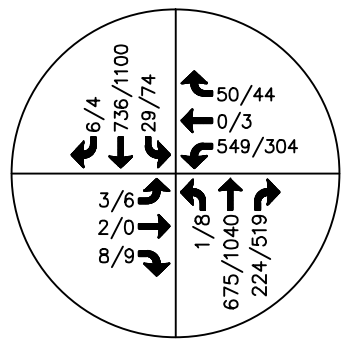
3. NW Lake Road/NW Parker Street/NE Larkspur Street



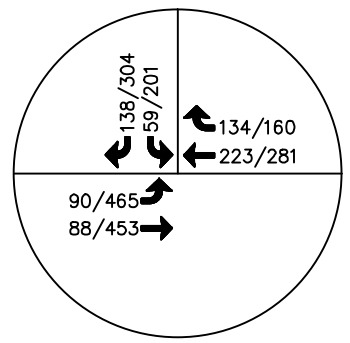
4. NW Parker Street/NW 38th Avenue



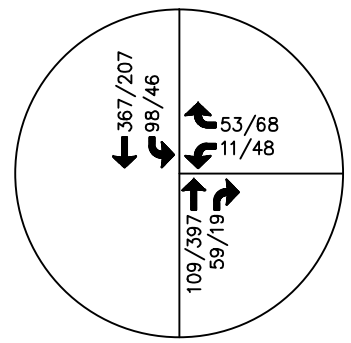
5. SE Brady Road/SE 192nd Avenue



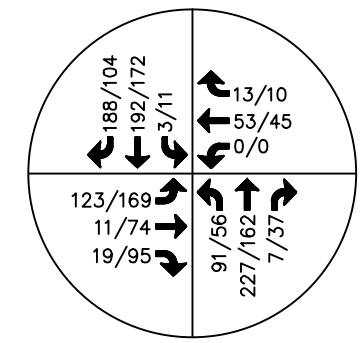
6. NE Goodwin Road/NE Ingle Road



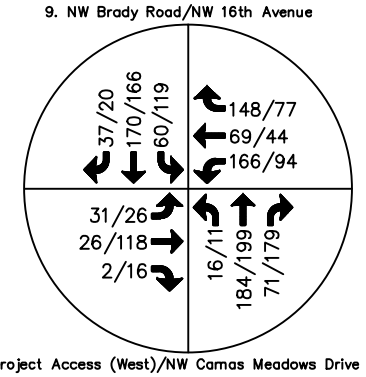
7. NE Goodwin Road/NW Camas Meadows Drive



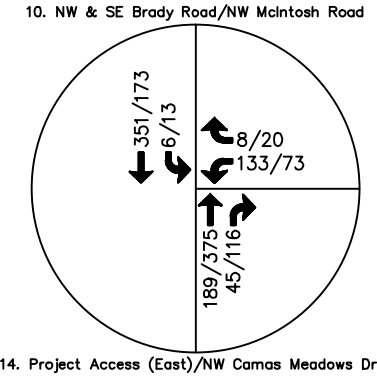
8. NW Parker Street/NW Pacific Rim Boulevard/NW Pacific Rim Drive



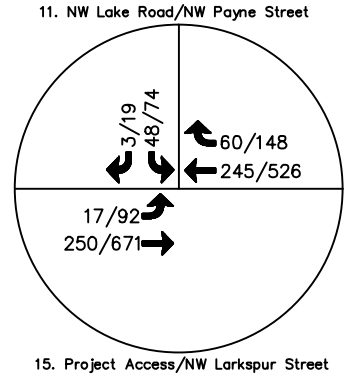
9. NW Brady Road/NW 16th Avenue



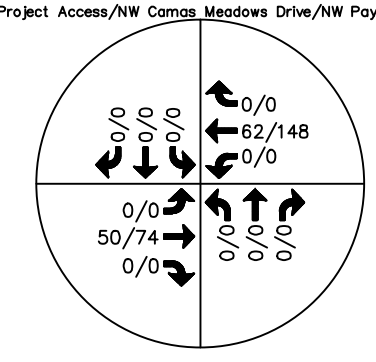
10. NW & SE Brady Road/NW McIntosh Road



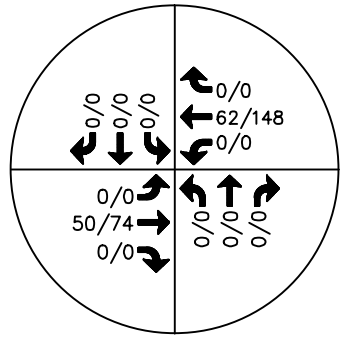
11. NW Lake Road/NW Payne Street



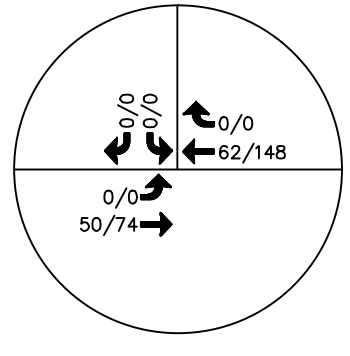
12. Project Access/NW Camas Meadows Drive/NW Payne Street



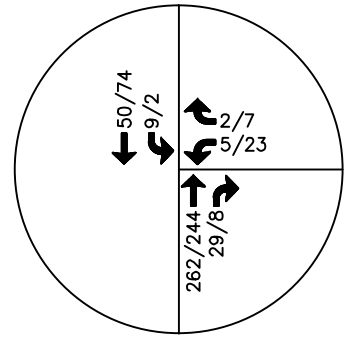
13. Project Access (West)/NW Camas Meadows Drive



14. Project Access (East)/NW Camas Meadows Drive



15. Project Access/NW Larkspur Street



LEGEND

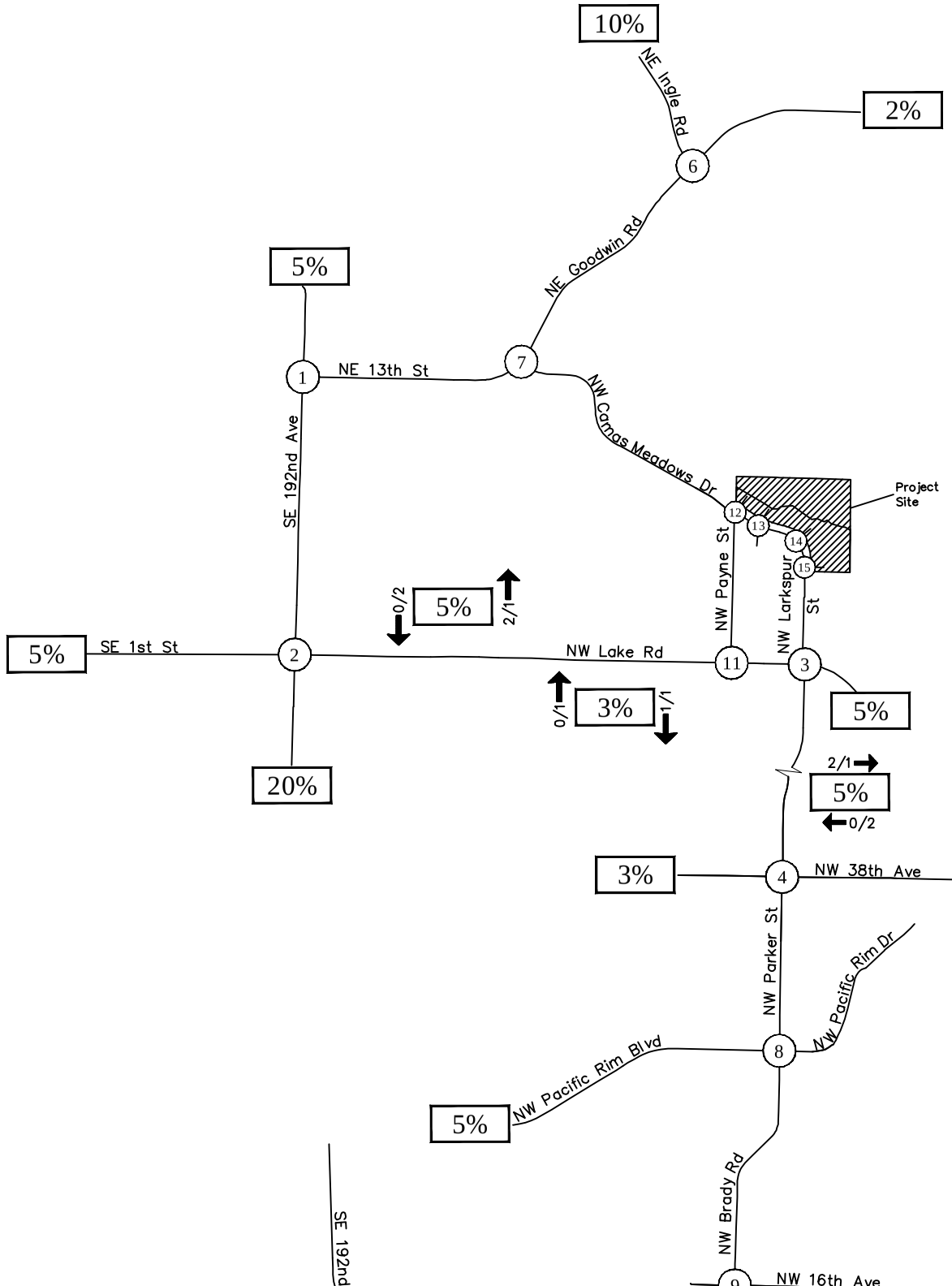
128/200 A.M./P.M. Peak Hour Traffic Volume

NOT TO SCALE

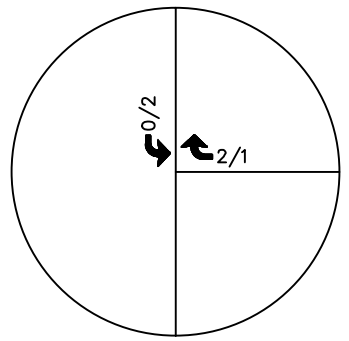
FIGURE 5
2020 "Without Project"
A.M. and P.M. Peak Hour Traffic Volumes

315021.0Figures.Dwg

Exhibit 10 APPEAL24-1001



1. NE 13th Street/NE 192nd Avenue



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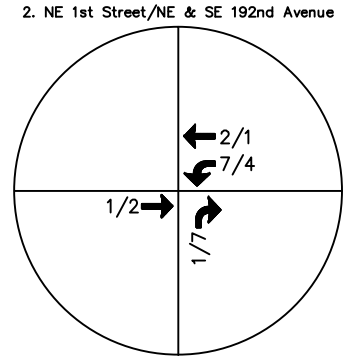
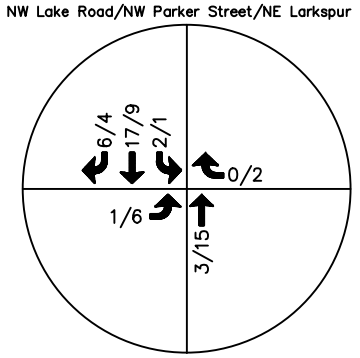
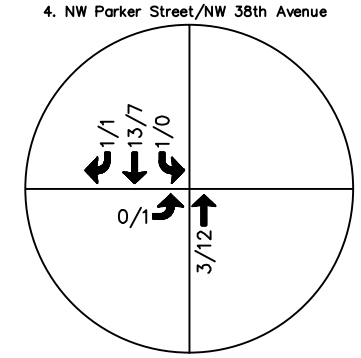


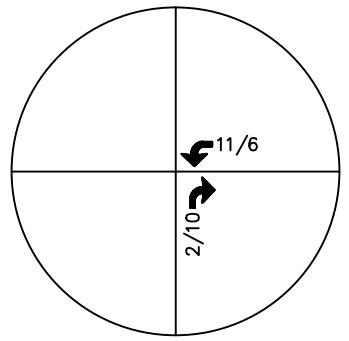
3. NW Lake Road/NW Parker Street/NE Larkspur Street



4. NW Parker Street/NW 38th Avenue



5. SE Brady Road/SE 192nd Avenue



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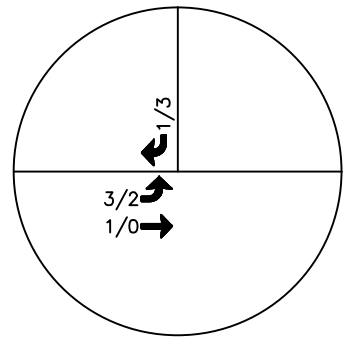
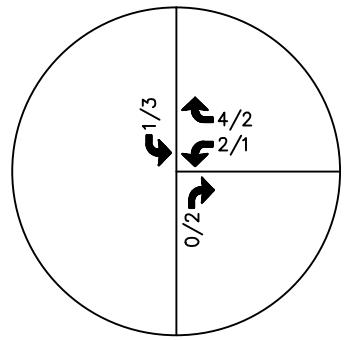
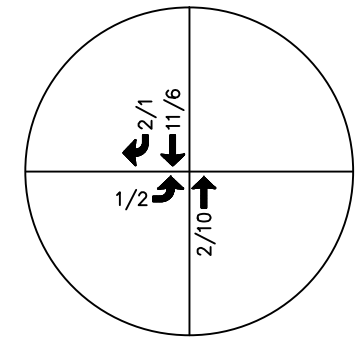


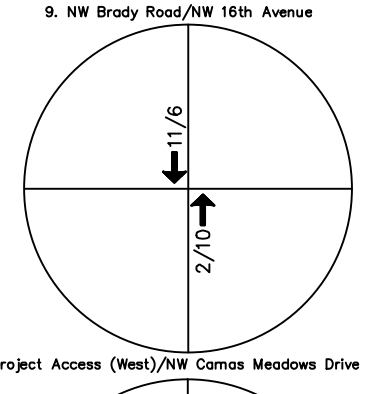
7. NE Goodwin Road/NW Camas Meadows Drive



8. NW Parker Street/NW Pacific Rim Boulevard/NW Pacific Rim Drive



9. NW Brady Road/NW 16th Avenue



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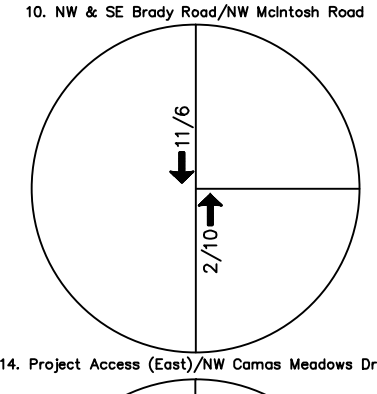
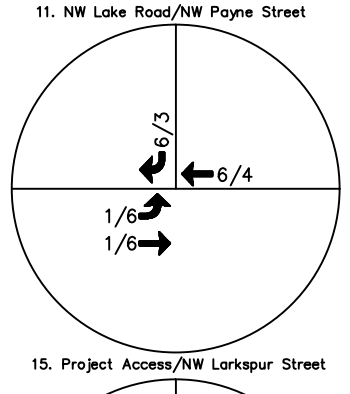
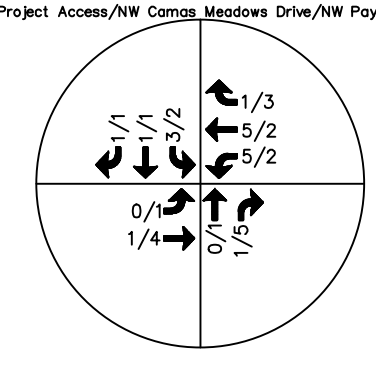


11. NW Lake Road/NW Payne Street



12. Project Access/NW Camas Meadows Drive/NW Payne Street



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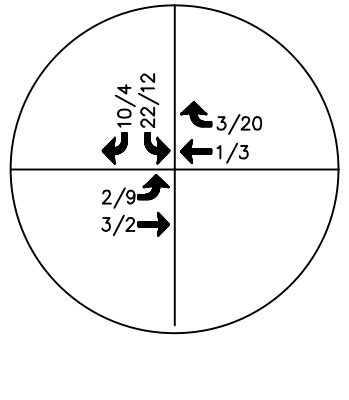
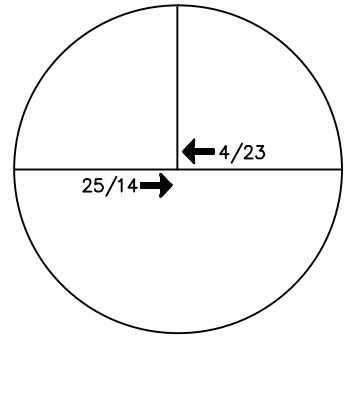
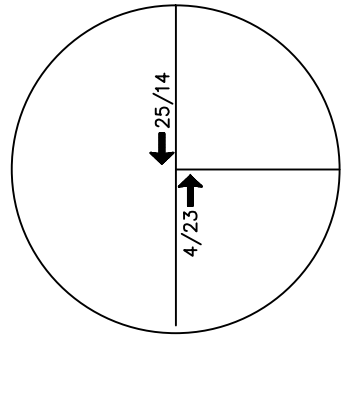


14. Project Access (East)/NW Camas Meadows Drive



15. Project Access/NW Larkspur Street



NOT TO SCALE

LEGEND

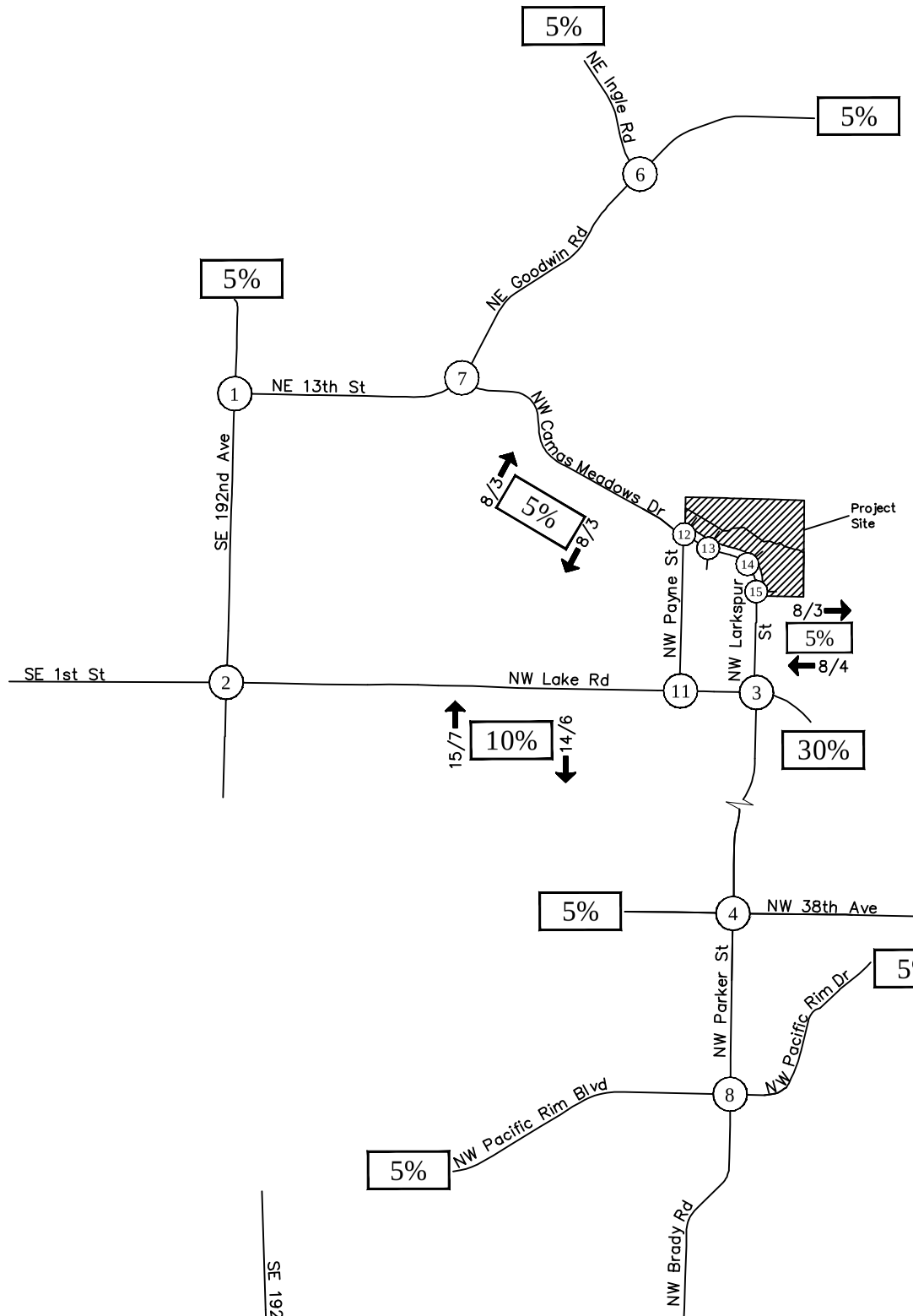
128/200 A.M./P.M. Peak Hour Traffic Volume

10% A.M. and P.M. Peak Hour Trip Distribution

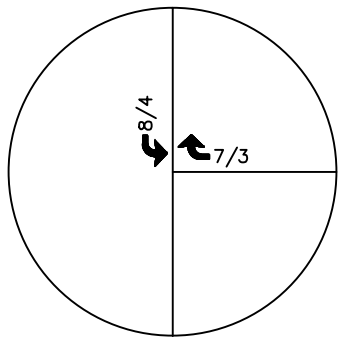
FIGURE 6a
"Residential"
Trip Distribution and Assignment
Traffic Volumes

315021.0Figures.Dwg

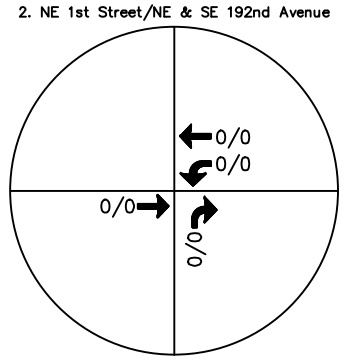
Exhibit 10 APPEAL24-1001



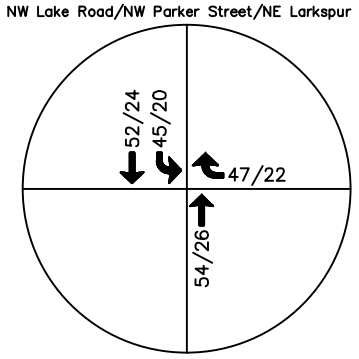
1. NE 13th Street/NE 192nd Avenue



2. NE 1st Street/NE & SE 192nd Avenue



3. NW Lake Road/NW Parker Street/NE Larkspur Street



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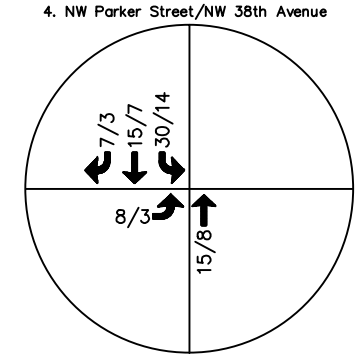

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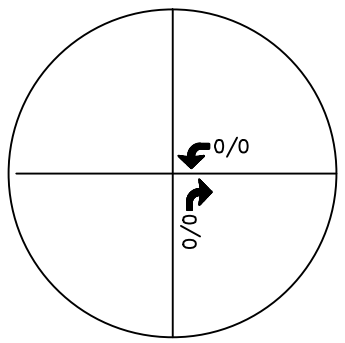

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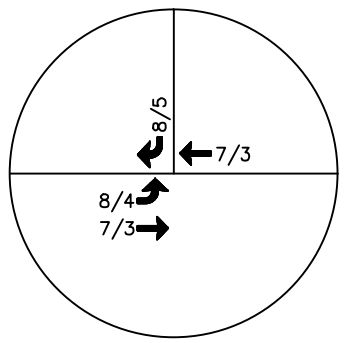
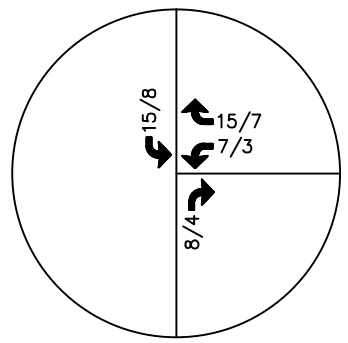


7. NE Goodwin Road/NW Camas Meadows Drive



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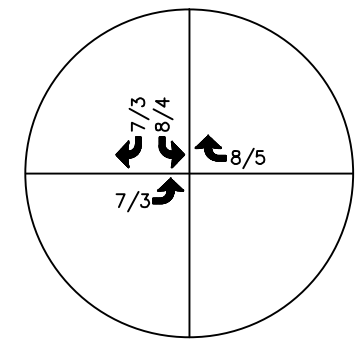
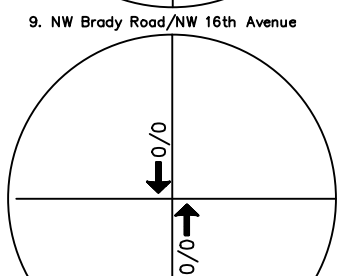
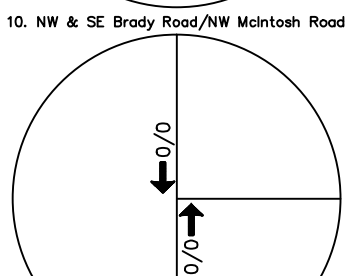


9. NW Brady Road/NW 16th Avenue



10. NW & SE Brady Road/NW McIntosh Road



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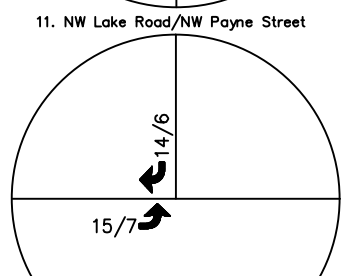
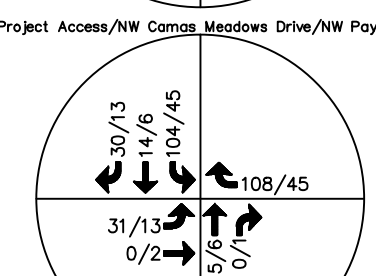


12. Project Access/NW Camas Meadows Drive/NW Payne Street



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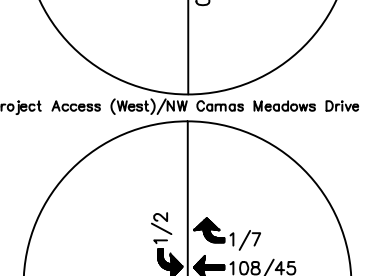

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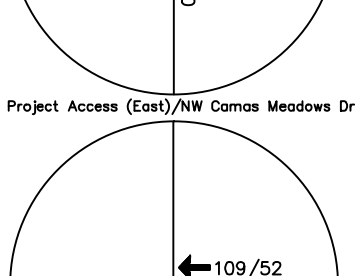
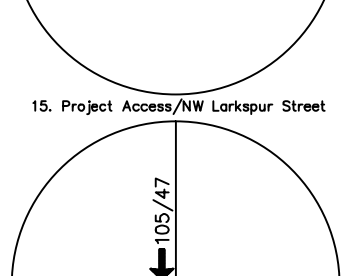


15. Project Access/NW Larkspur Street



NOT TO SCALE

LEGEND

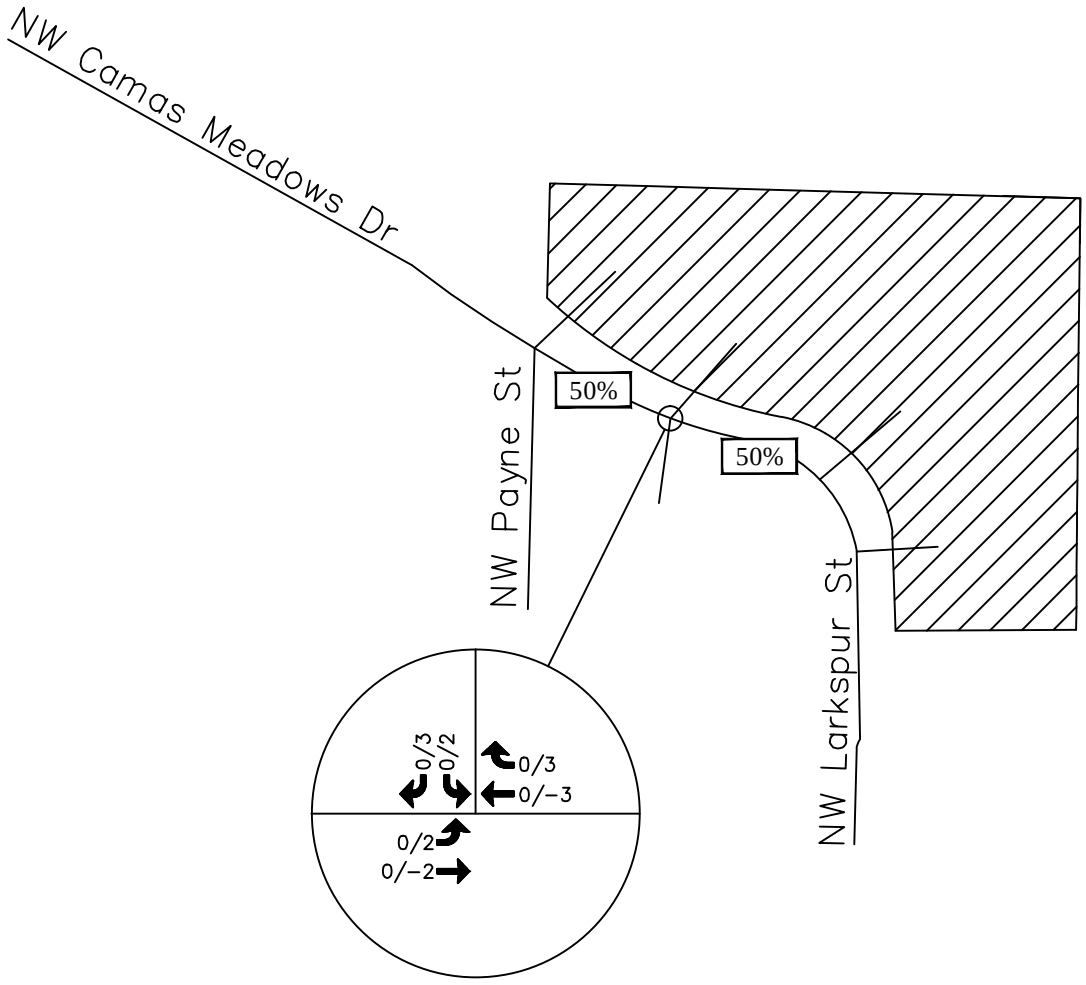
100/128 A.M./P.M. Peak Hour Traffic Volumes

10% A.M. and P.M. Peak Hour Trip Distribution

FIGURE 6b
"Coffee Shop/Quality Restaurant"
Trip Distribution and Assignment
Traffic Volumes

315021.0Figures.Dwg

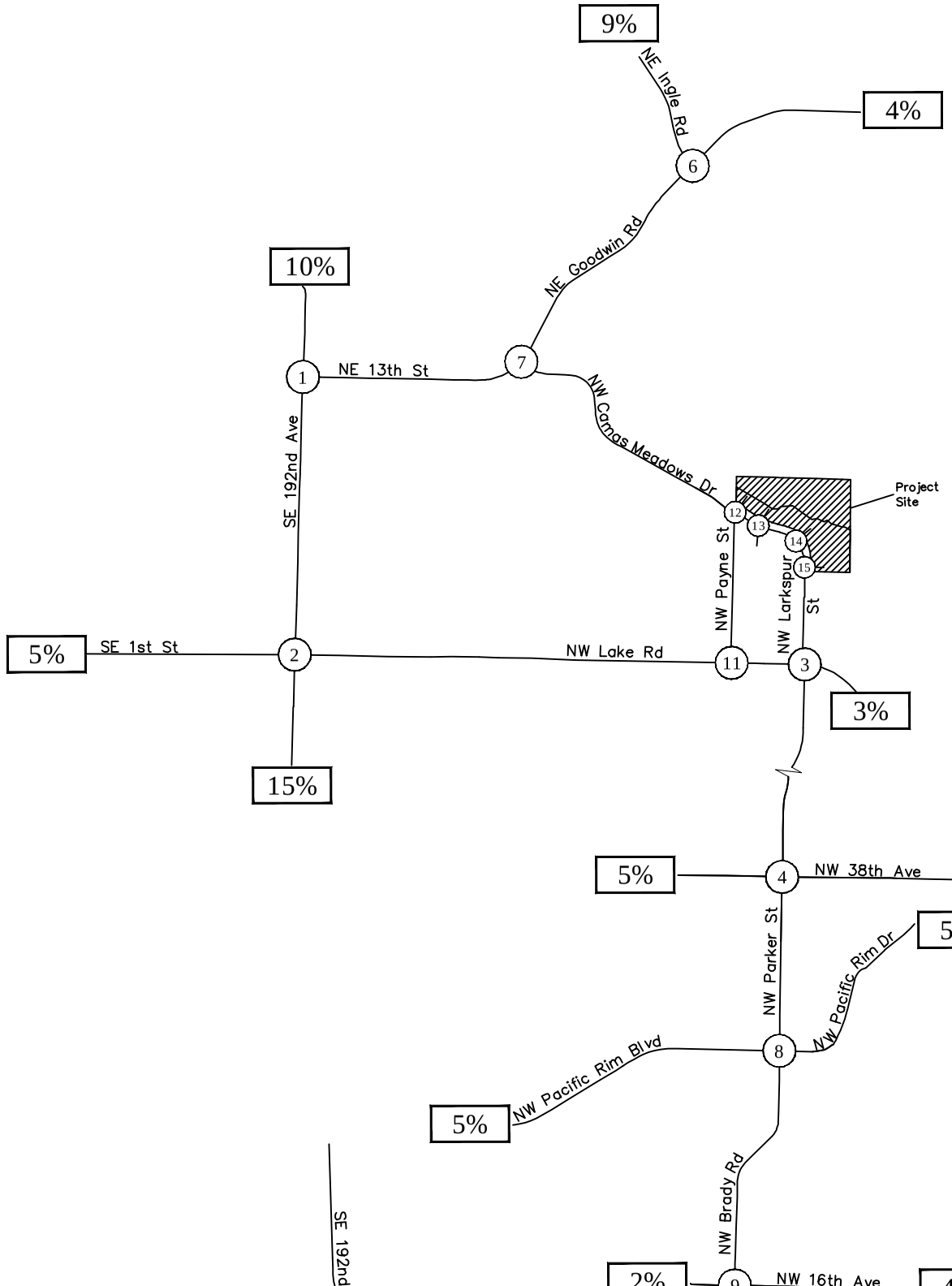
Exhibit 10 APPEAL24-1001

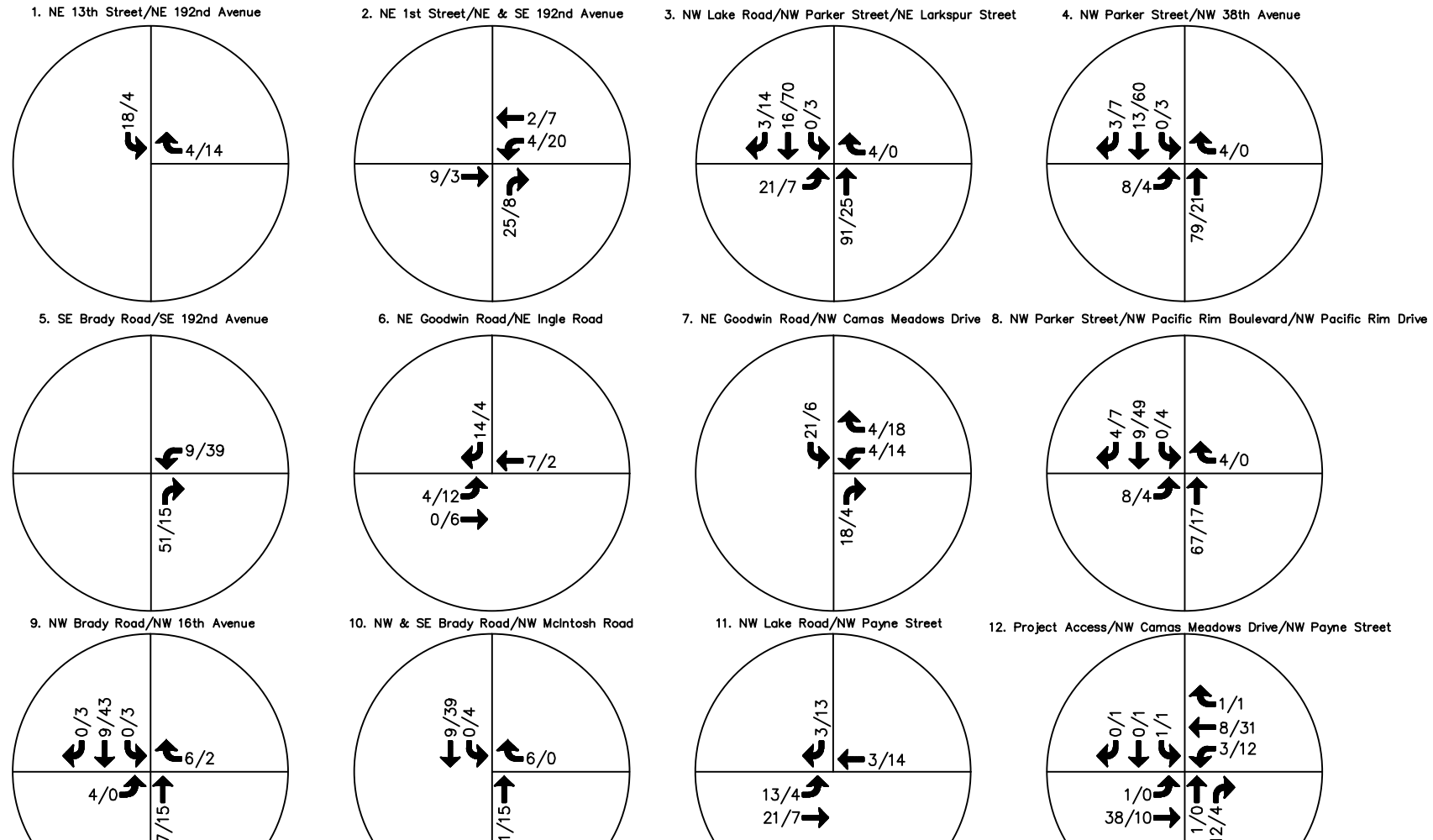


NOT TO SCALE

FIGURE 6c
"Quality Restaurant"
Pass-By Trips
Traffic Volumes

315021.0Figures.Dwg





LEGEND

100/128 A.M./P.M. Peak Hour Traffic Volumes

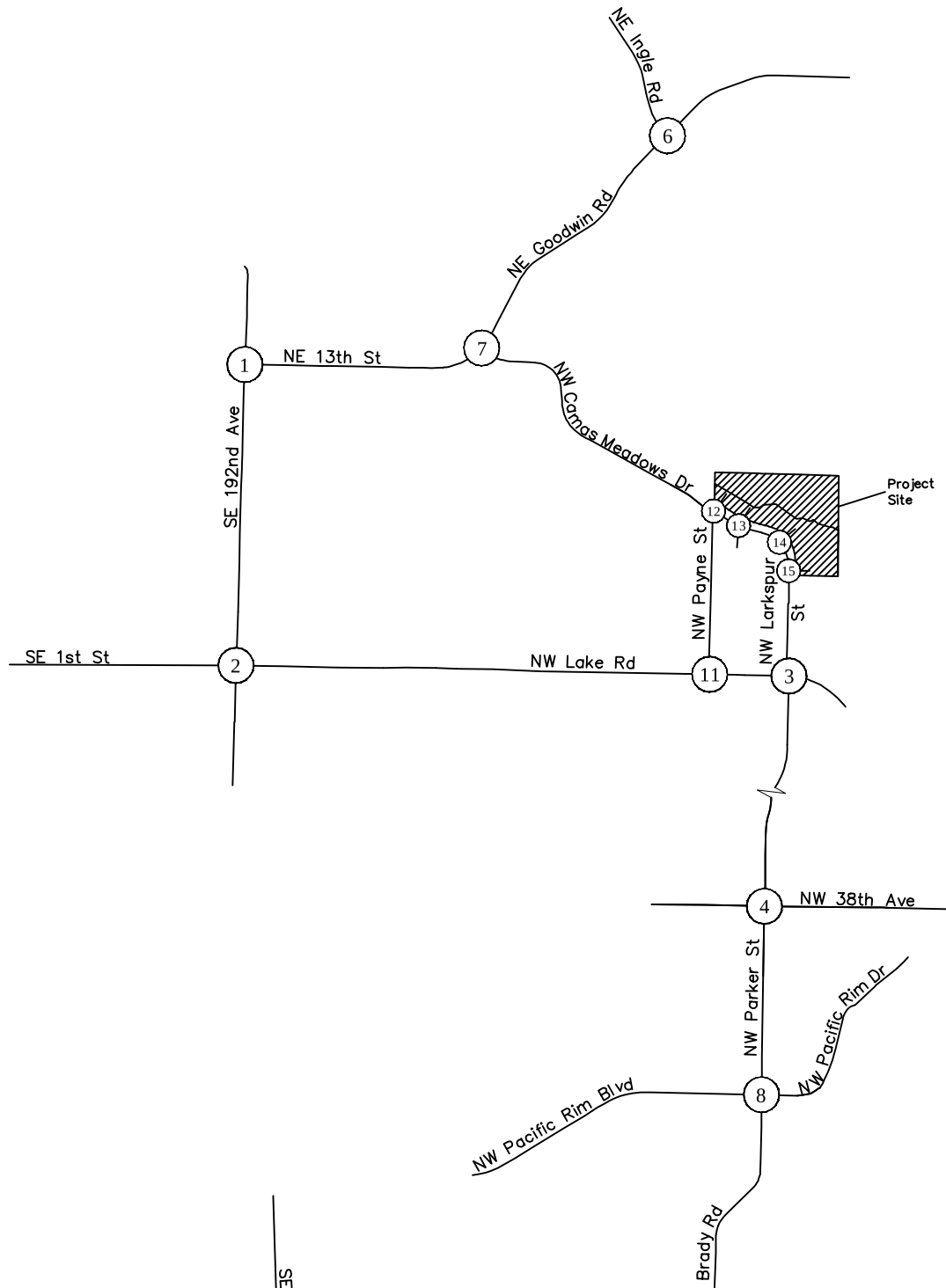
10% A.M. and P.M. Peak Hour Trip Distribution

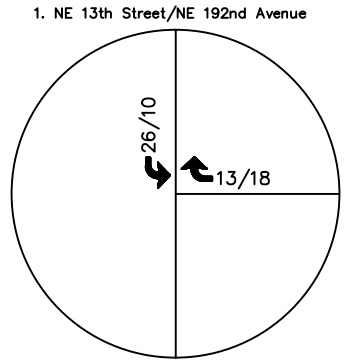
NOT TO SCALE

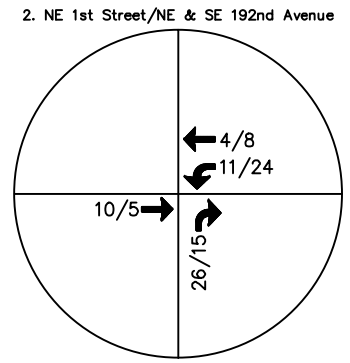
FIGURE 6d
"Business Park"
Trip Distribution and Assignment
Traffic Volumes

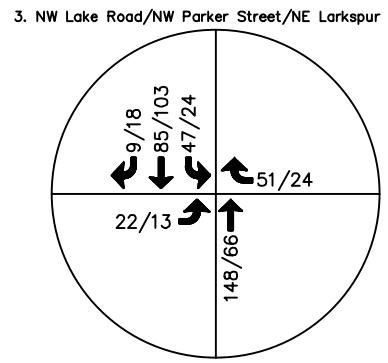
315021.0Figures.Dwg

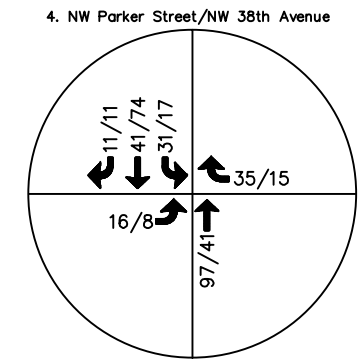
Exhibit 10 APPEAL24-1001

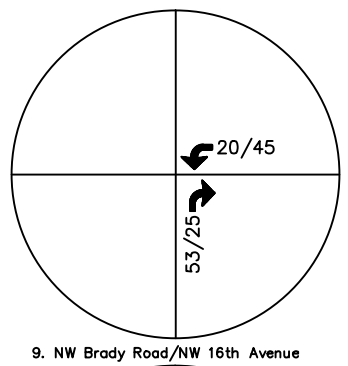


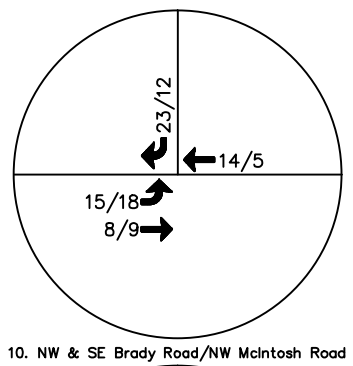


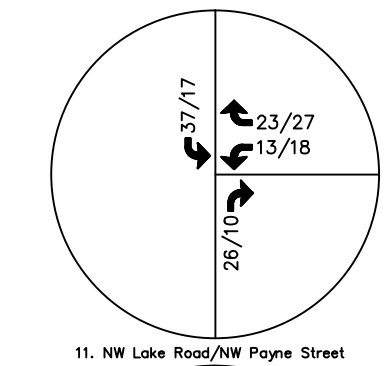


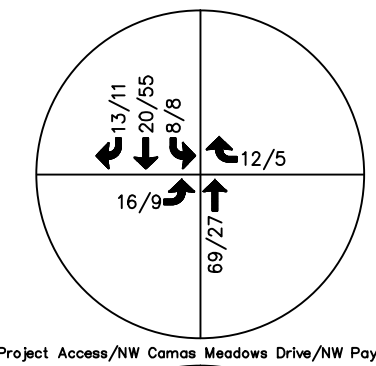


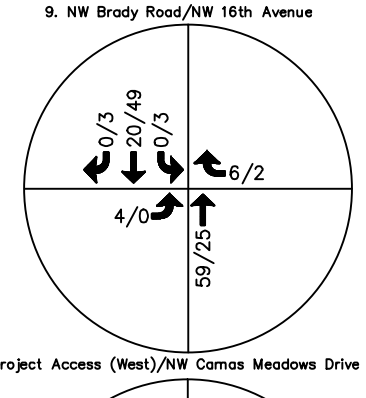


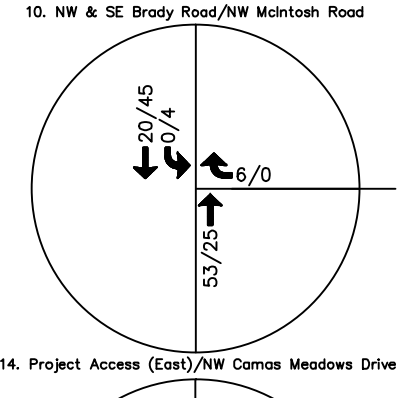


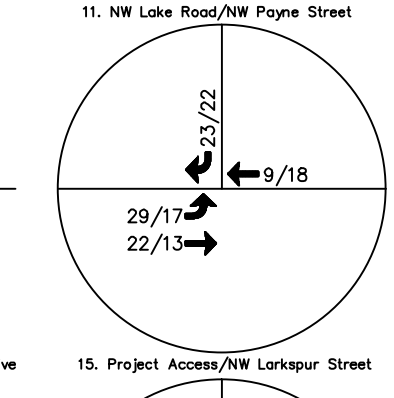


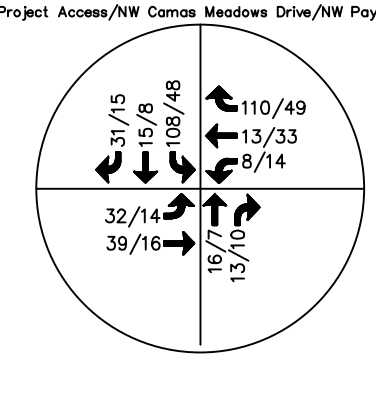


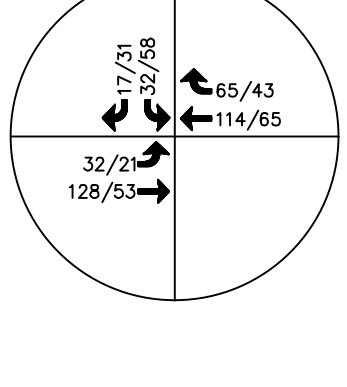


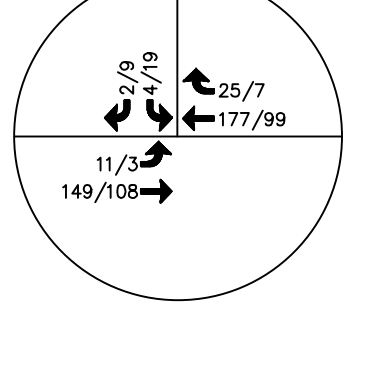


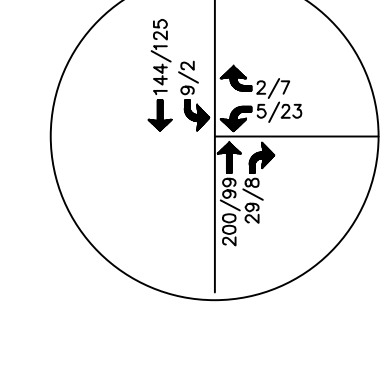












LEGEND

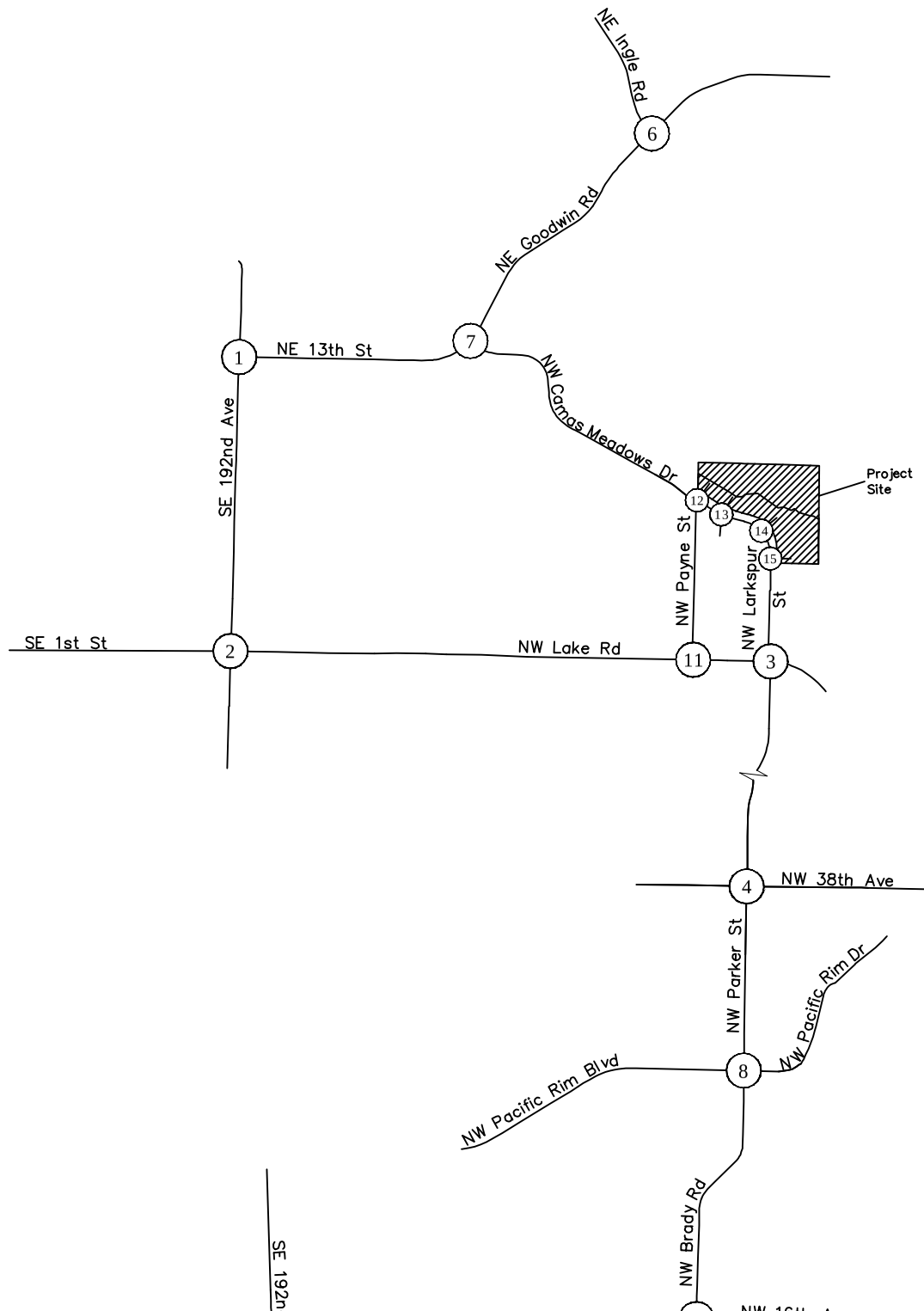
100/128 A.M./P.M. Peak Hour Traffic Volumes

NOT TO SCALE

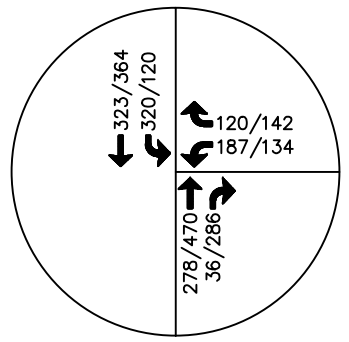
FIGURE 6e
"Combined Use"
Trip Distribution and Assignment
Traffic Volumes

315021.0Figures.Dwg

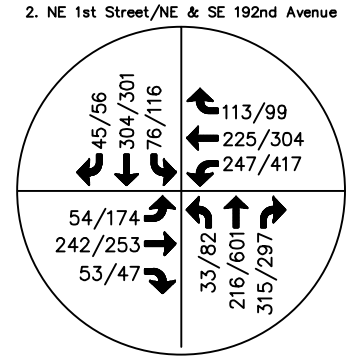
Exhibit 10 APPEAL24-1001



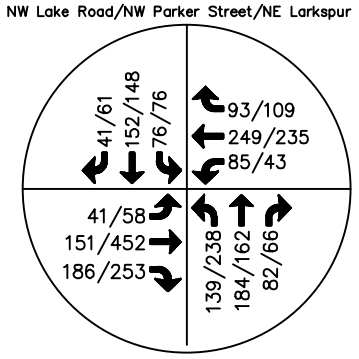
1. NE 13th Street/NE 192nd Avenue



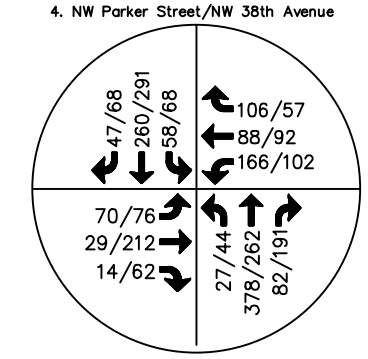
2. NE 1st Street/NE & SE 192nd Avenue



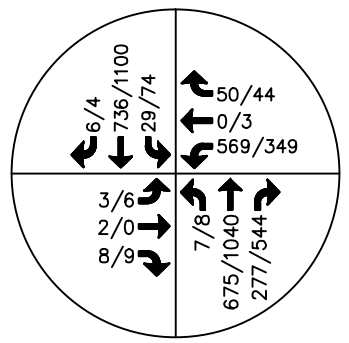
3. NW Lake Road/NW Parker Street/NE Larkspur Street



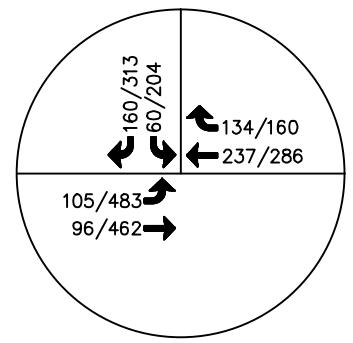
4. NW Parker Street/NW 38th Avenue



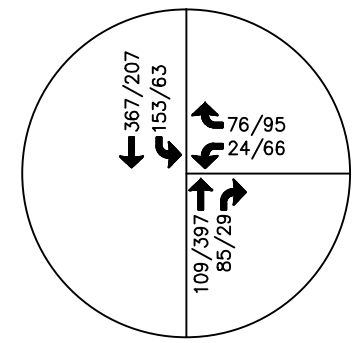
5. SE Brady Road/SE 192nd Avenue



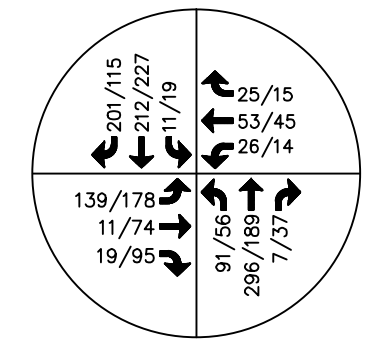
6. NE Goodwin Road/NE Ingle Road



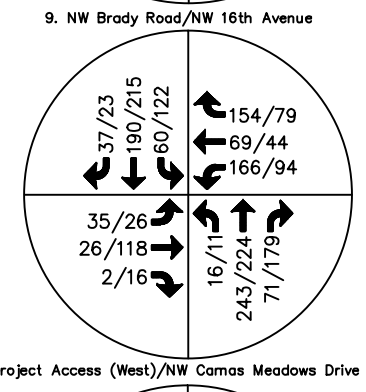
7. NE Goodwin Road/NW Camas Meadows Drive



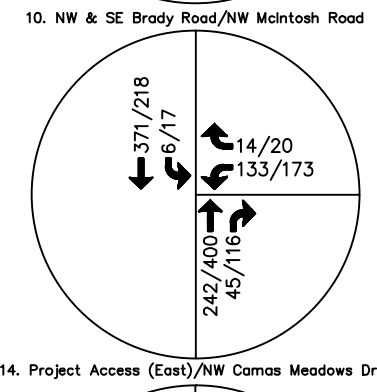
8. NW Parker Street/NW Pacific Rim Boulevard/NW Pacific Rim Drive



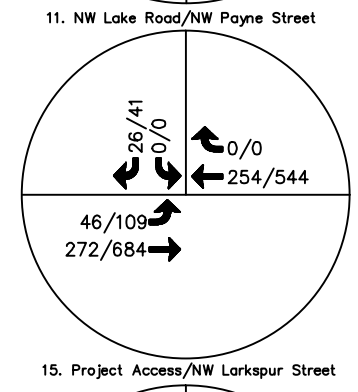
9. NW Brady Road/NW 16th Avenue



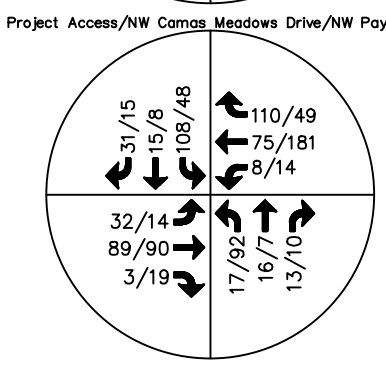
10. NW & SE Brady Road/NW McIntosh Road



11. NW Lake Road/NW Payne Street



12. Project Access/NW Camas Meadows Drive/NW Payne Street



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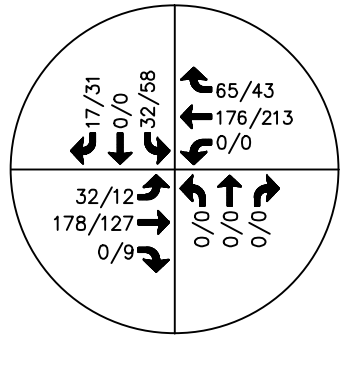

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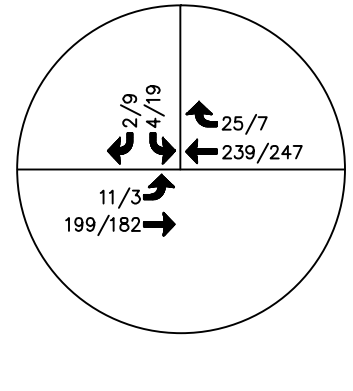
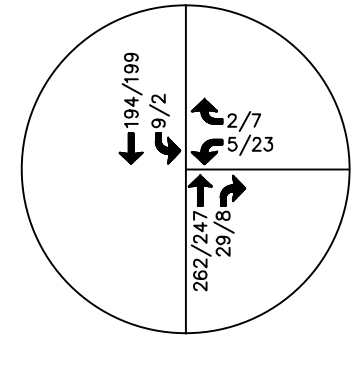


15. Project Access/NW Larkspur Street



LEGEND

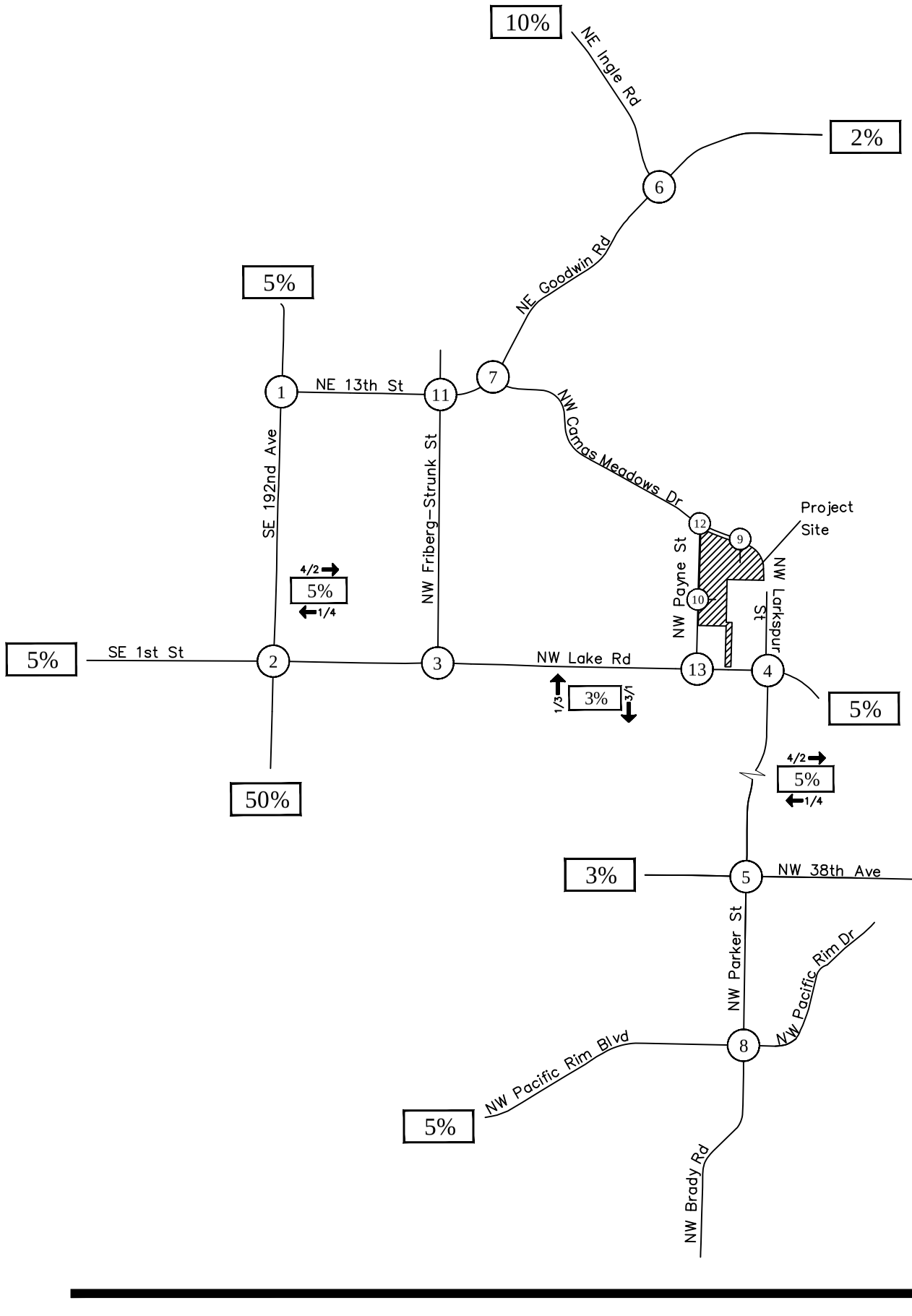
128/200 AM/PM Peak Hour Traffic Volume

NOT TO SCALE

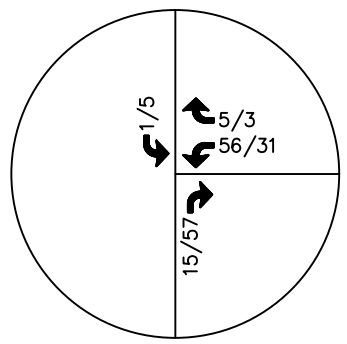
FIGURE 7
2020 "With Project"
A.M. and P.M. Peak Hour Traffic Volumes

315021.0Figures.Dwg

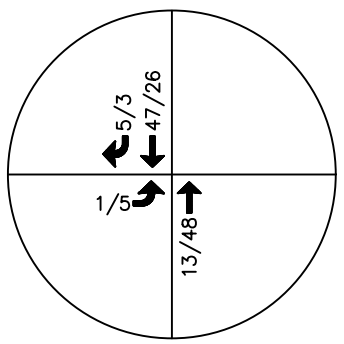
Exhibit 10 APPEAL24-1001



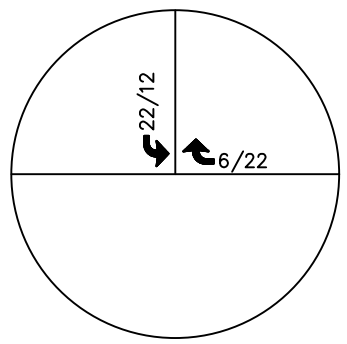
1. NE 13th Street/NE 192nd Avenue



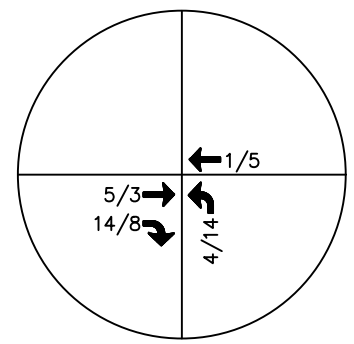
2. NE 1st Street/NE & SE 192nd Avenue



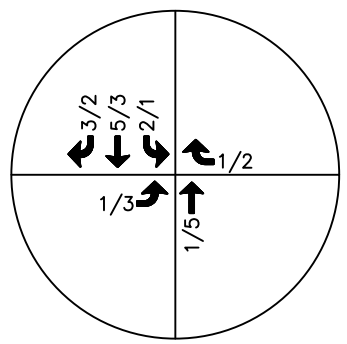
3. NW Lake Road/NW Friberg–Strunk Street



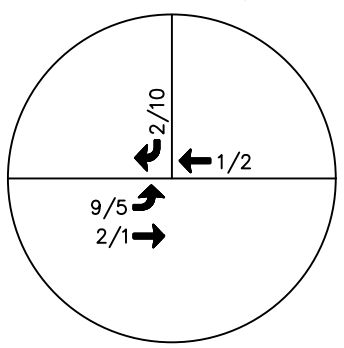
4. NW Lake Road/NW Parker Street/NE Larkspur Street



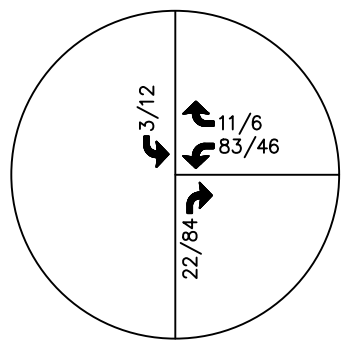
5. NW Parker Street/NW 38th Avenue



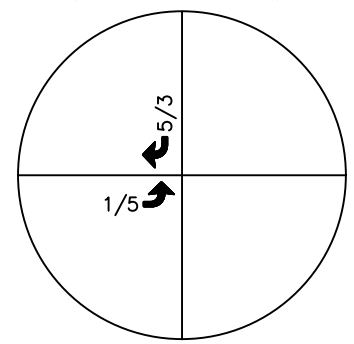
6. NE Goodwin Road/NE Ingle Road



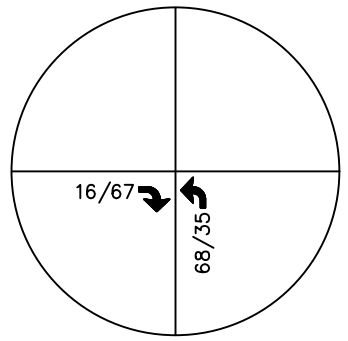
7. NE Goodwin Road/NW Camas Meadows Drive



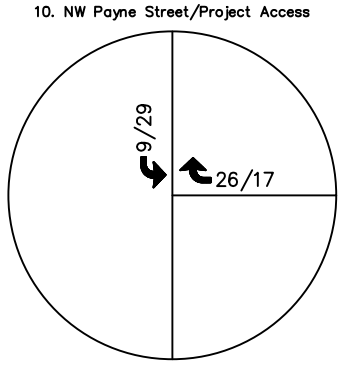
8. NW Parker Street/NW Pacific Rim Boulevard/NW Pacific Rim Drive



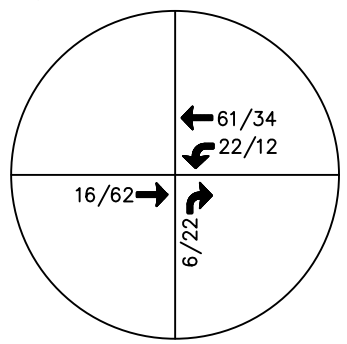
9. NW Camas Meadows Drive/Project Access



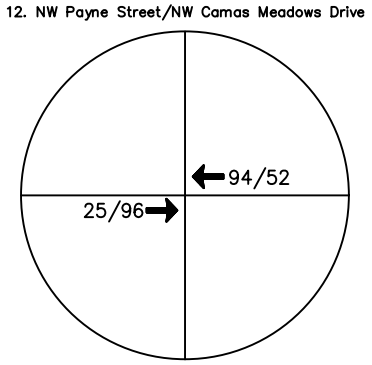
10. NW Payne Street/Project Access



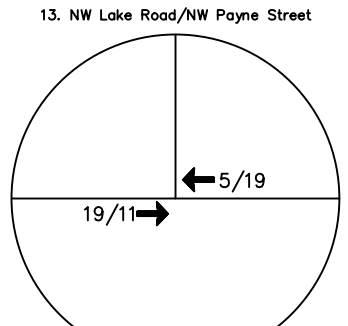
11. NW Friberg–Strunk Street/NE 13th Street/NE Goodwin Road



12. NW Payne Street/NW Camas Meadows Drive



13. NW Lake Road/NW Payne Street



LEGEND

128/200 A.M./P.M. Peak Hour Traffic Volume

10% A.M. and P.M. Peak Hour Trip Distribution

NOT TO SCALE

FIGURE 6
Trip Distribution and Assignment
Traffic Volumes

16025_Figures.Dwg

Exhibit 10 APPEAL24-1001

CURRENT PROPOSED DEVELOPMENT PLAN

The B1 South Phase consists of 124 attached units and 2 single-family detached homes and is expected to be completed by 2020. It is located in the southwest portion of the overall site, directly south of Phase 1. Access will be provided via the neighborhood collector built with Phase 1, which connects to NE Ingle Road. In the future, this neighborhood collector will connect to Phase 3 of the site.

Trip Generation

Trip generation estimates for the proposed development were generated based on information provided in the standard reference manual *Trip Generation, 9th Edition* published by the Institute of Transportation Engineers (ITE – Reference 2). Table 1 summarizes the daily, weekday AM, and weekday PM peak-hour trips for the B1 South Phase assumed development.

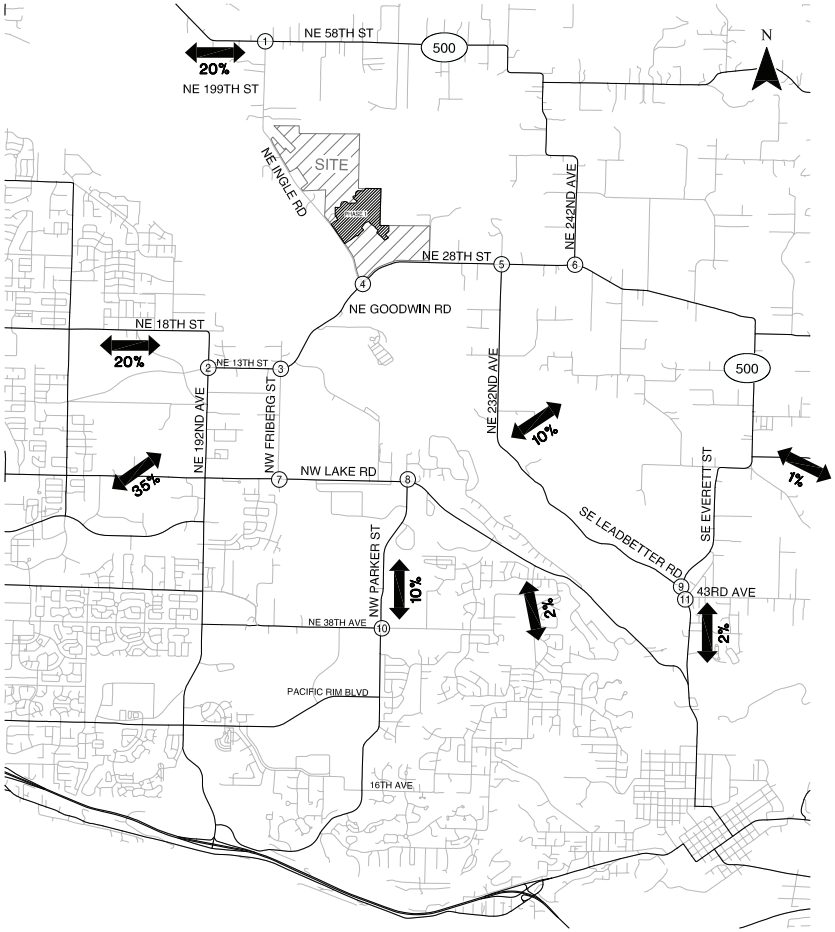
Table 1: Trip Generation Estimate – B1 South Phase

Land Use	ITE Code	Size	Daily	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Residential Condominium/ Townhouse	230	124 units	720	55	9	46	65	43	22
Single-Family Detached Housing	210	2 units	20	2	1	1	2	1	1
Total Residential (126 units)			**740**	**57**	**10**	**47**	**67**	**44**	**23**

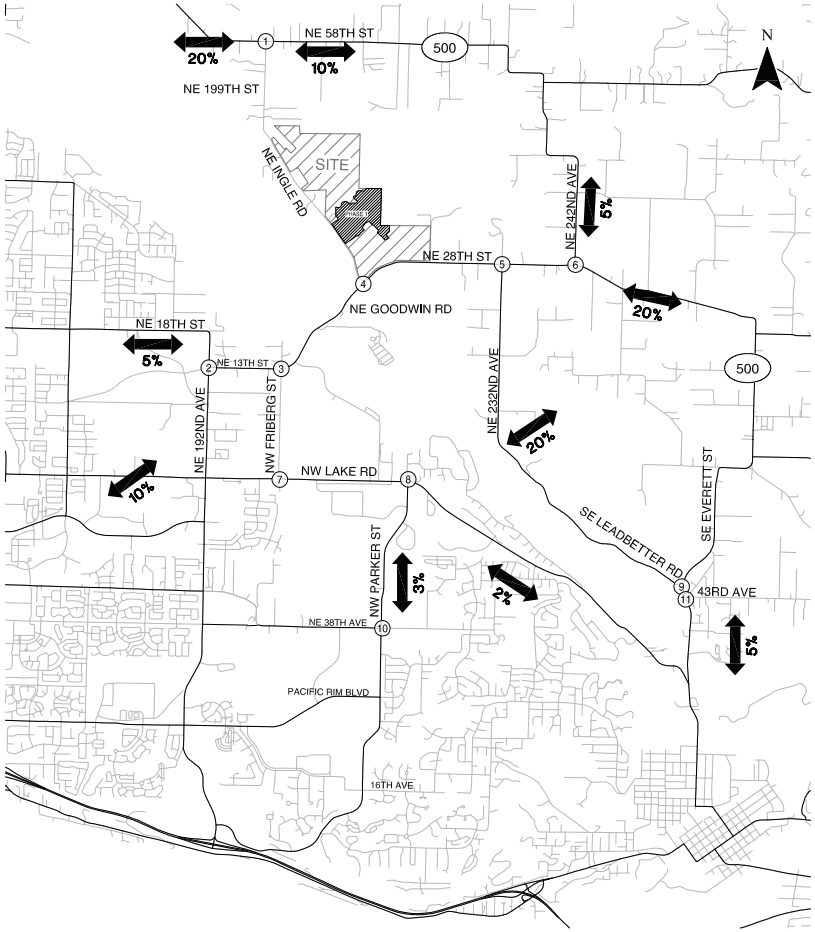
Table 2 summarizes the overall master plan trip generation and then deducts for the cumulative Phase 1[1], Phase 2[1] Phase 3, and B1 South Phase trips to summarize the number of net new trips that will remain vested.

[1] While previous traffic analysis assumed 215 units in Phase 1, Phase 1 as platted consists of 201 units. While previous traffic analysis assumed 230 units in Phase 2, Phase 2 is now platted for 228 units. The updated trip totals are shown in Table 2.

RESIDENTIAL DISTRIBUTION:



RETAIL DISTRIBUTION:



Estimated Trip Distribution Pattern
Camas, Washington

Figure 6

H:\proj\tm13865 - Green Mountain Master Plan\dwg\fig\tm13865_traffic study -Nov update.dwg Nov 20, 2014 - 2:27pm - klaustsen Layout Tab: 6_Dist

Exhibit 10 APPEAL24-1001

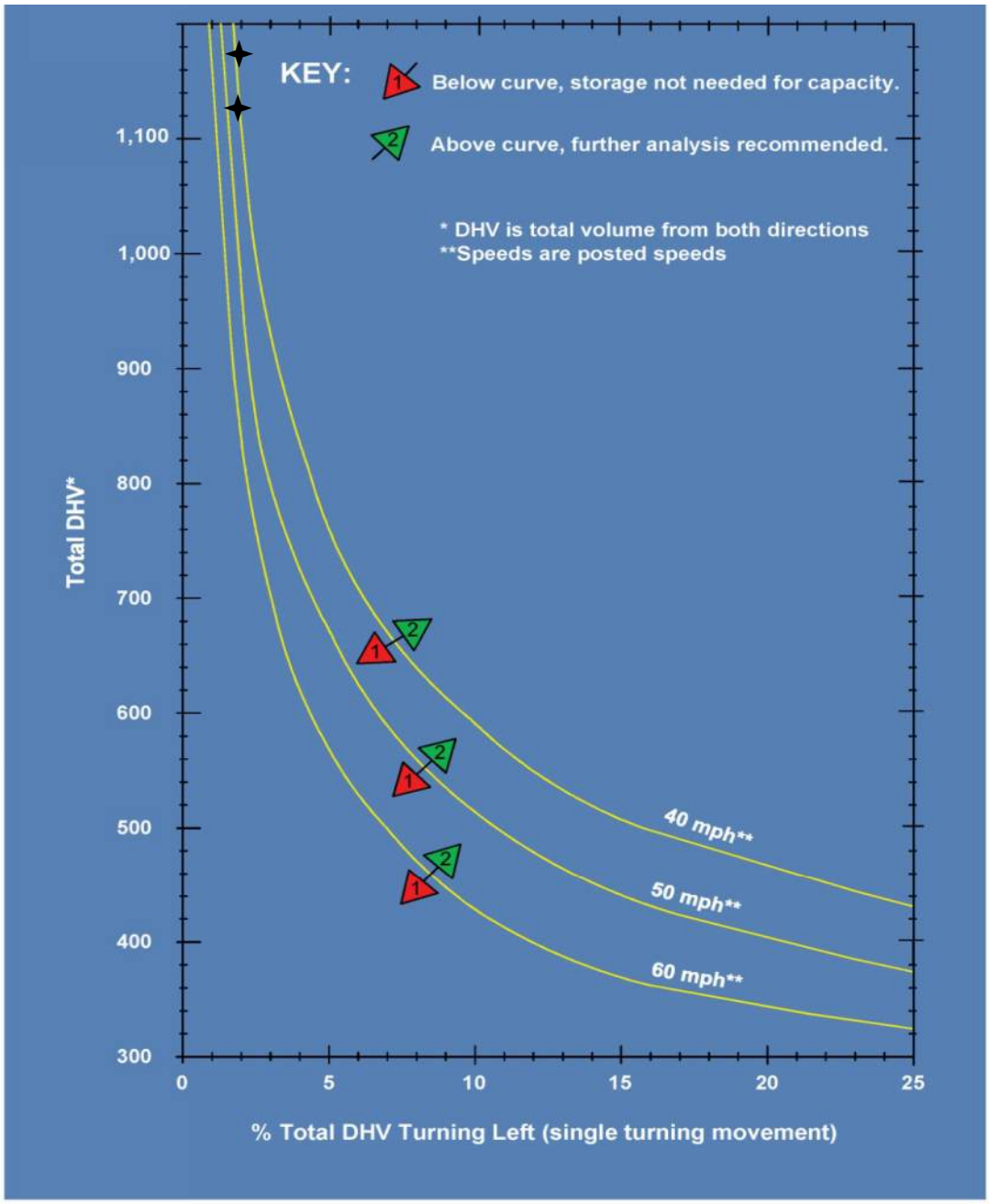


Exhibit 1310-7a. Left-turn Storage Guidelines-: Two-Lane, Unsignalized.

Storage requirements for critical left-turn movements at unsignalized intersections on 2-lane highways.

Intersection	Mov't	Analysis Period	Speed V (mph)	Left Turns in Advancing Volume (vph)	Advancing Volume V_A (vph)	Opposing Volume V_O (vph)	Total DHV	% Left Turns in DHV L	Storage Req'd (ft)
Site Access and NE 13th Street	WB LT	2026 Total Traffic-AM Peak	35	21	615	557	1,172	2%	100 ft
		2026 Total Traffic-PM Peak		24	515	614	1,129	2%	None

Source: WSDOT Design Guide, February 2019.

Exhibit 1310-8a Left-Turn Storage Length: Two-Lane, Unsignalized (40mph)

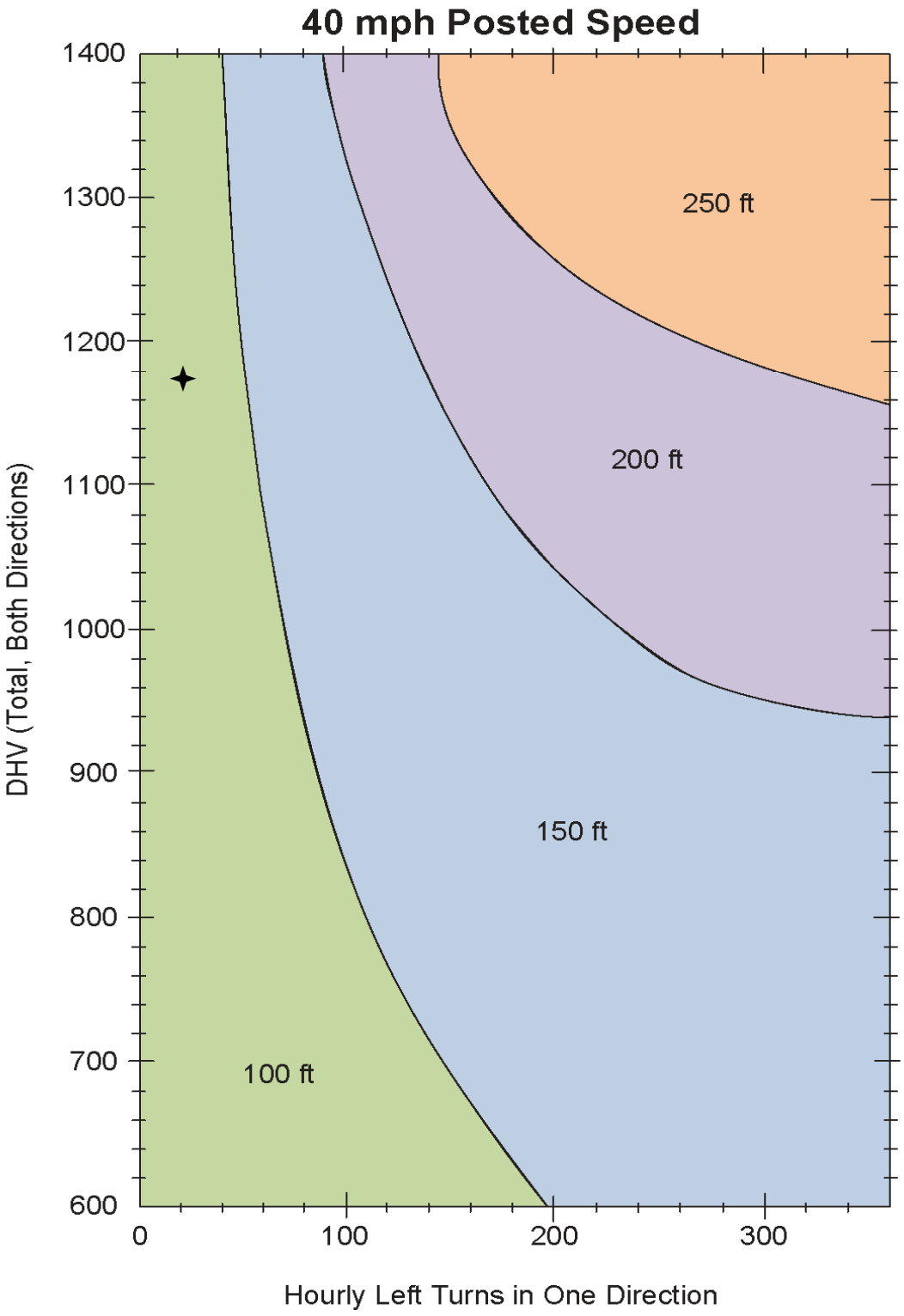
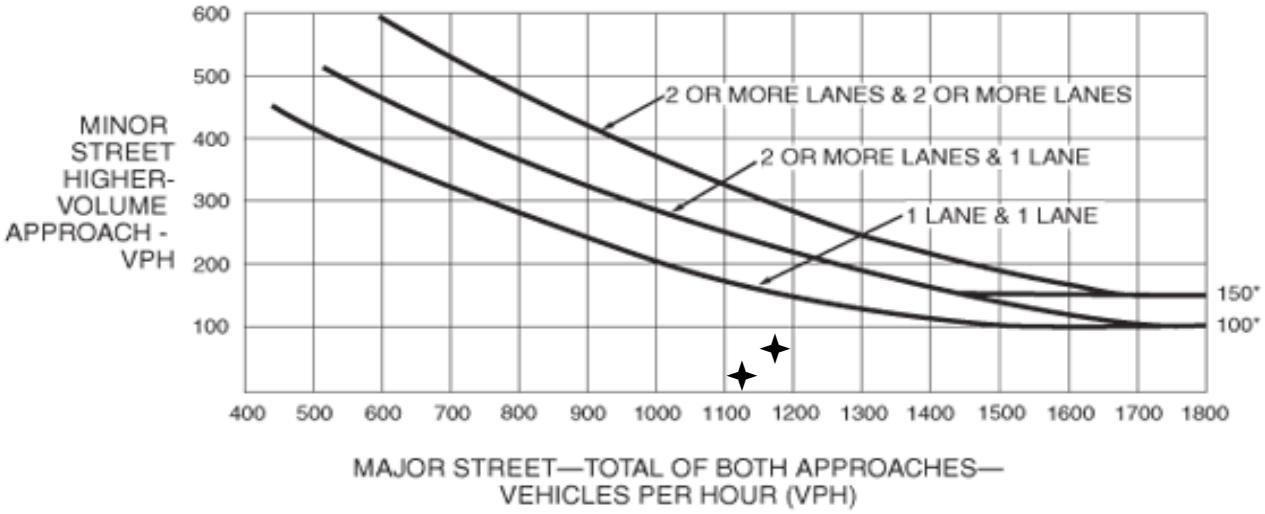


Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Table for Figure 4C-3

One lane and one lane		Two or more lanes and one lane		Two or more lanes and two or more lanes	
VPH on the major street (Total of both approaches)	VPH on the minor street (Higher volume approach)	VPH on the major street (Total of both approaches)	VPH on the minor street (Higher volume approach)	VPH on the major street (Total of both approaches)	VPH on the minor street (Higher volume approach)
1800	100	1800	100 or 150*	1800	150
1700	100	1700	100 or 150*	1700	150
1600	100	1600	120 or 150*	1600	170
1500	100	1500	145 or 150*	1500	180
1400	120	1400	155	1400	220
1300	130	1300	190	1300	250
1200	150	1200	220	1200	285
1100	175	1100	250	1100	340
1000	200	1000	285	1000	370
900	245	900	325	900	425
800	285	800	360	800	475
700	325	700	420	700	540
600	360	600	460	600	590
500	420	500	Not available	500	Not available

* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Peak hour volume warrant for signalization data.

Intersection	Analysis Period	Major Street Speed (mph)	Major Street		Minor Street High Volume Approach		Signal Warranted?
			Volume (vph)	Lanes (#)	Volume (vph)	Lanes (#)	
Site Access and NE 13th Street	2026 Total Traffic - AM Peak	35	1,172	1	70	1	No
	2026 Total Traffic - PM Peak		1,129		81		No

Source: *Manual on Uniform Traffic Control Devices (MUTCD)*, 2009 Edition.

OFFICER REPORTED CRASHES THAT OCCURRED *at* OR *in the vicinity of* MULTIPLE INTERSECTIONS IN THE CITIES OF CAMAS & VANCOUVER

01/01/2018 - Avail 2023 (04/04/23) *See 2nd tab below for road info*

Under 23 U.S. Code § 148 and 23 U.S. Code § 407, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

Indexed Primary Trafficway	BLOCK NUMBER	INTERSECTING TRAFFICWAY	DIST FROM REF POINT	MI or FT	COMP DIR FROM REF POINT	REFERENCE POINT NAME	REPORT NUMBER	DATE	# INJ	# FAT	# VEH	# PEDS	# BIKES	VEH 1 COMPASS DIR FROM	VEH 1 COMPASS DIR TO	VEH 2 COMPASS DIR FROM	VEH 2 COMPASS DIR TO
NE GOODWIN RD	7801	NW FRIBERG STRUNK ST				NE 13TH ST	EC42777	05/02/2022	0	0	1	0	0	East	West		
NE GOODWIN RD	7800		108	F	E	NE 13TH ST	E853679	10/20/2018	0	0	1	0	0	West	East		
NW FRIBERG STRUNK ST	0	NE 13TH ST					E914095	04/23/2019	0	0	1	0	0	South	Northwest		
NE 13TH ST	0	NE 192ND AVE					EA33917	05/09/2020	0	0	1	0	0	West	North		
NE 13TH ST	19409	NE 192ND AVE					EC40931	04/20/2022	1	0	2	0	0	East	West	e Stopped	e Stopped
NE 13TH ST	19200		75	F	E	NE 192ND AVE	E891662	02/09/2019	1	0	2	0	0	East	West	e Stopped	e Stopped
NE 13TH ST	19200		33	F	E	NE 192ND AVE	EC66129	07/18/2022	0	0	2	0	0	South	East	e Stopped	e Stopped
NE 192ND AVE	1190	NE 13TH ST					EC64739	07/14/2022	0	0	2	0	0	North	East	e Stopped	e Stopped
NE 192ND AVE	1168	NE 13TH ST					EB73778	09/24/2021	0	0	2	0	0	North	East	South	North
NE 192ND AVE	0	NE 13TH ST					E974878	10/18/2019	0	0	2	0	0	East	North	South	North
NE 192ND AVE	1200		181	F	S	NE 13TH ST	EC53185	06/06/2022	1	0	3	0	0	South	North	e Stopped	e Stopped
NE 192ND AVE	1200		50	F	S	NE 13TH ST	EC31583	03/24/2022	0	0	3	0	0	South	North	e Stopped	e Stopped
NW FRIBERG STRUNK ST	200		112	F	N	NW LAKE RD	E869653	12/06/2018	2	0	4	0	0	North	South	e Stopped	e Stopped
NW LAKE RD	9900	NW FRIBERG STRUNK ST					E774352	02/20/2018	0	0	2	0	0	East	East	West	East
SE 1ST ST	0	NW FRIBERG STRUNK ST					EA42305	06/22/2020	1	0	2	0	0	East	West	West	North
SE 1ST ST	20199	NW FRIBERG STRUNK ST					ED49006	04/04/2023	0	0	2	0	0	West	East	West	East
SE 1ST ST	0	NW FRIBERG STRUNK ST					E846435	10/08/2018	0	0	2	0	0	West	North	East	West

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Exhibit 10 APPEAL24-1001

Exhibit 1A. Trip Distribution for Corridor Intersections.

Corridor: Andresen Road	Limits: Mill Plain Boulevard to SR-500											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Mill Plain Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
E. 18th Street/N.E. 18th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 25th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fourth Plain Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
SR-500	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Corridor: Andresen Road	Limits: SR-500 to NE 78th Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
SR-500	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 40th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Vancouver Mall Drive	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 58th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Minnehaha/NE 63rd Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 78th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Corridor: Fourth Plain Boulevard	Limits: Mill Plain Boulevard to I-5											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Mill Plain Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fruit Valley Road/Kotobuki Way	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Kauffman Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Main Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
I-5 southbound off-/on-ramps	0%	----	0%	0%	0%	----	----	----	----	----	0%	0%
I-5 northbound off-/on-ramps	----	----	----	0%	0%	----	0%	0%	0%	----	0%	0%

Corridor: Fourth Plain Boulevard	Limits: I-5 to Andresen Road											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
I-5 northbound off-/on-ramps	----	----	----	0%	0%	----	0%	0%	0%	----	0%	0%
St. Johns Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fort Vancouver Way	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Grand Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Falk Road	0%	----	0%	0%	0%	----	----	----	----	----	0%	0%
Stapleton Road	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Andresen Road	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Exhibit 1A. Trip Distribution for Corridor Intersections. (continued)

Corridor: Fourth Plain Boulevard					Limits: Andresen Road to I-205							
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Andresen Road	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 86th Avenue	----	----	----	----	0%	0%	0%	----	0%	0%	0%	----
Thurston Way	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
I-205 SB on-ramp/Oak View Drive	----	----	----	0%	0%	0%	0%	0%	0%	0%	0%	0%
I-205 SB off-ramp/Van Mall Drive	0%	0%	0%	0%	0%	----	0%	0%	0%	----	0%	0%
I-205 NB on-ramp/NE 54th Street	0%	0%	0%	0%	0%	0%	----	----	----	0%	0%	0%

Corridor: Fourth Plain Boulevard (SR-500)					Limits: I-205 to NE 162nd Avenue							
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
I-205 NB on-ramp/NE 54th Street	0%	0%	0%	0%	0%	0%	----	----	----	0%	0%	0%
Covington Road/Gher Road	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 112th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 117th Avenue (SR 503/500)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 121st Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 137th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ward Road	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 162nd Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Corridor: Mill Plain Boulevard					Limits: Fourth Plain Boulevard to I-5							
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Fourth Plain Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Kauffman Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Main Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
I-5 southbound on-/off-ramps	0%	0%	0%	----	0%	0%	----	----	----	0%	0%	----
I-5 northbound on-/off-ramps	----	----	----	0%	0%	----	0%	0%	0%	----	0%	0%

Corridor: Mill Plain Boulevard					Limits: I-5 to Andresen Road							
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
I-5 northbound on-/off-ramps	----	----	----	0%	0%	----	0%	0%	0%	----	0%	0%
Fort Vancouver Way	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Grand Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
MacArthur Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Andresen Road	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Exhibit 1A. Trip Distribution for Corridor Intersections. (continued)

Corridor: Mill Plain Boulevard	Limits: Andresen Road to I-205											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Andresen Road	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Lieser Road	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 97th/98th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
I-205 southbound on-/off-ramps	0%	----	0%	0%	0%	----	----	----	----	0%	0%	----
I-205 northbound on-/off-ramps	0%	----	----	0%	0%	----	0%	----	----	----	0%	0%

Corridor: Mill Plain Boulevard	Limits: I-205 to NE 136th Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
I-205 northbound on-/off-ramps	0%	----	----	0%	0%	----	0%	----	----	----	0%	0%
Chkalov Drive	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE/SE 117th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE/SE 120th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
SE 123rd/NE 124th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
SE 126th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Park Plaza Dr/SE 131st Av	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE/SE 136th Avenue	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	5%	0%

Corridor: Mill Plain Boulevard	Limits: NE 136th Avenue to NE 164th Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE/SE 136th Avenue	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	5%	0%
SE 139th Avenue	----	----	----	----	5%	0%	0%	----	0%	0%	5%	----
Olympia Drive	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	5%	0%
Hearthwood Blvd/Park Crest Av	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	5%	0%
SE 148th Avenue	0%	----	0%	0%	5%	----	----	----	----	----	5%	0%
SE 155th Avenue	0%	----	0%	0%	5%	----	----	----	----	----	5%	0%
SE 157th Avenue	0%	----	0%	0%	5%	----	----	----	----	----	5%	0%
SE 160th Avenue	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	5%	0%
SE 164th Avenue	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	10%	0%

Corridor: Mill Plain Boulevard	Limits: NE 164th Avenue to NE 192nd Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
SE 164th Avenue	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	10%	0%
SE 168th Avenue	0%	10%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%
SE 172nd Av/Tech Center Dr	0%	10%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%
SE 177th Avenue	0%	10%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%
SE 192nd Avenue	10%	15%	0%	0%	0%	0%	0%	15%	0%	0%	0%	10%

Exhibit 1A. Trip Distribution for Corridor Intersections. (continued)

Corridor: NE 18th Street	Limits: NE 112th Avenue to NE 138th Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 112th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 125th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 138th Avenue	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	5%	0%

Corridor: NE 18th Street	Limits: NE 138th Avenue to NE 162nd Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 138th Avenue	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	5%	0%
NE 148th Court/Place	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	10%	0%
NE 155th Avenue	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	10%	0%
NE 162nd Avenue	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	10%	0%

Corridor: Burton Road/NE 28th Street	Limits: NE 18th Street to NE 112th Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 18th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 86th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 98th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 112th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Corridor: Burton Road/NE 28th Street	Limits: NE 112th Avenue and NE 138th Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 112th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 119th Avenue/Four Seasons	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 124th Avenue (South)	----	----	----	----	0%	0%	0%	----	0%	0%	0%	----
NE 124th Avenue (North)	0%	----	0%	0%	0%	----	----	----	----	----	0%	0%
NE 129th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 138th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Corridor: NE 28th Street	Limits: NE 138th Avenue to NE 162nd Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 136th/138th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 148th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 152nd Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 162nd Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Exhibit 1A. Trip Distribution for Corridor Intersections. (continued)

Corridor: Ft. Vancouver Way/St. Johns Boulevard	Limits: Mill Plain Boulevard to NE 63rd Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Mill Plain Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
McLoughlin Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fourth Plain Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
St. Johns Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
E 33rd Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
SR 500	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 44th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Minnehaha/NE 63rd Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Corridor: NE 112th Avenue (also Chkalov Drive)	Limits: Mill Plain Boulevard to Burton Road/NE 28th Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Mill Plain Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 9th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 18th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Burton Road/NE 28th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Corridor: NE 112th Avenue	Limits: Burton Road/NE 28th Street to NE 51st Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Burton Road/NE 28th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 49th Street	----	0%	0%	0%	----	0%	0%	0%	----	----	----	----
NE 51st Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Corridor: NE 136th/138th Avenue	Limits: Mill Plain Boulevard to NE 28th Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Mill Plain Boulevard	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	5%	0%
NE 4th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 18th Street	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	5%	0%
NE 28th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Corridor: NE 137th/138th Avenue	Limits: NE 28th Street to Fourth Plain Boulevard											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 28th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 39th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 49th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fourth Plain Road	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Exhibit 1A. Trip Distribution for Corridor Intersections. (continued)

Corridor: SE 164th Avenue	Limits: SR-14 to SE 1st Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
SR-14 eastbound ramps	----	0%	0%	----	----	----	0%	0%	----	0%	----	0%
SR-14 westbound ramps	0%	0%	----	0%	----	0%	----	0%	0%	----	----	----
Cascade Park Dr/SE 34th St	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Village Loop/SE 29th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
McGillivray Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Village Loop/SE 20th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
SE 15th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
SE 12th Court/Tech Center Drive	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Mill Plain Boulevard	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	10%	0%
SE 1st Street	0%	0%	0%	0%	15%	0%	0%	0%	0%	0%	15%	0%

Corridor: NE 162nd/SE 164th Avenue	Limits: SE 1st Street to Fourth Plain Road											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
SE 1st Street	0%	0%	0%	0%	15%	0%	0%	0%	0%	0%	15%	0%
NE 11th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 18th Street	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	10%	0%
NE 28th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 34th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 39th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Poplar Street/NE 45th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 65th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fourth Plain Road	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Corridor: NE/SE 192nd Avenue	Limits: SR-14 to NE 18th Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
SR-14 eastbound ramps	----	0%	15%	----	----	----	0%	0%	----	0%	----	0%
SR-14 westbound ramps	0%	15%	----	15%	----	0%	----	0%	0%	----	----	----
Brady Road	----	15%	0%	0%	----	0%	0%	15%	----	----	----	----
SE 34th Street/Pacific Rim Blvd	0%	15%	0%	0%	0%	0%	0%	15%	0%	0%	0%	0%
SE 31st Street	----	15%	0%	0%	----	0%	0%	15%	----	----	----	----
SE 20th Street	0%	15%	0%	0%	0%	0%	0%	15%	0%	0%	0%	0%
SE 15th Street	0%	15%	0%	0%	0%	0%	0%	15%	0%	0%	0%	0%
SE 12th Way	0%	15%	----	----	----	----	----	15%	0%	0%	----	0%
Westridge Boulevard	----	15%	0%	0%	----	0%	0%	15%	----	----	----	----
Mill Plain Boulevard	10%	15%	0%	0%	0%	0%	0%	15%	0%	0%	0%	10%
SE 1st Street	15%	25%	0%	0%	0%	0%	0%	25%	0%	0%	0%	15%
NE 6th Street	----	40%	0%	0%	----	0%	0%	40%	----	----	----	----
NE 9th Street	0%	40%	----	----	----	----	----	40%	0%	0%	----	0%
NE 11th Street	----	40%	0%	0%	----	0%	0%	40%	----	----	----	----
NE 13th Street	----	0%	30%	30%	----	40%	40%	0%	----	----	----	----
NE 18th Street	----	----	----	----	0%	0%	0%	----	30%	30%	0%	----

Exhibit 1B. Trip Assignment for Corridor Intersections.

Corridor: Andresen Road	Limits: Mill Plain Boulevard to SR-500											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Mill Plain Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
E. 18th Street/N.E. 18th Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 25th Street	0	0	0	0	0	0	0	0	0	0	0	0
Fourth Plain Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
SR-500	0	0	0	0	0	0	0	0	0	0	0	0

Corridor: Andresen Road	Limits: SR-500 to NE 78th Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
SR-500	0	0	0	0	0	0	0	0	0	0	0	0
NE 40th Street	0	0	0	0	0	0	0	0	0	0	0	0
Vancouver Mall Drive	0	0	0	0	0	0	0	0	0	0	0	0
NE 58th Street	0	0	0	0	0	0	0	0	0	0	0	0
Minnehaha/NE 63rd Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 78th Street	0	0	0	0	0	0	0	0	0	0	0	0

Corridor: Fourth Plain Boulevard	Limits: Mill Plain Boulevard to I-5											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Mill Plain Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
Fruit Valley Road/Kotobuki Way	0	0	0	0	0	0	0	0	0	0	0	0
Kauffman Avenue	0	0	0	0	0	0	0	0	0	0	0	0
Main Street	0	0	0	0	0	0	0	0	0	0	0	0
I-5 southbound off-/on-ramps	0	----	0	0	0	----	----	----	----	----	0	0
I-5 northbound off-/on-ramps	----	----	----	0	0	----	0	0	0	----	0	0

Corridor: Fourth Plain Boulevard	Limits: I-5 to Andresen Road											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
I-5 northbound off-/on-ramps	----	----	----	0	0	----	0	0	0	----	0	0
St. Johns Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
Fort Vancouver Way	0	0	0	0	0	0	0	0	0	0	0	0
Grand Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
Falk Road	0	----	0	0	0	----	----	----	----	----	0	0
Stapleton Road	0	0	0	0	0	0	0	0	0	0	0	0
Andresen Road	0	0	0	0	0	0	0	0	0	0	0	0

Exhibit 1B. Trip Assignment for Corridor Intersections. (continued)

Corridor: Fourth Plain Boulevard				Limits: Andresen Road to I-205								
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Andresen Road	0	0	0	0	0	0	0	0	0	0	0	0
NE 86th Avenue	----	----	----	----	0	0	0	----	0	0	0	----
Thurston Way	0	0	0	0	0	0	0	0	0	0	0	0
I-205 SB on-ramp/Oak View Drive	----	----	----	0	0	0	0	0	0	0	0	0
I-205 SB off-ramp/Van Mall Drive	0	0	0	0	0	----	0	0	0	----	0	0
I-205 NB on-ramp/NE 54th Street	0	0	0	0	0	0	----	----	----	0	0	0

Corridor: Fourth Plain Boulevard (SR-500)				Limits: I-205 to NE 162nd Avenue								
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
I-205 NB on-ramp/NE 54th Street	0	0	0	0	0	0	----	----	----	0	0	0
Covington Road/Gher Road	0	0	0	0	0	0	0	0	0	0	0	0
NE 112th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 117th Avenue (SR 503/500)	0	0	0	0	0	0	0	0	0	0	0	0
NE 121st Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 137th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
Ward Road/NE 147th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 162nd Avenue	0	0	0	0	0	0	0	0	0	0	0	0

Corridor: Mill Plain Boulevard				Limits: Fourth Plain Boulevard to I-5								
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Fourth Plain Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
Kauffman Avenue	0	0	0	0	0	0	0	0	0	0	0	0
Main Street	0	0	0	0	0	0	0	0	0	0	0	0
I-5 southbound on-/off-ramps	0	0	0	----	0	0	----	----	----	0	0	----
I-5 northbound on-/off-ramps	----	----	----	0	0	----	0	0	0	----	0	0

Corridor: Mill Plain Boulevard				Limits: I-5 to Andresen Road								
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
I-5 northbound on-/off-ramps	----	----	----	0	0	----	0	0	0	----	0	0
Fort Vancouver Way	0	0	0	0	0	0	0	0	0	0	0	0
Grand Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
MacArthur Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
Andresen Road	0	0	0	0	0	0	0	0	0	0	0	0

Exhibit 1B. Trip Assignment for Corridor Intersections. (continued)

Corridor: Mill Plain Boulevard	Limits: Andresen Road to I-205											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Andresen Road	0	0	0	0	0	0	0	0	0	0	0	0
Lieser Road	0	0	0	0	0	0	0	0	0	0	0	0
NE 97th/98th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
I-205 southbound on-/off-ramps	0	----	0	0	0	----	----	----	----	0	0	----
I-205 northbound on-/off-ramps	0	----	----	0	0	----	0	----	----	----	0	0

Corridor: Mill Plain Boulevard	Limits: I-205 to NE 136th Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
I-205 northbound on-/off-ramps	0	----	----	0	0	----	0	----	----	----	0	0
Chkalov Drive	0	0	0	0	0	0	0	0	0	0	0	0
NE/SE 117th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE/SE 120th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
SE 123rd/NE 124th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
SE 126th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
Park Plaza Dr/SE 131st Av	0	0	0	0	0	0	0	0	0	0	0	0
NE/SE 136th Avenue	0	0	0	0	2	0	0	0	0	0	2	0

Corridor: Mill Plain Boulevard	Limits: NE 136th Avenue to NE 164th Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE/SE 136th Avenue	0	0	0	0	2	0	0	0	0	0	2	0
SE 139th Avenue	----	----	----	----	2	0	0	----	0	0	2	----
Olympia Drive	0	0	0	0	2	0	0	0	0	0	2	0
Hearthwood Blvd/Park Crest Av	0	0	0	0	2	0	0	0	0	0	2	0
SE 148th Avenue	0	----	0	0	2	----	----	----	----	----	2	0
SE 155th Avenue	0	----	0	0	2	----	----	----	----	----	2	0
SE 157th Avenue	0	----	0	0	2	----	----	----	----	----	2	0
SE 160th Avenue	0	0	0	0	2	0	0	0	0	0	2	0
SE 164th Avenue	0	0	0	0	4	0	0	0	0	0	4	0

Corridor: Mill Plain Boulevard	Limits: NE 164th Avenue to NE 192nd Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
SE 164th Avenue	0	0	0	0	4	0	0	0	0	0	4	0
SE 168th Avenue	0	0	0	0	4	0	0	0	0	0	4	0
SE 172nd Av/Tech Center Dr	0	0	0	0	4	0	0	0	0	0	4	0
SE 177th Avenue	0	0	0	0	4	0	0	0	0	0	4	0
SE 192nd Avenue	4	6	0	0	0	0	0	7	0	0	0	4

Exhibit 1B. Trip Assignment for Corridor Intersections. (continued)

Corridor: NE 18th Street	Limits: NE 112th Avenue to NE 138th Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 112th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 125th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 138th Avenue	0	0	0	0	2	0	0	0	0	0	2	0

Corridor: NE 18th Street	Limits: NE 138th Avenue to NE 162nd Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 138th Avenue	0	0	0	0	2	0	0	0	0	0	2	0
NE 148th Court/Place	0	0	0	0	4	0	0	0	0	0	4	0
NE 155th Avenue	0	0	0	0	4	0	0	0	0	0	4	0
NE 162nd Avenue	0	0	0	0	4	0	0	0	0	0	4	0

Corridor: Burton Road/NE 28th Street	Limits: NE 18th Street to NE 112th Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 18th Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 86th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 98th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 112th Avenue	0	0	0	0	0	0	0	0	0	0	0	0

Corridor: Burton Road/NE 28th Street	Limits: NE 112th Avenue and NE 138th Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 112th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 119th Avenue/Four Seasons	0	0	0	0	0	0	0	0	0	0	0	0
NE 124th Avenue (South)	----	----	----	----	0	0	0	----	0	0	0	----
NE 124th Avenue (North)	0	----	0	0	0	----	----	----	----	----	0	0
NE 129th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 138th Avenue	0	0	0	0	0	0	0	0	0	0	0	0

Corridor: NE 28th Street	Limits: NE 138th Avenue to NE 162nd Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 136th/138th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 148th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 152nd Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 162nd Avenue	0	0	0	0	0	0	0	0	0	0	0	0

Exhibit 1B. Trip Assignment for Corridor Intersections. (continued)

Corridor: Ft. Vancouver Way/St. Johns Boulevard	Limits: Mill Plain Boulevard to NE 63rd Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Mill Plain Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
McLoughlin Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
Fourth Plain Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
St. Johns Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
E 33rd Street	0	0	0	0	0	0	0	0	0	0	0	0
SR 500	0	0	0	0	0	0	0	0	0	0	0	0
NE 44th Street	0	0	0	0	0	0	0	0	0	0	0	0
Minnehaha/NE 63rd Street	0	0	0	0	0	0	0	0	0	0	0	0

Corridor: NE 112th Avenue (also Chkalov Drive)	Limits: Mill Plain Boulevard to Burton Road/NE 28th Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Mill Plain Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
NE 9th Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 18th Street	0	0	0	0	0	0	0	0	0	0	0	0
Burton Road/NE 28th Street	0	0	0	0	0	0	0	0	0	0	0	0

Corridor: NE 112th Avenue	Limits: Burton Road/NE 28th Street to NE 51st Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Burton Road/NE 28th Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 49th Street	----	0	0	0	----	0	0	0	----	----	----	----
NE 51st Street	0	0	0	0	0	0	0	0	0	0	0	0

Corridor: NE 136th/138th Avenue	Limits: Mill Plain Boulevard to NE 28th Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Mill Plain Boulevard	0	0	0	0	2	0	0	0	0	0	2	0
NE 4th Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 18th Street	0	0	0	0	2	0	0	0	0	0	2	0
NE 28th Street	0	0	0	0	0	0	0	0	0	0	0	0

Corridor: NE 137th/138th Avenue	Limits: NE 28th Street to Fourth Plain Boulevard											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 28th Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 39th Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 49th Street	0	0	0	0	0	0	0	0	0	0	0	0
Fourth Plain Road	0	0	0	0	0	0	0	0	0	0	0	0

Exhibit 1B. Trip Assignment for Corridor Intersections. (continued)

Corridor: SE 164th Avenue	Limits: SR-14 to SE 1st Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
SR-14 eastbound ramps	----	0	0	----	----	----	0	0	----	0	---	0
SR-14 westbound ramps	0	0	----	0	---	0	----	0	0	----	----	----
Cascade Park Dr/SE 34th St	0	0	0	0	0	0	0	0	0	0	0	0
Village Loop/SE 29th Street	0	0	0	0	0	0	0	0	0	0	0	0
McGillivray Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
Village Loop/SE 20th Street	0	0	0	0	0	0	0	0	0	0	0	0
SE 15th Street	0	0	0	0	0	0	0	0	0	0	0	0
SE 12th Court/Tech Center Drive	0	0	0	0	0	0	0	0	0	0	0	0
Mill Plain Boulevard	0	0	0	0	4	0	0	0	0	0	4	0
SE 1st Street	0	0	0	0	6	0	0	0	0	0	6	0

Corridor: NE 162nd/SE 164th Avenue	Limits: SE 1st Street to Fourth Plain Road											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
SE 1st Street	0	0	0	0	6	0	0	0	0	0	6	0
NE 11th Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 18th Street	0	0	0	0	4	0	0	0	0	0	4	0
NE 28th Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 34th Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 39th Street	0	0	0	0	0	0	0	0	0	0	0	0
Poplar Street/NE 45th Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 65th Street	0	0	0	0	0	0	0	0	0	0	0	0
Fourth Plain Road	0	0	0	0	0	0	0	0	0	0	0	0

Corridor: NE/SE 192nd Avenue	Limits: SR-14 to NE 18th Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
SR-14 eastbound ramps	----	0	6	----	----	----	0	0	----	0	----	0
SR-14 westbound ramps	0	6	----	7	----	0	----	0	0	----	----	----
Brady Road	----	6	0	0	----	0	0	7	----	----	----	----
SE 34th Street/Pacific Rim Blvd	0	6	0	0	0	0	0	7	0	0	0	0
SE 31st Street	----	6	0	0	----	0	0	7	----	----	----	----
SE 20th Street	0	6	0	0	0	0	0	7	0	0	0	0
SE 15th Street	0	6	0	0	0	0	0	7	0	0	0	0
SE 12th Way	0	6	----	----	----	----	----	7	0	0	----	0
Westridge Boulevard	----	6	0	0	----	0	0	7	----	----	----	----
Mill Plain Boulevard	4	6	0	0	0	0	0	7	0	0	0	4
SE 1st Street	6	10	0	0	0	0	0	11	0	0	0	6
NE 6th Street	----	16	0	0	----	0	0	17	----	----	----	----
NE 9th Street	0	16	----	----	----	----	----	17	0	0	----	0
NE 11th Street	----	16	0	0	----	0	0	17	----	----	----	----
NE 13th Street	----	0	12	12	----	16	17	0	----	----	----	----
NE 18th Street	----	----	----	----	0	0	0	----	12	12	0	----

Table 6: 2035 PM Peak Hour Mitigated Intersection Level of Service

Roadway	Limits	Description	Benefits
Goodwin Road	192nd Avenue to Friberg Street	An improvement is needed to provide additional capacity between Vancouver and Camas. No specific project has been identified, but could include: • widening of 13th Street • constructing an 18th Street connection • or a combination of the two	• Modeling shows there will be a high travel demand in the future between Vancouver and northern Camas. Either two three-lane corridors or one five-lane corridor will be needed to connect 192nd and Goodwin/28th.
Goodwin Road	Friberg Street to Ingle Road	High travel demand along this corridor will require a five-lane section to provide capacity between Vancouver and northeastern Camas.	• Capacity improvement for key corridor • Safety improvement for key corridor
Goodwin Road	Ingle Road to 242nd Avenue	Traffic forecasts indicate a three-lane section, in combination with the proposed 242nd Extension/East-West Arterial Roadway will provide sufficient capacity in this corridor	• Lower cost than originally anticipated (3-lane vs. 5-lane section • Improved capacity and safety
Camas Meadows Drive	Payne to Lake Road	Extend Camas Meadows Drive from Payne Street to Lake Road along Larkspur alignment as a three-lane collector	• Improved capacity and safety • Improves operation of Lake/Parker intersection • Eliminates the need to widen 1st/Lake to accommodate eastbound through traffic
Ingle Street Extension (New East-West Connector)	Extend Ingle Street south and east between Goodwin/28th and 232nd Street	Provides an alternative route into north portion of Camas, eliminating the need for a five-lane section on Goodwin between Ingle and 242nd Avenue	• Provides additional capacity • Provides access to new development area

Exhibit 10 APPEAL24-1001

Roadway	Limits	Description	Benefits
23rd Street Realignment	283rd Avenue to 23rd Street	Construct connection between 23rd Street Extension terminus on 283rd Avenue south of 23rd Street to 23rd Street	• Provide a direct connection between the new 23rd Street Extension (at 283rd Avenue) and the existing 23rd Street, providing access east toward Washougal
Friberg Street	1st Street to 13th Street	Widen to 3 lanes	• Provide turn lane capacity for adjacent development and growth in through traffic
38th Avenue Extension	192nd to Bybee	Construct new 3 lane roadway	• Provide a direct connection to 192nd with adequate capacity rather than a residentially fronted two lane street
38th Avenue (West)	Bybee to Parker	Widen to 3 lanes	• Provide turn lane capacity for adjacent development and growth in through traffic
38th Avenue (East)	Parker to 650 feet west of Dahlia	Widen to 3 lanes	• Provide turn lanes and increased capacity for development
Bybee Realignment	199th Avenue to 20th Street	Realign to meet new signalized intersection	• Current alignment of Bybee would not be access spacing standards between the new signal planned west of 202nd Avenue

Exhibit 10 APPEAL24-1001

Notes:

- 13th Street/18th Street Corridor: It is recognized that additional capacity (five lanes total) is needed between NE 192nd Avenue (in Vancouver) and NE Goodwin Road (in Camas). The area between these two points is located within Clark County and, while there are multiple alignment options, there are issues related to each. The most desirable option, in terms of vehicular demand and connectivity, would be a new route along the 18th Street alignment. However, there are known environmental issues with this alignment which would make development of a project very difficult. Another alternative would be to widen NE 13th Street between 192nd Avenue and Goodwin Road, however, this alignment goes through a neighborhood, and would require acquisition of residential property to build a five-lane section. A third alternative would provide two three-lane roadways, however, both environmental and neighborhood issues would need to be addressed. This analysis assumes that some sort of connection is provided (to be determined at a later date), that would provide capacity for the equivalent of a five lane roadway.

- Previous analysis has indicated that a five-lane section would be required along the Goodwin/28th corridor. Current analysis indicates that with the planned improvements in the North UGA area, including a parallel collector route, a three-lane section will work between Ingle and 242nd Avenue. Right-of-way should be reserved for a five-lane section, as ultimately, it may be required.

- In the 2007 Framework Plan, it was recommended that Camas Meadows Drive be realigned to intersect with 1st Street/Lake Road at Larkspur/Parker Street. A key purpose of this realignment was to consolidate access and the need for additional traffic signals along 1st Street/Lake Road. Alternatives to this realignment were considered, such as improving the existing Payne Street alignment. However, the Larkspur alignment significantly improves operations at the Lake Road/1st Street/Parker intersection and preserves pedestrian access on all intersection approaches. Pedestrian access may have been at risk on the west approach to the intersection due to the high number of eastbound right turns/northbound left turns that can be reduced by extending Parker north to align with Camas Meadows Drive. Camas Meadows Drive will be improved between Payne Street and Lake Road as a three-lane collector.

- The previous TIF Update recommended improvements to Crown Road. However, current analysis reflects changing development patterns with an increased traffic shed to the north. Current modeling indicates that the current capacity of Crown Road should be adequate to accommodate future growth in Camas.

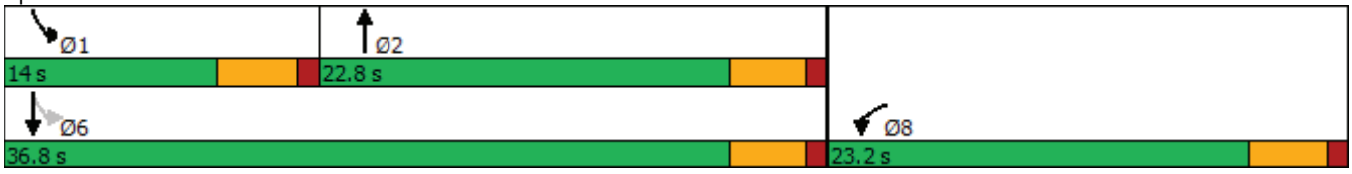
Lanes, Volumes, Timings
1: NE 192nd Avenue & NE 13th Street

2023 Adjusted Existing Traffic, AM Peak Hour
09/09/2023

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	186	240	175	74	362	270
Future Volume (vph)	186	240	175	74	362	270
Confl. Peds. (#/hr)	1	2		1	2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	4%	4%	7%	7%
Shared Lane Traffic (%)						
Turn Type	Prot		NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases					6	
Detector Phase	8		2		1	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	23.2		22.5		9.5	22.5
Total Split (s)	23.2		22.8		14.0	36.8
Total Split (%)	38.7%		38.0%		23.3%	61.3%
Yellow Time (s)	3.5		3.5		3.5	3.5
All-Red Time (s)	1.0		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.5		4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		Max		None	Max
Act Effct Green (s)	16.5		18.5		32.4	32.4
Actuated g/C Ratio	0.28		0.32		0.56	0.56
v/c Ratio	0.86		0.48		0.72	0.30
Control Delay	32.1		17.7		17.8	8.4
Queue Delay	0.0		0.0		0.0	0.0
Total Delay	32.1		17.7		17.8	8.4
LOS	C		B		B	A
Approach Delay	32.1		17.7			13.8
Approach LOS	C		B			B

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 57.9	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 20.5	Intersection LOS: C
Intersection Capacity Utilization 70.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: NE 192nd Avenue & NE 13th Street



HCM 6th Signalized Intersection Summary
1: NE 192nd Avenue & NE 13th Street

2023 Adjusted Existing Traffic, AM Peak Hour
09/09/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	186	240	175	74	362	270
Future Volume (veh/h)	186	240	175	74	362	270
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1841	1841	1796	1796
Adj Flow Rate, veh/h	207	267	194	82	402	300
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	4	4	7	7
Cap, veh/h	225	290	375	159	578	969
Arrive On Green	0.31	0.31	0.31	0.31	0.16	0.54
Sat Flow, veh/h	724	934	1227	519	1711	1796
Grp Volume(v), veh/h	475	0	0	276	402	300
Grp Sat Flow(s),veh/h/ln	1662	0	0	1746	1711	1796
Q Serve(g_s), s	16.5	0.0	0.0	7.8	9.2	5.5
Cycle Q Clear(g_c), s	16.5	0.0	0.0	7.8	9.2	5.5
Prop In Lane	0.44	0.56		0.30	1.00	
Lane Grp Cap(c), veh/h	515	0	0	534	578	969
V/C Ratio(X)	0.92	0.00	0.00	0.52	0.70	0.31
Avail Cap(c_a), veh/h	519	0	0	534	578	969
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.9	0.0	0.0	17.1	11.2	7.6
Incr Delay (d2), s/veh	21.9	0.0	0.0	3.5	3.6	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	0.0	0.0	3.2	3.2	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	41.9	0.0	0.0	20.7	14.8	8.4
LnGrp LOS	D	A	A	C	B	A
Approach Vol, veh/h	475		276			702
Approach Delay, s/veh	41.9		20.7			12.1
Approach LOS	D		C			B

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	14.0	22.8			36.8	23.1
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	9.5	18.3			32.3	18.7
Max Q Clear Time (g_c+I1), s	11.2	9.8			7.5	18.5
Green Ext Time (p_c), s	0.0	0.9			1.6	0.0

Intersection Summary	
HCM 6th Ctrl Delay	23.5
HCM 6th LOS	C

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	443	0	0	431	1	0
Future Volume (vph)	443	0	0	431	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	2%	2%	2%	2%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization	33.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	443	0	0	431	1	0
Future Vol, veh/h	443	0	0	431	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	20	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	5	2	2	2	2
Mvmt Flow	492	0	0	479	1	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	492	0	971	492
Stage 1	-	-	-	-	492	-
Stage 2	-	-	-	-	479	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1071	-	280	577
Stage 1	-	-	-	-	615	-
Stage 2	-	-	-	-	623	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1071	-	280	577
Mov Cap-2 Maneuver	-	-	-	-	280	-
Stage 1	-	-	-	-	615	-
Stage 2	-	-	-	-	623	-

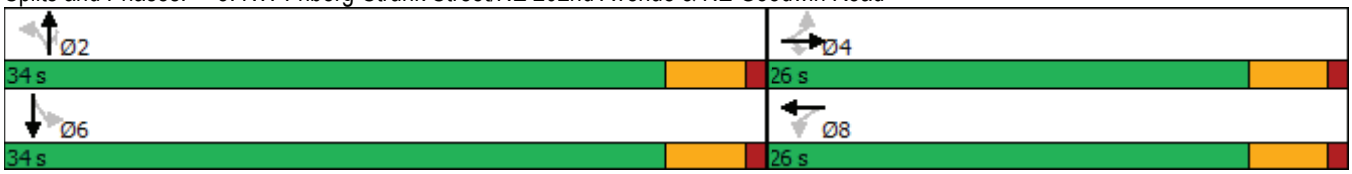
Approach	EB	WB	NB
HCM Control Delay, s	0	0	17.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	280	-	-	1071	-
HCM Lane V/C Ratio	0.004	-	-	-	-
HCM Control Delay (s)	17.9	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

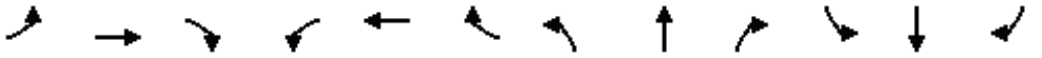
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	134	308	101	289	5	139	4	66	2	10	3
Future Volume (vph)	1	134	308	101	289	5	139	4	66	2	10	3
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	3%	3%	3%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	25.2	25.2	25.2	25.5	25.5		33.2	33.2	33.2	33.2	33.2	
Total Split (s)	26.0	26.0	26.0	26.0	26.0		34.0	34.0	34.0	34.0	34.0	
Total Split (%)	43.3%	43.3%	43.3%	43.3%	43.3%		56.7%	56.7%	56.7%	56.7%	56.7%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		4.5	4.5	4.5	4.5			4.5	4.5		4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)		15.1	15.1	15.1	15.1			29.7	29.7		29.7	
Actuated g/C Ratio		0.28	0.28	0.28	0.28			0.55	0.55		0.55	
v/c Ratio		0.31	0.52	0.35	0.67			0.22	0.09		0.02	
Control Delay		16.5	5.0	18.0	23.5			8.4	2.7		6.5	
Queue Delay		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Delay		16.5	5.0	18.0	23.5			8.4	2.7		6.5	
LOS		B	A	B	C			A	A		A	
Approach Delay		8.5			22.1			6.6			6.5	
Approach LOS		A			C			A			A	

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 53.8	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 13.2	Intersection LOS: B
Intersection Capacity Utilization 50.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road



HCM 6th Signalized Intersection Summary 2023 Adjusted Existing Traffic, AM Peak Hour
3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road 09/09/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	134	308	101	289	5	139	4	66	2	10	3
Future Volume (veh/h)	1	134	308	101	289	5	139	4	66	2	10	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1870	1870	1870	1856	1856	1856	1900	1900	1900
Adj Flow Rate, veh/h	1	158	362	119	340	6	164	5	78	2	12	4
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	5	5	5	2	2	2	3	3	3	0	0	0
Cap, veh/h	68	515	437	323	517	9	877	25	865	134	704	218
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.55	0.55	0.55	0.55	0.55	0.55
Sat Flow, veh/h	2	1822	1547	882	1832	32	1355	45	1572	107	1280	396
Grp Volume(v), veh/h	159	0	362	119	0	346	169	0	78	18	0	0
Grp Sat Flow(s),veh/h/ln	1824	0	1547	882	0	1865	1400	0	1572	1783	0	0
Q Serve(g_s), s	0.0	0.0	11.8	6.6	0.0	8.8	3.0	0.0	1.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.7	0.0	11.8	10.3	0.0	8.8	3.2	0.0	1.3	0.2	0.0	0.0
Prop In Lane	0.01		1.00	1.00		0.02	0.97		1.00	0.11		0.22
Lane Grp Cap(c), veh/h	583	0	437	323	0	527	902	0	865	1055	0	0
V/C Ratio(X)	0.27	0.00	0.83	0.37	0.00	0.66	0.19	0.00	0.09	0.02	0.00	0.00
Avail Cap(c_a), veh/h	798	0	620	427	0	747	902	0	865	1055	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	15.1	0.0	18.0	19.2	0.0	17.0	6.2	0.0	5.7	5.5	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	6.4	0.7	0.0	1.4	0.5	0.0	0.2	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	4.4	1.2	0.0	3.4	0.8	0.0	0.3	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.4	0.0	24.4	19.9	0.0	18.4	6.6	0.0	5.9	5.5	0.0	0.0
LnGrp LOS	B	A	C	B	A	B	A	A	A	A	A	A
Approach Vol, veh/h		521			465			247			18	
Approach Delay, s/veh		21.7			18.7			6.4			5.5	
Approach LOS		C			B			A			A	

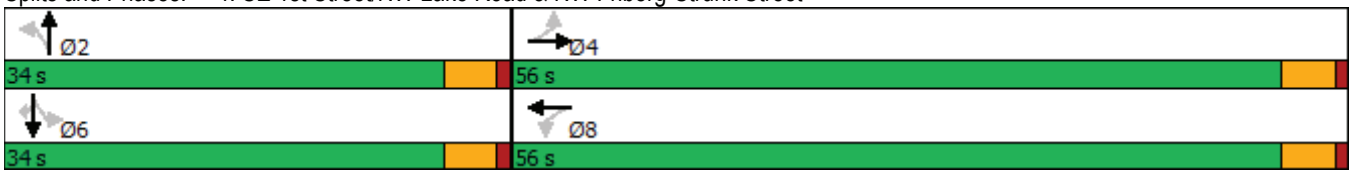
Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.0	19.7	34.0	19.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	29.5	21.5	29.5	21.5
Max Q Clear Time (g_c+I1), s	5.2	13.8	2.2	12.3
Green Ext Time (p_c), s	1.1	1.4	0.0	1.8

Intersection Summary	
HCM 6th Ctrl Delay	17.3
HCM 6th LOS	B

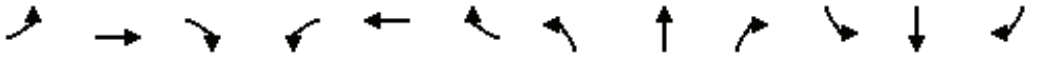
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	345	247	0	0	267	163	0	0	0	131	0	185
Future Volume (vph)	345	247	0	0	267	163	0	0	0	131	0	185
Confl. Peds. (#/hr)	9		2	1		8	2		1	8		9
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	0%	0%	0%	3%	3%	3%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA					Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		25.5	25.5		33.2	33.2		33.2	33.2	33.2
Total Split (s)	56.0	56.0		56.0	56.0		34.0	34.0		34.0	34.0	34.0
Total Split (%)	62.2%	62.2%		62.2%	62.2%		37.8%	37.8%		37.8%	37.8%	37.8%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	Max
Act Effct Green (s)	51.5	51.5			51.5						29.5	29.5
Actuated g/C Ratio	0.57	0.57			0.57						0.33	0.33
v/c Ratio	1.03	0.16			0.28						0.37	0.36
Control Delay	72.7	9.3			6.2						26.2	4.8
Queue Delay	0.0	0.0			0.0						0.0	0.0
Total Delay	72.7	9.3			6.2						26.2	4.8
LOS	E	A			A						C	A
Approach Delay		46.3			6.2						13.7	
Approach LOS		D			A						B	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.03	
Intersection Signal Delay: 25.7	Intersection LOS: C
Intersection Capacity Utilization 68.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street



HCM 6th Signalized Intersection Summary 2023 Adjusted Existing Traffic, AM Peak Hour
4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street 09/09/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	345	247	0	0	267	163	0	0	0	131	0	185
Future Volume (veh/h)	345	247	0	0	267	163	0	0	0	131	0	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1900	1900	1900	1856	1856	1856
Adj Flow Rate, veh/h	448	321	0	0	347	212	0	0	0	170	0	240
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Percent Heavy Veh, %	3	3	3	1	1	1	0	0	0	3	3	3
Cap, veh/h	491	2017	0	80	1229	736	0	623	0	540	0	511
Arrive On Green	0.57	0.57	0.00	0.00	0.57	0.57	0.00	0.00	0.00	0.33	0.00	0.33
Sat Flow, veh/h	842	3618	0	1067	2147	1286	0	1900	0	1404	0	1560
Grp Volume(v), veh/h	448	321	0	0	288	271	0	0	0	170	0	240
Grp Sat Flow(s),veh/h/ln	842	1763	0	1067	1791	1643	0	1900	0	1404	0	1560
Q Serve(g_s), s	43.9	3.9	0.0	0.0	7.4	7.6	0.0	0.0	0.0	8.3	0.0	11.0
Cycle Q Clear(g_c), s	51.5	3.9	0.0	0.0	7.4	7.6	0.0	0.0	0.0	8.3	0.0	11.0
Prop In Lane	1.00		0.00	1.00		0.78	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	491	2017	0	80	1025	940	0	623	0	540	0	511
V/C Ratio(X)	0.91	0.16	0.00	0.00	0.28	0.29	0.00	0.00	0.00	0.31	0.00	0.47
Avail Cap(c_a), veh/h	491	2017	0	80	1025	940	0	623	0	540	0	511
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.9	9.1	0.0	0.0	9.8	9.9	0.0	0.0	0.0	23.1	0.0	24.0
Incr Delay (d2), s/veh	21.4	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	1.5	0.0	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.0	1.3	0.0	0.0	2.6	2.4	0.0	0.0	0.0	2.8	0.0	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.3	9.1	0.0	0.0	10.0	10.0	0.0	0.0	0.0	24.7	0.0	27.1
LnGrp LOS	D	A	A	A	A	B	A	A	A	C	A	C
Approach Vol, veh/h		769			559			0			410	
Approach Delay, s/veh		30.8			10.0			0.0			26.1	
Approach LOS		C			A						C	

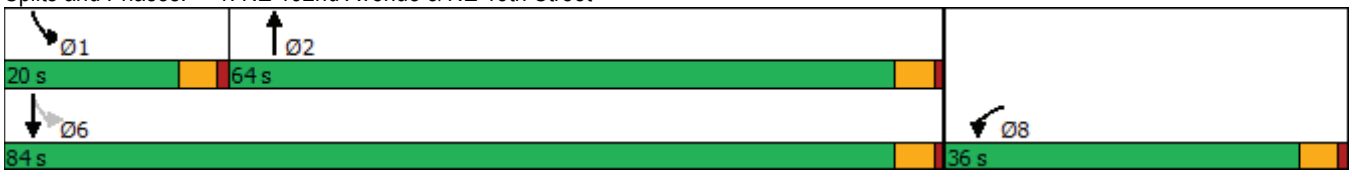
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		34.0		56.0		34.0		56.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		29.5		51.5		29.5		51.5				
Max Q Clear Time (g_c+I1), s		0.0		53.5		13.0		9.6				
Green Ext Time (p_c), s		0.0		0.0		1.5		3.6				

Intersection Summary												
HCM 6th Ctrl Delay			23.0									
HCM 6th LOS			C									

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	141	249	540	183	228	409
Future Volume (vph)	141	249	540	183	228	409
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)						
Turn Type	Prot		NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases					6	
Detector Phase	8		2		1	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	23.2		22.5		9.5	22.5
Total Split (s)	36.0		64.0		20.0	84.0
Total Split (%)	30.0%		53.3%		16.7%	70.0%
Yellow Time (s)	3.5		3.5		3.5	3.5
All-Red Time (s)	1.0		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.5		4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		Max		None	Max
Act Effct Green (s)	28.9		61.4		79.6	79.6
Actuated g/C Ratio	0.25		0.52		0.68	0.68
v/c Ratio	0.92		0.84		0.77	0.36
Control Delay	62.7		34.0		33.6	9.4
Queue Delay	0.0		0.0		0.0	0.0
Total Delay	62.7		34.0		33.6	9.4
LOS	E		C		C	A
Approach Delay	62.7		34.0			18.1
Approach LOS	E		C			B

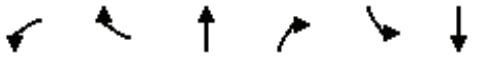
Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 117.5	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 34.6	Intersection LOS: C
Intersection Capacity Utilization 86.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: NE 192nd Avenue & NE 13th Street



HCM 6th Signalized Intersection Summary
1: NE 192nd Avenue & NE 13th Street

2023 Adjusted Existing Traffic, PM Peak Hour
09/09/2023



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	141	249	540	183	228	409
Future Volume (veh/h)	141	249	540	183	228	409
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	157	277	600	203	253	454
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	158	278	736	249	326	1249
Arrive On Green	0.26	0.26	0.55	0.55	0.08	0.66
Sat Flow, veh/h	601	1060	1347	456	1795	1885
Grp Volume(v), veh/h	435	0	0	803	253	454
Grp Sat Flow(s),veh/h/ln	1664	0	0	1803	1795	1885
Q Serve(g_s), s	31.3	0.0	0.0	43.7	7.1	12.8
Cycle Q Clear(g_c), s	31.3	0.0	0.0	43.7	7.1	12.8
Prop In Lane	0.36	0.64		0.25	1.00	
Lane Grp Cap(c), veh/h	437	0	0	985	326	1249
V/C Ratio(X)	1.00	0.00	0.00	0.82	0.78	0.36
Avail Cap(c_a), veh/h	437	0	0	985	416	1249
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.2	0.0	0.0	22.3	22.6	9.0
Incr Delay (d2), s/veh	41.9	0.0	0.0	7.4	6.9	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.7	0.0	0.0	19.1	4.4	5.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	86.0	0.0	0.0	29.7	29.5	9.8
LnGrp LOS	F	A	A	C	C	A
Approach Vol, veh/h	435		803			707
Approach Delay, s/veh	86.0		29.7			16.9
Approach LOS	F		C			B

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	13.9	70.1			84.0	36.0
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	15.5	59.5			79.5	31.5
Max Q Clear Time (g_c+I1), s	9.1	45.7			14.8	33.3
Green Ext Time (p_c), s	0.4	4.8			2.9	0.0

Intersection Summary	
HCM 6th Ctrl Delay	37.6
HCM 6th LOS	D

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	390	1	0	383	0	0
Future Volume (vph)	390	1	0	383	0	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	1%	1%	2%	2%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization	30.2%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	390	1	0	383	0	0
Future Vol, veh/h	390	1	0	383	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	20	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	1	1	2	2
Mvmt Flow	433	1	0	426	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	434	0	859	433
Stage 1	-	-	-	-	433	-
Stage 2	-	-	-	-	426	-
Critical Hdwy	-	-	4.11	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.209	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1131	-	327	623
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	659	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1131	-	327	623
Mov Cap-2 Maneuver	-	-	-	-	327	-
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	659	-

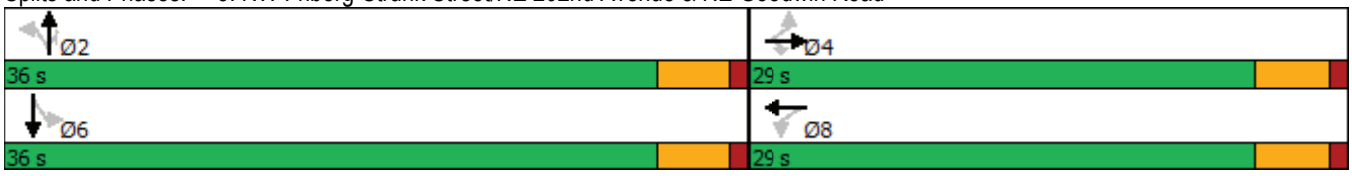
Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1131	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

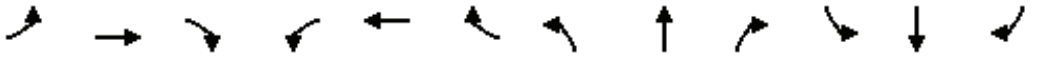
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	280	101	109	265	2	115	12	227	0	6	3
Future Volume (vph)	9	280	101	109	265	2	115	12	227	0	6	3
Confl. Peds. (#/hr)	5		5	7		7	5		7	7		5
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm		NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	25.2	25.2	25.2	25.5	25.5		33.2	33.2	33.2	33.2	33.2	
Total Split (s)	29.0	29.0	29.0	29.0	29.0		36.0	36.0	36.0	36.0	36.0	
Total Split (%)	44.6%	44.6%	44.6%	44.6%	44.6%		55.4%	55.4%	55.4%	55.4%	55.4%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		4.5	4.5	4.5	4.5			4.5	4.5		4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)		15.1	15.1	15.1	15.1			31.7	31.7		31.7	
Actuated g/C Ratio		0.27	0.27	0.27	0.27			0.57	0.57		0.57	
v/c Ratio		0.64	0.22	0.61	0.59			0.17	0.26		0.01	
Control Delay		24.0	4.8	31.3	22.4			7.8	2.1		6.3	
Queue Delay		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Delay		24.0	4.8	31.3	22.4			7.8	2.1		6.3	
LOS		C	A	C	C			A	A		A	
Approach Delay		19.0			25.0			4.2			6.3	
Approach LOS		B			C			A			A	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 55.9	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 16.3	Intersection LOS: B
Intersection Capacity Utilization 61.5%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road



HCM 6th Signalized Intersection Summary 2023 Adjusted Existing Traffic, PM Peak Hour
3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road 09/09/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	280	101	109	265	2	115	12	227	0	6	3
Future Volume (veh/h)	9	280	101	109	265	2	115	12	227	0	6	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1885	1885	1885	1885	1885	1885	1900	1900	1900
Adj Flow Rate, veh/h	10	315	113	122	298	2	129	13	255	0	7	3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	0	0	0
Cap, veh/h	68	591	506	291	592	4	807	76	844	0	669	287
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.53	0.53	0.53	0.00	0.53	0.53
Sat Flow, veh/h	18	1868	1597	964	1870	13	1300	143	1587	0	1259	540
Grp Volume(v), veh/h	325	0	113	122	0	300	142	0	255	0	0	10
Grp Sat Flow(s),veh/h/ln	1886	0	1597	964	0	1883	1443	0	1587	0	0	1799
Q Serve(g_s), s	0.0	0.0	3.1	7.1	0.0	7.7	2.8	0.0	5.3	0.0	0.0	0.2
Cycle Q Clear(g_c), s	8.4	0.0	3.1	15.4	0.0	7.7	3.0	0.0	5.3	0.0	0.0	0.2
Prop In Lane	0.03		1.00	1.00		0.01	0.91		1.00	0.00		0.30
Lane Grp Cap(c), veh/h	660	0	506	291	0	596	883	0	844	0	0	956
V/C Ratio(X)	0.49	0.00	0.22	0.42	0.00	0.50	0.16	0.00	0.30	0.00	0.00	0.01
Avail Cap(c_a), veh/h	840	0	660	384	0	778	883	0	844	0	0	956
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	16.7	0.0	14.9	23.1	0.0	16.5	7.2	0.0	7.7	0.0	0.0	6.5
Incr Delay (d2), s/veh	0.6	0.0	0.2	1.0	0.0	0.7	0.4	0.0	0.9	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	1.0	1.5	0.0	3.0	0.8	0.0	1.5	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.3	0.0	15.1	24.0	0.0	17.1	7.6	0.0	8.7	0.0	0.0	6.6
LnGrp LOS	B	A	B	C	A	B	A	A	A	A	A	A
Approach Vol, veh/h		438			422			397			10	
Approach Delay, s/veh		16.7			19.1			8.3			6.6	
Approach LOS		B			B			A			A	

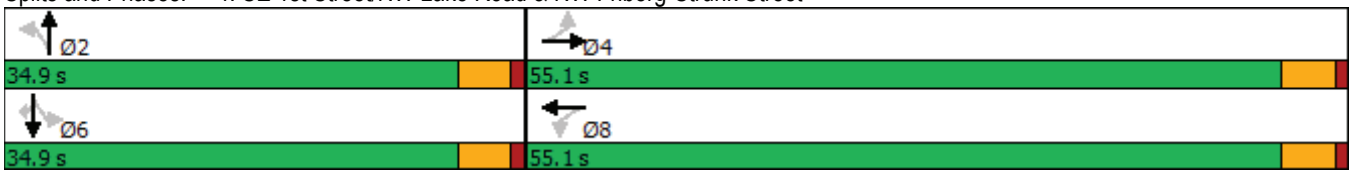
Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	36.0	23.3	36.0	23.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	31.5	24.5	31.5	24.5
Max Q Clear Time (g_c+I1), s	7.3	10.4	2.2	17.4
Green Ext Time (p_c), s	1.6	1.9	0.0	1.3

Intersection Summary	
HCM 6th Ctrl Delay	14.8
HCM 6th LOS	B

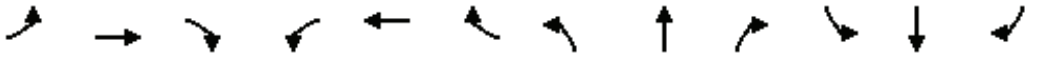
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	250	567	2	0	402	116	2	0	0	101	0	141
Future Volume (vph)	250	567	2	0	402	116	2	0	0	101	0	141
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		25.5	25.5		33.2	33.2		33.2	33.2	33.2
Total Split (s)	55.1	55.1		55.1	55.1		34.9	34.9		34.9	34.9	34.9
Total Split (%)	61.2%	61.2%		61.2%	61.2%		38.8%	38.8%		38.8%	38.8%	38.8%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	Max
Act Effct Green (s)	30.1	30.1			30.1			31.3			31.3	31.3
Actuated g/C Ratio	0.43	0.43			0.43			0.44			0.44	0.44
v/c Ratio	0.84	0.40			0.37			0.00			0.17	0.19
Control Delay	40.8	13.8			11.7			17.5			17.2	4.3
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	40.8	13.8			11.7			17.5			17.2	4.3
LOS	D	B			B			B			B	A
Approach Delay		22.0			11.7			17.5			9.7	
Approach LOS		C			B			B			A	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 70.7	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 16.7	Intersection LOS: B
Intersection Capacity Utilization 45.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street



HCM 6th Signalized Intersection Summary 2023 Adjusted Existing Traffic, PM Peak Hour
4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street 09/09/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	567	2	0	402	116	2	0	0	101	0	141
Future Volume (veh/h)	250	567	2	0	402	116	2	0	0	101	0	141
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	269	610	2	0	432	125	2	0	0	109	0	152
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	422	1751	6	96	1313	377	557	0	0	695	0	653
Arrive On Green	0.47	0.47	0.47	0.00	0.47	0.47	0.41	0.00	0.00	0.41	0.00	0.41
Sat Flow, veh/h	866	3691	12	823	2768	794	1137	0	0	1476	0	1610
Grp Volume(v), veh/h	269	298	314	0	280	277	2	0	0	109	0	152
Grp Sat Flow(s),veh/h/ln	866	1805	1898	823	1805	1757	1137	0	0	1476	0	1610
Q Serve(g_s), s	21.1	7.8	7.8	0.0	7.2	7.4	0.1	0.0	0.0	0.0	0.0	4.6
Cycle Q Clear(g_c), s	28.5	7.8	7.8	0.0	7.2	7.4	2.9	0.0	0.0	2.9	0.0	4.6
Prop In Lane	1.00		0.01	1.00		0.45	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	422	856	900	96	856	833	557	0	0	695	0	653
V/C Ratio(X)	0.64	0.35	0.35	0.00	0.33	0.33	0.00	0.00	0.00	0.16	0.00	0.23
Avail Cap(c_a), veh/h	595	1218	1281	261	1218	1186	557	0	0	695	0	653
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.2	12.4	12.4	0.0	12.3	12.3	15.0	0.0	0.0	14.1	0.0	14.6
Incr Delay (d2), s/veh	1.6	0.2	0.2	0.0	0.2	0.2	0.0	0.0	0.0	0.5	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	2.8	2.9	0.0	2.6	2.5	0.0	0.0	0.0	1.1	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.8	12.6	12.6	0.0	12.5	12.5	15.0	0.0	0.0	14.6	0.0	15.5
LnGrp LOS	C	B	B	A	B	B	B	A	A	B	A	B
Approach Vol, veh/h		881			557			2			261	
Approach Delay, s/veh		15.7			12.5			15.0			15.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.9	40.1	34.9	40.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	30.4	50.6	30.4	50.6
Max Q Clear Time (g_c+I1), s	4.9	30.5	6.6	9.4
Green Ext Time (p_c), s	0.0	5.1	1.0	3.5

Intersection Summary	
HCM 6th Ctrl Delay	14.6
HCM 6th LOS	B

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	302	297	186	107	403	286
Future Volume (vph)	302	297	186	107	403	286
Confl. Peds. (#/hr)	1	2		1	2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	4%	4%	7%	7%
Shared Lane Traffic (%)						
Turn Type	Prot		NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases					6	
Detector Phase	8		2		1	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	23.2		22.5		9.5	22.5
Total Split (s)	40.0		25.0		25.0	50.0
Total Split (%)	44.4%		27.8%		27.8%	55.6%
Yellow Time (s)	3.5		3.5		3.5	3.5
All-Red Time (s)	1.0		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.5		4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		Max		None	Max
Act Effct Green (s)	34.6		21.3		45.5	45.5
Actuated g/C Ratio	0.39		0.24		0.51	0.51
v/c Ratio	0.97		0.75		0.91	0.35
Control Delay	52.7		41.8		42.1	14.6
Queue Delay	0.0		0.0		0.0	0.0
Total Delay	52.7		41.8		42.1	14.6
LOS	D		D		D	B
Approach Delay	52.7		41.8			30.7
Approach LOS	D		D			C

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 89.1	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 41.1	Intersection LOS: D
Intersection Capacity Utilization 85.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: NE 192nd Avenue & NE 13th Street

HCM 6th Signalized Intersection Summary
1: NE 192nd Avenue & NE 13th Street

2026 Background Traffic, AM Peak Hour
09/10/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	302	297	186	107	403	286
Future Volume (veh/h)	302	297	186	107	403	286
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1841	1841	1796	1796
Adj Flow Rate, veh/h	336	330	207	119	448	318
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	4	4	7	7
Cap, veh/h	333	327	268	154	510	908
Arrive On Green	0.39	0.39	0.24	0.24	0.21	0.51
Sat Flow, veh/h	844	829	1096	630	1711	1796
Grp Volume(v), veh/h	667	0	0	326	448	318
Grp Sat Flow(s),veh/h/ln	1676	0	0	1726	1711	1796
Q Serve(g_s), s	35.5	0.0	0.0	15.8	16.7	9.6
Cycle Q Clear(g_c), s	35.5	0.0	0.0	15.8	16.7	9.6
Prop In Lane	0.50	0.49		0.37	1.00	
Lane Grp Cap(c), veh/h	661	0	0	422	510	908
V/C Ratio(X)	1.01	0.00	0.00	0.77	0.88	0.35
Avail Cap(c_a), veh/h	661	0	0	422	539	908
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.3	0.0	0.0	31.7	19.4	13.4
Incr Delay (d2), s/veh	37.2	0.0	0.0	12.8	14.7	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	20.0	0.0	0.0	7.8	8.0	3.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	64.4	0.0	0.0	44.5	34.0	14.4
LnGrp LOS	F	A	A	D	C	B
Approach Vol, veh/h	667		326			766
Approach Delay, s/veh	64.4		44.5			25.9
Approach LOS	E		D			C

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	23.5	26.5			50.0	40.0
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	20.5	20.5			45.5	35.5
Max Q Clear Time (g_c+I1), s	18.7	17.8			11.6	37.5
Green Ext Time (p_c), s	0.3	0.5			1.9	0.0

Intersection Summary	
HCM 6th Ctrl Delay	44.0
HCM 6th LOS	D

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	518	0	0	606	1	0
Future Volume (vph)	518	0	0	606	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	2%	2%	2%	2%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	518	0	0	606	1	0
Future Vol, veh/h	518	0	0	606	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	20	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	5	2	2	2	2
Mvmt Flow	576	0	0	673	1	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	576	0	1249	576
Stage 1	-	-	-	-	576	-
Stage 2	-	-	-	-	673	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	997	-	191	517
Stage 1	-	-	-	-	562	-
Stage 2	-	-	-	-	507	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	997	-	191	517
Mov Cap-2 Maneuver	-	-	-	-	191	-
Stage 1	-	-	-	-	562	-
Stage 2	-	-	-	-	507	-

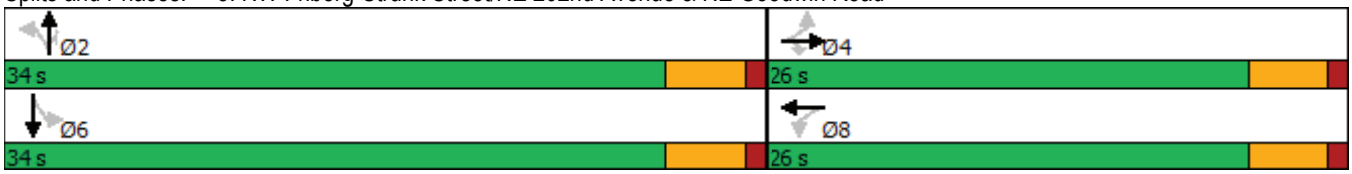
Approach	EB	WB	NB
HCM Control Delay, s	0	0	24
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	191	-	-	997	-
HCM Lane V/C Ratio	0.006	-	-	-	-
HCM Control Delay (s)	24	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	187	329	171	446	5	156	4	93	2	11	3
Future Volume (vph)	1	187	329	171	446	5	156	4	93	2	11	3
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	3%	3%	3%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	25.2	25.2	25.2	25.5	25.5		33.2	33.2	33.2	33.2	33.2	
Total Split (s)	26.0	26.0	26.0	26.0	26.0		34.0	34.0	34.0	34.0	34.0	
Total Split (%)	43.3%	43.3%	43.3%	43.3%	43.3%		56.7%	56.7%	56.7%	56.7%	56.7%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		4.5	4.5	4.5	4.5			4.5	4.5		4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)		19.7	19.7	19.7	19.7			29.6	29.6		29.6	
Actuated g/C Ratio		0.34	0.34	0.34	0.34			0.51	0.51		0.51	
v/c Ratio		0.36	0.50	0.54	0.85			0.28	0.13		0.02	
Control Delay		16.4	4.4	21.8	32.6			10.3	2.5		7.1	
Queue Delay		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Delay		16.4	4.4	21.8	32.6			10.3	2.5		7.1	
LOS		B	A	C	C			B	A		A	
Approach Delay		8.7			29.6			7.4			7.1	
Approach LOS		A			C			A			A	

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 58.3	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 17.7	Intersection LOS: B
Intersection Capacity Utilization 60.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road



HCM 6th Signalized Intersection Summary 2026 Background Traffic, AM Peak Hour
3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road 09/10/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	187	329	171	446	5	156	4	93	2	11	3
Future Volume (veh/h)	1	187	329	171	446	5	156	4	93	2	11	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1870	1870	1870	1856	1856	1856	1900	1900	1900
Adj Flow Rate, veh/h	1	220	387	201	525	6	184	5	109	2	13	4
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	5	5	5	2	2	2	3	3	3	0	0	0
Cap, veh/h	61	653	554	340	661	8	786	20	773	115	645	185
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.49	0.49	0.49	0.49	0.49	0.49
Sat Flow, veh/h	1	1823	1547	813	1845	21	1358	40	1572	99	1312	376
Grp Volume(v), veh/h	221	0	387	201	0	531	189	0	109	19	0	0
Grp Sat Flow(s),veh/h/ln	1825	0	1547	813	0	1867	1398	0	1572	1787	0	0
Q Serve(g_s), s	0.0	0.0	12.8	14.4	0.0	15.3	4.4	0.0	2.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.3	0.0	12.8	19.7	0.0	15.3	4.7	0.0	2.3	0.3	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.01	0.97		1.00	0.11		0.21
Lane Grp Cap(c), veh/h	714	0	554	340	0	669	806	0	773	945	0	0
V/C Ratio(X)	0.31	0.00	0.70	0.59	0.00	0.79	0.23	0.00	0.14	0.02	0.00	0.00
Avail Cap(c_a), veh/h	714	0	554	340	0	669	806	0	773	945	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.1	0.0	16.5	21.2	0.0	17.3	8.9	0.0	8.3	7.8	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	3.8	2.7	0.0	6.6	0.7	0.0	0.4	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	4.5	2.7	0.0	6.8	1.3	0.0	0.7	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.3	0.0	20.3	24.0	0.0	23.8	9.6	0.0	8.7	7.9	0.0	0.0
LnGrp LOS	B	A	C	C	A	C	A	A	A	A	A	A
Approach Vol, veh/h		608			732			298			19	
Approach Delay, s/veh		18.1			23.9			9.3			7.9	
Approach LOS		B			C			A			A	

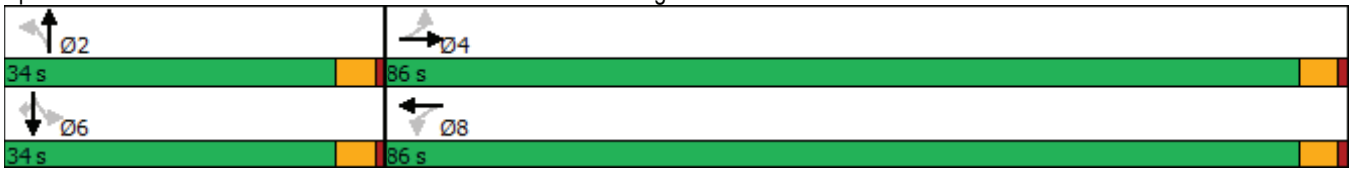
Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.0	26.0	34.0	26.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	29.5	21.5	29.5	21.5
Max Q Clear Time (g_c+I1), s	6.7	14.8	2.3	21.7
Green Ext Time (p_c), s	1.3	1.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	18.9
HCM 6th LOS	B

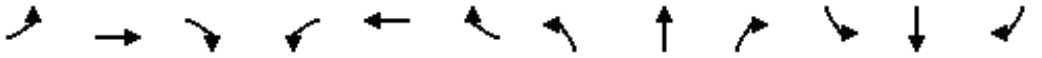
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	376	269	0	0	287	186	0	0	0	184	0	232
Future Volume (vph)	376	269	0	0	287	186	0	0	0	184	0	232
Confl. Peds. (#/hr)	9		2	1		8	2		1	8		9
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	0%	0%	0%	3%	3%	3%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA					Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		25.5	25.5		33.2	33.2		33.2	33.2	33.2
Total Split (s)	86.0	86.0		86.0	86.0		34.0	34.0		34.0	34.0	34.0
Total Split (%)	71.7%	71.7%		71.7%	71.7%		28.3%	28.3%		28.3%	28.3%	28.3%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	Max
Act Effct Green (s)	81.1	81.1			81.1						29.5	29.5
Actuated g/C Ratio	0.68	0.68			0.68						0.25	0.25
v/c Ratio	0.99	0.15			0.27						0.70	0.50
Control Delay	58.3	7.1			4.6						53.7	7.2
Queue Delay	0.0	0.0			0.0						0.0	0.0
Total Delay	58.3	7.1			4.6						53.7	7.2
LOS	E	A			A						D	A
Approach Delay		36.9			4.6						27.7	
Approach LOS		D			A						C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 119.6	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 24.5	Intersection LOS: C
Intersection Capacity Utilization 71.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street



HCM 6th Signalized Intersection Summary 2026 Background Traffic, AM Peak Hour
4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street 09/10/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	376	269	0	0	287	186	0	0	0	184	0	232
Future Volume (veh/h)	376	269	0	0	287	186	0	0	0	184	0	232
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1900	1900	1900	1856	1856	1856
Adj Flow Rate, veh/h	488	349	0	0	373	242	0	0	0	239	0	301
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Percent Heavy Veh, %	3	3	3	1	1	1	0	0	0	3	3	3
Cap, veh/h	547	2394	0	60	1420	907	0	467	0	405	0	382
Arrive On Green	0.68	0.68	0.00	0.00	0.68	0.68	0.00	0.00	0.00	0.25	0.00	0.25
Sat Flow, veh/h	800	3618	0	1040	2091	1336	0	1900	0	1403	0	1555
Grp Volume(v), veh/h	488	349	0	0	319	296	0	0	0	239	0	301
Grp Sat Flow(s),veh/h/ln	800	1763	0	1040	1791	1635	0	1900	0	1403	0	1555
Q Serve(g_s), s	73.0	4.2	0.0	0.0	8.3	8.5	0.0	0.0	0.0	18.6	0.0	21.7
Cycle Q Clear(g_c), s	81.5	4.2	0.0	0.0	8.3	8.5	0.0	0.0	0.0	18.6	0.0	21.7
Prop In Lane	1.00		0.00	1.00		0.82	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	547	2394	0	60	1216	1111	0	467	0	405	0	382
V/C Ratio(X)	0.89	0.15	0.00	0.00	0.26	0.27	0.00	0.00	0.00	0.59	0.00	0.79
Avail Cap(c_a), veh/h	547	2394	0	60	1216	1111	0	467	0	405	0	382
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.6	6.9	0.0	0.0	7.5	7.5	0.0	0.0	0.0	41.1	0.0	42.3
Incr Delay (d2), s/veh	16.9	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	6.2	0.0	15.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.8	1.4	0.0	0.0	2.9	2.7	0.0	0.0	0.0	7.0	0.0	9.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.5	6.9	0.0	0.0	7.6	7.7	0.0	0.0	0.0	47.3	0.0	57.4
LnGrp LOS	D	A	A	A	A	A	A	A	A	D	A	E
Approach Vol, veh/h		837			615			0			540	
Approach Delay, s/veh		26.5			7.6			0.0			52.9	
Approach LOS		C			A						D	

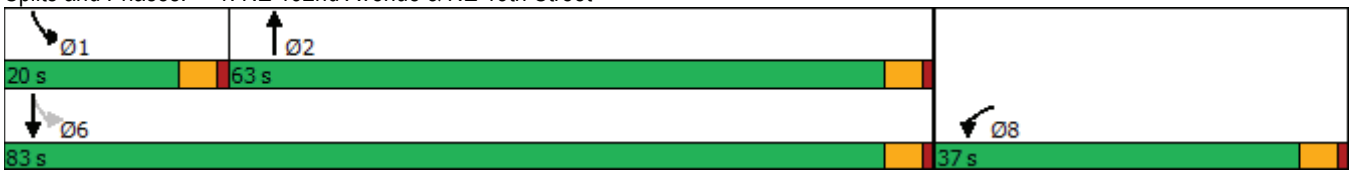
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		34.0		86.0		34.0		86.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		29.5		81.5		29.5		81.5				
Max Q Clear Time (g_c+I1), s		0.0		83.5		23.7		10.5				
Green Ext Time (p_c), s		0.0		0.0		1.2		4.1				

Intersection Summary												
HCM 6th Ctrl Delay			27.8									
HCM 6th LOS			C									

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	212	296	572	299	287	434
Future Volume (vph)	212	296	572	299	287	434
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)						
Turn Type	Prot		NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases					6	
Detector Phase	8		2		1	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	23.2		22.5		9.5	22.5
Total Split (s)	37.0		63.0		20.0	83.0
Total Split (%)	30.8%		52.5%		16.7%	69.2%
Yellow Time (s)	3.5		3.5		3.5	3.5
All-Red Time (s)	1.0		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.5		4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		Max		None	Max
Act Effct Green (s)	32.5		58.5		78.5	78.5
Actuated g/C Ratio	0.27		0.49		0.65	0.65
v/c Ratio	1.13		1.09		1.09	0.39
Control Delay	116.9		86.6		112.6	10.8
Queue Delay	0.0		0.0		0.0	0.0
Total Delay	116.9		86.6		112.6	10.8
LOS	F		F		F	B
Approach Delay	116.9		86.6			51.3
Approach LOS	F		F			D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.13	
Intersection Signal Delay: 81.8	Intersection LOS: F
Intersection Capacity Utilization 105.4%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: NE 192nd Avenue & NE 13th Street



HCM 6th Signalized Intersection Summary
1: NE 192nd Avenue & NE 13th Street

2026 Background Traffic, PM Peak Hour
09/09/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	212	296	572	299	287	434
Future Volume (veh/h)	212	296	572	299	287	434
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	236	329	636	332	319	482
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	189	264	569	297	292	1233
Arrive On Green	0.27	0.27	0.49	0.49	0.13	0.65
Sat Flow, veh/h	698	974	1167	609	1795	1885
Grp Volume(v), veh/h	566	0	0	968	319	482
Grp Sat Flow(s),veh/h/ln	1675	0	0	1776	1795	1885
Q Serve(g_s), s	32.5	0.0	0.0	58.5	15.5	14.3
Cycle Q Clear(g_c), s	32.5	0.0	0.0	58.5	15.5	14.3
Prop In Lane	0.42	0.58		0.34	1.00	
Lane Grp Cap(c), veh/h	454	0	0	866	292	1233
V/C Ratio(X)	1.25	0.00	0.00	1.12	1.09	0.39
Avail Cap(c_a), veh/h	454	0	0	866	292	1233
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.8	0.0	0.0	30.8	41.6	9.6
Incr Delay (d2), s/veh	128.8	0.0	0.0	68.5	79.8	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	29.4	0.0	0.0	39.7	10.6	5.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	172.5	0.0	0.0	99.3	121.4	10.6
LnGrp LOS	F	A	A	F	F	B
Approach Vol, veh/h	566		968			801
Approach Delay, s/veh	172.5		99.3			54.7
Approach LOS	F		F			D

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	20.0	63.0			83.0	37.0
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	15.5	58.5			78.5	32.5
Max Q Clear Time (g_c+I1), s	17.5	60.5			16.3	34.5
Green Ext Time (p_c), s	0.0	0.0			3.2	0.0

Intersection Summary	
HCM 6th Ctrl Delay	101.7
HCM 6th LOS	F

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	563	1	0	503	0	0
Future Volume (vph)	563	1	0	503	0	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	1%	1%	2%	2%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	563	1	0	503	0	0
Future Vol, veh/h	563	1	0	503	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	20	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	1	1	2	2
Mvmt Flow	626	1	0	559	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	627	0	1185	626
Stage 1	-	-	-	-	626	-
Stage 2	-	-	-	-	559	-
Critical Hdwy	-	-	4.11	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.209	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	960	-	209	484
Stage 1	-	-	-	-	533	-
Stage 2	-	-	-	-	572	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	960	-	209	484
Mov Cap-2 Maneuver	-	-	-	-	209	-
Stage 1	-	-	-	-	533	-
Stage 2	-	-	-	-	572	-

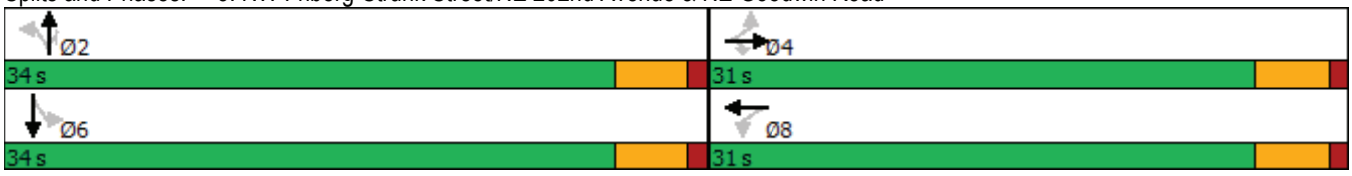
Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	960	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

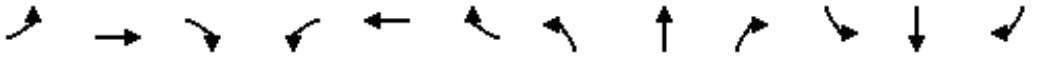
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	442	112	157	367	2	133	13	310	0	6	3
Future Volume (vph)	10	442	112	157	367	2	133	13	310	0	6	3
Confl. Peds. (#/hr)	5		5	7		7	5		7	7		5
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm		NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	25.2	25.2	25.2	25.5	25.5		33.2	33.2	33.2	33.2	33.2	
Total Split (s)	31.0	31.0	31.0	31.0	31.0		34.0	34.0	34.0	34.0	34.0	
Total Split (%)	47.7%	47.7%	47.7%	47.7%	47.7%		52.3%	52.3%	52.3%	52.3%	52.3%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		4.5	4.5	4.5	4.5			4.5	4.5		4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)		23.0	23.0	23.0	23.0			29.7	29.7		29.7	
Actuated g/C Ratio		0.37	0.37	0.37	0.37			0.48	0.48		0.48	
v/c Ratio		0.73	0.19	0.99	0.59			0.24	0.41		0.01	
Control Delay		23.2	3.6	91.0	19.2			11.9	6.2		8.7	
Queue Delay		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Delay		23.2	3.6	91.0	19.2			11.9	6.2		8.7	
LOS		C	A	F	B			B	A		A	
Approach Delay		19.3			40.6			8.0			8.7	
Approach LOS		B			D			A			A	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 61.8	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 23.2	Intersection LOS: C
Intersection Capacity Utilization 73.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road



HCM 6th Signalized Intersection Summary 2026 Background Traffic, PM Peak Hour
3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road 09/09/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	442	112	157	367	2	133	13	310	0	6	3
Future Volume (veh/h)	10	442	112	157	367	2	133	13	310	0	6	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1885	1885	1885	1885	1885	1885	1900	1900	1900
Adj Flow Rate, veh/h	11	497	126	176	412	2	149	15	348	0	7	3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	0	0	0
Cap, veh/h	62	765	652	265	764	4	695	65	719	0	571	245
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.45	0.45	0.45	0.00	0.45	0.45
Sat Flow, veh/h	13	1875	1600	807	1874	9	1298	144	1585	0	1259	539
Grp Volume(v), veh/h	508	0	126	176	0	414	164	0	348	0	0	10
Grp Sat Flow(s),veh/h/ln	1888	0	1600	807	0	1883	1442	0	1585	0	0	1798
Q Serve(g_s), s	0.0	0.0	3.3	12.4	0.0	10.8	4.3	0.0	10.0	0.0	0.0	0.2
Cycle Q Clear(g_c), s	14.1	0.0	3.3	26.5	0.0	10.8	4.5	0.0	10.0	0.0	0.0	0.2
Prop In Lane	0.02		1.00	1.00		0.00	0.91		1.00	0.00		0.30
Lane Grp Cap(c), veh/h	826	0	652	265	0	768	760	0	719	0	0	816
V/C Ratio(X)	0.61	0.00	0.19	0.66	0.00	0.54	0.22	0.00	0.48	0.00	0.00	0.01
Avail Cap(c_a), veh/h	826	0	652	265	0	768	760	0	719	0	0	816
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	15.6	0.0	12.4	27.0	0.0	14.6	10.9	0.0	12.4	0.0	0.0	9.7
Incr Delay (d2), s/veh	1.4	0.0	0.1	6.1	0.0	0.8	0.7	0.0	2.3	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.0	1.1	3.0	0.0	4.2	1.3	0.0	3.4	0.0	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.9	0.0	12.5	33.1	0.0	15.4	11.6	0.0	14.7	0.0	0.0	9.8
LnGrp LOS	B	A	B	C	A	B	B	A	B	A	A	A
Approach Vol, veh/h		634			590			512			10	
Approach Delay, s/veh		16.1			20.7			13.7			9.8	
Approach LOS		B			C			B			A	

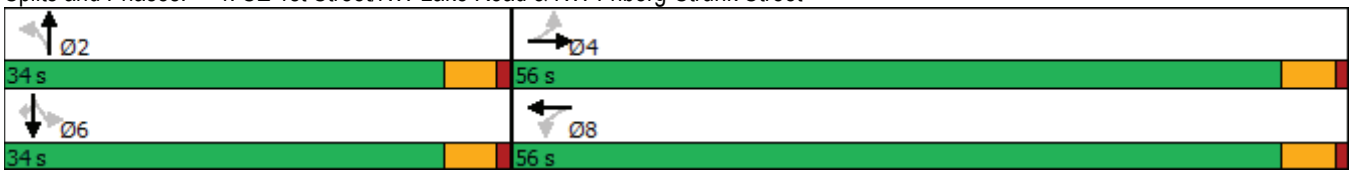
Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.0	31.0	34.0	31.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	29.5	26.5	29.5	26.5
Max Q Clear Time (g_c+I1), s	12.0	16.1	2.2	28.5
Green Ext Time (p_c), s	1.9	2.7	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	16.9
HCM 6th LOS	B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	296	606	4	0	435	167	8	0	1	134	0	186
Future Volume (vph)	296	606	4	0	435	167	8	0	1	134	0	186
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		25.5	25.5		33.2	33.2		33.2	33.2	33.2
Total Split (s)	56.0	56.0		56.0	56.0		34.0	34.0		34.0	34.0	34.0
Total Split (%)	62.2%	62.2%		62.2%	62.2%		37.8%	37.8%		37.8%	37.8%	37.8%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	Max
Act Effct Green (s)	40.3	40.3			40.3			30.2			30.2	30.2
Actuated g/C Ratio	0.51	0.51			0.51			0.38			0.38	0.38
v/c Ratio	0.92	0.36			0.36			0.02			0.27	0.27
Control Delay	52.0	11.8			9.7			6.2			22.3	4.5
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	52.0	11.8			9.7			6.2			22.3	4.5
LOS	D	B			A			A			C	A
Approach Delay		24.9			9.7			6.2			12.0	
Approach LOS		C			A			A			B	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 79.7	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 17.6	Intersection LOS: B
Intersection Capacity Utilization 52.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street



HCM 6th Signalized Intersection Summary 2026 Background Traffic, PM Peak Hour
4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street 09/09/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	296	606	4	0	435	167	8	0	1	134	0	186
Future Volume (veh/h)	296	606	4	0	435	167	8	0	1	134	0	186
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	318	652	4	0	468	180	9	0	1	144	0	200
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	437	2006	12	85	1393	532	404	4	36	607	0	561
Arrive On Green	0.55	0.55	0.55	0.00	0.55	0.55	0.35	0.00	0.35	0.35	0.00	0.35
Sat Flow, veh/h	796	3678	23	790	2554	975	927	13	104	1497	0	1610
Grp Volume(v), veh/h	318	320	336	0	330	318	10	0	0	144	0	200
Grp Sat Flow(s),veh/h/ln	796	1805	1896	790	1805	1724	1044	0	0	1497	0	1610
Q Serve(g_s), s	31.4	8.3	8.3	0.0	8.6	8.7	0.2	0.0	0.0	0.0	0.0	7.8
Cycle Q Clear(g_c), s	40.2	8.3	8.3	0.0	8.6	8.7	5.0	0.0	0.0	4.8	0.0	7.8
Prop In Lane	1.00		0.01	1.00		0.57	0.90		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	437	984	1034	85	984	940	444	0	0	607	0	561
V/C Ratio(X)	0.73	0.32	0.33	0.00	0.33	0.34	0.02	0.00	0.00	0.24	0.00	0.36
Avail Cap(c_a), veh/h	487	1098	1153	135	1098	1049	444	0	0	607	0	561
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.9	10.6	10.6	0.0	10.7	10.7	19.0	0.0	0.0	19.6	0.0	20.5
Incr Delay (d2), s/veh	4.8	0.2	0.2	0.0	0.2	0.2	0.1	0.0	0.0	0.9	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	2.9	3.1	0.0	3.0	2.9	0.1	0.0	0.0	2.0	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.8	10.8	10.8	0.0	10.9	10.9	19.1	0.0	0.0	20.5	0.0	22.3
LnGrp LOS	C	B	B	A	B	B	B	A	A	C	A	C
Approach Vol, veh/h		974			648			10			344	
Approach Delay, s/veh		16.0			10.9			19.1			21.5	
Approach LOS		B			B			B			C	

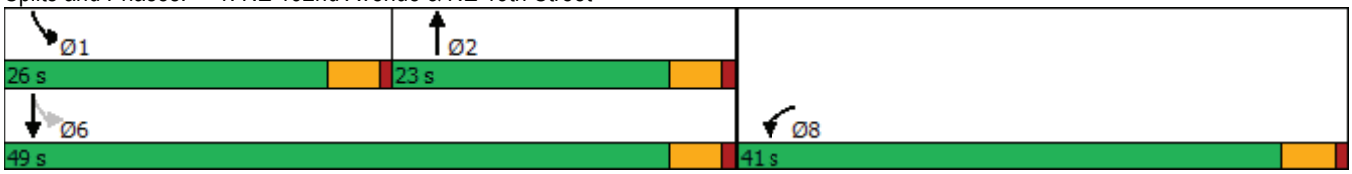
Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.0	50.7	34.0	50.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	29.5	51.5	29.5	51.5
Max Q Clear Time (g_c+I1), s	7.0	42.2	9.8	10.7
Green Ext Time (p_c), s	0.0	4.0	1.3	4.2

Intersection Summary	
HCM 6th Ctrl Delay	15.3
HCM 6th LOS	B

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	321	317	175	130	419	279
Future Volume (vph)	321	317	175	130	419	279
Confl. Peds. (#/hr)	1	2		1	2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	4%	4%	7%	7%
Shared Lane Traffic (%)						
Turn Type	Prot		NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases					6	
Detector Phase	8		2		1	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	23.2		22.5		9.5	22.5
Total Split (s)	41.0		23.0		26.0	49.0
Total Split (%)	45.6%		25.6%		28.9%	54.4%
Yellow Time (s)	3.5		3.5		3.5	3.5
All-Red Time (s)	1.0		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.5		4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		Max		None	Max
Act Effct Green (s)	36.5		18.5		44.5	44.5
Actuated g/C Ratio	0.41		0.21		0.49	0.49
v/c Ratio	0.99		0.89		0.97	0.35
Control Delay	56.6		58.3		58.6	15.4
Queue Delay	0.0		0.0		0.0	0.0
Total Delay	56.6		58.3		58.6	15.4
LOS	E		E		E	B
Approach Delay	56.6		58.3			41.3
Approach LOS	E		E			D

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 50.4	Intersection LOS: D
Intersection Capacity Utilization 89.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: NE 192nd Avenue & NE 13th Street



HCM 6th Signalized Intersection Summary
1: NE 192nd Avenue & NE 13th Street

2026 Total Traffic, AM Peak Hour
09/09/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	321	317	175	130	419	279
Future Volume (veh/h)	321	317	175	130	419	279
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1841	1841	1796	1796
Adj Flow Rate, veh/h	357	352	194	144	466	310
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	4	4	7	7
Cap, veh/h	342	337	207	154	495	888
Arrive On Green	0.41	0.41	0.21	0.21	0.23	0.49
Sat Flow, veh/h	843	831	980	728	1711	1796
Grp Volume(v), veh/h	710	0	0	338	466	310
Grp Sat Flow(s),veh/h/ln	1676	0	0	1708	1711	1796
Q Serve(g_s), s	36.5	0.0	0.0	17.5	18.8	9.5
Cycle Q Clear(g_c), s	36.5	0.0	0.0	17.5	18.8	9.5
Prop In Lane	0.50	0.50		0.43	1.00	
Lane Grp Cap(c), veh/h	680	0	0	361	495	888
V/C Ratio(X)	1.04	0.00	0.00	0.94	0.94	0.35
Avail Cap(c_a), veh/h	680	0	0	361	506	888
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.8	0.0	0.0	34.9	21.7	13.9
Incr Delay (d2), s/veh	46.7	0.0	0.0	33.5	25.7	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	22.2	0.0	0.0	10.3	10.4	3.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	73.4	0.0	0.0	68.4	47.4	15.0
LnGrp LOS	F	A	A	E	D	B
Approach Vol, veh/h	710		338			776
Approach Delay, s/veh	73.4		68.4			34.5
Approach LOS	E		E			C

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	25.5	23.5			49.0	41.0
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	21.5	18.5			44.5	36.5
Max Q Clear Time (g_c+I1), s	20.8	19.5			11.5	38.5
Green Ext Time (p_c), s	0.1	0.0			1.8	0.0

Intersection Summary	
HCM 6th Ctrl Delay	55.9
HCM 6th LOS	E

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	508	49	21	594	52	18
Future Volume (vph)	508	49	21	594	52	18
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	2%	2%	2%	2%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	508	49	21	594	52	18
Future Vol, veh/h	508	49	21	594	52	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	20	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	5	2	2	2	2
Mvmt Flow	564	54	23	660	58	20

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	618	0	1270	564
Stage 1	-	-	-	-	564	-
Stage 2	-	-	-	-	706	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	962	-	186	525
Stage 1	-	-	-	-	569	-
Stage 2	-	-	-	-	489	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	962	-	179	525
Mov Cap-2 Maneuver	-	-	-	-	179	-
Stage 1	-	-	-	-	569	-
Stage 2	-	-	-	-	470	-

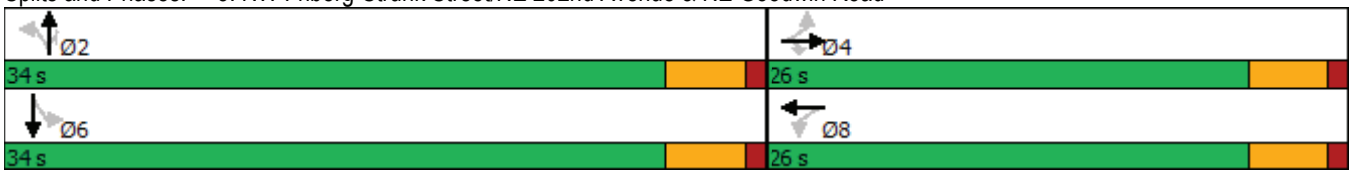
Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	30.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	216	-	-	962	-
HCM Lane V/C Ratio	0.36	-	-	0.024	-
HCM Control Delay (s)	30.8	-	-	8.8	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.5	-	-	0.1	-

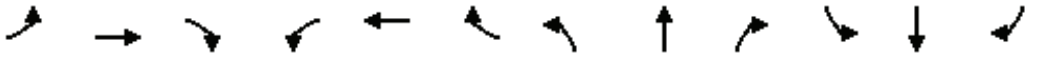
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	188	337	171	447	5	164	4	93	2	11	3
Future Volume (vph)	1	188	337	171	447	5	164	4	93	2	11	3
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	3%	3%	3%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	25.2	25.2	25.2	25.5	25.5		33.2	33.2	33.2	33.2	33.2	
Total Split (s)	26.0	26.0	26.0	26.0	26.0		34.0	34.0	34.0	34.0	34.0	
Total Split (%)	43.3%	43.3%	43.3%	43.3%	43.3%		56.7%	56.7%	56.7%	56.7%	56.7%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		4.5	4.5	4.5	4.5			4.5	4.5		4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)		19.7	19.7	19.7	19.7			29.6	29.6		29.6	
Actuated g/C Ratio		0.34	0.34	0.34	0.34			0.51	0.51		0.51	
v/c Ratio		0.36	0.51	0.54	0.85			0.29	0.13		0.02	
Control Delay		16.4	4.4	21.8	32.7			10.4	2.5		7.1	
Queue Delay		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Delay		16.4	4.4	21.8	32.7			10.4	2.5		7.1	
LOS		B	A	C	C			B	A		A	
Approach Delay		8.7			29.7			7.6			7.1	
Approach LOS		A			C			A			A	

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 58.3	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 17.7	Intersection LOS: B
Intersection Capacity Utilization 61.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road



HCM 6th Signalized Intersection Summary — 2026 Total Traffic, AM Peak Hour
3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road — 09/09/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	188	337	171	447	5	164	4	93	2	11	3
Future Volume (veh/h)	1	188	337	171	447	5	164	4	93	2	11	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1870	1870	1870	1856	1856	1856	1900	1900	1900
Adj Flow Rate, veh/h	1	221	396	201	526	6	193	5	109	2	13	4
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	5	5	5	2	2	2	3	3	3	0	0	0
Cap, veh/h	61	653	554	337	661	8	787	19	773	115	645	185
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.49	0.49	0.49	0.49	0.49	0.49
Sat Flow, veh/h	1	1823	1547	806	1846	21	1360	38	1572	99	1312	376
Grp Volume(v), veh/h	222	0	396	201	0	532	198	0	109	19	0	0
Grp Sat Flow(s),veh/h/ln	1825	0	1547	806	0	1867	1398	0	1572	1787	0	0
Q Serve(g_s), s	0.0	0.0	13.2	14.6	0.0	15.3	4.6	0.0	2.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.3	0.0	13.2	19.9	0.0	15.3	4.9	0.0	2.3	0.3	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.01	0.97		1.00	0.11		0.21
Lane Grp Cap(c), veh/h	714	0	554	337	0	669	806	0	773	945	0	0
V/C Ratio(X)	0.31	0.00	0.71	0.60	0.00	0.80	0.25	0.00	0.14	0.02	0.00	0.00
Avail Cap(c_a), veh/h	714	0	554	337	0	669	806	0	773	945	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.1	0.0	16.6	21.3	0.0	17.3	9.0	0.0	8.3	7.8	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	4.3	2.8	0.0	6.6	0.7	0.0	0.4	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	4.7	2.7	0.0	6.9	1.3	0.0	0.7	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.3	0.0	20.9	24.2	0.0	23.9	9.7	0.0	8.7	7.9	0.0	0.0
LnGrp LOS	B	A	C	C	A	C	A	A	A	A	A	A
Approach Vol, veh/h		618			733			307			19	
Approach Delay, s/veh		18.6			24.0			9.4			7.9	
Approach LOS		B			C			A			A	

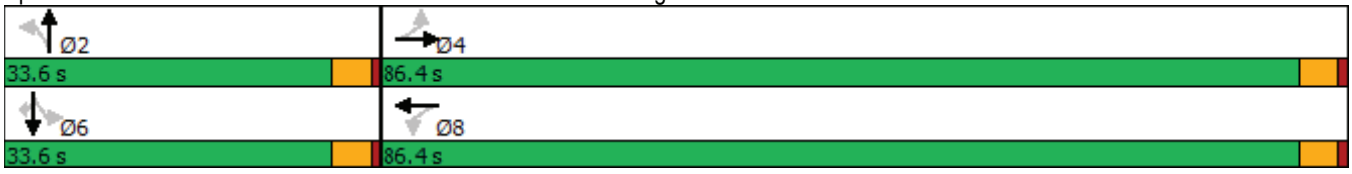
Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.0	26.0	34.0	26.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	29.5	21.5	29.5	21.5
Max Q Clear Time (g_c+I1), s	6.9	15.2	2.3	21.9
Green Ext Time (p_c), s	1.4	1.5	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	19.1
HCM 6th LOS	B

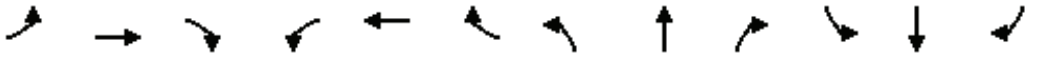
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	376	269	0	0	287	192	0	0	0	190	0	232
Future Volume (vph)	376	269	0	0	287	192	0	0	0	190	0	232
Confl. Peds. (#/hr)	9		2	1		8	2		1	8		9
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	0%	0%	0%	3%	3%	3%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA					Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		25.5	25.5		33.2	33.2		33.2	33.2	33.2
Total Split (s)	86.4	86.4		86.4	86.4		33.6	33.6		33.6	33.6	33.6
Total Split (%)	72.0%	72.0%		72.0%	72.0%		28.0%	28.0%		28.0%	28.0%	28.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	Max
Act Effct Green (s)	81.9	81.9			81.9						29.1	29.1
Actuated g/C Ratio	0.68	0.68			0.68						0.24	0.24
v/c Ratio	0.99	0.15			0.27						0.74	0.50
Control Delay	58.7	6.9			4.5						56.4	7.3
Queue Delay	0.0	0.0			0.0						0.0	0.0
Total Delay	58.7	6.9			4.5						56.4	7.3
LOS	E	A			A						E	A
Approach Delay		37.1			4.5						29.4	
Approach LOS		D			A						C	

Intersection Summary			
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay: 24.9		Intersection LOS: C	
Intersection Capacity Utilization 71.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street



HCM 6th Signalized Intersection Summary — 2026 Total Traffic, AM Peak Hour
4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street — 09/09/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	376	269	0	0	287	192	0	0	0	190	0	232
Future Volume (veh/h)	376	269	0	0	287	192	0	0	0	190	0	232
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1900	1900	1900	1856	1856	1856
Adj Flow Rate, veh/h	488	349	0	0	373	249	0	0	0	247	0	301
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Percent Heavy Veh, %	3	3	3	1	1	1	0	0	0	3	3	3
Cap, veh/h	546	2406	0	60	1409	926	0	461	0	400	0	377
Arrive On Green	0.68	0.68	0.00	0.00	0.68	0.68	0.00	0.00	0.00	0.24	0.00	0.24
Sat Flow, veh/h	795	3618	0	1040	2065	1357	0	1900	0	1403	0	1555
Grp Volume(v), veh/h	488	349	0	0	323	299	0	0	0	247	0	301
Grp Sat Flow(s),veh/h/ln	795	1763	0	1040	1791	1631	0	1900	0	1403	0	1555
Q Serve(g_s), s	73.3	4.2	0.0	0.0	8.4	8.6	0.0	0.0	0.0	19.4	0.0	21.8
Cycle Q Clear(g_c), s	81.9	4.2	0.0	0.0	8.4	8.6	0.0	0.0	0.0	19.4	0.0	21.8
Prop In Lane	1.00		0.00	1.00		0.83	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	546	2406	0	60	1222	1113	0	461	0	400	0	377
V/C Ratio(X)	0.89	0.15	0.00	0.00	0.26	0.27	0.00	0.00	0.00	0.62	0.00	0.80
Avail Cap(c_a), veh/h	546	2406	0	60	1222	1113	0	461	0	400	0	377
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.5	6.7	0.0	0.0	7.4	7.4	0.0	0.0	0.0	41.8	0.0	42.7
Incr Delay (d2), s/veh	17.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	7.0	0.0	16.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.8	1.4	0.0	0.0	2.9	2.7	0.0	0.0	0.0	7.3	0.0	9.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.6	6.7	0.0	0.0	7.5	7.5	0.0	0.0	0.0	48.8	0.0	58.7
LnGrp LOS	D	A	A	A	A	A	A	A	A	D	A	E
Approach Vol, veh/h		837			622			0			548	
Approach Delay, s/veh		26.5			7.5			0.0			54.2	
Approach LOS		C			A						D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		33.6		86.4		33.6		86.4				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		29.1		81.9		29.1		81.9				
Max Q Clear Time (g_c+I1), s		0.0		83.9		23.8		10.6				
Green Ext Time (p_c), s		0.0		0.0		1.2		4.2				

Intersection Summary												
HCM 6th Ctrl Delay			28.2									
HCM 6th LOS			C									

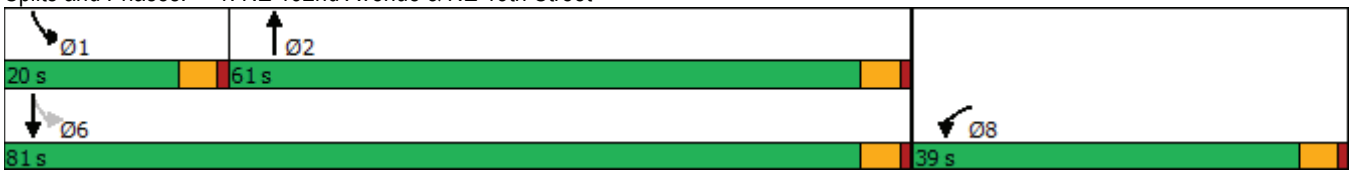
Lanes, Volumes, Timings
1: NE 192nd Avenue & NE 13th Street

2026 Total Traffic, PM Peak Hour
09/09/2023

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	236	321	559	329	307	426
Future Volume (vph)	236	321	559	329	307	426
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)						
Turn Type	Prot		NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases					6	
Detector Phase	8		2		1	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	23.2		22.5		9.5	22.5
Total Split (s)	39.0		61.0		20.0	81.0
Total Split (%)	32.5%		50.8%		16.7%	67.5%
Yellow Time (s)	3.5		3.5		3.5	3.5
All-Red Time (s)	1.0		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.5		4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		Max		None	Max
Act Effct Green (s)	34.5		56.5		76.5	76.5
Actuated g/C Ratio	0.29		0.47		0.64	0.64
v/c Ratio	1.17		1.15		1.16	0.39
Control Delay	131.6		111.0		137.5	11.7
Queue Delay	0.0		0.0		0.0	0.0
Total Delay	131.6		111.0		137.5	11.7
LOS	F		F		F	B
Approach Delay	131.6		111.0			64.4
Approach LOS	F		F			E

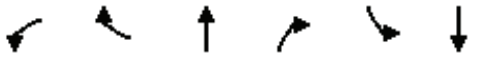
Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.17	
Intersection Signal Delay: 100.6	Intersection LOS: F
Intersection Capacity Utilization 110.5%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 1: NE 192nd Avenue & NE 13th Street



HCM 6th Signalized Intersection Summary
1: NE 192nd Avenue & NE 13th Street

2026 Total Traffic, PM Peak Hour
09/09/2023



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	236	321	559	329	307	426
Future Volume (veh/h)	236	321	559	329	307	426
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	262	357	621	366	341	473
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	204	277	524	309	292	1202
Arrive On Green	0.29	0.29	0.47	0.47	0.13	0.64
Sat Flow, veh/h	708	965	1112	655	1795	1885
Grp Volume(v), veh/h	620	0	0	987	341	473
Grp Sat Flow(s),veh/h/ln	1676	0	0	1767	1795	1885
Q Serve(g_s), s	34.5	0.0	0.0	56.5	15.5	14.6
Cycle Q Clear(g_c), s	34.5	0.0	0.0	56.5	15.5	14.6
Prop In Lane	0.42	0.58		0.37	1.00	
Lane Grp Cap(c), veh/h	482	0	0	832	292	1202
V/C Ratio(X)	1.29	0.00	0.00	1.19	1.17	0.39
Avail Cap(c_a), veh/h	482	0	0	832	292	1202
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.8	0.0	0.0	31.8	41.2	10.5
Incr Delay (d2), s/veh	144.0	0.0	0.0	95.8	106.2	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	33.2	0.0	0.0	44.6	12.8	5.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	186.8	0.0	0.0	127.6	147.4	11.5
LnGrp LOS	F	A	A	F	F	B
Approach Vol, veh/h	620		987			814
Approach Delay, s/veh	186.8		127.6			68.4
Approach LOS	F		F			E

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	20.0	61.0			81.0	39.0
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	15.5	56.5			76.5	34.5
Max Q Clear Time (g_c+I1), s	17.5	58.5			16.6	36.5
Green Ext Time (p_c), s	0.0	0.0			3.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	122.9
HCM 6th LOS	F

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	555	59	24	491	61	20
Future Volume (vph)	555	59	24	491	61	20
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	1%	1%	2%	2%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	555	59	24	491	61	20
Future Vol, veh/h	555	59	24	491	61	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	20	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	1	1	2	2
Mvmt Flow	617	66	27	546	68	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	683	0	1217	617
Stage 1	-	-	-	-	617	-
Stage 2	-	-	-	-	600	-
Critical Hdwy	-	-	4.11	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.209	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	915	-	200	490
Stage 1	-	-	-	-	538	-
Stage 2	-	-	-	-	548	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	915	-	192	490
Mov Cap-2 Maneuver	-	-	-	-	192	-
Stage 1	-	-	-	-	538	-
Stage 2	-	-	-	-	525	-

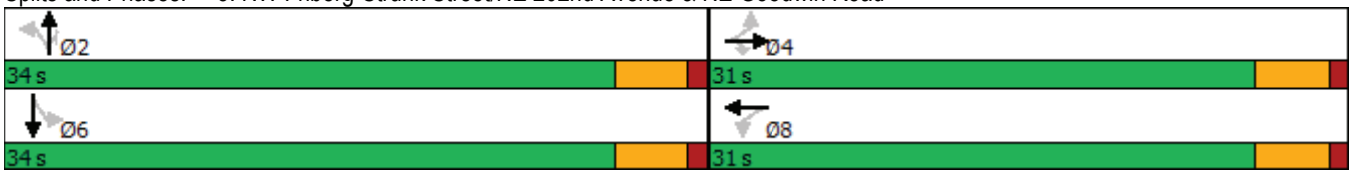
Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	31.1
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	226	-	-	915	-
HCM Lane V/C Ratio	0.398	-	-	0.029	-
HCM Control Delay (s)	31.1	-	-	9.1	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.8	-	-	0.1	-

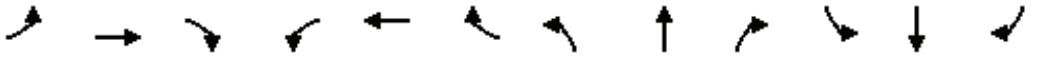
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	444	122	157	369	2	143	13	310	0	6	3
Future Volume (vph)	10	444	122	157	369	2	143	13	310	0	6	3
Confl. Peds. (#/hr)	5		5	7		7	5		7	7		5
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm		NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	25.2	25.2	25.2	25.5	25.5		33.2	33.2	33.2	33.2	33.2	
Total Split (s)	31.0	31.0	31.0	31.0	31.0		34.0	34.0	34.0	34.0	34.0	
Total Split (%)	47.7%	47.7%	47.7%	47.7%	47.7%		52.3%	52.3%	52.3%	52.3%	52.3%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		4.5	4.5	4.5	4.5			4.5	4.5		4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)		23.1	23.1	23.1	23.1			29.7	29.7		29.7	
Actuated g/C Ratio		0.37	0.37	0.37	0.37			0.48	0.48		0.48	
v/c Ratio		0.73	0.20	0.99	0.59			0.26	0.41		0.01	
Control Delay		23.3	3.5	91.8	19.3			12.1	6.3		8.7	
Queue Delay		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Delay		23.3	3.5	91.8	19.3			12.1	6.3		8.7	
LOS		C	A	F	B			B	A		A	
Approach Delay		19.1			40.8			8.2			8.7	
Approach LOS		B			D			A			A	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 61.9	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 23.1	Intersection LOS: C
Intersection Capacity Utilization 73.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road



HCM 6th Signalized Intersection Summary — 2026 Total Traffic, PM Peak Hour
3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road — 09/09/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	444	122	157	369	2	143	13	310	0	6	3
Future Volume (veh/h)	10	444	122	157	369	2	143	13	310	0	6	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1885	1885	1885	1885	1885	1885	1900	1900	1900
Adj Flow Rate, veh/h	11	499	137	176	415	2	161	15	348	0	7	3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	0	0	0
Cap, veh/h	62	765	652	263	764	4	698	61	719	0	571	245
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.45	0.45	0.45	0.00	0.45	0.45
Sat Flow, veh/h	13	1875	1600	797	1874	9	1305	134	1585	0	1259	539
Grp Volume(v), veh/h	510	0	137	176	0	417	176	0	348	0	0	10
Grp Sat Flow(s),veh/h/ln	1888	0	1600	797	0	1883	1439	0	1585	0	0	1798
Q Serve(g_s), s	0.0	0.0	3.6	12.4	0.0	10.9	4.7	0.0	10.0	0.0	0.0	0.2
Cycle Q Clear(g_c), s	14.1	0.0	3.6	26.5	0.0	10.9	4.9	0.0	10.0	0.0	0.0	0.2
Prop In Lane	0.02		1.00	1.00		0.00	0.91		1.00	0.00		0.30
Lane Grp Cap(c), veh/h	826	0	652	263	0	768	759	0	719	0	0	816
V/C Ratio(X)	0.62	0.00	0.21	0.67	0.00	0.54	0.23	0.00	0.48	0.00	0.00	0.01
Avail Cap(c_a), veh/h	826	0	652	263	0	768	759	0	719	0	0	816
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	15.6	0.0	12.5	27.2	0.0	14.6	11.0	0.0	12.4	0.0	0.0	9.7
Incr Delay (d2), s/veh	1.4	0.0	0.2	6.5	0.0	0.8	0.7	0.0	2.3	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.0	1.2	3.1	0.0	4.2	1.5	0.0	3.4	0.0	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.0	0.0	12.6	33.6	0.0	15.4	11.7	0.0	14.7	0.0	0.0	9.8
LnGrp LOS	B	A	B	C	A	B	B	A	B	A	A	A
Approach Vol, veh/h		647			593			524			10	
Approach Delay, s/veh		16.1			20.8			13.7			9.8	
Approach LOS		B			C			B			A	

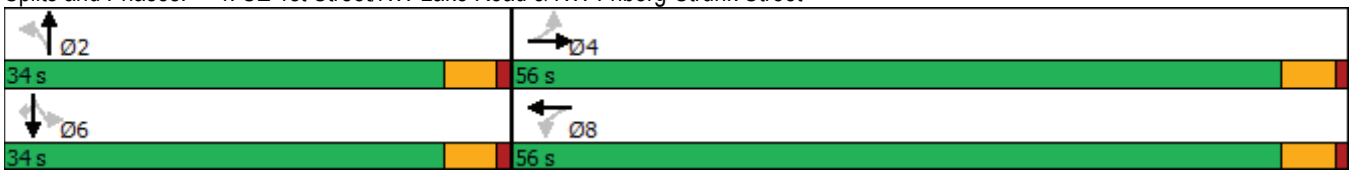
Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.0	31.0	34.0	31.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	29.5	26.5	29.5	26.5
Max Q Clear Time (g_c+I1), s	12.0	16.1	2.2	28.5
Green Ext Time (p_c), s	2.0	2.7	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	16.9
HCM 6th LOS	B

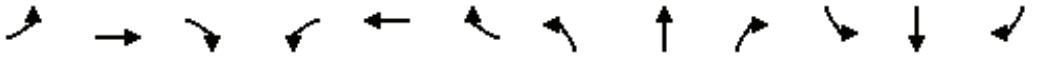
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	296	606	4	0	435	175	8	0	1	142	0	186
Future Volume (vph)	296	606	4	0	435	175	8	0	1	142	0	186
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		25.5	25.5		33.2	33.2		33.2	33.2	33.2
Total Split (s)	56.0	56.0		56.0	56.0		34.0	34.0		34.0	34.0	34.0
Total Split (%)	62.2%	62.2%		62.2%	62.2%		37.8%	37.8%		37.8%	37.8%	37.8%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	Max
Act Effct Green (s)	40.8	40.8			40.8			30.1			30.1	30.1
Actuated g/C Ratio	0.51	0.51			0.51			0.38			0.38	0.38
v/c Ratio	0.93	0.36			0.36			0.02			0.29	0.27
Control Delay	53.2	11.7			9.6			6.2			22.6	4.6
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	53.2	11.7			9.6			6.2			22.6	4.6
LOS	D	B			A			A			C	A
Approach Delay		25.3			9.6			6.2			12.4	
Approach LOS		C			A			A			B	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 80.1	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 17.7	Intersection LOS: B
Intersection Capacity Utilization 53.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street



HCM 6th Signalized Intersection Summary — 2026 Total Traffic, PM Peak Hour
4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street — 09/09/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	296	606	4	0	435	175	8	0	1	142	0	186
Future Volume (veh/h)	296	606	4	0	435	175	8	0	1	142	0	186
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	318	652	4	0	468	188	9	0	1	153	0	200
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	435	2015	12	85	1380	550	396	4	36	604	0	558
Arrive On Green	0.55	0.55	0.55	0.00	0.55	0.55	0.35	0.00	0.35	0.35	0.00	0.35
Sat Flow, veh/h	790	3678	23	790	2519	1005	911	13	103	1499	0	1610
Grp Volume(v), veh/h	318	320	336	0	334	322	10	0	0	153	0	200
Grp Sat Flow(s),veh/h/ln	790	1805	1896	790	1805	1719	1026	0	0	1499	0	1610
Q Serve(g_s), s	31.9	8.3	8.3	0.0	8.8	8.9	0.2	0.0	0.0	0.0	0.0	7.9
Cycle Q Clear(g_c), s	40.8	8.3	8.3	0.0	8.8	8.9	5.4	0.0	0.0	5.3	0.0	7.9
Prop In Lane	1.00		0.01	1.00		0.58	0.90		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	435	989	1039	85	989	942	436	0	0	604	0	558
V/C Ratio(X)	0.73	0.32	0.32	0.00	0.34	0.34	0.02	0.00	0.00	0.25	0.00	0.36
Avail Cap(c_a), veh/h	480	1092	1147	130	1092	1040	436	0	0	604	0	558
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.1	10.6	10.6	0.0	10.7	10.7	19.3	0.0	0.0	19.9	0.0	20.8
Incr Delay (d2), s/veh	5.1	0.2	0.2	0.0	0.2	0.2	0.1	0.0	0.0	1.0	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	2.9	3.0	0.0	3.1	3.0	0.2	0.0	0.0	2.2	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.1	10.8	10.8	0.0	10.9	10.9	19.4	0.0	0.0	20.9	0.0	22.6
LnGrp LOS	C	B	B	A	B	B	B	A	A	C	A	C
Approach Vol, veh/h		974			656			10			353	
Approach Delay, s/veh		16.1			10.9			19.4			21.8	
Approach LOS		B			B			B			C	

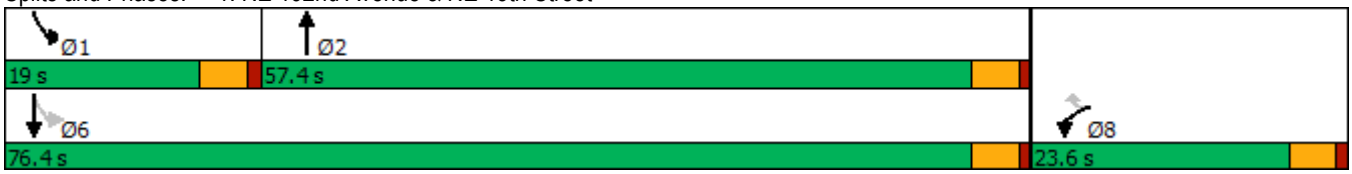
Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.0	51.1	34.0	51.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	29.5	51.5	29.5	51.5
Max Q Clear Time (g_c+I1), s	7.4	42.8	9.9	10.9
Green Ext Time (p_c), s	0.0	3.8	1.4	4.3

Intersection Summary	
HCM 6th Ctrl Delay	15.4
HCM 6th LOS	B

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	212	296	572	299	287	434
Future Volume (vph)	212	296	572	299	287	434
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	23.2	23.2	22.5		9.5	22.5
Total Split (s)	23.6	23.6	57.4		19.0	76.4
Total Split (%)	23.6%	23.6%	57.4%		19.0%	76.4%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	Max		None	Max
Act Effct Green (s)	16.6	16.6	53.0		72.0	72.0
Actuated g/C Ratio	0.17	0.17	0.54		0.74	0.74
v/c Ratio	0.78	0.60	0.98		0.93	0.35
Control Delay	56.6	9.2	46.1		62.1	5.6
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	56.6	9.2	46.1		62.1	5.6
LOS	E	A	D		E	A
Approach Delay	29.0		46.1			28.1
Approach LOS	C		D			C

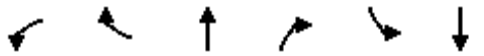
Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 97.6	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.98	
Intersection Signal Delay: 35.8	Intersection LOS: D
Intersection Capacity Utilization 87.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: NE 192nd Avenue & NE 13th Street



HCM 6th Signalized Intersection Summary
1: NE 192nd Avenue & NE 13th Street

2026 Background Traffic-MIT, PM Peak Hour
09/09/2023



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	212	296	572	299	287	434
Future Volume (veh/h)	212	296	572	299	287	434
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	236	329	636	332	319	482
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	343	305	617	322	332	1355
Arrive On Green	0.19	0.19	0.53	0.53	0.14	0.72
Sat Flow, veh/h	1795	1598	1167	609	1795	1885
Grp Volume(v), veh/h	236	329	0	968	319	482
Grp Sat Flow(s),veh/h/ln	1795	1598	0	1776	1795	1885
Q Serve(g_s), s	12.2	19.1	0.0	52.9	13.6	9.7
Cycle Q Clear(g_c), s	12.2	19.1	0.0	52.9	13.6	9.7
Prop In Lane	1.00	1.00		0.34	1.00	
Lane Grp Cap(c), veh/h	343	305	0	939	332	1355
V/C Ratio(X)	0.69	1.08	0.00	1.03	0.96	0.36
Avail Cap(c_a), veh/h	343	305	0	939	332	1355
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.7	40.5	0.0	23.6	33.9	5.3
Incr Delay (d2), s/veh	5.7	73.9	0.0	37.5	38.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	13.6	0.0	29.2	7.4	3.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	43.4	114.4	0.0	61.0	72.6	6.0
LnGrp LOS	D	F	A	F	E	A
Approach Vol, veh/h	565		968			801
Approach Delay, s/veh	84.7		61.0			32.5
Approach LOS	F		E			C

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	19.0	57.4			76.4	23.6
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	14.5	52.9			71.9	19.1
Max Q Clear Time (g_c+I1), s	15.6	54.9			11.7	21.1
Green Ext Time (p_c), s	0.0	0.0			3.2	0.0

Intersection Summary	
HCM 6th Ctrl Delay	57.0
HCM 6th LOS	E

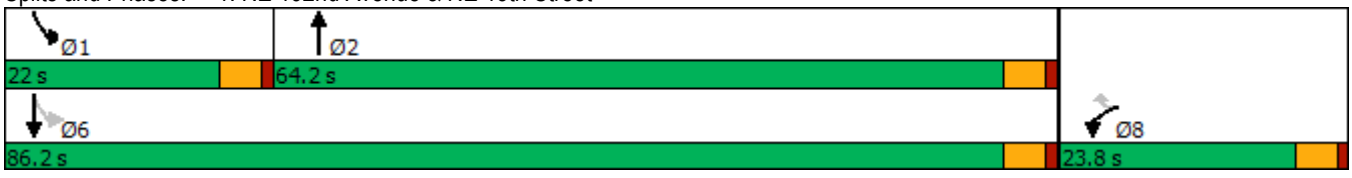
Lanes, Volumes, Timings
1: NE 192nd Avenue & NE 13th Street

2026 Total Traffic-MIT, PM Peak Hour
09/09/2023

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	236	321	559	329	307	426
Future Volume (vph)	236	321	559	329	307	426
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	23.2	23.2	22.5		9.5	22.5
Total Split (s)	23.8	23.8	64.2		22.0	86.2
Total Split (%)	21.6%	21.6%	58.4%		20.0%	78.4%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	Max		None	Max
Act Effct Green (s)	18.4	18.4	59.7		81.7	81.7
Actuated g/C Ratio	0.17	0.17	0.55		0.75	0.75
v/c Ratio	0.87	0.63	0.99		0.96	0.34
Control Delay	72.3	9.8	50.9		71.8	5.5
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	72.3	9.8	50.9		71.8	5.5
LOS	E	A	D		E	A
Approach Delay	36.3		50.9			33.3
Approach LOS	D		D			C

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 109.1	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 41.2	Intersection LOS: D
Intersection Capacity Utilization 90.8%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: NE 192nd Avenue & NE 13th Street



HCM 6th Signalized Intersection Summary
1: NE 192nd Avenue & NE 13th Street

2026 Total Traffic-MIT, PM Peak Hour
09/09/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	236	321	559	329	307	426		
Future Volume (veh/h)	236	321	559	329	307	426		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Work Zone On Approach	No		No			No		
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885		
Adj Flow Rate, veh/h	262	357	621	366	341	473		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	1	1	1	1	1	1		
Cap, veh/h	315	280	603	356	351	1400		
Arrive On Green	0.18	0.18	0.54	0.54	0.16	0.74		
Sat Flow, veh/h	1795	1598	1112	655	1795	1885		
Grp Volume(v), veh/h	262	357	0	987	341	473		
Grp Sat Flow(s),veh/h/ln	1795	1598	0	1767	1795	1885		
Q Serve(g_s), s	15.5	19.3	0.0	59.7	16.7	9.5		
Cycle Q Clear(g_c), s	15.5	19.3	0.0	59.7	16.7	9.5		
Prop In Lane	1.00	1.00		0.37	1.00			
Lane Grp Cap(c), veh/h	315	280	0	959	351	1400		
V/C Ratio(X)	0.83	1.27	0.00	1.03	0.97	0.34		
Avail Cap(c_a), veh/h	315	280	0	959	351	1400		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	43.8	45.3	0.0	25.2	38.4	4.9		
Incr Delay (d2), s/veh	17.0	148.0	0.0	36.7	40.2	0.7		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	8.3	19.0	0.0	32.1	12.9	3.1		
Unsig. Movement Delay, s/veh								
LnGrp Delay(d),s/veh	60.8	193.3	0.0	61.9	78.7	5.5		
LnGrp LOS	E	F	A	F	E	A		
Approach Vol, veh/h	619		987			814		
Approach Delay, s/veh	137.2		61.9			36.2		
Approach LOS	F		E			D		
Timer - Assigned Phs	1	2				6	8	
Phs Duration (G+Y+Rc), s	22.0	64.2				86.2	23.8	
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5	
Max Green Setting (Gmax), s	17.5	59.7				81.7	19.3	
Max Q Clear Time (g_c+I1), s	18.7	61.7				11.5	21.3	
Green Ext Time (p_c), s	0.0	0.0				3.1	0.0	
Intersection Summary								
HCM 6th Ctrl Delay			72.5					
HCM 6th LOS			E					

Queues
1: NE 192nd Avenue & NE 13th Street

2023 Adjusted Existing Traffic, AM Peak Hour
09/09/2023

Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	474	276	402	300
v/c Ratio	0.86	0.48	0.72	0.30
Control Delay	32.1	17.7	17.8	8.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	32.1	17.7	17.8	8.4
Queue Length 50th (ft)	118	69	79	55
Queue Length 95th (ft)	#265	132	#162	96
Internal Link Dist (ft)	2250	872		592
Turn Bay Length (ft)			200	
Base Capacity (vph)	614	580	562	993
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.48	0.72	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	159	362	119	346	169	78	18
v/c Ratio	0.31	0.52	0.35	0.67	0.22	0.09	0.02
Control Delay	16.5	5.0	18.0	23.5	8.4	2.7	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.5	5.0	18.0	23.5	8.4	2.7	6.5
Queue Length 50th (ft)	39	0	30	96	24	0	2
Queue Length 95th (ft)	72	38	60	152	61	15	10
Internal Link Dist (ft)	228			879	635		611
Turn Bay Length (ft)		150	185			200	
Base Capacity (vph)	726	834	491	748	752	900	1002
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.43	0.24	0.46	0.22	0.09	0.02

Intersection Summary

Lane Group	EBL	EBT	WBT	SBT	SBR
Lane Group Flow (vph)	448	321	559	170	240
v/c Ratio	1.03	0.16	0.28	0.37	0.36
Control Delay	72.7	9.3	6.2	26.2	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	72.7	9.3	6.2	26.2	4.8
Queue Length 50th (ft)	~275	42	46	73	0
Queue Length 95th (ft)	#353	52	55	108	27
Internal Link Dist (ft)		871	1508	817	
Turn Bay Length (ft)	300				135
Base Capacity (vph)	436	2005	1992	454	664
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.03	0.16	0.28	0.37	0.36

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

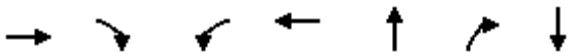
Queues
1: NE 192nd Avenue & NE 13th Street

2023 Adjusted Existing Traffic, PM Peak Hour
09/09/2023

Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	434	803	253	454
v/c Ratio	0.92	0.84	0.77	0.36
Control Delay	62.7	34.0	33.6	9.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	62.7	34.0	33.6	9.4
Queue Length 50th (ft)	275	530	91	143
Queue Length 95th (ft)	#460	#793	#201	202
Internal Link Dist (ft)	2250	872		592
Turn Bay Length (ft)			200	
Base Capacity (vph)	505	958	352	1273
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.86	0.84	0.72	0.36

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	325	113	122	300	142	255	10
v/c Ratio	0.64	0.22	0.61	0.59	0.17	0.26	0.01
Control Delay	24.0	4.8	31.3	22.4	7.8	2.1	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.0	4.8	31.3	22.4	7.8	2.1	6.3
Queue Length 50th (ft)	94	0	35	85	19	0	1
Queue Length 95th (ft)	158	27	80	145	57	29	8
Internal Link Dist (ft)	228			879	635		611
Turn Bay Length (ft)		150	185			200	
Base Capacity (vph)	827	756	327	830	818	989	1027
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.15	0.37	0.36	0.17	0.26	0.01

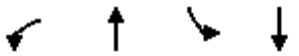
Intersection Summary

Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	269	612	557	2	109	152
v/c Ratio	0.84	0.40	0.37	0.00	0.17	0.19
Control Delay	40.8	13.8	11.7	17.5	17.2	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.8	13.8	11.7	17.5	17.2	4.3
Queue Length 50th (ft)	97	90	69	1	27	0
Queue Length 95th (ft)	195	121	99	6	85	40
Internal Link Dist (ft)		871	1508	219	817	
Turn Bay Length (ft)	300					135
Base Capacity (vph)	552	2661	2588	577	636	799
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.23	0.22	0.00	0.17	0.19

Intersection Summary

Queues
1: NE 192nd Avenue & NE 13th Street

2026 Background Traffic, AM Peak Hour
09/10/2023



Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	666	326	448	318
v/c Ratio	0.97	0.75	0.91	0.35
Control Delay	52.7	41.8	42.1	14.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	52.7	41.8	42.1	14.6
Queue Length 50th (ft)	332	160	170	104
Queue Length 95th (ft)	#566	#292	#350	163
Internal Link Dist (ft)	2250	872		592
Turn Bay Length (ft)			200	
Base Capacity (vph)	706	433	505	906
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.94	0.75	0.89	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	221	387	201	531	189	109	19
v/c Ratio	0.36	0.50	0.54	0.85	0.28	0.13	0.02
Control Delay	16.4	4.4	21.8	32.6	10.3	2.5	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.4	4.4	21.8	32.6	10.3	2.5	7.1
Queue Length 50th (ft)	57	0	56	167	37	0	3
Queue Length 95th (ft)	98	39	104	#287	68	18	11
Internal Link Dist (ft)	228			879	635		611
Turn Bay Length (ft)		150	185			200	
Base Capacity (vph)	668	812	408	688	679	849	924
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.48	0.49	0.77	0.28	0.13	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBT	SBT	SBR
Lane Group Flow (vph)	488	349	615	239	301
v/c Ratio	0.99	0.15	0.27	0.70	0.50
Control Delay	58.3	7.1	4.6	53.7	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	58.3	7.1	4.6	53.7	7.2
Queue Length 50th (ft)	333	46	50	170	0
Queue Length 95th (ft)	#454	53	54	216	31
Internal Link Dist (ft)		871	1508	817	
Turn Bay Length (ft)	300				135
Base Capacity (vph)	497	2388	2330	340	604
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.98	0.15	0.26	0.70	0.50

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
1: NE 192nd Avenue & NE 13th Street

2026 Background Traffic, PM Peak Hour
09/09/2023

Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	565	968	319	482
v/c Ratio	1.13	1.09	1.09	0.39
Control Delay	116.9	86.6	112.6	10.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	116.9	86.6	112.6	10.8
Queue Length 50th (ft)	~474	~831	~227	160
Queue Length 95th (ft)	#697	#1085	#412	224
Internal Link Dist (ft)	2250	872		592
Turn Bay Length (ft)			200	
Base Capacity (vph)	501	890	293	1230
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.13	1.09	1.09	0.39

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
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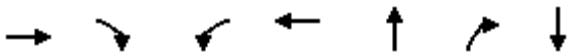
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	508	126	176	414	164	348	10
v/c Ratio	0.73	0.19	0.99	0.59	0.24	0.41	0.01
Control Delay	23.2	3.6	91.0	19.2	11.9	6.2	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.2	3.6	91.0	19.2	11.9	6.2	8.7
Queue Length 50th (ft)	157	0	63	120	38	30	1
Queue Length 95th (ft)	251	26	#173	194	74	78	9
Internal Link Dist (ft)	228			879	635		611
Turn Bay Length (ft)		150	185			200	
Base Capacity (vph)	811	749	206	811	677	856	870
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.17	0.85	0.51	0.24	0.41	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	318	656	648	10	144	200
v/c Ratio	0.92	0.36	0.36	0.02	0.27	0.27
Control Delay	52.0	11.8	9.7	6.2	22.3	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.0	11.8	9.7	6.2	22.3	4.5
Queue Length 50th (ft)	135	95	76	0	54	0
Queue Length 95th (ft)	#309	127	108	8	110	46
Internal Link Dist (ft)		871	1508	219	817	
Turn Bay Length (ft)	300					135
Base Capacity (vph)	451	2384	2321	617	540	735
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.28	0.28	0.02	0.27	0.27

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
1: NE 192nd Avenue & NE 13th Street

2026 Total Traffic, AM Peak Hour
09/09/2023

Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	709	338	466	310
v/c Ratio	0.99	0.89	0.97	0.35
Control Delay	56.6	58.3	58.6	15.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	56.6	58.3	58.6	15.4
Queue Length 50th (ft)	363	169	212	103
Queue Length 95th (ft)	#611	#326	#410	162
Internal Link Dist (ft)	2250	872		592
Turn Bay Length (ft)			200	
Base Capacity (vph)	718	379	481	878
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.99	0.89	0.97	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
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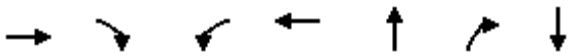


Lane Group	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	222	396	201	532	198	109	19
v/c Ratio	0.36	0.51	0.54	0.85	0.29	0.13	0.02
Control Delay	16.4	4.4	21.8	32.7	10.4	2.5	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.4	4.4	21.8	32.7	10.4	2.5	7.1
Queue Length 50th (ft)	57	0	56	168	40	0	3
Queue Length 95th (ft)	98	40	104	#288	72	18	11
Internal Link Dist (ft)	228			879	635		611
Turn Bay Length (ft)		150	185			200	
Base Capacity (vph)	668	818	406	687	676	849	922
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.48	0.50	0.77	0.29	0.13	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBT	SBT	SBR
Lane Group Flow (vph)	488	349	622	247	301
v/c Ratio	0.99	0.15	0.27	0.74	0.50
Control Delay	58.7	6.9	4.5	56.4	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	58.7	6.9	4.5	56.4	7.3
Queue Length 50th (ft)	335	45	49	177	0
Queue Length 95th (ft)	#455	52	53	226	31
Internal Link Dist (ft)		871	1508	817	
Turn Bay Length (ft)	300				135
Base Capacity (vph)	493	2392	2333	335	599
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.99	0.15	0.27	0.74	0.50

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
1: NE 192nd Avenue & NE 13th Street

2026 Total Traffic, PM Peak Hour
09/09/2023

Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	619	987	341	473
v/c Ratio	1.17	1.15	1.16	0.39
Control Delay	131.6	111.0	137.5	11.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	131.6	111.0	137.5	11.7
Queue Length 50th (ft)	~540	~888	~262	165
Queue Length 95th (ft)	#770	#1143	#450	231
Internal Link Dist (ft)	2250	872		592
Turn Bay Length (ft)			200	
Base Capacity (vph)	528	858	293	1199
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.17	1.15	1.16	0.39

Intersection Summary

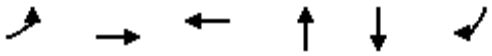
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	510	137	176	417	176	348	10
v/c Ratio	0.73	0.20	0.99	0.59	0.26	0.41	0.01
Control Delay	23.3	3.5	91.8	19.3	12.1	6.3	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.3	3.5	91.8	19.3	12.1	6.3	8.7
Queue Length 50th (ft)	158	0	63	121	41	30	1
Queue Length 95th (ft)	252	27	#173	196	79	79	9
Internal Link Dist (ft)	228			879	635		611
Turn Bay Length (ft)		150	185			200	
Base Capacity (vph)	810	754	204	810	672	854	868
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.18	0.86	0.51	0.26	0.41	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	318	656	656	10	153	200
v/c Ratio	0.93	0.36	0.36	0.02	0.29	0.27
Control Delay	53.2	11.7	9.6	6.2	22.6	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.2	11.7	9.6	6.2	22.6	4.6
Queue Length 50th (ft)	136	95	76	0	60	0
Queue Length 95th (ft)	#312	127	108	8	117	46
Internal Link Dist (ft)		871	1508	219	817	
Turn Bay Length (ft)	300					135
Base Capacity (vph)	442	2368	2307	610	536	732
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.28	0.28	0.02	0.29	0.27

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

PLS ENGINEERING

Engineering - Surveying - Planning * 604 W Evergreen Blvd, Vancouver, WA 98660 * P 360-944-6519 * F 360-944-6539 *

October 9, 2023

City of Camas Public Works
616 NE 4th Avenue
Camas, WA 98607

RE: 13the Street Site Plan, PA-22-32
Maximum Extent Feasible Memo for: Access Spacing Deviation & Parking Spaces Setback

Per City of Camas Design Standards Manual (CDSM), design deviation allowances will be considered on a case-by-case basis. The Maximum Extent Feasible (MEF) memo is required prior to engineering plan approval.

Deviation standards:

1. Camas Design Standards Manual (CDSM) Table 3 identifies the access spacing standards on an Arterial to be 660' minimum to 1,000' Maximum. This deviation request will show that the proposed lot development does not accommodate the 660' minimum allowed in Table 3, but the standard has been met to the maximum extent feasible.
2. Camas Design Standards Manual (CDSM) Table 1 requires on site parking to be setback 50' minimum from the sidewalk along an arterial. This deviation request will show that the proposed lot development does is too narrow to meet the criteria, but the standard has been met to the maximum extent feasible.

Reasons for deviation are as follows:

1. ***Access Spacing Deviation:***
   a. The westernmost property boundary is approximately 367-feet west of the intersection on NE 13th Street and NW Friberg-Strunk Street.
   b. The existing driveway to the current single-family residence is approximately 244-feet west of the intersection of NE 13th Street and NW Friberg-Strunk Street.
   c. The entrance must be located such that fuel delivery trucks can access the site from both directions and have room to turn around. Turning paths were calculated to identify the ideal driveway location (see attached exhibit).

2. ***Parking Spaces Setback:***
   a. The existing depth of the parcel is 131-feet. There isn't room for the required parking spaces to all be located 50' from the sidewalk.
   b. The proposed gas station mini-mart is less than 50' from the sidewalk. Parking is required in front of the mini-mart. It is impossible to provide parking in front of the mini-mart and comply with the 50' setback requirement.
   c. Proposed parking spaces for this lot that are not located in front of the mini-mart are more than 50' from the right of way.

PLS ENGINEERING

Engineering - Surveying - Planning * 604 W Evergreen Blvd, Vancouver, WA 98660 * P 360-944-6519 * F 360-944-6539 *

Maximum Extent Feasible:

1. ***Access Spacing Deviation:***
   As seen in the attached exhibit, the driveway was located as far West as possible to provide for fuel delivery, and is located such that it complies with the standard to the maximum extent feasible.

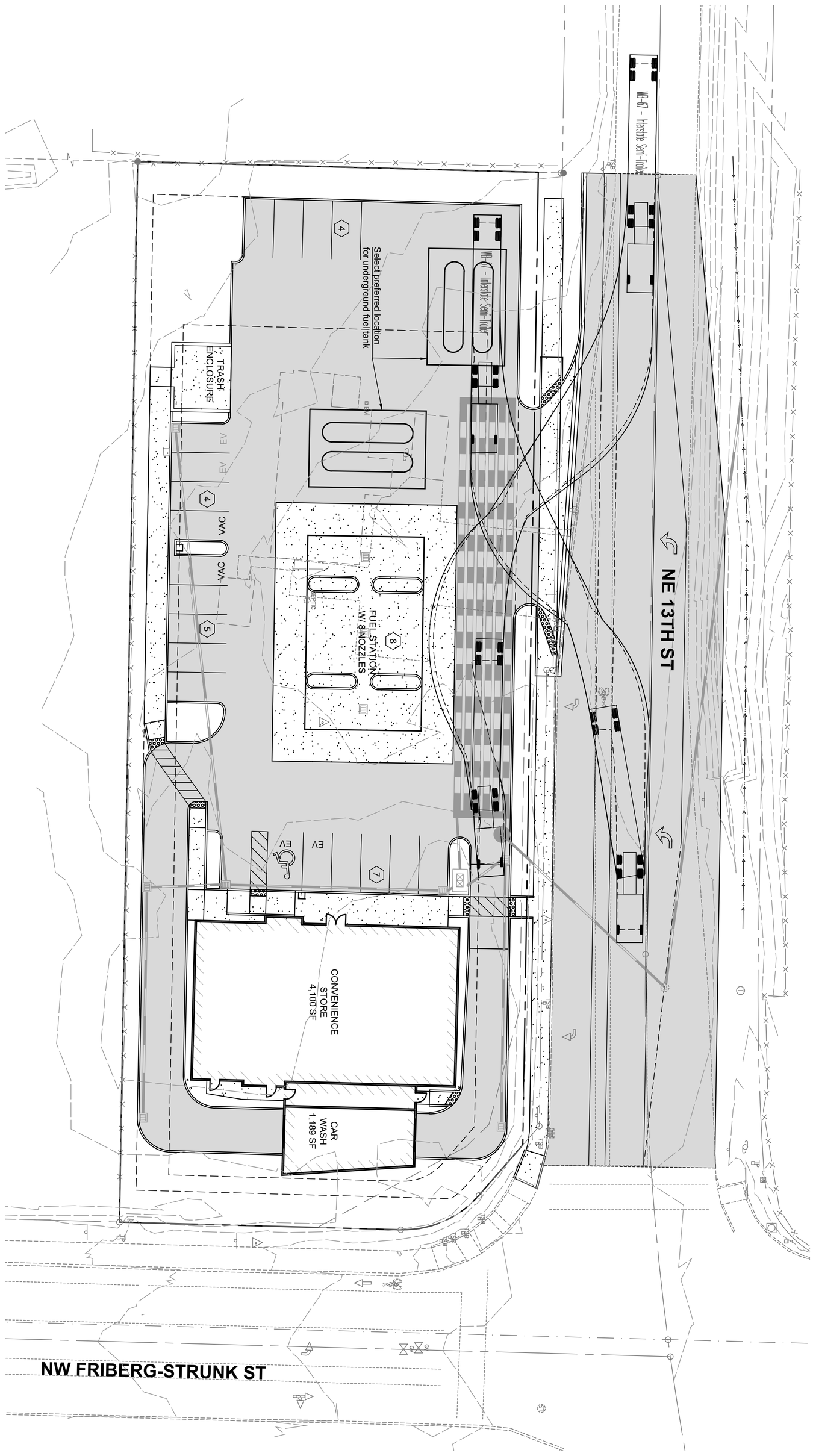
2. ***Parking Spaces Setback:***
   Aside from the parking spaces required to be located in front of the convenience store, the rest of the required parking spaces were located as far away from the arterial as possible. The majority exceed 50' from the sidewalk. This meets the maximum extent feasible criteria.

In closing, please approve these proposed design deviations.

If you have any questions or concerns, please contact me at (360) 944-6519 or scott@plsengineering.com

Sincerely,

Scott Gilliland
PLS Engineering



Scale 1" = 20'

20 10 0 20

N

Project No.	3632
SCALE:	H: 1" = 20' V: N/A
DESIGNED BY:	SWG
DRAFTED BY:	SWG
REVIEWED BY:	TGJ

01
01

Revisions			
1			
2			
3			
4			
5			
6			

Truck Turning Exhibit A For:

13th Street Gas Station

A site located in the City of Camas, WA

Engineering - Surveying - Planning | 604 W. Evergreen Blvd., Vancouver, WA 98660 | PH (360) 944-6519 | Fax (360) 944-6539

PLS ENGINEERING

Exhibit 11 APPEAL24-1001

CRITICAL AREAS REPORT

October 2, 2023

13th Street Gas Station

Camas, WA

Prepared for

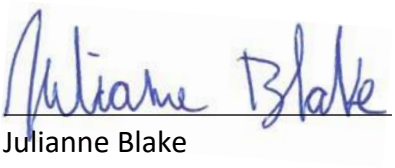
PAK USA Camas, LLC
c/o Taz Khan
3993 NW Currawong Court
Camas, WA 98607
(512) 779-4999

Prepared by

Ecological Land Services
1157 3rd Avenue, Suite 220A • Longview, WA 98632
(360) 578-1371 • Project Number 3934.01

SIGNATURE PAGE

The information in this report was compiled and prepared under the supervision and direction of the undersigned.



Julianne Blake
Biologist III

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APPENDICES

Appendix A – Routine Determination Method and Plant Indicator Rating Definitions
Appendix B – Wetland Determination Data Form
Appendix C – Precipitation Information

INTRODUCTION

Ecological Land Services, Inc. (ELS) was contracted by PAK USA Camas, LLC to complete a critical areas assessment for wetlands and fish and wildlife habitat conservation areas, for the purpose of future development. The site is approximately 0.97 acres and consists of Clark County Tax Parcel 176148000 located at 20101 NE 13th Street within the NW ¼ of Section 29, Township 2 North, and Range 3 East of the Willamette Meridian in Camas, Washington (Figure 1). Field work was conducted on August 29, 2023. This report summarizes the findings of the site visit in accordance with *Camas Municipal Code (CMC) Title 16 Environment* (2023).

SITE DESCRIPTION

The 0.97-acre site consists of Clark County Tax Parcel 176148000 and is accessed by a paved driveway off NE 13th Street. The site is zoned as Business Park (BP) and currently contains a single-family mobile home, shed, carport, and paved driveway. The site is bordered to the north by NE 13th Street, to the east by NW Friberg-Strunk Street, to the south by undeveloped land and commercial development in progress, and to the west by undeveloped land and a single-family residence (Figure 2).

Vegetation onsite consists primarily of regularly mowed grasses, ornamental shrubs, and coniferous and deciduous trees. Topography onsite is generally flat with NE 13th Street and NW Friberg-Strunk Street roughly two feet higher in elevation than the site. One Oregon white oak (*Quercus garryana,* FACU) was identified onsite along the southern property boundary.

METHODOLOGY

The property was evaluated for the presence of wetlands using the Routine Determination Method according to the U.S. Army Corps of Engineers' 1987 *Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers' Wetland Delineation Manual* (Environmental Laboratory 1987)*; Western Mountains, Valleys, and Coast Region (Version 2.0)* (Corps 2010). The Routine Determination Method and defining wetland criteria are discussed further in Appendix A. Wetlands are regulated as "Waters of the United States" by the U.S. Army Corps of Engineers (Corps) and as "Waters of the State" by the Washington Department of Ecology (Ecology), and locally by The City of Camas (City).

ELS biologists evaluated the property on August 29, 2023, to determine the presence or absence of critical areas including streams, wetlands, and priority habitats. One Oregon white oak (oak) was identified onsite, and no wetlands, streams, or other priority habitats were identified. Vegetation, soil, and hydrology data were collected from one test plot (TP) to determine whether wetlands were present onsite. No wetlands were present onsite. TP-1 was taken in the southwest corner of the site in an area with mapped hydric soils. The oak dripline and test plot location were mapped using a hand-held Global Positioning System (GPS) unit capable of sub-meter accuracy under ideal conditions.

VEGETATION

General vegetation consists primarily of regularly mowed grass and ornamental trees and shrubs (Photoplates 1 and 2). One Oregon white oak was observed along the southern site boundary. The plant indicator status following the plant scientific name is defined by the *National Wetland Plant List Indicator Rating Definitions* (Corps 2012) and can be found in Appendix A.

Dominant vegetation consisted of domestic apple trees (*Malus* spp.*,* assumed FAC), Japanese maple (*Acer palmatum*, UPL), rhododendron (*Rhododendron* spp., assumed FACU), Oregon white oak, osoberry (*Oemleria cerasiformis*, FACU), mowed English hawthorn saplings (*Crataegus monogyna*, FAC), swordfern (*Polystichum munitum*, FACU), and fescue grass (*Festuca* spp.*,* assumed FAC). The wetland determination data form contains vegetation information at TP-1 and is in Appendix B.

SOILS

The Natural Resources Conservation Service (NRCS) designates soils onsite as cove silty clay loam, thin solum, 0 to 3 percent slopes (CwA), and Wind River gravelly loam, 0 to 8 percent slopes (WrB) (Figure 3, NRCS 2023B). Of the two soil types found onsite, cove silty clay loam, thin solum, 0 to 3 percent slopes is designated as hydric.

According to soil profile descriptions developed by NRCS, cove silty clay loam, thin solum, is characterized as a poorly drained soil, forming on floodplains, with a depth to water table of 0 to 12 inches below ground surface (BGS). A typical soil profile includes silty clay loam from 0 to 14 inches, clay from 14-21 inches, and silt loam from 21 to 60 inches BGS. Wind River gravelly loam is categorized as a somewhat excessively drained soil with a typical soil profile of gravelly loam from 0 to 4 inches, coarse sandy loam from 4 to 24 inches, and loamy coarse sand from 24 to 60 inches BGS. Wind River gravelly loam forms on floodplains from alluvium parent material and has an average depth to water table of more than 80 inches.

Evaluated soils were characterized as loamy with a value of 4, and a chroma of 3, with no observations of redoximorphic concentrations and meeting no hydric soil indicators. Mapped hydric soils do not necessarily mean that an area is or is not a wetland—hydrology, hydrophytic wetland vegetation, and hydric soils must all be present to classify an area as a wetland. The test plot data form is in Appendix B.

HYDROLOGY

No evidence of wetland hydrology was observed at TP-1 or onsite.

PRECIPITATION

Precipitation data was gathered from the NOAA Regional Climate Centers *Clark County, Washington, WETS Station: Battle Ground*, which is located closest to the site. No rainfall occurred the day of the site visit or in the two weeks prior. Rainfall in June, July, and August was below exceedance levels and approximately 94 percent of August rainfall occurred prior to the site visit. Furthermore, review of the USACE Antecedent Precipitation Tool (APT) indicates rainfall

in the two months preceding the August 29th site visit was drier than normal with a score of 6. A copy of the APT data is provided in Appendix C. Table 1 summarizes the precipitation data.

Table 1. Precipitation Summary

Precipitation (inches)								
Date of Visit	Two Weeks Prior	3 Months Prior		30%	70%	DAREM[1]		
		30 Days Ending	Observed			Value	Weight	Total
8/29/23	8/15/23 – 8/28/23	8/29/23	0.05	0.25	0.99	1	3	3
		7/30/23	0.0	0.24	0.82	1	2	2
0.0	0.0	6/30/23	0.83	1.48	2.80	1	1	1
Rainfall 3 months prior was: **drier than normal** (sum 6-9), normal (sum 10-14), wetter than normal (sum 15-18).[1]								6
Year to Date Average Rainfall[2,3]: 50.06								
Year to Date Actual Rainfall[3]: 45.32								

[1] *Direct Antecedent Rainfall Evaluation Methods (Sumner et al 2009)*
[2] *Includes 94% of August Rainfall*
[3] *Based on a water year, October 2022 – August 2023*

Critical Area Inventories

National Wetlands Inventory

The National Wetlands Inventory (NWI) map does not indicate any wetlands onsite (Figure 4, USFWS 1988). ELS agrees with the NWI mapping, as no wetlands were identified onsite.

Clark County Critical Area Inventory

The Clark County Critical Area Inventory (CCCAI) map does not indicate any wetlands onsite but does indicate potential wetlands presence on the property to the south. Hydric soils are mapped along the eastern site boundary and the southwestern corner, and a habitat area is mapped over the majority of the eastern portion of the site (Figure 5). ELS partially agrees with the CCAI as no wetlands were identified onsite and one oak was observed in the vicinity of the mapped habitat area. The potential wetlands mapped to the south of the site are located in the footprint of a commercial development that has received permit approval. However, ELS does not agree with the extent of the mapped habitat area as only one oak was identified onsite and no other critical habitats were identified.

Washington Department of Natural Resources Stream Type

The Washington Department of Natural Resources (WDNR) Stream Type Map does not depict any streams onsite (Figure 6, WDNR 2023). ELS agrees with the WDNR mapping as no streams were observed onsite.

Priority Habitats and Species

The Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) maps indicate oak woodland and caves or cave-rich areas on the southern boundary of the site

and within 300 feet of the site to the southwest (Figure 7, WDFW 2023). ELS confirmed the presence of a single oak along the southern site boundary, but no oak woodlands or caves were observed onsite.

Critical area inventory maps are typically used to gather general information about a region and due to the large scale necessary for regional mapping, are limited in accuracy for localized analyses.

CRITICAL AREAS SUMMARY

PRIORITY HABITATS

OREGON WHITE OAK

Oregon white oaks are considered a priority habitat and are regulated by the Washington Department of Fish and Wildlife (WDFW) and locally by the City of Camas. According to WDFW's Management Recommendations for Washington's priority habitats: Oregon white oak woodlands (Larsen and Morgan, 1998), in urban or urbanizing areas west of the Cascades, priority oak habitat is defined as single oaks, stands of pure oak, or oak/conifer associations, one acre or greater in size. WDFW may also consider individual Oregon white oak trees a priority habitat when found to be particularly valuable to wildlife [i.e., contains many cavities, has a large diameter at breast height (DBH), is used by priority species, or has a large canopy]. The site is within the City of Camas. WDFW recommendation is that in urban and urbanizing areas, single trees should be maintained if they are deemed important to species highly associated with Oregon white oak. Oaks and their associated floras comprise distinct woodland ecosystems with various plant communities providing valuable habitat that contributes to wildlife diversity; oak woodlands provide a mix of feeding, resting, and breeding habitat for many wildlife species (Larsen and Morgan 1998).

The WDFW Priority Habitats and Species online mapping tool depicts oak woodlands within the vicinity of the observed oak along the southern site boundary. One oak tree measuring approximately 52 inches DBH was mapped along the southern site boundary during site reconnaissance (Figure 2). The oak has several live and dead branches, cavities, and has canopy connectivity with other trees in the vicinity but is not connected with other oaks. The oak location was mapped using a GPS system capable of submeter accuracy in ideal conditions. According to *CMC 16.61.010(3)(a)*, individual Oregon white oak trees with a twenty-inch DBH are considered a priority habitat.

Table 2: Oak Summary

Canopy Area	Diameter at Breast Height	Number of Trunks	Noteworthy Habitat Features
0.08 acres	52 inches	1	• Canopy is interconnected with adjacent trees, but not other oaks • Two large cavities

LIMITATIONS

ELS bases this report's determinations on standard scientific methodology and best professional judgment. In our opinion, local, state, and federal regulatory agencies should agree with our determinations. However, the information contained in this report should be considered preliminary and used at your own risk until it has been approved in writing by the appropriate regulatory agencies. ELS is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this report.

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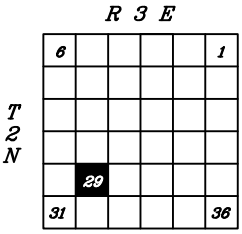
FIGURES AND PHOTOPLATES

WASHINGTON

SITE

45.6321° Latitude
-122.4664° Longitude

LOCATION MAP



PROJECT VICINITY MAP

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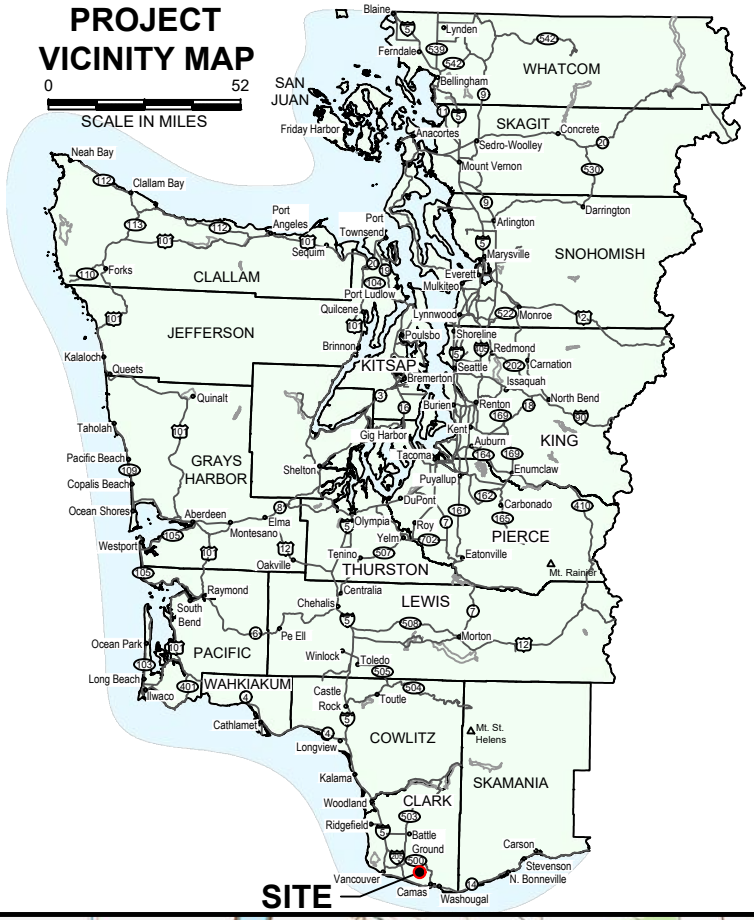
SCALE IN MILES



NOTE:
Quadrangle topographic map from USGS.

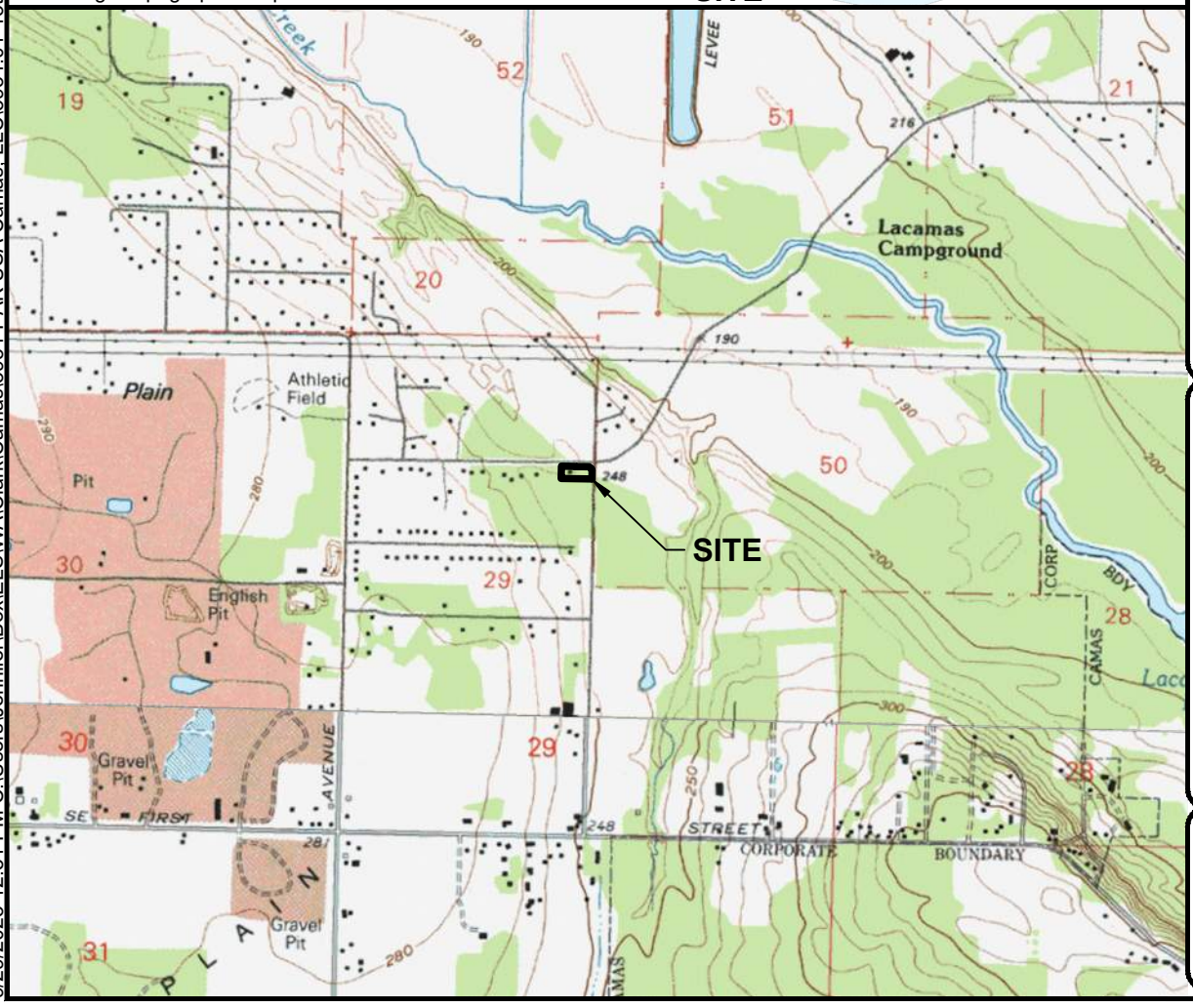


Figure 1
VICINITY MAP
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com

Ecological Land Services

0 2000 4000
SCALE IN FEET

N W E S

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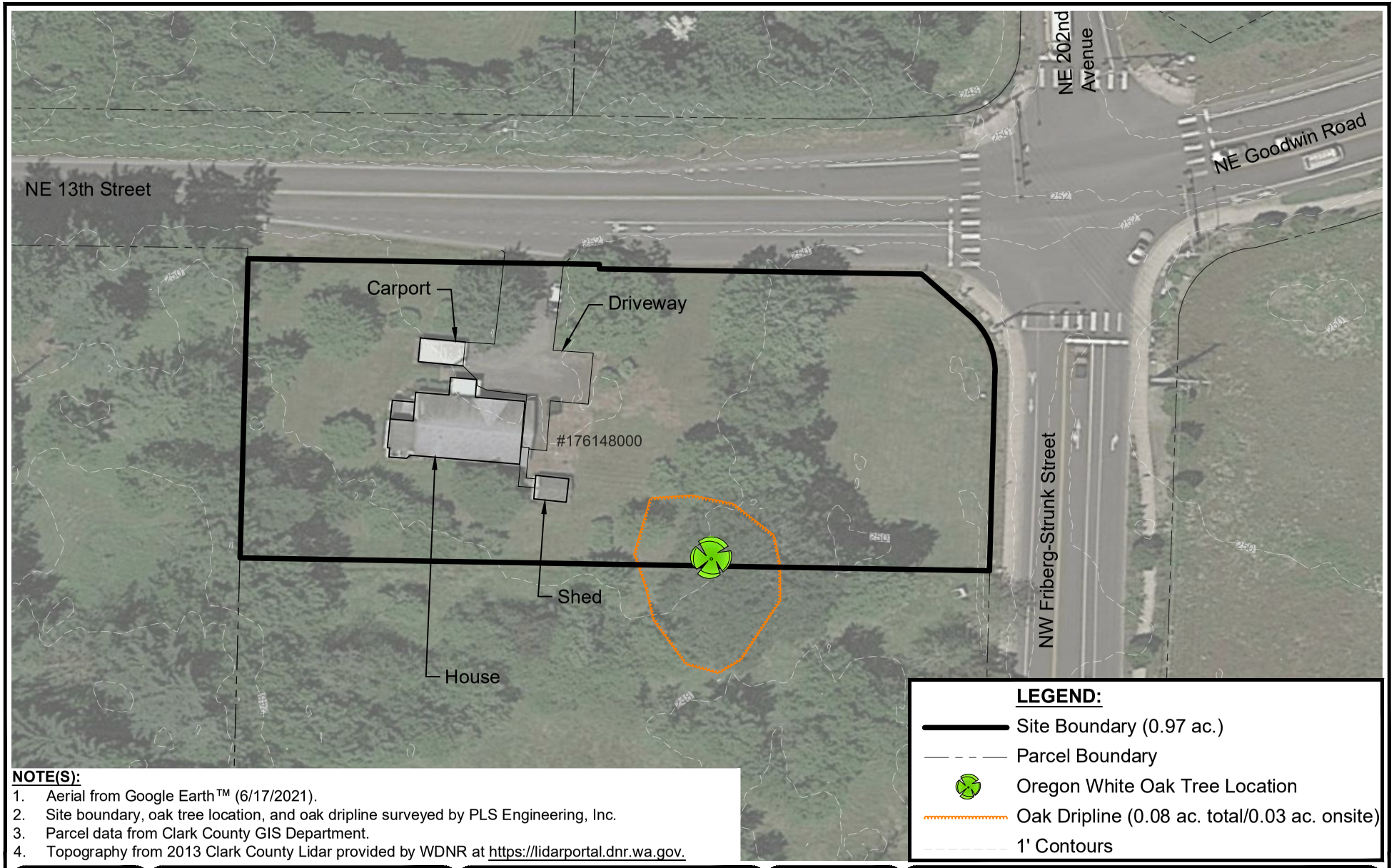

NOTE(S):

1. Aerial from Google Earth™ (6/17/2021).
2. Site boundary, oak tree location, and oak dripline surveyed by PLS Engineering, Inc.
3. Parcel data from Clark County GIS Department.
4. Topography from 2013 Clark County Lidar provided by WDNR at https://lidarportal.dnr.wa.gov.

N W E S

0 60 120
SCALE IN FEET

Ecological Land Services
1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

Figure 2
EXISTING CONDITIONS
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

Exhibit 12 APPEAL24-1001

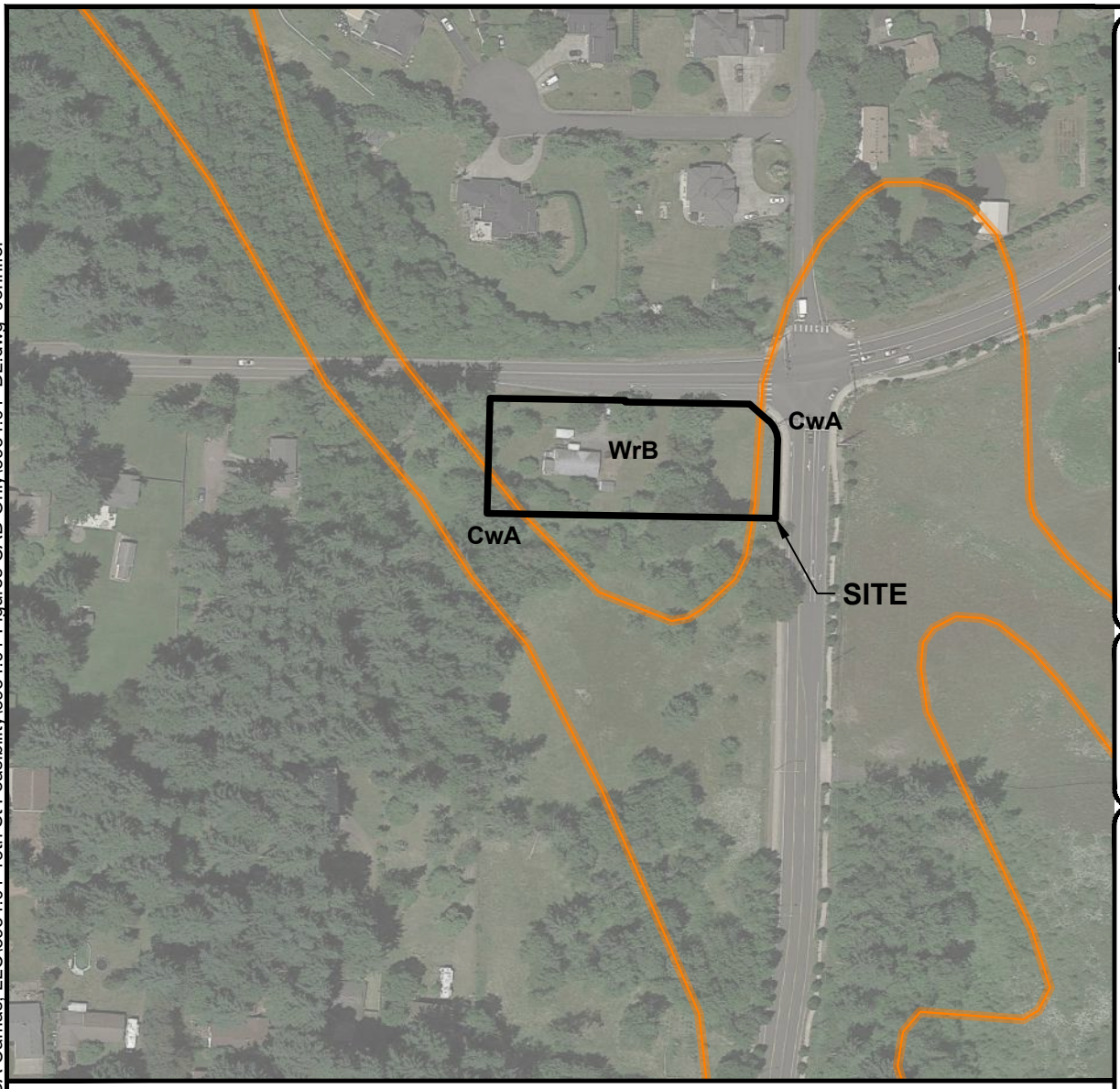

Figure 3
NRCS SOIL SURVEY
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

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Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com
Ecological Land Services

0 200 400
SCALE IN FEET

N
W E
S

LEGEND:

Site Boundary
NRCS Soil Boundary
CwA Cove silty clay loam, thin solum, 0 to 3 percent slopes. **Hydric.**
WrB Wind River gravelly loam, 0 to 8 percent slopes. Not hydric.

NOTE(S):
1. Map provided on-line by NRCS at web address: *http://websoilsurvey.nrcs.usda.gov/app/*

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Figure 4
USFWS NATIONAL WETLANDS INVENTORY
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

1157 3rd Ave., Suite 220A
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Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com
Ecological Land Services

No mapped wetlands indicated onsite by US Fish & Wildlife Service.

LEGEND:
- Site Boundary
- **Wetlands**
- Riverine

SCALE IN FEET: 0, 200, 400

N, W, E, S

NOTE(S):
1. Map provided on-line by US Fish & Wildlife Service at web address: *https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper*

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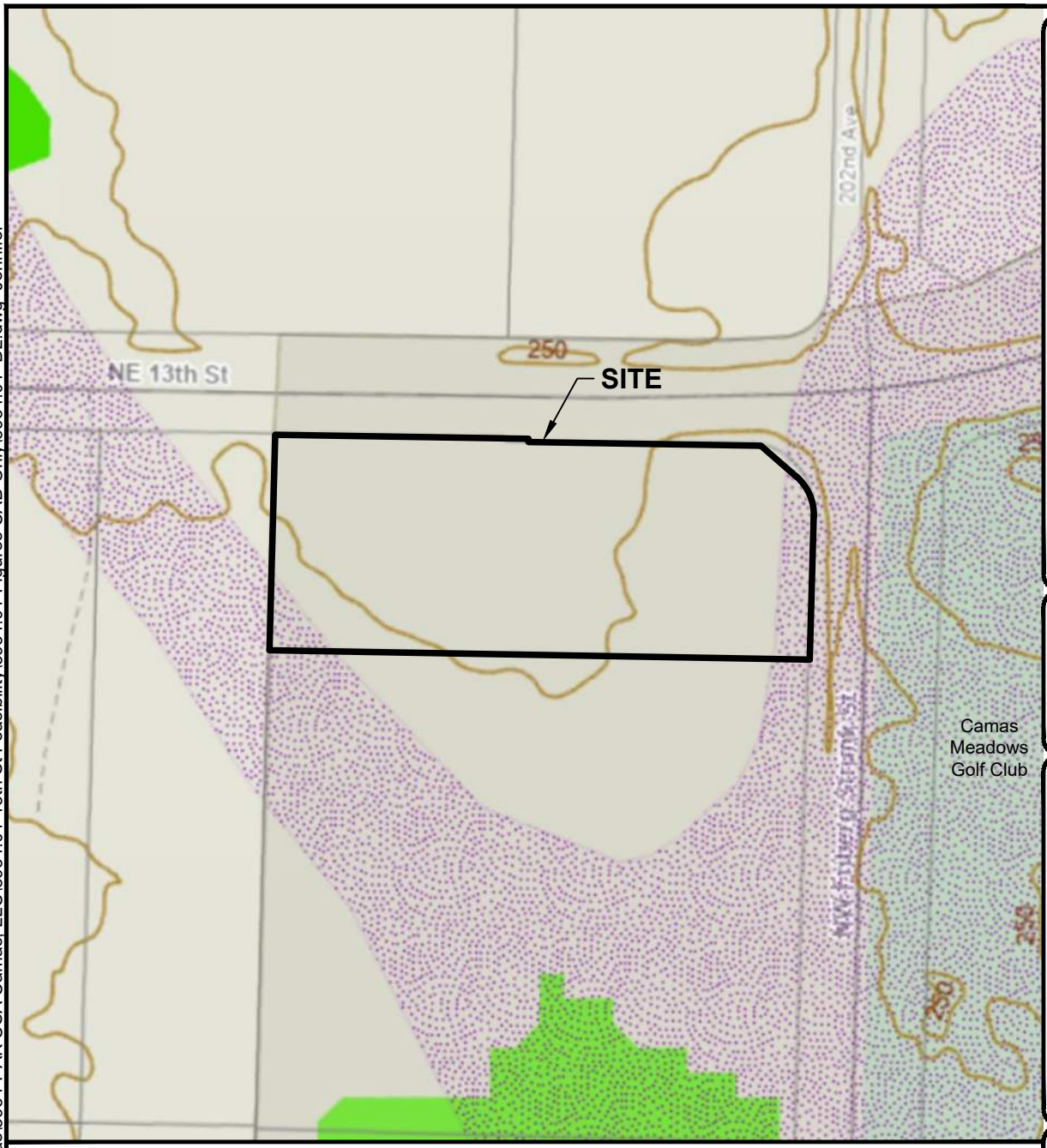

Figure 5
CLARK COUNTY CRITICAL AREAS
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com
Ecological Land Services

LEGEND:

Site Boundary

Slopes and Geologic Hazards Group Contour Lines
Contour Lines - 10 ft

Soils and Wetlands Inventory
Hydric Soils
Potential Wetlands Presence
Permitted Wetland

0 100 200 SCALE IN FEET

N W E S

NOTE(S):
1. Map provided on-line by Clark County at web address: *https://gis.clark.wa.gov/mapsonline/index.cfm?site=Environmental*

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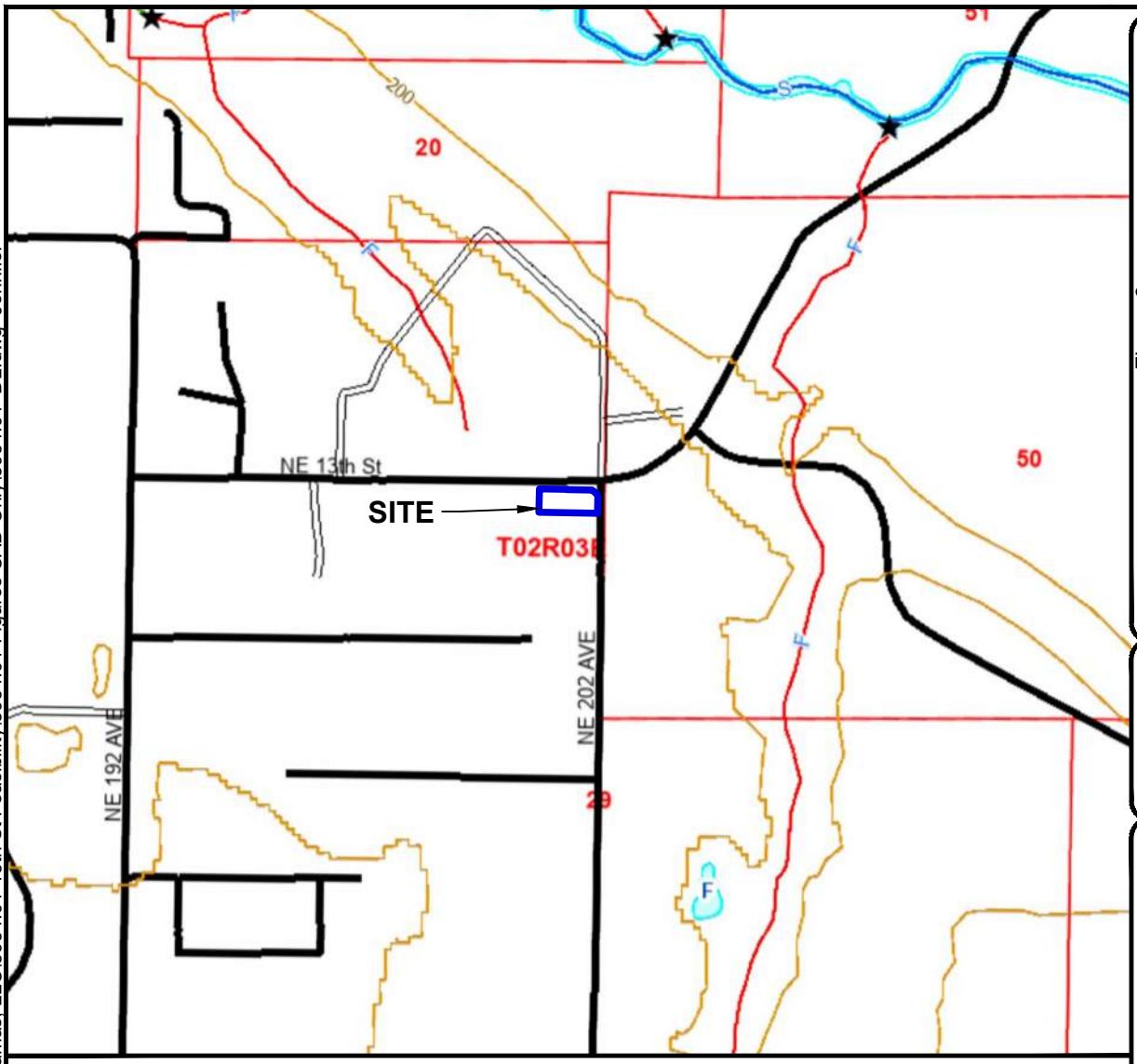

No mapped streams indicated onsite by the Washington State Department of Natural Resources (DNR).

LEGEND:

- Site Boundary

40-foot Contours
- 40 ft. Contours

Water Courses (FP)
- Type S
- Type F
- Type N, Np, Ns
- U, unknown
- X, non-typed per WAC 222-16

WRIA Boundaries
- WRIA Boundaries

DNR Roads
- Paved Road
- Unpaved Road/Surface Unknown

Unpaved Road/Surface Unknown
- Water Type Breaks (FP)

NOTE: Map provided on-line by Washington State Department of Natural Resources at web address: *http://fortress.wa.gov/dnr/app1/Fpars/viewer.htm*

Figure 6
WDNR STREAM TYPE MAP
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
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SCALE IN FEET
0
1000
2000

N
W
E
S

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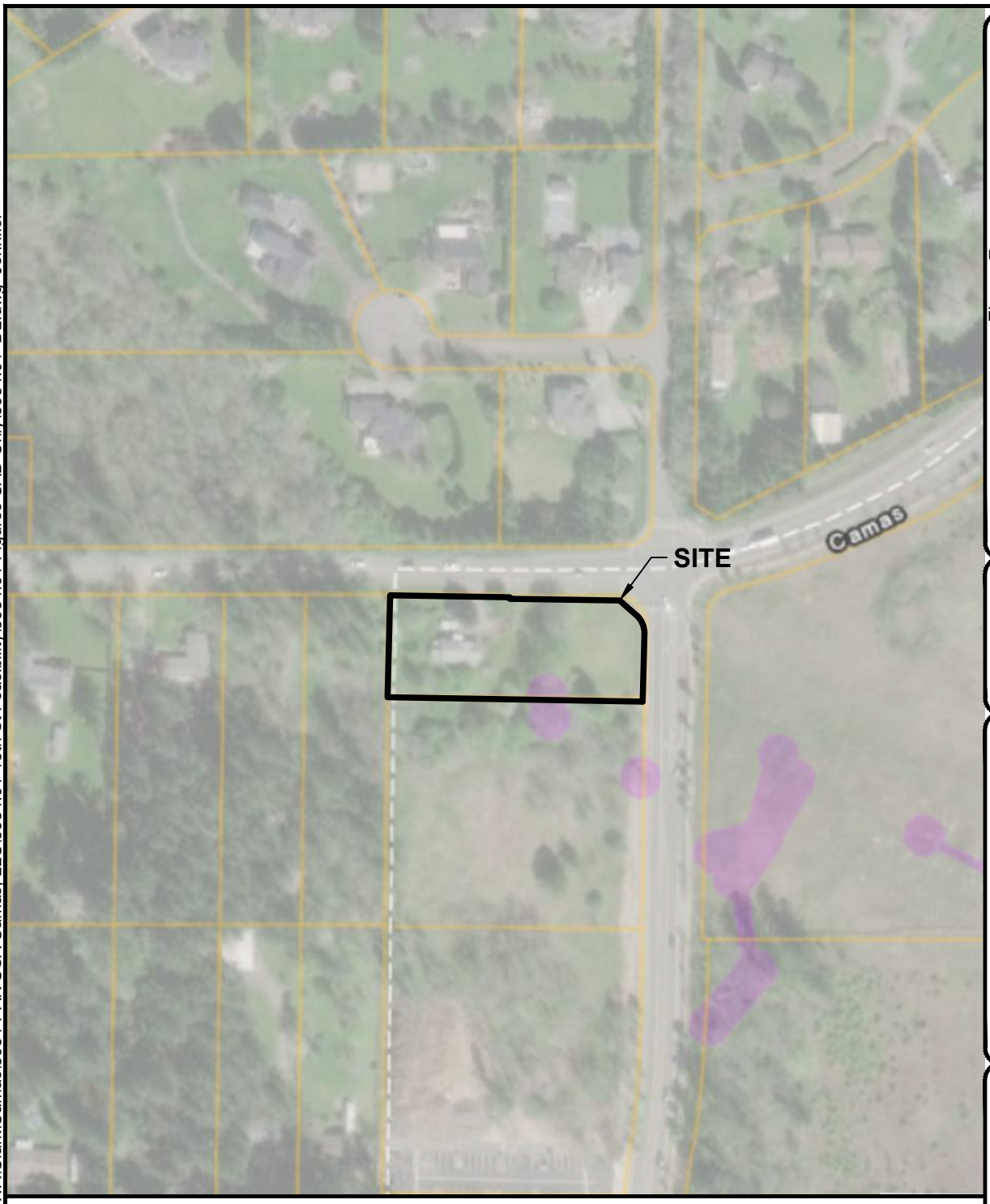

Figure 7
WDFW PRIORITY HABITAT AND SPECIES
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

1157 3rd Ave., Suite 220A
Longview, WA 98632
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Ecological Land Services

0 200 400
SCALE IN FEET

N
W E
S

LEGEND:

- Site Boundary
- Parcel Boundary
- Oak Woodland - Habitat Feature

By Township
Caves or Cave-rich Areas

NOTE: Map provided on-line by Washington State Department of Fish & Wildlife at web address:
http://apps.wdfw.wa.gov/phsontheweb/

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Photo 1 was taken facing east and shows general conditions onsite.

Photo 2 was taken facing west and shows general conditions onsite. The oak is visible on the left.

Photo 3 shows the onsite Oregon white oak.

Ecological
nd Services

1157 3rd Ave., Suite 220A
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Phone: (360) 578-1371
Fax: (360) 414-9305

DATE: 08.29.2023
DWN: JB
PRJ. MGR: JB
PROJ.#: 3934.01

Photoplate 1
13th Street Gas Station
Camas, WA
Section 29, Township 2N, Range 3E, W.M.

Exhibit 12 APPEAL24-1001

Photo 4 was taken facing north at TP-1 and shows general conditions onsite.

Photo 5 was taken facing west.

Photo 6 was taken facing west at TP-1.

Photo 7 was taken facing east at TP-1 and shows general conditions onsite.

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nd Services

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Longview, WA 98632
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Fax: (360) 414-9305

DATE: 08.29.2023
DWN: JB
PRJ. MGR: JB
PROJ.#: 3934.01

Photoplate 2
13th Street Gas Station
Camas, WA
Section 29, Township 2N, Range 3E, W.M.

Exhibit 12 APPEAL24-1001

APPENDIX A

ROUTINE DETERMINATION METHOD AND PLANT INDICATOR RATING DEFINITIONS

Routine Determination Method

The Routine Determination Method is defined according to the U.S. Army Corps of Engineers' 1987 *Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers' Wetland Delineation Manual* (Environmental Laboratory 1987)*; Western Mountains, Valleys, and Coast Region (Version 2.0)* (Corps 2010). The Routine Determination Method examines three parameters – vegetation, soils, and hydrology – to determine if wetlands exist in a given area. Hydrology is critical in determining what is a wetland, but if often difficult to assess because hydrologic conditions can change periodically (hourly, daily, or seasonally). Consequently, it is necessary to determine if hydrophytic vegetation and hydric soils are present, which would indicate that water is present for a long enough duration to support a wetland plant community. By definition, wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Vegetation Indicator Status

The indicator status, following the scientific names of plant species, indicates the likelihood of the species to be found in wetlands according to the *National Wetland Plant List Indicator Rating Definitions* (Corps 2012). Listed from most likely to least likely to be found in wetlands, the indicator status categories are:

- **OBL** (obligate wetland) - occur almost always under natural conditions in wetlands.
- **FACW** (facultative wetland) - usually occur in wetlands, but occasionally found in non-wetlands.
- **FAC** (facultative) - equally likely to occur in wetlands or non-wetlands.
- **FACU** (facultative upland) - usually occur in non-wetlands, but occasionally found in wetlands.
- **UPL** (obligate upland) - occur almost always under natural conditions in non-wetlands.
- **NI** (no indicator) - insufficient data to assign to an indicator category.

APPENDIX B

WETLAND DETERMINATION DATA FORM

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: 13th Street Gas Station City/County: Camas/Clark Sampling Date: 08/29/2023
Applicant/Owner: PAK USA Camas, LLC State: WA Sampling Point: TP-1
Investigator(s): J. Blake Section, Township, Range: S29, T2N, R3E
Landform (hillslope, terrace, etc.): Floodplains Local relief: (concave, convex, none): Convex Slope (%): 0-3%
Subregion (LRR): LRRA MLRA2 Lat: 45.6318544 Long: -122.4669931 Datum: NAD83
Soil Map Unit Name: Cove silty clay loam, thin solum, 0 to 3 percent slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☐ No☒ (If no, explain Remarks.)
Are Vegetation☐, Soil☐, or Hydrology☐ significantly disturbed? Are "Normal Circumstances" present? Yes☒ No☐
Are Vegetation☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?** **Yes☐ No☒**
Hydric Soils Present?	Yes ☐	No ☒	
Wetland Hydrology Present?	Yes ☐	No ☒	

Remarks: TP-1 is located in the southwest corner of the site in an area with mapped hydric soils. TP-1 does not meet all three wetland indicators and is therefore in uplands. Hydrologic conditions were not typical for this time of year, as antecedent rainfall was determined to be drier than normal for the two months prior to the site visit.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Malus* spp.*	20%	yes	FAC
2. *Fraxinus latifolia*	20%	yes	FACW
3. *Robinia pseudoacacia*	20%	yes	FACU
4. *Crataegus monogyna*	15%	yes	FAC
50% = 38 20% = 15	75%	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
50% = ___ 20% = ___	%	=Total Cover	
Herb Stratum (Plot size: 5 ft radius)			
1. *Festuca* spp*	93%	yes	FAC
2. *Iris* spp.*	5%	no	FACW
3. *Rubus ursinus*	2%	no	FACU
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
11.	%		
50% = 50 20% = 20	100%	=Total Cover	
Woody Vine Stratum (Plot size: 15 ft radius)			
1. *Rubus armeniacus*	5%	yes	FAC
2.	%		
50% = 3 20% = 1	5%	=Total Cover	

% Bare Ground in Herb Stratum 0%

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC 83 (A/B)

Prevalence Index worksheet

Total % Cover of:		Multiply by:	
OBL species		x 1=	
FACW species		x 2=	
FAC species		x 3=	
FACU species		x 4=	
UPL species		x 5=	
Column Totals:	(A)		(B)

Prevalence Index = B/A=

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 – Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes☒ No☐**

Remarks: *Festuca* spp.* and *Malus* spp.* indicator statuses assumed FAC. *Iris* spp.* indicator status assumed FACW.

SOIL

Sampling Point: TP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/3	100%		%			Loam	
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosal (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Minerals (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and Wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: Hardpan
Depth (inches):6

Hydric Soil Present? Yes☐ No☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (min. of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (Inches): _____
Water Table Present?	Yes ☐	No ☒	Depth (Inches): _____
Saturation Present? (Includes Capillary fringe)	Yes ☐	No ☒	Depth (Inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

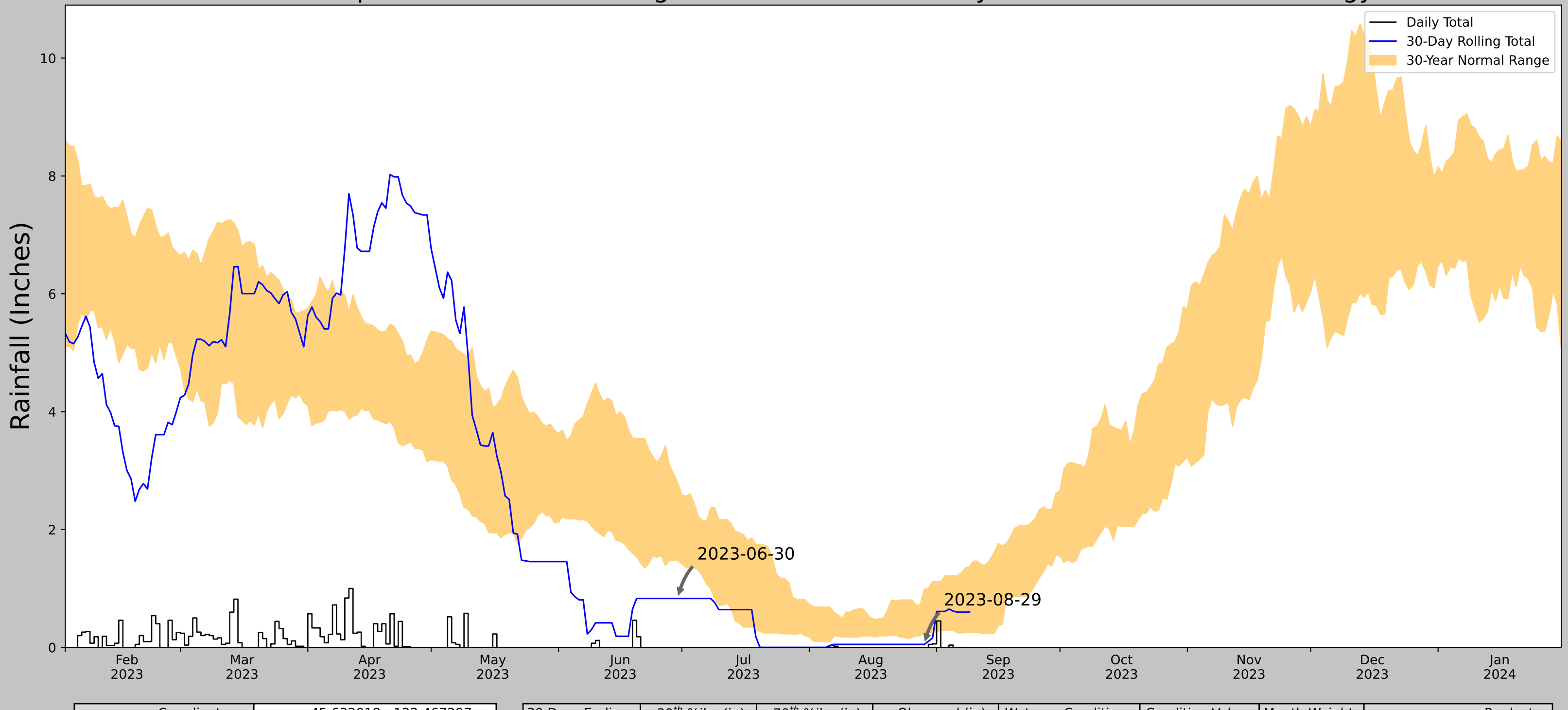
Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrologic conditions were not typical for this time of year, as antecedent rainfall was determined to be drier than normal for the two months prior to the site visit.

APPENDIX C

PRECIPITATION INFORMATION

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	45.632018, -122.467297
Observation Date	2023-08-29
Elevation (ft)	253.44
Drought Index (PDSI)	Severe drought
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-08-29	0.253543	0.986221	0.051181	Dry	1	3	3
2023-07-30	0.24252	0.814961	0.0	Dry	1	2	2
2023-06-30	1.475197	2.795276	0.830709	Dry	1	1	1
Result							Drier than Normal - 6

US Army Corps of Engineers

ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
BATTLE GROUND	45.7717, -122.5286	284.121	10.094	30.681	4.852	11318	69
BATTLE GROUND 0.8 N	45.794, -122.5443	316.929	1.716	32.808	0.828	0	1
BATTLE GROUND 1.2 NE	45.7958, -122.5275	361.877	1.666	77.756	0.879	0	20
VANCOUVER 4 NNE	45.6775, -122.6514	220.144	8.8	63.977	4.523	4	0
MERWIN DAM	45.955, -122.5625	224.081	12.769	60.04	6.513	31	0

Exhibit 12 APPEAL 24-1001

OAK BANK USE PLAN

October 2, 2023

13th Street Gas Station
Camas, WA

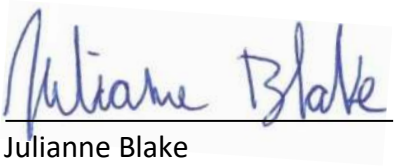
Prepared for

PAK USA Camas, LLC
c/o Taz Khan
3993 NW Currawong Court
Camas, WA 98607
(512) 779-4999

Prepared by
Ecological Land Services
1157 3rd Avenue, Suite 220A • Longview, WA 98632
(360) 578-1371 • Project Number 3934.01

SIGNATURE PAGE

The information in this report was compiled and prepared under the supervision and direction of the undersigned.



Julianne Blake
Biologist III

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INTRODUCTION

Ecological Land Services, Inc. (ELS) was contracted by PAK USA Camas, LLC to prepare this Oak Bank Use Plan to address Oregon white oak (oak) impacts resulting from the construction of a fuel station, convenience store, and associated parking lot. The site is approximately 0.97 acres and consists of Clark County Tax Parcel 176148000 located at 20101 NE 13th Street within the NW ¼ of Section 29, Township 2 North, and Range 3 East of the Willamette Meridian in Camas, Washington (Figure 1). Field work was conducted on August 29, 2023. The project will remove one existing oak (*Quercus garryana*) and impact 0.08 acres (3,456 square feet) of oak canopy. Canopy impacts will be offset by purchasing 0.238 credits from Terrace Oak Bank (Bank). This Bank Use Plan was prepared according to the *Camas Municipal Code (CMC) Title 16 Environment* (2023) and Washington Department of Fish and Wildlife's (WDFW) *Management recommendations for Washington's priority habitats: Oregon white oak woodlands (1998)*.

RESPONSIBLE PARTIES

PROPERTY OWNER/APPLICANT
PAK USA Camas, LLC
Taz Khan
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cornellr@rotschyinc.com

BIOLOGICAL CONSULTANT
Ecological Land Services, Inc.
Julianne Blake – Biologist III
1157 3rd Avenue, Suite 220A
Longview, Washington 98632
(360) 578-1371
Julianne@eco-land.com

PROJECT DESCRIPTION

The project area is approximately 0.97 acres and consists of Clark County Tax Parcel 176148000 located at 20101 NE 13th Street within the NW ¼ of Section 29, Township 2 North, and Range 3 East of the Willamette Meridian in Camas, Washington (Figure 1). The project consists of constructing a fuel station, convenience store, and associated parking lot. The parking lot will contain electric vehicle charging stations and vacuum pumps as well as pedestrian crossing areas (Figure 3). The existing oak will be removed as part of the project, removing 0.08 acres (3,546 square feet) of oak canopy. Canopy impacts will be mitigated by purchasing 0.238 credits from Terrace Oak Bank. Construction is anticipated to start upon receipt of all necessary permits.

Best management practices (BMPs) that will be completed prior to construction include designating staging and stockpile areas outside of critical areas and associated buffers, establishing a standard construction entrance, and installing silt fencing to prevent sedimentation. When site preparation is complete, construction will occur. A water truck will be available to prevent dust blowing during construction, if needed. Equipment used may include haul trucks, bulldozers, excavators, pavers, and hand tools. Upon completion of construction activities, disturbed areas that will not be paved will be seeded with a native grass seed mix.

EXISTING CONDITIONS

EXISTING AND SURROUNDING LAND USES

The 0.97-acre site consists of Clark County Tax Parcel 176148000 and is accessed by a paved driveway off NE 13th Street. The site is zoned as Business Park (BP) and currently contains a single-family mobile home, shed, carport, and paved driveway. The site is bordered to the north by NE 13th Street, to the east by NW Friberg-Strunk Street, to the south by undeveloped land and commercial development in progress, and to the west by undeveloped land and a single-family residence (Figure 2).

EXISTING CRITICAL AREAS

A site visit was completed by ELS in August 2023 following the appropriate technical manuals: *The Routine Determination Method according to the Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (U.S. Army Corps of Engineers 2010). During the field visit, no wetlands were identified onsite (ELS 2023).

The WDFW Priority Habitats and Species online mapping tool depicts oak woodlands within the vicinity of the observed oak along the southern site boundary. One oak measuring approximately 52 inches diameter at breast height (DBH) was mapped along the southern site boundary during site reconnaissance (Figure 2). The oak has several live and dead branches, cavities, and has canopy connectivity with other trees in the vicinity but is not connected with other oaks. The oak location was mapped using a GPS system capable of submeter accuracy in ideal conditions. According to *CMC 16.61.010(3)(a)*, individual Oregon white oak trees with a twenty-inch DBH are considered a priority habitat.

Table 1. Oak Summary

Total Canopy Area	DBH	Number of Trunks	Noteworthy Habitat Features
0.08 acres 3,456 square feet	52 inches	1	• Canopy is interconnected with adjacent trees, but not other oaks • Two large cavities

Avoidance and Minimization

The preferred mitigation sequencing of first avoidance, then minimization, and finally compensation for unavoidable impacts was taken into consideration during the design process of this project; however, due to the single oak tree being located in an area of the site needed for a required driveway, avoiding Oregon white oak impacts altogether is not feasible. The Oregon white oak proposed for removal is the only oak tree onsite.

Unavoidable Oregon White Oak Impacts

Removal of the oak will result in the loss of 0.08 acres (3,456 square feet) of Oregon white oak priority habitat as measured by the oak canopy coverage (drip line). The following table summarizes proposed oak impacts.

Table 2. Oak Impact Summary

Identifier	DBH	Canopy Coverage	Total Impact
Oregon White Oak (Single Mature Tree)	52 inches	0.08 acres 3,456 square feet	0.08 acres 3,456 square feet

Impacted Priority Habitat Functions

ELS assessed the functions provided by the oak during a site visit on August 29, 2023. The functional assessment is based on Washington Department of Fish and Wildlife's (WDFW) *Management Recommendations for Washington's Priority Habitats, Oregon White Oak Woodlands* (Guidance) (Larsen and Morgan 1998).

Habitat Functions

Oak woodlands are considered "priority habitat and species" by WDFW and are protected locally by the City of Camas Municipal Code (*CMC*). According to *CMC 16.61.010(3)(a)*, individual Oregon white oak trees with a twenty-inch DBH are considered a priority habitat.

In urban or urbanizing areas west of the Cascades, WDFW defines priority oak habitat as single oaks, or stands of pure oak, or oak/conifer associations, 1 acre or greater in size. WDFW may also consider individual Oregon white oak trees a priority habitat when found to be particularly valuable to wildlife (i.e., contains many cavities, has a large DBH, is used by priority species, or has a large canopy) (Larsen and Morgan 1998). The project site is within the City of Camas (City). WDFW recommendation is that in urban and urbanizing areas, single trees should be maintained

if they are deemed important to species highly associated with Oregon white oak. Oaks and their associated flora comprise distinct woodland ecosystems with various plant communities providing valuable habitat that contributes to wildlife diversity. Oak woodlands provide a mix of feeding, resting, and breeding habitat for many wildlife species (Larsen and Morgan 1998).

The oak proposed for removal has several live and dead branches, cavities, and has canopy connectivity with other trees in the vicinity but is not connected with other oaks. Due to the placement of the oak within the City boundaries and lack of habitat connectivity, larger animals or those not adapted to urban conditions are not likely to be present. Therefore, removing the oak would likely result in habitat loss and a food source only for birds and small mammals that are well adapted to urban conditions.

OREGON WHITE OAK MITIGATION SELECTION RATIONALE

The Oregon white oak proposed for removal is located in the service area for the Terrace Oak Bank (Bank). The oak tree is approximately 4 miles southeast of the Bank, in the Lacamas Creek Watershed which is in the southeastern portion of the service area (Figure 4). The proposed oak removal will be mitigated by purchasing credits from the Bank at ratios specified in the Terrace Oak Bank's Mitigation Banking Instrument (MBI).

Rationale for selecting this mitigation bank is as follows:

- The oak onsite does not provide habitat for other priority species that should be replaced onsite. Habitat functions will be impacted for species common to urban areas, which can be fully replaced at the Bank.

- The habitat functions lost from the proposed oak removal correspond directly with the habitat creation purpose, goals, and objectives at the Bank which identifies 13.93 acres of existing Oregon white oak woodland WDFW Priority Habitat that will be restored to pre-agricultural conditions through creation, enhancement, and preservation. Creation and enhancement will be accomplished through planting oak saplings and/or native understory plantings, removing of Douglas-fir, and establishing a conservation easement over the entire 13.93 acres.

The 2008 *Compensatory Mitigation for Losses of Aquatic Resources, Final Rule* (Corps) recommends purchasing mitigation bank credits for ecological considerations (lower risk of failure and lower temporal loss of resources and services) and to avoid the maintenance and contingency issues and outright failures that often accompany permittee-responsible mitigation sites. Use of the Terrace Oak Bank substantially lowers the risk of failure and temporal loss of resource functions and services over newly established, permittee-responsible mitigation sites and offsite mitigation is anticipated to be more meaningful and beneficial to the watershed's habitat functions.

Functions Provided at Oak Bank

The general goal of the Bank is to restore the approximately 13.93 acres to a state similar to its pre-agricultural condition through creation, enhancement, and preservation of an existing Oregon white oak woodland. All functions related to oak habitat are expected to increase as a result of design implementation. The primary ecological goals of the Bank are as follows:

- Removal of all existing impervious surfaces, including buildings, large equipment, gravel and paved areas, and debris, followed by replanting oak saplings and native understory species.
- Removal of invasive species in creation, enhancement, and preservation areas, primarily English ivy (*Hedera helix*) and Himalayan blackberry (*Rubus armeniacus*).
- Removal of Douglas-fir (*Pseudotsuga menziesii*) overstory as recommended by WDFW to reduce competition and further degradation of the Oregon white oak woodland from shading.
- Replanting of both creation and enhancement areas with oak saplings and and native understory species to augment and expand existing Oregon white oak habitat.
- Preserve the Bank through a conservation easement.

Wildlife Habitat

The proposed development site plan will provide diverse habitat for a variety of large and small mammals, songbirds, waterfowl, amphibians, and insects by improving the condition of the existing Oregon White Oak habitat through creation and enhancement that includes replanting of oaks and native understory, removing invasive species, non-native debris, and impervious surfaces, and eliminating Douglas-fir encroachment.

Anticipated Functional Lift

The creation, enhancement, and Douglas-fir stand release activities proposed in the Bank will provide a variety of benefits lifting overall habitat functions. Invasive species eradication and installing oak trees and native understory in open areas will increase the site's potential to provide habitat by providing improved and increased diversity of plant species, structure, and interspersion of habitat. Removing Douglas-fir competition will allow the existing oaks to increase branching and smaller oak trees to become better established. The changes will increase acorn production, provide additional food for wildlife, and support a greater diversity of wildlife species as will removing impervious surfaces and debris. All functions impacted by removing an oak tree at the project site will be fully mitigated at the Bank.

Proposed Mitigation Credits

As stated in the MBI (October 28th, 2020), the local jurisdiction with regulatory authority will determine both how impacts are measured[1] and the mitigation ratios required. The mitigation

[1] i.e., square foot of canopy area/root zone, DBH, etc.

credits required for impacts to Oregon white oak will be determined by using the local jurisdiction's mitigation ratio (6:1) and multiplying this ratio by a "risk reduction factor" of 0.5. Impacts to high functioning Oregon White Oak Priority Habitat stands will be determined by the regulatory agencies on a case-by-case basis. Table 3 summarizes the impact type, mitigation ratio, and total credits proposed for compensation.

Table 3. Credits for Oak Impacts at Terrace Oak Bank

Impact Type	Impact Amount	Mitigation Ratio	Risk Reduction Multiplier	Mitigation Area Required	Proposed Credit Purchase
Canopy loss	0.08 acres (3,456 sq. ft.)	6:1	0.5	0.238 acres (10,368 sq. ft.)	0.238 credits

Credit Purchase or Transfer Timing

Following permit issuance, PAK USA Camas, LLC, as the applicant, will enter into a Buy/Sell Agreement with Terrace Oak Bank, for purchase of mitigation credits (in the quantity specified in Table 3) that would appropriately mitigate for the proposed project impacts. The actual purchase of credits will occur upon permit issuance. Prior to impacting the project oak, the applicant will submit proof of transfer of mitigation credits to project managers for the City of Camas. Proof of the mitigation transfer will be provided in the form of a notification letter to the approving agencies. Upon service of this notification, the mitigation requirement to purchase 0.238 mitigation credits will be fully satisfied.

Confirmation of Mitigation Credit Availability

Proof of the current number of available mitigation credits at the Terrace Oak Bank site will be confirmed by the approving agency, City of Camas and through the advising members of the Oak Bank Review Team.

Chair:
Brent Davis, Wetland and Habitat Review Program Manager
Clark County Community Development
P.O. Box 9810
Vancouver, WA 98666-9810
(360) 397-2375 ext. 4152
brent.davis@clark.wa.gov

Advisory Members:
Dave Howe, Area Habitat Biologist
Washington Department of Fish and Wildlife
5525 S 11th Street
Ridgefield, WA 98642
(360) 906-6729
david.howe@dfw.wa.gov

Carlo Abbruzzese, Pacific Cascade Region Natural Areas Manager
Washington Department of Natural Resources
2508 NW 126th Circle
Vancouver, WA 98685
(360) 577-2025
carlo.abbruzzese@dnr.wa.gov

LIMITATIONS

ELS bases this report's determinations on standard scientific methodology and best professional judgment. In our opinion, local, state, and federal regulatory agencies should agree with our determinations. However, the information contained in this report should be considered preliminary and used at your own risk until it has been approved in writing by the appropriate regulatory agencies. ELS is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this report.

REFERENCES

City of Camas. 2023. *Camas Municipal Code (CMC) Title 16 Environment.* Camas, Washington. July 31, 2023.

Ecological Land Services, Inc. (ELS). 2023. *Critical Areas Report for 13th Street Gas Station, Camas, Washington*. September 26, 2023.

Ecological Land Services, Inc. (ELS). 2020. *Mitigation Banking Instrument for the Terrace Oak Bank, Clark County, Washington*. October 2020.

Larsen, E. M., and J. T. Morgan. 1998. *Management recommendations for Washington's priority habitats: Oregon white oak woodlands*. Washington Department of Fish and Wildlife, Olympia. 37pp.

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*, Technical Report Y-87-1. U.S. Army Corps of Engineer Waterways Experiment Station. Vicksburg, Mississippi.

Interagency Review Team for Washington State. February 19, 2009. *Using Credits from Wetland Mitigation Banks: Guidance to Applicants on Submittal Contents for Bank Use Plans*. Online http://www.ecy.wa.gov/programs/sea/wetlands/mitigation/banking/pdf/mitig_plan_guidance.pdf. Accessed August 2023.

U.S. Army Corps of Engineers (Corps). 2008. *Compensatory Mitigation for Losses of Aquatic Resources, Final Rule.* 33 C.F.R. §332, Federal Register, April 30, 2008.

U.S. Army Corps of Engineers (Corps). 2010. *Final Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0), ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-13. Vicksburg, Mississippi: U.S. Army Engineer Research and Development Center.

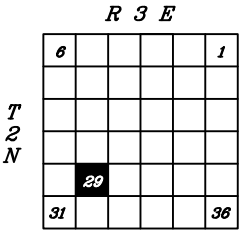
FIGURES

WASHINGTON

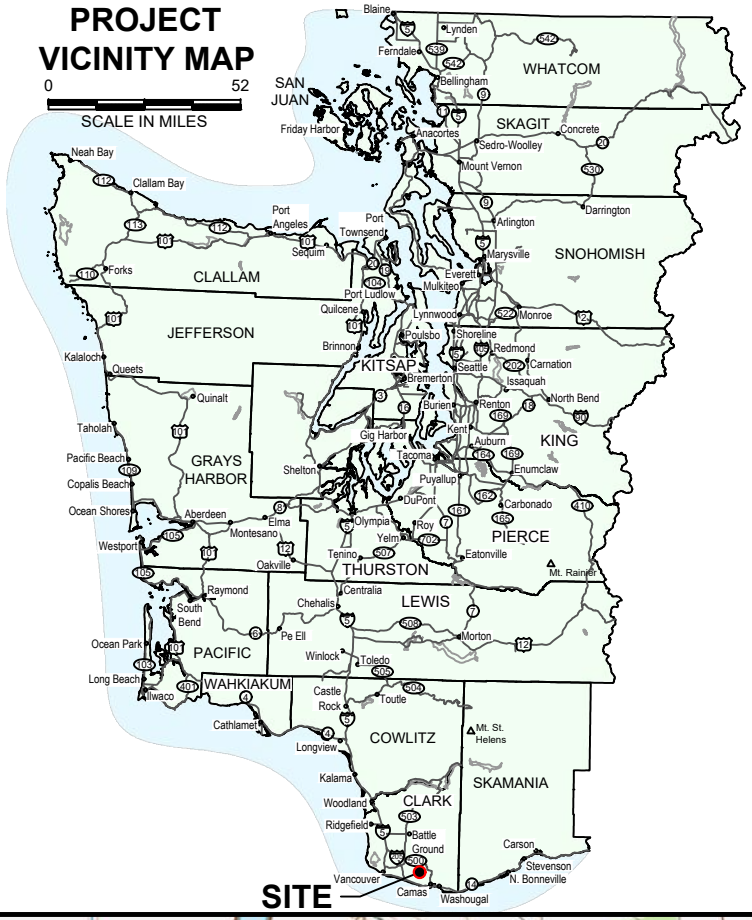
SITE

45.6321° Latitude
-122.4664° Longitude

LOCATION MAP



PROJECT VICINITY MAP



NOTE:
Quadrangle topographic map from USGS.

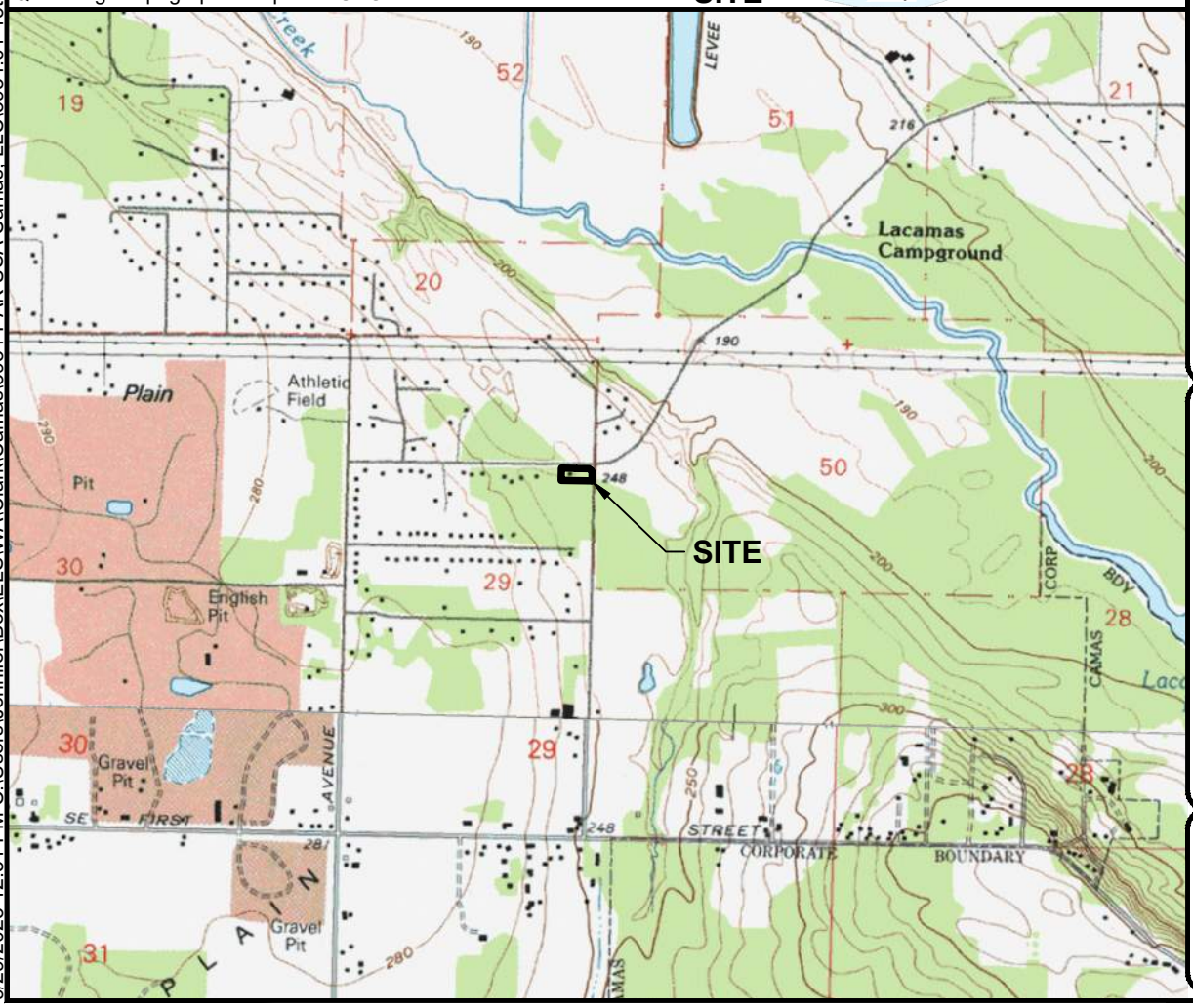


Figure 1
VICINITY MAP
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com

Ecological Land Services

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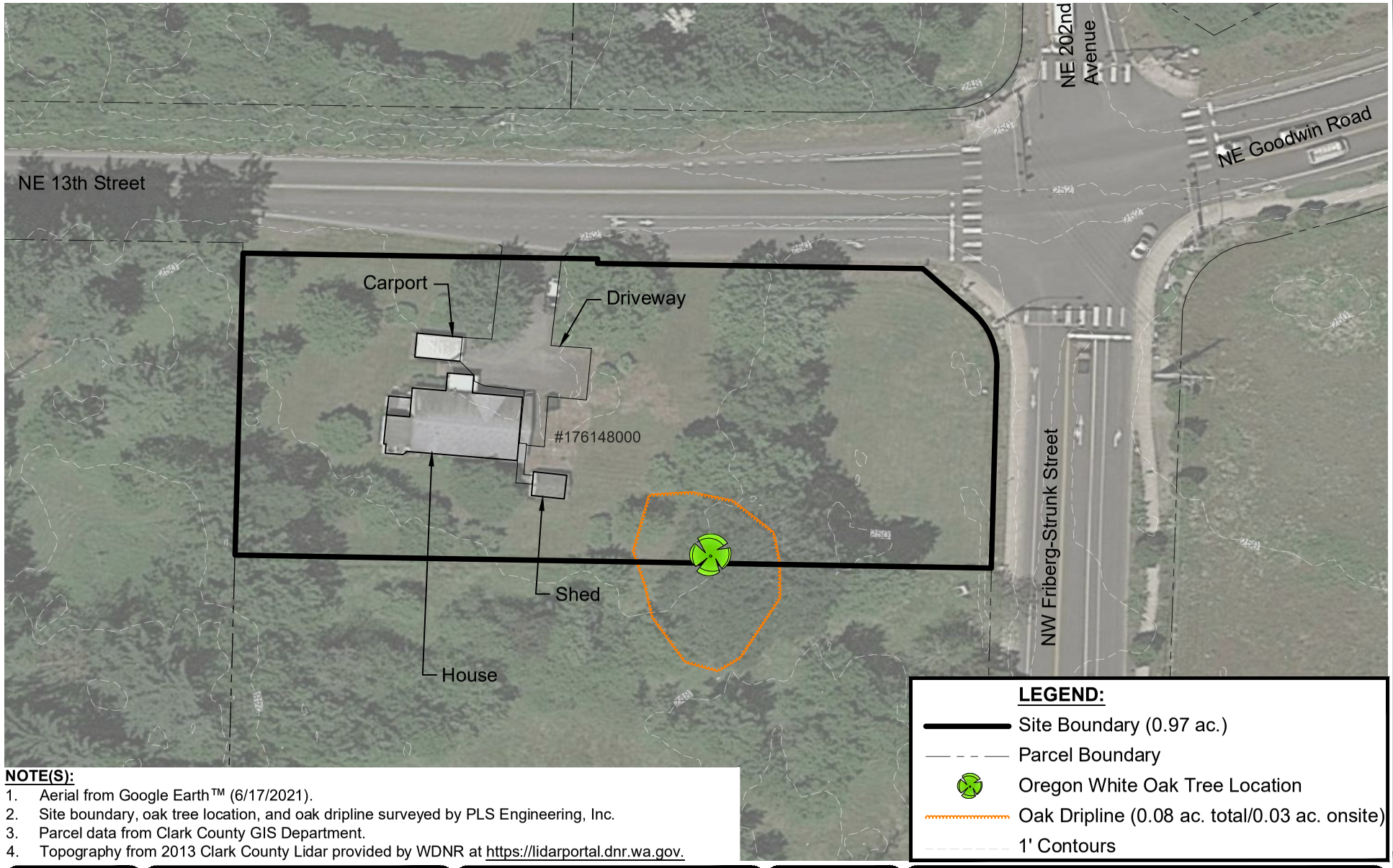

NOTE(S):

1. Aerial from Google Earth™ (6/17/2021).
2. Site boundary, oak tree location, and oak dripline surveyed by PLS Engineering, Inc.
3. Parcel data from Clark County GIS Department.
4. Topography from 2013 Clark County Lidar provided by WDNR at https://lidarportal.dnr.wa.gov.

LEGEND:

- Site Boundary (0.97 ac.)
- Parcel Boundary
- Oregon White Oak Tree Location
- Oak Dripline (0.08 ac. total/0.03 ac. onsite)
- 1' Contours

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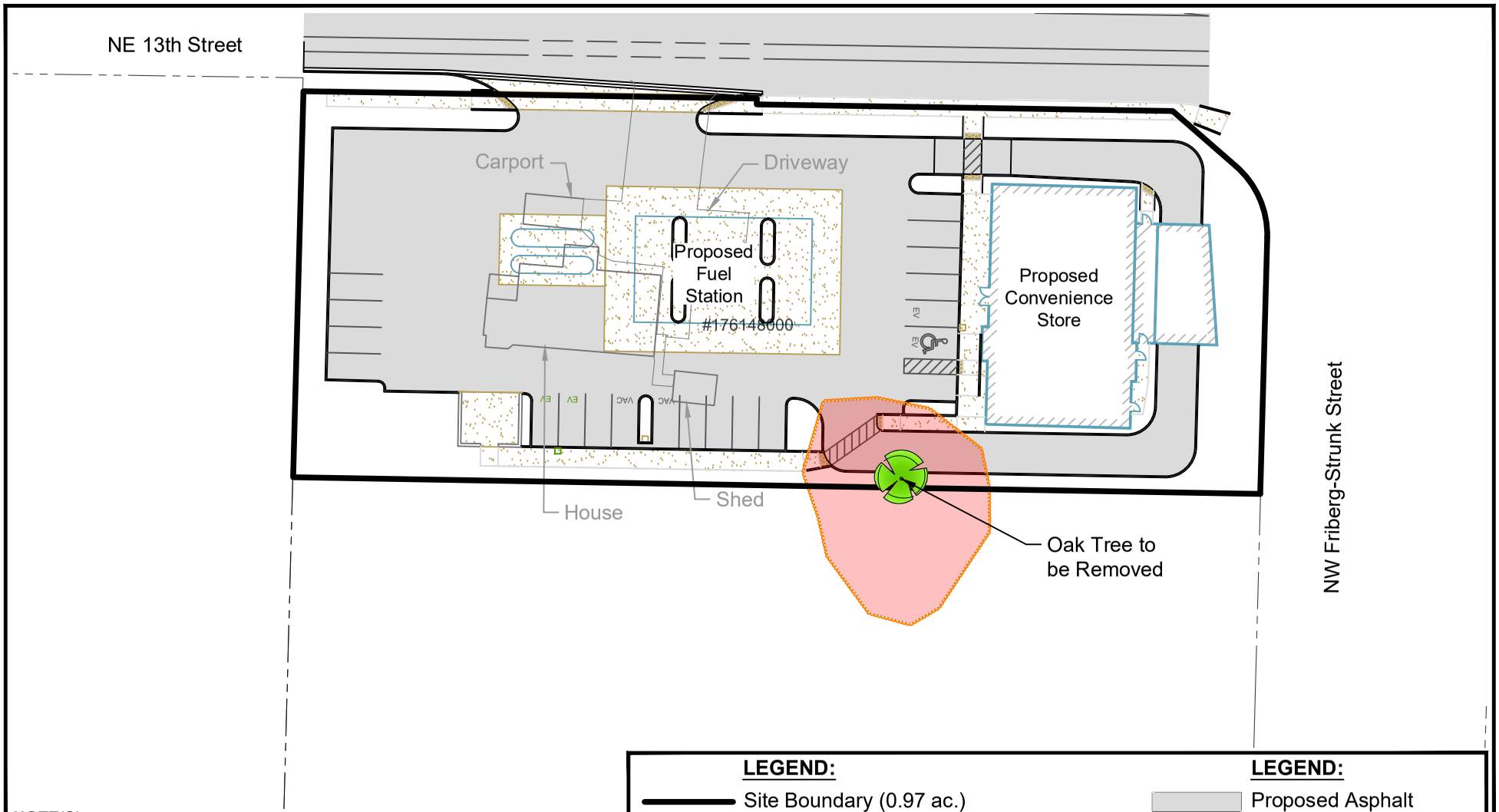
DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

Figure 2
EXISTING CONDITIONS
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

Exhibit 13 APPEAL24-1001



NOTE(S):
1. Site boundary, oak tree location, and oak dripline surveyed by PLS Engineering, Inc.
2. Parcel, ditch, and culvert data from Clark County GIS Department.
3. Site plan by PLS Engineering.

LEGEND:
- Site Boundary (0.97 ac.)
- Parcel Boundary
- Oregon White Oak Tree Location
- Oak Dripline (0.08 ac. total/0.03 ac. onsite)

LEGEND:
- Proposed Asphalt
- Proposed Concrete
- Oak Dripline Impact (3,546 sq. ft./0.08 ac.)

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DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

Figure 3
PROPOSED CONDITIONS
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

Exhibit 13 APPEAL24-1001

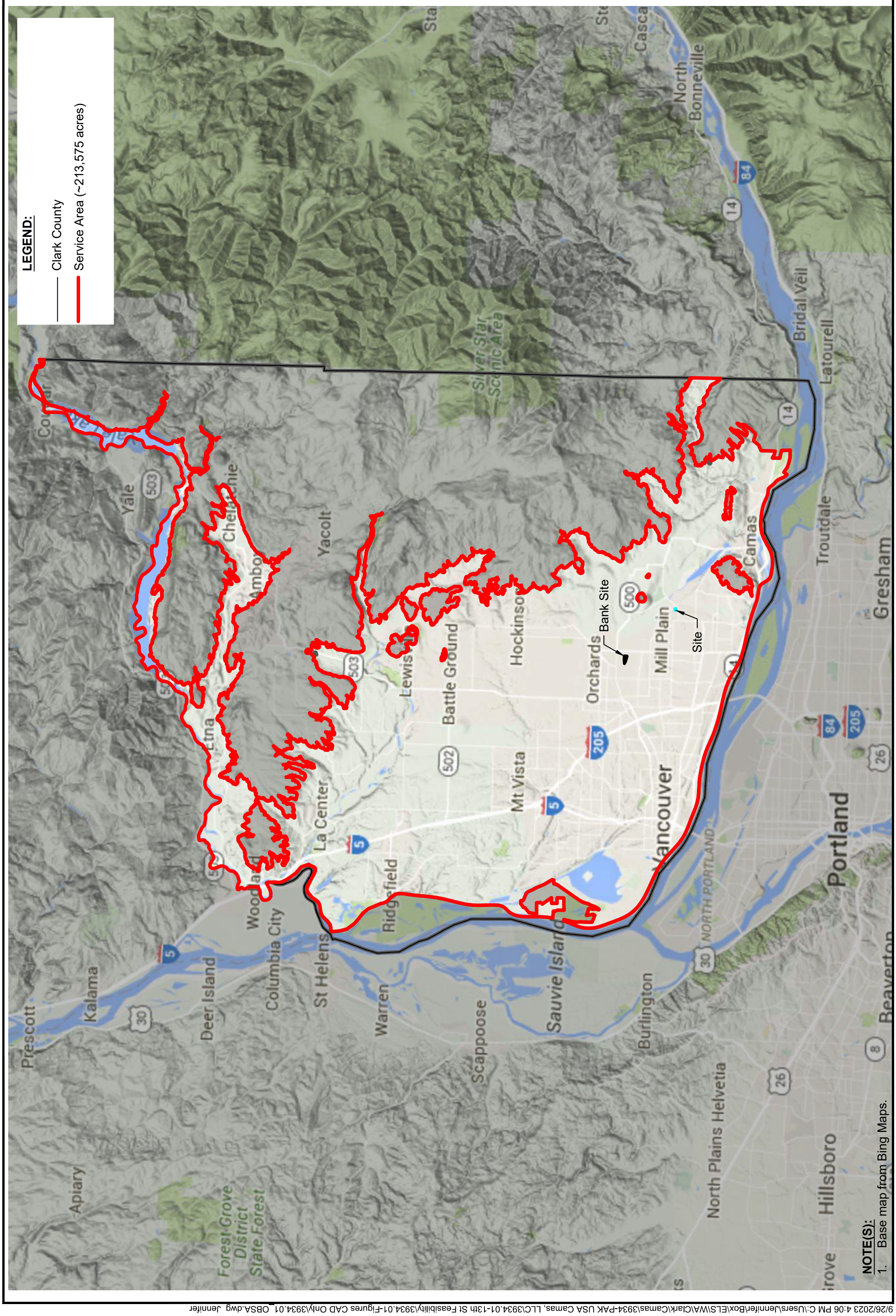

Figure 4
TERRACE OAK BANK SERVICE AREA
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/26/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

Ecological Land Services
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Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
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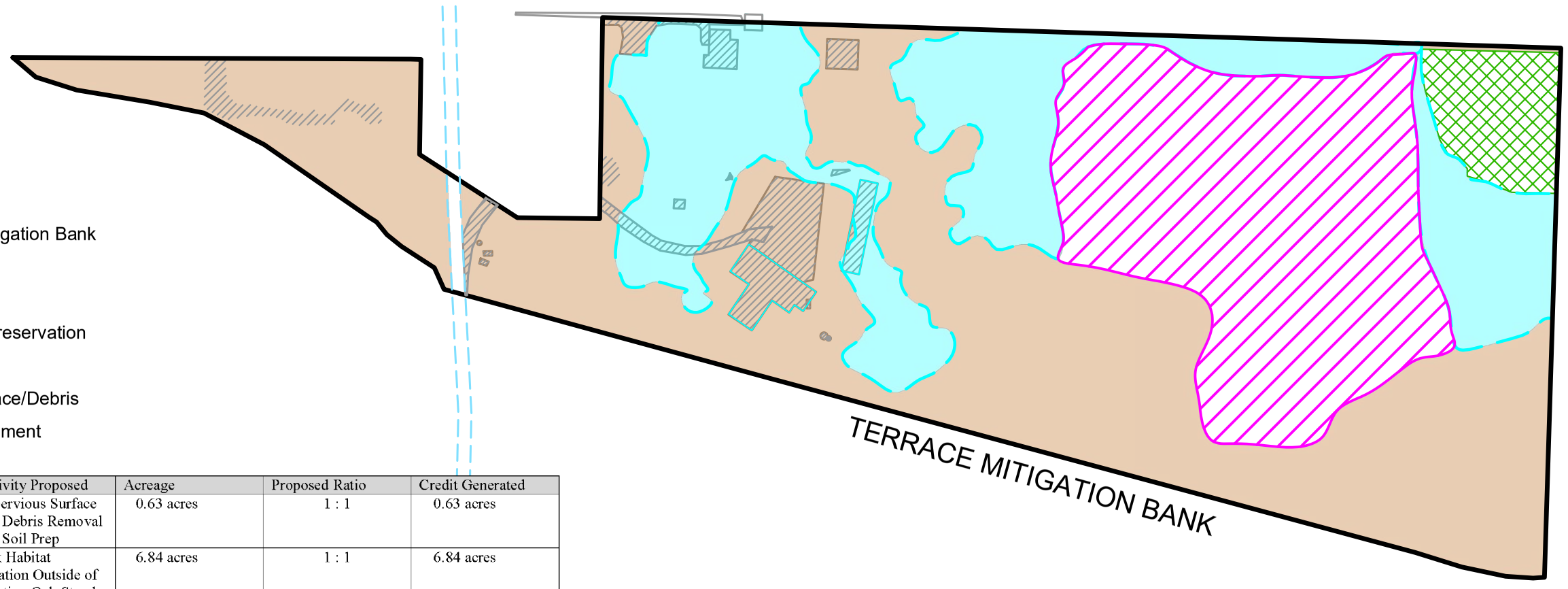
NOTE(S):
1. Base map from Bing Maps.



LEGEND:

- Terrace Oak Mitigation Bank
- Creation
- Enhancement
- Upland Forest Preservation
- Stand Release
- Impervious Surface/Debris
- Water Line Easement

Activity Proposed	Acreage	Proposed Ratio	Credit Generated
Impervious Surface and Debris Removal and Soil Prep	0.63 acres	1 : 1	0.63 acres
Oak Habitat Creation Outside of Existing Oak Stand	6.84 acres	1 : 1	6.84 acres
Douglas Fir Stand Release	3.34 acres	0.4 : 1	8.35 acres
Enhancement of Existing Oak Stand	3.20 acres	0.4 : 1	8.00 acres
Upland Forest Preservation	0.50 acres	0.5 : 1	1.00 acres
Totals	14.51 acres[1]		24.82 acres

[1] Total acreage includes areas of activity overlap and does not include 0.05 acres of water line easement, so is not reflective of the 13.93 acres represented in the legal survey of Oak Bank area.

Table 2. Oak Mitigation Bank Activity Descriptions.

Activity Proposed	Type of Activity/Area
Impervious Surface and Debris Removal and Soil Prep	• Includes: • Buildings, driveways, gravel pads or any other impervious area to be removed (regardless of whether oak tree canopy already covers the area) • Removal of debris piles throughout the site • Loosening of soils following impervious/debris removal
Oak Habitat Creation Outside of Existing Oak Stand	• Includes open areas of all types not currently covered by oak canopy • Areas to be replanted with oak saplings and native understory
Douglas Fir Stand Release	• Includes area of dense fir canopy within existing oak stand • Douglas fir over-story to be removed through harvest or tree girdling/snag creation
Enhancement of Existing Oak Stand	• Includes areas of existing oak canopy • Enhancement areas will have non-natives removed and understory planted with native shrubs typically associated with oak woodlands
Upland Forest Preservation	• Includes areas of deciduous forest adjacent to oak canopy, providing upland forest habitat • Area will be preserved through administration of a conservation easement

Figure 5
TERRACE OAK BANK SITE DESIGN
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/26/23
DWN: JKJ
REQ. BY: JB
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Exhibit 13 APPEAL24-1001

Owner Name	Mailing Address
CAMAS MEADOWS INDUSTRIAL LLC	1821 DOCK ST STE 100, TACOMA, WA, 98401
FAN LIMING & FAN QI REV LIV TRUST	18900 NE 25TH DR, VANCOUVER, WA, 98684
GOERTZEN JEFFERY K & GOERTZEN KELI J TRUSTEES	20009 NE 14TH ST, CAMAS, WA, 98607
LACAMAS TECH PARTNERS LLC	7408 NE 113TH CIR, VANCOUVER, WA, 98662
LUCIER ERNEST J JR	20005 NE 13TH ST, CAMAS, WA, 98607
LUCIER ERNEST JR	20005 NE 13TH ST, CAMAS, WA, 98607
NOSRATI RANDY & NOSRATI KARIN L	20107 NE 14TH ST, CAMAS, WA, 98607
PAK USA CAMAS LLC	PO BOX 452, CAMAS, WA, 98607
RICKARD RICHARD & RICKARD JOAN	1417 NE 202ND AVE, CAMAS, WA, 98607
SMALL WILLIAM & SMALL RUTH	20217 NE 16TH ST, CAMAS, WA, 98607
WILSON JUDITH A	20008 NE 11TH ST, CAMAS, WA, 98607

This document was created by the Clark County, Washington Geographic Information System

Number of Records 11
Number of Pages 1
Date Created 10/19/2023
Employee
Employee Name Jesse Manley

WFG National Title Company of Clark County
a Williston Financial Group company

5101 NE 82nd Avenue Bldg A Suite 102
Vancouver, WA 98662
Phone (360) 891-5454 Fax (360) 314-0345

IQ Credit Union

File No.: 23-105006
Loan No.: 745754-50
Loan To: Pak USA Camas, LLC
Property: 20101 NE 13th Street
Camas, WA 98607

Please find enclosed your Policy of Title Insurance with regard to the above referenced matter.

If you have any questions regarding the policy, please do not hesitate to contact the office noted above.

WFG National Title Insurance Company
a Williston Financial Group company

LOAN POLICY OF TITLE INSURANCE

SCHEDULE A

Name and Address of Title Insurance Company: **WFG National Title Insurance Company**
12909 SW 68th Parkway, Suite 350, Portland, OR 97223

File No.: **23-105006** Policy No.: **3172000-6462830**

Loan No.: **745754-50**

Address Reference: **20101 NE 13th Street, Camas, WA 98607**

Amount of Insurance: **$385,000.00** Premium: **$565.00**

Date of Policy: **February 15, 2023 3:59PM**

1. Name of Insured:

   IQ Credit Union, ISAOA

2. The estate or interest in the Land that is encumbered by the Insured Mortgage is:

   Fee Simple

3. Title is vested in:

   Pak USA Camas, LLC, a Washington limited liability company

4. The Insured Mortgage and its assignments, if any, are described as follows:

   Deed of Trust and the terms and conditions thereof:

Grantor:	**Pak USA Camas, LLC, a Washington limited liability company**
Trustee:	**Trustee Services, Inc.**
Beneficiary:	**IQ Credit Union**
Original Amount:	**$385,000.00**
Dated:	**February 9, 2023**
Recorded:	**February 15, 2023**
Recording No.:	**6104855, of Official Records**

5. The Land referred to in this policy is described as follows:

   See Exhibit "A" attached hereto and made a part hereof

Countersigned:
WFG National Title Company of Clark County WA, LLC, as Issuing Agent for WFG National Title Insurance Company

By: _____
Authorized Signature

ALTA Loan Policy (06-17-06)
Form No. 3172000 (Arbitration Removed)

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AMERICAN LAND TITLE ASSOCIATION

File No. 23-105006

EXHIBIT "A"

LEGAL DESCRIPTION

All that certain real property in the County of Clark, State of Washington, described as follows:

THE NORTH 162 FEET OF THAT PORTION OF THE NORTHWEST QUARTER OF SECTION 29, TOWNSHIP 2 NORTH, RANGE 3 EAST OF THE WILLAMETTE MERIDIAN, CLARK COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT 30 FEET WEST OF THE NORTHEAST CORNER OF THE SOUTH HALF OF THE NORTHWEST QUARTER OF SECTION 29, TOWNSHIP 2 NORTH, RANGE 3 EAST OF THE WILLAMETTE MERIDIAN; AND RUNNING THENCE WEST 330 FEET; THENCE SOUTH 1320 FEET; THENCE EAST 330 FEET; THENCE NORTH 1320 FEET TO THE POINT OF BEGINNING.

EXCEPT PUBLIC ROAD; NE 202ND AVENUE AND NE 13TH STREET.

ALSO EXCEPTING THAT PORTION CONVEYED TO CLARK COUNTY BY DEED RECORDED UNDER AUDITOR'S FILE NO. G 202602.

ALSO EXCEPTING THAT PORTION CONVEYED TO CLARK COUNTY BY DEED RECORDED UNDER AUDITOR'S FILE NO. 5066695.

TOGETHER WITH THAT CERTAIN MOBILE HOME, THE TITLE TO WHICH WAS ELIMINATED BY INSTRUMENT RECORDED DECEMBER 29, 2004, UNDER CLARK COUNTY AUDITOR'S FILE NO. 3926540, RECORDS OF CLARK COUNTY, WASHINGTON.

Tax Account No(s): 176148-000

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SCHEDULE B

EXCEPTIONS FROM COVERAGE

File No.: **23-105006** Policy No: **3172000-6462830**

PART I

This policy does not insure against loss or damage, and the Company will not pay costs, attorneys' fees, or expenses that arise by reason of:

1. Taxes and assessments for the year 2024 and subsequent years, which are not yet due and payable.

2. Easement and the terms, conditions and provisions thereof, as disclosed by that certain instrument recorded as 5066696, of Official Records.
   For: Right of Way Slope
   In favor of: City of Camas

3. Taxes and charges, together with interest, penalty and statutory foreclosure costs, if any, after delinquency:

Tax Year:	2023
Tax Type:	County
Tax ID No.:	176148-000
Taxing Entity:	Clark County Treasurer
Total Annual Tax:	$2,077.20
First Installment:	$1,038.65
First Installment Status:	Due
First Installment Due/Paid Date:	April 30, 2023
Second Installment:	$1,038.55
Second Installment Status:	Due
Second Installment Due/Paid Date:	October 31, 2023

4. Any unpaid assessments or charges, and liability for further assessments or charges by:
   City of Camas. (none due at time of policy)

END OF SCHEDULE B - PART I

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SCHEDULE B

File No.: **23-105006** Policy No: **3172000-6462830**

PART II

In addition to the matters set forth in Part I of this Schedule, the Title is subject to the following matters, and the Company insures against loss or damage sustained in the event that they are not subordinate to the lien of the Insured Mortgage:

None

END OF SCHEDULE B - PART II

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WFG National Title Insurance Company
a Williston Financial Group company

LOAN POLICY OF TITLE INSURANCE
Issued by
WFG NATIONAL TITLE INSURANCE COMPANY

POLICY NUMBER: 3172000-6462830

Any notice of claim and any other notice or statement in writing required to be given to the Company under this Policy must be given to the Company at the address shown in Section 18 of the Conditions.

COVERED RISKS

SUBJECT TO THE EXCLUSIONS FROM COVERAGE, THE EXCEPTIONS FROM COVERAGE CONTAINED IN SCHEDULE B, AND THE CONDITIONS, WFG NATIONAL TITLE INSURANCE COMPANY, a South Carolina corporation (the "Company") insures, as of Date of Policy and, to the extent stated in Covered Risks 11, 13 and 14, after Date of Policy, against loss or damage, not exceeding the Amount of Insurance, sustained or incurred by the Insured by reason of:

1. Title being vested other than as stated in Schedule A.
2. Any defect in or lien or encumbrance on the Title. This Covered Risk includes but is not limited to insurance against loss from
   (a) A defect in the Title caused by
      (i) forgery, fraud, undue influence, duress, incompetence, incapacity, or impersonation;
      (ii) failure of any person or Entity to have authorized a transfer or conveyance;
      (iii) a document affecting Title not properly created, executed, witnessed, sealed, acknowledged, notarized, or delivered;
      (iv) failure to perform those acts necessary to create a document by electronic means authorized by law;
      (v) a document executed under a falsified, expired, or otherwise invalid power of attorney;
      (vi) a document not properly filed, recorded, or indexed in the Public Records including failure to perform those acts by electronic means authorized by law; or
      (vii) a defective judicial or administrative proceeding.
   (b) The lien of real estate taxes or assessments imposed on the Title by a governmental authority due or payable, but unpaid.
   (c) Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land. The term "encroachment" includes encroachments of existing improvements located on the Land onto adjoining land, and encroachments onto the Land of existing improvements located on adjoining land.

In Witness Whereof, WFG NATIONAL TITLE INSURANCE COMPANY has caused this policy to be signed and sealed by its duly authorized officers as of Date of Policy shown in Schedule A.

Issued By:
WFG National Title Company of Clark County WA, LLC**, as Issuing Agent for** WFG National Title Insurance Company

By: _____
Authorized Signature

WFG NATIONAL TITLE INSURANCE COMPANY

By: _____
Steve Ozonian, President/CEO

ATTEST: _____
Joseph V. McCabe, EVP/General Counsel/Secretary

ALTA Loan Policy (06-17-06)
Form No. 3172000 (Arbitration Removed)

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3. Unmarketable Title.
4. No right of access to and from the Land.
5. The violation or enforcement of any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
   (a) the occupancy, use, or enjoyment of the Land;
   (b) the character, dimensions, or location of any improvement erected on the Land;
   (c) the subdivision of land; or
   (d) environmental protection

   if a notice, describing any part of the Land, is recorded in the Public Records setting forth the violation or intention to enforce, but only to the extent of the violation or enforcement referred to in that notice.
6. An enforcement action based on the exercise of a governmental police power not covered by Covered Risk 5 if a notice of the enforcement action, describing any part of the Land, is recorded in the Public Records, but only to the extent of the enforcement referred to in that notice.
7. The exercise of the rights of eminent domain if a notice of the exercise, describing any part of the Land, is recorded in the Public Records.
8. Any taking by a governmental body that has occurred and is binding on the rights of a purchaser for value without Knowledge.
9. The invalidity or unenforceability of the lien of the Insured Mortgage upon the Title. This Covered Risk includes but is not limited to insurance against loss from any of the following impairing the lien of the Insured Mortgage
   (a) forgery, fraud, undue influence, duress, incompetency, incapacity, or impersonation;
   (b) failure of any person or Entity to have authorized a transfer or conveyance;
   (c) the Insured Mortgage not being properly created, executed, witnessed, sealed, acknowledged, notarized, or delivered;
   (d) failure to perform those acts necessary to create a document by electronic means authorized by law;
   (e) a document executed under a falsified, expired, or otherwise invalid power of attorney;
   (f) a document not properly filed, recorded, or indexed in the Public Records including failure to perform those acts by electronic means authorized by law; or
   (g) a defective judicial or administrative proceeding.
10. The lack of priority of the lien of the Insured Mortgage upon the Title over any other lien or encumbrance.
11. The lack of priority of the lien of the Insured Mortgage upon the Title
   (a) as security for each and every advance of proceeds of the loan secured by the Insured Mortgage over any statutory lien for services, labor, or material arising from construction of an improvement or work related to the Land when the improvement or work is either
      (i) contracted for or commenced on or before Date of Policy; or
      (ii) contracted for, commenced, or continued after Date of Policy if the construction is financed, in whole or in part, by proceeds of the loan secured by the Insured Mortgage that the Insured has advanced or is obligated on Date of Policy to advance; and
   (b) over the lien of any assessments for street improvements under construction or completed at Date of Policy.
12. The invalidity or unenforceability of any assignment of the Insured Mortgage, provided the assignment is shown in Schedule A, or the failure of the assignment shown in Schedule A to vest title to the Insured Mortgage in the named Insured assignee free and clear of all liens.
13. The invalidity, unenforceability, lack of priority, or avoidance of the lien of the Insured Mortgage upon the Title
   (a) resulting from the avoidance in whole or in part, or from a court order providing an alternative remedy, of any transfer of all or any part of the title to or any interest in the Land occurring prior to the transaction creating the lien of the Insured Mortgage because that prior transfer constituted a fraudulent or preferential transfer under federal bankruptcy, state insolvency, or similar creditors' rights laws; or

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(b) because the Insured Mortgage constitutes a preferential transfer under federal bankruptcy, state insolvency, or similar creditors' rights laws by reason of the failure of its recording in the Public Records

(i) to be timely, or

(ii) to impart notice of its existence to a purchaser for value or to a judgment or lien creditor.

14. Any defect in or lien or encumbrance on the Title or other matter included in Covered Risks 1 through 13 that has been created or attached or has been filed or recorded in the Public Records subsequent to Date of Policy and prior to the recording of the Insured Mortgage in the Public Records.

The Company will also pay the costs, attorneys' fees, and expenses incurred in defense of any matter insured against by this Policy, but only to the extent provided in the Conditions.

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to

(i) the occupancy, use, or enjoyment of the Land;

(ii) the character, dimensions, or location of any improvement erected on the Land;

(iii) the subdivision of land; or

(iv) environmental protection;

(v) or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.

(b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.

2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.

3. Defects, liens, encumbrances, adverse claims, or other matters

(a) created, suffered, assumed, or agreed to by the Insured Claimant;

(b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;

(c) resulting in no loss or damage to the Insured Claimant;

(d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 11, 13, or 14); or

(e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Title.

4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with applicable doing-business laws of the state where the Land is situated.

5. Invalidity or unenforceability in whole or in part of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury or any consumer credit protection or truth-in-lending law.

6. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction vesting the Title as shown in Schedule A, is

(a) a fraudulent conveyance or fraudulent transfer; or

(b) a preferential transfer for any reason not stated in Covered Risk 13(b) of this policy.

7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the Insured Mortgage in the Public Records. This Exclusion does not modify or limit the coverage provided under Covered Risk 11(b).

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CONDITIONS

1. DEFINITION OF TERMS

The following terms when used in this policy mean:

(a) "Amount of Insurance": The amount stated in Schedule A, as may be increased or decreased by endorsement to this policy, increased by Section 8(b) or decreased by Section 10 of these Conditions.

(b) "Date of Policy": The date designated as "Date of Policy" in Schedule A.

(c) "Entity": A corporation, partnership, trust, limited liability company, or other similar legal entity.

(d) "Indebtedness": The obligation secured by the Insured Mortgage including one evidenced by electronic means authorized by law, and if that obligation is the payment of a debt, the Indebtedness is the sum of (i) the amount of the principal disbursed as of Date of Policy; (ii) the amount of the principal disbursed subsequent to Date of Policy; (iii) the construction loan advances made subsequent to Date of Policy for the purpose of financing in whole or in part the construction of an improvement to the Land or related to the Land that the Insured was and continued to be obligated to advance at Date of Policy and at the date of the advance; (iv) interest on the loan; (v) the prepayment premiums, exit fees, and other similar fees or penalties allowed by law; (vi) the expenses of foreclosure and any other costs of enforcement; (vii) the amounts advanced to assure compliance with laws or to protect the lien or the priority of the lien of the Insured Mortgage before the acquisition of the estate or interest in the Title; (viii) the amounts to pay taxes and insurance; and (ix) the reasonable amounts expended to prevent deterioration of improvements; but the Indebtedness is reduced by the total of all payments and by any amount forgiven by an Insured.

(e) "Insured": The Insured named in Schedule A.

(i) The term "Insured" also includes

(A) the owner of the Indebtedness and each successor in ownership of the Indebtedness, whether the owner or successor owns the Indebtedness for its own account or as a trustee or other fiduciary, except a successor who is an obligor under the provisions of Section 12(c) of these Conditions;

(B) the person or Entity who has "control" of the "transferable record," if the Indebtedness is evidenced by a "transferable record," as these terms are defined by applicable electronic transactions law;

(C) successors to an Insured by dissolution, merger, consolidation, distribution, or reorganization;

(D) successors to an Insured by its conversion to another kind of Entity;

(E) a grantee of an Insured under a deed delivered without payment of actual valuable consideration conveying the Title

(1) if the stock, shares, memberships, or other equity interests of the grantee are wholly-owned by the named Insured,

(2) if the grantee wholly owns the named Insured, or

(3) if the grantee is wholly-owned by an affiliated Entity of the named Insured, provided the affiliated Entity and the named Insured are both wholly-owned by the same person or Entity;

(F) any government agency or instrumentality that is an insurer or guarantor under an insurance contract or guaranty insuring or guaranteeing the Indebtedness secured by the Insured Mortgage, or any part of it, whether named as an Insured or not;

(ii) With regard to (A), (B), (C), (D) , and (E) reserving, however, all rights and defenses as to any successor that the Company would have had against any predecessor Insured, unless the successor acquired the Indebtedness as a purchaser for value without Knowledge of the asserted defect, lien, encumbrance, or other matter insured against by this policy.

(f) "Insured Claimant": An Insured claiming loss or damage.

(g) "Insured Mortgage": The Mortgage described in paragraph 4 of Schedule A.

(h) "Knowledge" or "Known": Actual knowledge, not constructive knowledge or notice that may be imputed to an Insured by reason of the Public Records or any other records that impart constructive notice of matters affecting the Title.

(i) "Land": The land described in Schedule A, and affixed improvements that by law constitute real property. The term "Land" does not include any property beyond the lines of the area described in Schedule A, nor any right, title, interest, estate, or easement in abutting streets, roads, avenues, alleys, lanes, ways, or waterways, but this does not modify or limit the extent that a right of access to and from the Land is insured by this policy.

(j) "Mortgage": Mortgage, deed of trust, trust deed, or other security instrument, including one evidenced by electronic means authorized by law.

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(k) "Public Records": Records established under state statutes at Date of Policy for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without Knowledge. With respect to Covered Risk 5(d), "Public Records" shall also include environmental protection liens filed in the records of the clerk of the United States District Court for the district where the Land is located.

(l) "Title": The estate or interest described in Schedule A.

(m) "Unmarketable Title": Title affected by an alleged or apparent matter that would permit a prospective purchaser or lessee of the Title or lender on the Title or a prospective purchaser of the Insured Mortgage to be released from the obligation to purchase, lease, or lend if there is a contractual condition requiring the delivery of marketable title.

2. CONTINUATION OF INSURANCE

The coverage of this policy shall continue in force as of Date of Policy in favor of an Insured after acquisition of the Title by an Insured or after conveyance by an Insured, but only so long as the Insured retains an estate or interest in the Land, or holds an obligation secured by a purchase money Mortgage given by a purchaser from the Insured, or only so long as the Insured shall have liability by reason of warranties in any transfer or conveyance of the Title. This policy shall not continue in force in favor of any purchaser from the Insured of either (i) an estate or interest in the Land, or (ii) an obligation secured by a purchase money Mortgage given to the Insured.

3. NOTICE OF CLAIM TO BE GIVEN BY INSURED CLAIMANT

The Insured shall notify the Company promptly in writing (i) in case of any litigation as set forth in Section 5(a) of these Conditions, (ii) in case Knowledge shall come to an Insured of any claim of title or interest that is adverse to the Title or the lien of the Insured Mortgage, as insured, and that might cause loss or damage for which the Company may be liable by virtue of this policy, or (iii) if the Title or the lien of the Insured Mortgage, as insured, is rejected as Unmarketable Title. If the Company is prejudiced by the failure of the Insured Claimant to provide prompt notice, the Company's liability to the Insured Claimant under the policy shall be reduced to the extent of the prejudice.

4. PROOF OF LOSS

In the event the Company is unable to determine the amount of loss or damage, the Company may, at its option, require as a condition of payment that the Insured Claimant furnish a signed proof of loss. The proof of loss must describe the defect, lien, encumbrance, or other matter insured against by this policy that constitutes the basis of loss or damage and shall state, to the extent possible, the basis of calculating the amount of the loss or damage.

5. DEFENSE AND PROSECUTION OF ACTIONS

(a) Upon written request by the Insured, and subject to the options contained in Section 7 of these Conditions, the Company, at its own cost and without unreasonable delay, shall provide for the defense of an Insured in litigation in which any third party asserts a claim covered by this policy adverse to the Insured. This obligation is limited to only those stated causes of action alleging matters insured against by this policy. The Company shall have the right to select counsel of its choice (subject to the right of the Insured to object for reasonable cause) to represent the Insured as to those stated causes of action. It shall not be liable for and will not pay the fees of any other counsel. The Company will not pay any fees, costs, or expenses incurred by the Insured in the defense of those causes of action that allege matters not insured against by this policy.

(b) The Company shall have the right, in addition to the options contained in Section 7 of these Conditions, at its own cost, to institute and prosecute any action or proceeding or to do any other act that in its opinion may be necessary or desirable to establish the Title or the lien of the Insured Mortgage, as insured, or to prevent or reduce loss or damage to the Insured. The Company may take any appropriate action under the terms of this policy, whether or not it shall be liable to the Insured. The exercise of these rights shall not be an admission of liability or waiver of any provision of this policy. If the Company exercises its rights under this subsection, it must do so diligently.

(c) Whenever the Company brings an action or asserts a defense as required or permitted by this policy, the Company may pursue the litigation to a final determination by a court of competent jurisdiction, and it expressly reserves the right, in its sole discretion, to appeal any adverse judgment or order.

6. DUTY OF INSURED CLAIMANT TO COOPERATE

(a) In all cases where this policy permits or requires the Company to prosecute or provide for the defense of any action or proceeding and any appeals, the Insured shall secure to the Company the right to so prosecute or provide defense in the action or proceeding, including the right to use, at its option, the name of the Insured for this purpose.

Whenever requested by the Company, the Insured, at the Company's expense, shall give the Company all reasonable aid (i) in securing evidence, obtaining witnesses, prosecuting or defending the action or proceeding, or effecting settlement, and (ii) in any other lawful act that in the opinion of the Company may be necessary or desirable to establish the Title, the lien of the Insured Mortgage, or any other matter

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as insured. If the Company is prejudiced by the failure of the Insured to furnish the required cooperation, the Company's obligations to the Insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such cooperation.

(b) The Company may reasonably require the Insured Claimant to submit to examination under oath by any authorized representative of the Company and to produce for examination, inspection, and copying, at such reasonable times and places as may be designated by the authorized representative of the Company, all records, in whatever medium maintained, including books, ledgers, checks, memoranda, correspondence, reports, e-mails, disks, tapes, and videos whether bearing a date before or after Date of Policy, that reasonably pertain to the loss or damage. Further, if requested by any authorized representative of the Company, the Insured Claimant shall grant its permission, in writing, for any authorized representative of the Company to examine, inspect, and copy all of these records in the custody or control of a third party that reasonably pertain to the loss or damage. All information designated as confidential by the Insured Claimant provided to the Company pursuant to this Section shall not be disclosed to others unless, in the reasonable judgment of the Company, it is necessary in the administration of the claim. Failure of the Insured Claimant to submit for examination under oath, produce any reasonably requested information, or grant permission to secure reasonably necessary information from third parties as required in this subsection, unless prohibited by law or governmental regulation, shall terminate any liability of the Company under this policy as to that claim.

7. OPTIONS TO PAY OR OTHERWISE SETTLE CLAIMS; TERMINATION OF LIABILITY

In case of a claim under this policy, the Company shall have the following additional options:

(a) To Pay or Tender Payment of the Amount of Insurance or to Purchase the Indebtedness.

(i) To pay or tender payment of the Amount of Insurance under this policy together with any costs, attorneys' fees, and expenses incurred by the Insured Claimant that were authorized by the Company up to the time of payment or tender of payment and that the Company is obligated to pay; or

(ii) To purchase the Indebtedness for the amount of the Indebtedness on the date of purchase, together with any costs, attorneys' fees, and expenses incurred by the Insured Claimant that were authorized by the Company up to the time of purchase and that the Company is obligated to pay.

When the Company purchases the Indebtedness, the Insured shall transfer, assign, and convey to the Company the Indebtedness and the Insured Mortgage, together with any collateral security.

Upon the exercise by the Company of either of the options provided for in subsections (a)(i) or (ii), all liability and obligations of the Company to the Insured under this policy, other than to make the payment required in those subsections, shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation.

(b) To Pay or Otherwise Settle With Parties Other Than the Insured or With the Insured Claimant.

(i) to pay or otherwise settle with other parties for or in the name of an Insured Claimant any claim insured against under this policy. In addition, the Company will pay any costs, attorneys' fees, and expenses incurred by the Insured Claimant that were authorized by the Company up to the time of payment and that the Company is obligated to pay; or

(ii) to pay or otherwise settle with the Insured Claimant the loss or damage provided for under this policy, together with any costs, attorneys' fees, and expenses incurred by the Insured Claimant that were authorized by the Company up to the time of payment and that the Company is obligated to pay.

Upon the exercise by the Company of either of the options provided for in subsections (b)(i) or (ii), the Company's obligations to the Insured under this policy for the claimed loss or damage, other than the payments required to be made, shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation.

8. DETERMINATION AND EXTENT OF LIABILITY

This policy is a contract of indemnity against actual monetary loss or damage sustained or incurred by the Insured Claimant who has suffered loss or damage by reason of matters insured against by this policy.

(a) The extent of liability of the Company for loss or damage under this policy shall not exceed the least of

(i) the Amount of Insurance,

(ii) the Indebtedness,

(iii) the difference between the value of the Title as insured and the value of the Title subject to the risk insured against by this policy, or

(iv) if a government agency or instrumentality is the Insured Claimant, the amount it paid in the

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acquisition of the Title or the Insured Mortgage in satisfaction of its insurance contract or guaranty.

(b) If the Company pursues its rights under Section 5 of these Conditions and is unsuccessful in establishing the Title or the lien of the Insured Mortgage, as insured,

(i) the Amount of Insurance shall be increased by 10%, and

(ii) the Insured Claimant shall have the right to have the loss or damage determined either as of the date the claim was made by the Insured Claimant or as of the date it is settled and paid.

(c) In the event the Insured has acquired the Title in the manner described in Section 2 of these Conditions or has conveyed the Title, then the extent of liability of the Company shall continue as set forth in Section 8(a) of these Conditions.

(d) In addition to the extent of liability under (a), (b), and (c), the Company will also pay those costs, attorneys' fees, and expenses incurred in accordance with Sections 5 and 7 of these Conditions.

9. LIMITATION OF LIABILITY

(a) If the Company establishes the Title, or removes the alleged defect, lien, or encumbrance, or cures the lack of a right of access to or from the Land, or cures the claim of Unmarketable Title, or establishes the lien of the Insured Mortgage, all as insured, in a reasonably diligent manner by any method, including litigation and the completion of any appeals, it shall have fully performed its obligations with respect to that matter and shall not be liable for any loss or damage caused to the Insured.

(b) In the event of any litigation, including litigation by the Company or with the Company's consent, the Company shall have no liability for loss or damage until there has been a final determination by a court of competent jurisdiction, and disposition of all appeals, adverse to the Title or to the lien of the Insured Mortgage, as insured.

(c) The Company shall not be liable for loss or damage to the Insured for liability voluntarily assumed by the Insured in settling any claim or suit without the prior written consent of the Company.

10. REDUCTION OF INSURANCE; REDUCTION OR TERMINATION OF LIABILITY

(a) All payments under this policy, except payments made for costs, attorneys' fees, and expenses, shall reduce the Amount of Insurance by the amount of the payment. However, any payments made prior to the acquisition of Title as provided in Section 2 of these Conditions shall not reduce the Amount of Insurance afforded under this policy except to the extent that the payments reduce the Indebtedness.

(b) The voluntary satisfaction or release of the Insured Mortgage shall terminate all liability of the Company except as provided in Section 2 of these Conditions.

11. PAYMENT OF LOSS

When liability and the extent of loss or damage have been definitely fixed in accordance with these Conditions, the payment shall be made within 30 days.

12. RIGHTS OF RECOVERY UPON PAYMENT OR SETTLEMENT

(a) The Company's Right to Recover

Whenever the Company shall have settled and paid a claim under this policy, it shall be subrogated and entitled to the rights of the Insured Claimant in the Title or Insured Mortgage and all other rights and remedies in respect to the claim that the Insured Claimant has against any person or property, to the extent of the amount of any loss, costs, attorneys' fees, and expenses paid by the Company. If requested by the Company, the Insured Claimant shall execute documents to evidence the transfer to the Company of these rights and remedies. The Insured Claimant shall permit the Company to sue, compromise, or settle in the name of the Insured Claimant and to use the name of the Insured Claimant in any transaction or litigation involving these rights and remedies.

If a payment on account of a claim does not fully cover the loss of the Insured Claimant, the Company shall defer the exercise of its right to recover until after the Insured Claimant shall have recovered its loss.

(b) The Insured's Rights and Limitations

(i) The owner of the Indebtedness may release or substitute the personal liability of any debtor or guarantor, extend or otherwise modify the terms of payment, release a portion of the Title from the lien of the Insured Mortgage, or release any collateral security for the Indebtedness, if it does not affect the enforceability or priority of the lien of the Insured Mortgage.

(ii) If the Insured exercises a right provided in (b)(i), but has Knowledge of any claim adverse to the Title or the lien of the Insured Mortgage insured against by this policy, the Company shall be required to pay only that part of any losses insured against by this policy that shall exceed the amount, if any, lost to the Company by reason of the impairment by the Insured Claimant of the Company's right of subrogation.

(c) The Company's Rights Against Noninsured Obligors

The Company's right of subrogation includes the

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Insured's rights against non-insured obligors including the rights of the Insured to indemnities, guaranties, other policies of insurance, or bonds, notwithstanding any terms or conditions contained in those instruments that address subrogation rights.

The Company's right of subrogation shall not be avoided by acquisition of the Insured Mortgage by an obligor (except an obligor described in Section 1(e)(i)(F) of these Conditions) who acquires the Insured Mortgage as a result of an indemnity, guarantee, other policy of insurance, or bond, and the obligor will not be an Insured under this policy.

13. ARBITRATION – INTENTIONALLY DELETED

14. LIABILITY LIMITED TO THIS POLICY; POLICY ENTIRE CONTRACT

(a) This policy together with all endorsements, if any, attached to it by the Company is the entire policy and contract between the Insured and the Company. In interpreting any provision of this policy, this policy shall be construed as a whole.

(b) Any claim of loss or damage that arises out of the status of the Title or lien of the Insured Mortgage or by any action asserting such claim shall be restricted to this policy.

(c) Any amendment of or endorsement to this policy must be in writing and authenticated by an authorized person, or expressly incorporated by Schedule A of this policy.

(d) Each endorsement to this policy issued at any time is made a part of this policy and is subject to all of its terms and provisions. Except as the endorsement expressly states, it does not (i) modify any of the terms and provisions of the policy, (ii) modify any prior endorsement, (iii) extend the Date of Policy, or (iv) increase the Amount of Insurance.

15. SEVERABILITY

In the event any provision of this policy, in whole or in part, is held invalid or unenforceable under applicable law, the policy shall be deemed not to include that provision or such part held to be invalid, but all other provisions shall remain in full force and effect.

16. CHOICE OF LAW; FORUM

(a) Choice of Law: The Insured acknowledges the Company has underwritten the risks covered by this policy and determined the premium charged therefor in reliance upon the law affecting interests in real property and applicable to the interpretation, rights, remedies, or enforcement of policies of title insurance of the jurisdiction where the Land is located.

Therefore, the court or an arbitrator shall apply the law of the jurisdiction where the Land is located to determine the validity of claims against the Title or the lien of the Insured Mortgage that are adverse to the Insured and to interpret and enforce the terms of this policy. In neither case shall the court or arbitrator apply its conflicts of law principles to determine the applicable law.

(b) Choice of Forum: Any litigation or other proceeding brought by the Insured against the Company must be filed only in a state or federal court within the United States of America or its territories having appropriate jurisdiction.

17. NOTICES, WHERE SENT

Any notice of claim and any other notice or statement in writing required to be given to the Company under this policy must be given to the Company at 12909 SW 68th Pkwy., Suite 350, Portland, OR 97223. WFG National Title Insurance Company's telephone number is (800) 334-8885. Email address: claims@wfgnationaltitle.com.

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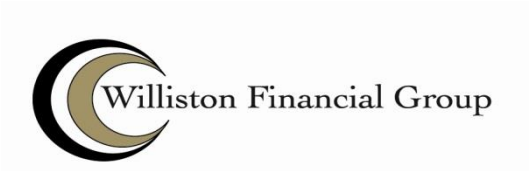

Williston Financial Group Privacy Notice

Williston Financial Group LLC, WFG National Title Insurance Company, and each of the affiliates listed below (collectively "WFG" or the "WFG Family") believe it is important to protect your privacy and confidences. We recognize and respect the privacy expectations of our customers. We believe that making you aware of how we collect information about you, how we use that information, and with whom we share that information will form the basis for a relationship of trust between us. This Privacy Notice provides that explanation. We reserve the right to change this Privacy Notice from time to time.

WFG's primary business is providing appraisal, title insurance, and escrow services for the sale or refinance of real property. This can be a complicated process involving multiple parties, many of whom have been selected by our customers, each filling a specialized role. In part, you have hired WFG to coordinate and smooth the passage of the information necessary for an efficient settlement or closing.

In the course of this process, WFG collects a significant amount of personal and identifying information about the parties to a transaction, including sensitive items that include but are not limited to: your contact information, including email addresses, Social Security numbers, driver's license, and other identification numbers and information; financial, bank and insurance information; information about past and proposed mortgages and loans; information about properties you currently or previously owned; your mortgage application package; and the cookie, IP address, and other information captured automatically by computer systems.

Much of this information is gathered from searches of public land, tax, court and credit records to make certain that any liens, challenges or title defects are addressed properly. Some of the information that is collected is provided by you or the computer systems you use. We also may receive information from real estate brokers and agents, mortgage brokers and lenders, and others working to facilitate your transaction, as well as information from public, private or governmental databases including credit bureaus, 'no-fly' lists, and terrorist 'watch lists'.

What Information is Shared?

WFG DOES NOT SELL any of your information to non-affiliated companies for marketing or any other purpose.

However, some of the same information does get shared with persons inside and outside the WFG Family in order to facilitate and complete your transaction.

For example:

However, some of the same information does get shared with persons inside and outside the WFG Family in order to facilitate and complete current and future transactions.

For example:

- Information, draft documents, and closing costs will pass back and forth between WFG and your mortgage broker and lender to facilitate your transaction.
- Information, including purchase agreements and amendments, will pass back and forth between WFG and the real estate agents and brokers, the mortgage brokers and lenders, the lawyers and accountants, and others involved in facilitating the transaction.
- WFG may order property searches and examinations from title searchers, abstractors and title plants.
- WFG may use third parties to obtain tax information, lien information, payoff information, and condominium or homeowners' association information.
- Third parties may be engaged to prepare documents in connection with your transaction.
- Surveys, appraisals, and inspections may be ordered.
- Within the WFG Family of companies, we may divide up the work to handle each closing in the most efficient manner possible and to meet specific legal and licensing requirements. Certain parts of your closing (for example a search or disbursement) may be handled by another division or company within the WFG Family.

- When it is time for signatures, your complete closing package may be sent to a notary, remote online notary, or notary service company who will arrange to meet with you to sign documents. The notary will, in turn, send signed copies back to us along with copies of your driver's license or other identity documents, usually by mail, UPS, Federal Express or another courier service.
- Your deed, mortgage and other documents required to perfect title will be recorded with the local recorder of deeds.
- In some cases, we use an outside service to coordinate the recording or electronic-recording of those instruments, and they will receive copies of your deeds, mortgages and other recordable documents to process, scan and send on to the recording office.
- Information within your title policy may be shared with WFG National Title Insurance Company title policy issuing agents to facilitate future financial transactions involving your property.
- Various government agencies get involved. The law requires us to provide certain information to the IRS, the U.S. Department of the Treasury, local and state tax authorities, and other regulatory and governmental agencies.
- **WFG title policy issuing agents only**: personal information provided by you may be shared with a third party for the purposes of facilitating training to obtain CE/CLE credits.

You have a choice in the selection of a mortgage broker, lender, real estate broker or agent and others that make up your 'transaction team.' Information flows to and from the members of the transaction team you have selected to facilitate an efficient transaction for you.

When WFG selects and engages a third party provider, we limit the scope of the information shared with that third party to the information reasonably necessary for that service provider to provide the requested services. With most, we have entered into agreements in which they expressly commit to maintain a WFG customer's information in strict confidence and use the information only for purposes of providing the requested services, clearing title, preventing fraud and addressing claims under our title insurance policies.

How does WFG use your Information?

We may use your personal information in a variety of ways, including but not limited to:

- Provide the products, services and title insurance you have requested, and to close and facilitate your transaction.
- Provide and use historic transaction information to facilitate future financial transactions.
- Coordinate and manage the appraisal process.
- Handle a claim or provide other services relating to your title insurance policies.
- Create, manage, and maintain your account.
- Operate and improve WFG's applications and websites, including WFG MyHome®, WFG's secure communication and transaction portal. Your information is used for access management, payment processing, site administration, internal operations, troubleshooting, data analysis, testing, research, and for statistical purposes.
- Respond to your requests, feedback or inquiries.
- Comply with laws, regulations, and other legal requirements.
- Comply with relevant industry standards and our policies, including managing WFG's risk profile through reinsurance.
- Protect and enforce your rights and the rights of other users against unlawful activity, including identity theft and fraud.
- Protect and enforce our collective rights arising under any agreements entered into between WFG and you or any other third party.
- Protect the integrity and maintain security of our applications, websites, and products.
- Operate, evaluate, and improve our business.
- Provide you with information about products, services, and promotions from WFG or third parties that may interest you.
- **WFG title policy issuing agents only**: Provide you with a training platform to obtain CE/CLE credits

How Do We Store and Protect Your Personal Information?

Although no system can guarantee the complete security of your personal information, we will use our best efforts to maintain commercially reasonable technical, organizational, and physical safeguards, consistent with applicable law, to protect your personal information and our systems and sites from malicious intrusions or hacking.

How Long Do We Keep Your Personal Information?

We keep your personal information for as long as necessary to comply with the purpose for which it was collected, our business needs, and our legal and regulatory obligations. We may store some personal information indefinitely. If we dispose of your personal information, we will do so in a way that is secure and appropriate to the nature of the information subject to disposal.

Computer Information

When you access a WFG website, or communicate with us by e-mail, we may automatically collect and store more information than you are expressly providing when you fill out a survey or send an email. This may include:

- Your IP Address.
- Your email address, your alias and, social media handles.
- The type of browser and operating system you use.
- The time of your visit.
- The pages of our site you visit.
- Cookies.

In order to provide you with customized service, we make use of Web browser cookies. Cookies are files that help us identify your computer and personalize your online experience. You may disable cookies on your computer, but you may not be able to download online documents or access certain websites unless cookies are enabled.

The technical information we collect is used for administrative and technical purposes and to prevent fraud and provide identity verification. For instance, we may use it to count the number of visitors to our website and determine the most popular pages. We may also use it to review types of technology you are using, determine which link brought you to our website, assess how our advertisements on other websites are working, help with maintenance, and improve our customers' experience.

We may compare information gathered on previous visits to verify that we are interacting with the same parties and not a potential imposter.

If we ask you to fill out any forms or surveys, we will use the information we receive only for the specific purposes indicated in those forms or surveys.

The information you and your transaction team send us in emails or attached to an email, or provide through any of our online tools, is used for purposes of providing title, escrow and appraisal management services and used for the purposes described above.

In addition to the above, if you use an eClosing platform to sign your real estate transaction additional information may be collected. This may include:

- Your IP address.
- Your location.
- Your email address and your alias.
- The type of browser and operating system you use.
- The time of your visit.
- Your biometrics.
- Your image.
- Video recording of your transaction signing.
- Transaction metadata.
- Cookies.

Links to Third Party Sites

Our Applications and Websites may contain links to third-party websites and services. Please note that these links are provided for your convenience and information, and the websites and services may operate independently from us and have their own privacy policies or notices, which we strongly suggest you review. This Privacy Notice applies to WFG's applications and websites only.

Do Not Track

Because there is not an industry-standard process or defined criteria to permit a user to opt-out of tracking their online activities (“Do Not Track”), our websites do not currently change the way they operate based upon detection of a Do Not Track or similar signal. Likewise, we cannot assure that third parties are not able to collect information about your online activities on WFG websites or applications.

Social Media Integration

Our applications, websites, and products contain links to and from social media platforms. You may choose to connect to us through a social media platform, such as Facebook, Twitter, Google, etc. When you do, we may collect from the social media platform additional information from or about you, such as your screen names, profile picture, contact information, contact list, and the profile pictures of your contacts. The social media platforms may also collect information from you.

When you click on a social plug-in, such as Facebook's "Like" button, Twitter's "tweet" button, or the Google+, that particular social network's plug-in will be activated and your browser will directly connect to that provider's servers. Your action in clicking on the social plug-in causes information to be passed to the social media platform.

We do not have control over the collection, use and sharing practices of social media platforms. We therefore encourage you to review their usage and disclosure policies and practices, including their data security practices, before using social media platforms.

How Can You “Opt-Out?”

We do not sell your information; therefore there is no need to opt-out of such reselling. Under various laws, you can opt-out of the sharing of your information for more narrow purposes. For additional detail, consult the Links under the “Legal” Notices attached below.

The “Legal” Notices

To comply with various federal and state laws, we are required to provide more complete legal notices and disclosures – see links below. The state-specific statutes referenced therein may also give residents of those states additional rights and remedies.

Privacy Notice for California Residents - https://national.wfgnationaltitle.com/privacy-notice-california

Privacy Notice for Oregon Residents - https://national.wfgnationaltitle.com/privacy-notice-oregon

How to Contact Us

If you have any questions about WFG’s privacy notice or how we protect your information, please contact WFG:

- By email: Consumerprivacy@willistonfinancial.com
- By telephone: 833-451-5718
- By fax: 503-974-9596
- By mail: 12909 SW 68th Pkwy, Suite 350, Portland, OR 97223

WFG FAMILY

WILLISTON FINANCIAL GROUP LLC
WFG NATIONAL TITLE INSURANCE COMPANY
WFG LENDER SERVICES, LLC
WFGLS TITLE AGENCY OF UTAH, LLC
WFG NATIONAL TITLE COMPANY OF WASHINGTON, LLC
WFG NATIONAL TITLE COMPANY OF CALIFORNIA
WFG NATIONAL TITLE COMPANY OF TEXAS, LLC D/B/A WFG NATIONAL TITLE COMPANY
UNIVERSAL TITLE PARTNERS, LLC
VALUTRUST SOLUTIONS, LLC
MYHOME, A WILLISTON FINANCIAL GROUP COMPANY, LLC (formerly known as WILLISTON ENTERPRISE SOLUTIONS & TECHNOLOGY, LLC)
WFG NATIONAL TITLE COMPANY OF CLARK COUNTY, WA, LLC, D/B/A WFG NATIONAL TITLE

Rev 12.20.2022

Rev. 12/2022

FACTS	WHAT DOES WILLISTON FINANCIAL GROUP DO WITH YOUR PERSONAL INFORMATION?
Why?	Financial companies choose how they share your personal information. Federal law gives consumers the right to limit some but not all sharing. Federal law also requires us to tell you how we collect, share, and protect your personal information. Please read this notice carefully to understand what we do.
What?	The types of personal information we collect and share depend on the product or service you have with us. This information can include: • Social Security number and other government identification information • Your name, address, phone, and email • Information about the property, any liens and restrictions • Financial Information including credit history and other debt • Financial account information, including wire transfer instructions.
How?	All financial companies need to share customers' personal information to run their everyday business. In the section below, we list the reasons financial companies can share their customers' personal information; the reasons Williston Financial Group chooses to share; and whether you can limit this sharing.

Reasons we can share your personal information	Does Williston Financial Group share?	Can you limit this sharing?
For our everyday business purposes— such as to process your transactions, maintain your account(s), respond to court orders and legal investigations, or report to credit bureaus	Yes	No
For our marketing purposes— to offer our products and services to you	Yes	No
For joint marketing with other financial companies	No	We don't share
For our affiliates' everyday business purposes— information about your transactions and experiences	Yes	No
For our affiliates' everyday business purposes— information about your creditworthiness	No	We don't share
For our affiliates to market to you	No	We don't share
For nonaffiliates to market to you	No	We don't share

To limit our sharing	• Call 833-451-5718—our menu will prompt you through your choice(s) • Visit us online: http://bit.ly/WFGsConsumerPrivacyInformationRequestPage or e-mailing us at consumerprivacy@willistonfinancial.com • Mail the form below Please note: If you are a new customer, we can begin sharing your information from the date we sent this notice. When you are no longer our customer, we continue to share your information as described in this notice. However, you can contact us at any time to limit our sharing.
Questions?	Call 833-451-5718 or Email consumerprivacy@willistonfinancial.com

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Mail-In Form			
If you have a joint policy, your choices will apply to everyone on your account.	Mark any/all you want to limit: [ ] Do not share information about my creditworthiness with your affiliates for their everyday business purposes. [ ] Do not allow your affiliates to use my personal information to market to me. [ ] Do not share my personal information with nonaffiliates to market their products and services to me.		
	Name		Mail to: Williston Financial Group PRIVACY DEPT 12909 SW 68th Pkwy, #350 Portland, OR 97223
	Address		
	City, State, Zip		
	File Number		

Who we are	
Who is providing this notice	Williston Financial Group, LLC and its affiliates and subsidiaries as listed below:
What we do	
How does Williston Financial Group protect my personal information?	To protect your personal information from unauthorized access and use, we use security measures that comply with federal law. These measures include computer safeguards and secured files and buildings. We limit access to your information to employees that need to use the information to process or protect transaction. We take industry standard (IPSEC) measures to protect against malicious intrusions or hacking
How does Williston Financial Group collect my personal information?	We collect your personal information, for example, when you • Apply for insurance • Engage us to provide appraisal, title and escrow services • Give us your contact information • Provide your mortgage information • Show your driver's license We also collect your personal information from others, such as real estate agents and brokers, mortgage brokers, lenders, credit bureaus, affiliates, and others
Why can't I limit all sharing?	Federal law gives you the right to limit only • sharing for affiliates' everyday business purposes—information about your creditworthiness • affiliates from using your information to market to you • sharing for nonaffiliates to market to you State laws and individual companies may give you additional rights to limit sharing. See below for more on your rights under state law.
What happens when I limit sharing for an account I hold jointly with someone else?	Your choices will apply to everyone on your policy.
Definitions	
Affiliates	Companies related by common ownership or control. They can be financial and nonfinancial companies. Our affiliates include companies with a common corporate identity, including those listed below.
Nonaffiliates	Companies not related by common ownership or control. They can be financial and nonfinancial companies. Nonaffilliates we share with can include real estate agents and brokers, mortgage brokers, lenders, appraisers, abstractors and title searchers and others as appropriate to facilitate your transaction.
Joint marketing	A formal agreement between nonaffiliated financial companies that together market financial products or services to you. Williston Financial Group does not jointly market.
Other important information	
As a resident or citizen of certain states, we may have to provide additional state specific privacy notices and you may have rights other than as set forth above. The links below will provide state specific information: **Privacy Notice for California Residents** - https://national.wfgnationaltitle.com/privacy-notice-california **Privacy Notice for Oregon Residents** - https://national.wfgnationaltitle.com/privacy-notice-oregon	

WFG National Title Insurance Company
a Williston Financial Group company

LOCATION ENDORSEMENT

Commitment No.: **23-105006**

Policy No.: **3172000-6462830**

Agent File No.:

Effective Date of Endorsement: **February 15, 2023**

Date Issued **February 21, 2023**

Insured: **IQ Credit Union, ISAOA**

WFG National Title Insurance Company herein called "The Company."

The Company insures against loss or damage sustained by the Insured by reason of the failure of a 1-4 Family Residence, known as 20101 NE 13th Street, Camas, WA 98607 (street address), to be located on the Land at Date of Policy.

This endorsement is issued as part of the policy. Except as it expressly states, it does not (i) modify any of the terms and provisions of the policy, (ii) modify any prior endorsements, (iii) extend the Date of Policy, or (iv) increase the Amount of Insurance. To the extent a provision of the policy or a previous endorsement is inconsistent with an express provision of this endorsement, this endorsement controls. Otherwise, this endorsement is subject to all of the terms and provisions of the policy and of any prior endorsements.

Issued By:
WFG National Title Company of Clark County WA, LLC**, as Issuing Agent for** WFG National Title Insurance Company

By: _____
Authorized Signature

WFG NATIONAL TITLE INSURANCE COMPANY

By: _____
Steve Ozonian, President/CEO

ATTEST: _____
Joseph V. McCabe, EVP/General Counsel/Secretary

WFG NATIONAL TITLE INSURANCE COMPANY INCORPORATED 1974 SOUTH CAROLINA

Endorsement 22-06 (Location)
Adopted 06-17-06

Form No. 2206

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AMERICAN LAND TITLE ASSOCIATION

WFG National Title Insurance Company
a Williston Financial Group company

COMMERCIAL ENVIRONMENTAL PROTECTION LIEN ENDORSEMENT

Commitment No.:	**23-105006**	Policy No.:	**3172000-6462830**
Agent File No.:		Effective Date of Endorsement:	**February 15, 2023**
Insured:	**IQ Credit Union, ISAOA**	Date Issued	**February 21, 2023**

WFG National Title Insurance Company herein called "The Company."

The Company insures against loss or damage sustained by the Insured by reason of an environmental protection lien that, at Date of Policy, is recorded in the Public Records or filed in the records of the clerk of the United States district court for the district in which the Land is located, unless the environmental protection lien is set forth as an exception in Schedule B.

This endorsement is issued as part of the policy. Except as it expressly states, it does not (i) modify any of the terms and provisions of the policy, (ii) modify any prior endorsements, (iii) extend the Date of Policy, or (iv) increase the Amount of Insurance. To the extent a provision of the policy or a previous endorsement is inconsistent with an express provision of this endorsement, this endorsement controls. Otherwise, this endorsement is subject to all of the terms and provisions of the policy and of any prior endorsements.

Issued By:
WFG National Title Company of Clark County WA, LLC, **as Issuing Agent for** WFG National Title Insurance Company

By: _____
Authorized Signature

WFG NATIONAL TITLE INSURANCE COMPANY

By: _____
Steve Ozonian, President/CEO

ATTEST: _____
Joseph V. McCabe, EVP/General Counsel/Secretary

WFG NATIONAL TITLE INSURANCE COMPANY · INCORPORATED · 1974 · SOUTH CAROLINA

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WFG National Title Insurance Company
a Williston Financial Group company

RESTRICTIONS, ENCROACHMENTS, MINERALS ENDORSEMENT – CURRENT VIOLATIONS

Commitment No.:	**23-105006**	Policy No.:	**3172000-6462830**
Agent File No.:		Effective Date of Endorsement:	**February 15, 2023**
Insured:	**IQ Credit Union, ISAOA**	Date Issued	**February 21, 2023**

WFG National Title Insurance Company herein called "The Company."

1. The insurance provided by this endorsement is subject to the exclusions in Section 5 of this endorsement; and the Exclusions from Coverage, the Exceptions from Coverage contained in Schedule B, and the Conditions in the policy.
2. For the purposes of this endorsement only:
   a. "Covenant" means a covenant, condition, limitation or restriction in a document or instrument in effect at Date of Policy.
   b. "Improvement" means an improvement, including any lawn, shrubbery, or trees, affixed to either the Land or adjoining land at Date of Policy that by law constitutes real property.
3. The Company insures against loss or damage sustained by the Insured by reason of:
   a. A violation at Date of Policy of a Covenant that:
      i. divests, subordinates, or extinguishes the lien of the Insured Mortgage,
      ii. results in the invalidity, unenforceability or lack of priority of the lien of the Insured Mortgage, or
      iii. causes a loss of the Insured's Title acquired in satisfaction or partial satisfaction of the Indebtedness;
   b. A violation on the Land at Date of Policy of an enforceable Covenant, unless an exception in Schedule B of the policy identifies the violation;
   c. Enforced removal of an Improvement located on the Land as a result of a violation, at Date of Policy, of a building setback line shown on a plat of subdivision recorded or filed in the Public Records, unless an exception in Schedule B of the policy identifies the violation; or
   d. A notice of a violation, recorded in the Public Records at Date of Policy, of an enforceable Covenant relating to environmental protection describing any part of the Land and referring to that Covenant, but only to the extent of the violation of the Covenant referred to in that notice, unless an exception in Schedule B of the policy identifies the notice of the violation.

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4. The Company insures against loss or damage sustained by reason of:

   a. An encroachment of:

      i. an Improvement located on the Land, at Date of Policy, onto adjoining land or onto that portion of the Land subject to an easement; or

      ii. an Improvement located on adjoining land onto the Land at Date of Policy

      unless an exception in Schedule B of the policy identifies the encroachment otherwise insured against in Sections 4.a.i. or 4.a.ii.;

   b. A final court order or judgment requiring the removal from any land adjoining the Land of an encroachment identified in Schedule B; or

   c. Damage to an Improvement located on the Land, at Date of Policy:

      i. that is located on or encroaches onto that portion of the Land subject to an easement excepted in Schedule B, which damage results from the exercise of the right to maintain the easement for the purpose for which it was granted or reserved; or

      ii. resulting from the future exercise of a right to use the surface of the Land for the extraction or development of minerals or any other subsurface substances excepted from the description of the Land or excepted in Schedule B.

5. This endorsement does not insure against loss or damage (and the Company will not pay costs, attorneys' fees, or expenses) resulting from:

   a. any Covenant contained in an instrument creating a lease;

   b. any Covenant relating to obligations of any type to perform maintenance, repair, or remediation on the Land;

   c. except as provided in Section 3.d, any Covenant relating to environmental protection of any kind or nature, including hazardous or toxic matters, conditions, or substances;

   d. contamination, explosion, fire, flooding, vibration, fracturing, earthquake or subsidence; or

   e. negligence by a person or an Entity exercising a right to extract or develop minerals or other subsurface substances.

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This endorsement is issued as part of the policy. Except as it expressly states, it does not (i) modify any of the terms and provisions of the policy, (ii) modify any prior endorsements, (iii) extend the Date of Policy, or (iv) increase the Amount of Insurance. To the extent a provision of the policy or a previous endorsement is inconsistent with an express provision of this endorsement, this endorsement controls. Otherwise, this endorsement is subject to all of the terms and provisions of the policy and of any prior endorsements.

Issued By:
WFG National Title Company of Clark County WA, LLC**, as Issuing Agent for** WFG National Title Insurance Company

By: _____
Authorized Signature

WFG NATIONAL TITLE INSURANCE COMPANY

By: _____
Steve Ozonian, President/CEO

ATTEST: _____
Joseph V. McCabe, EVP/General Counsel/Secretary

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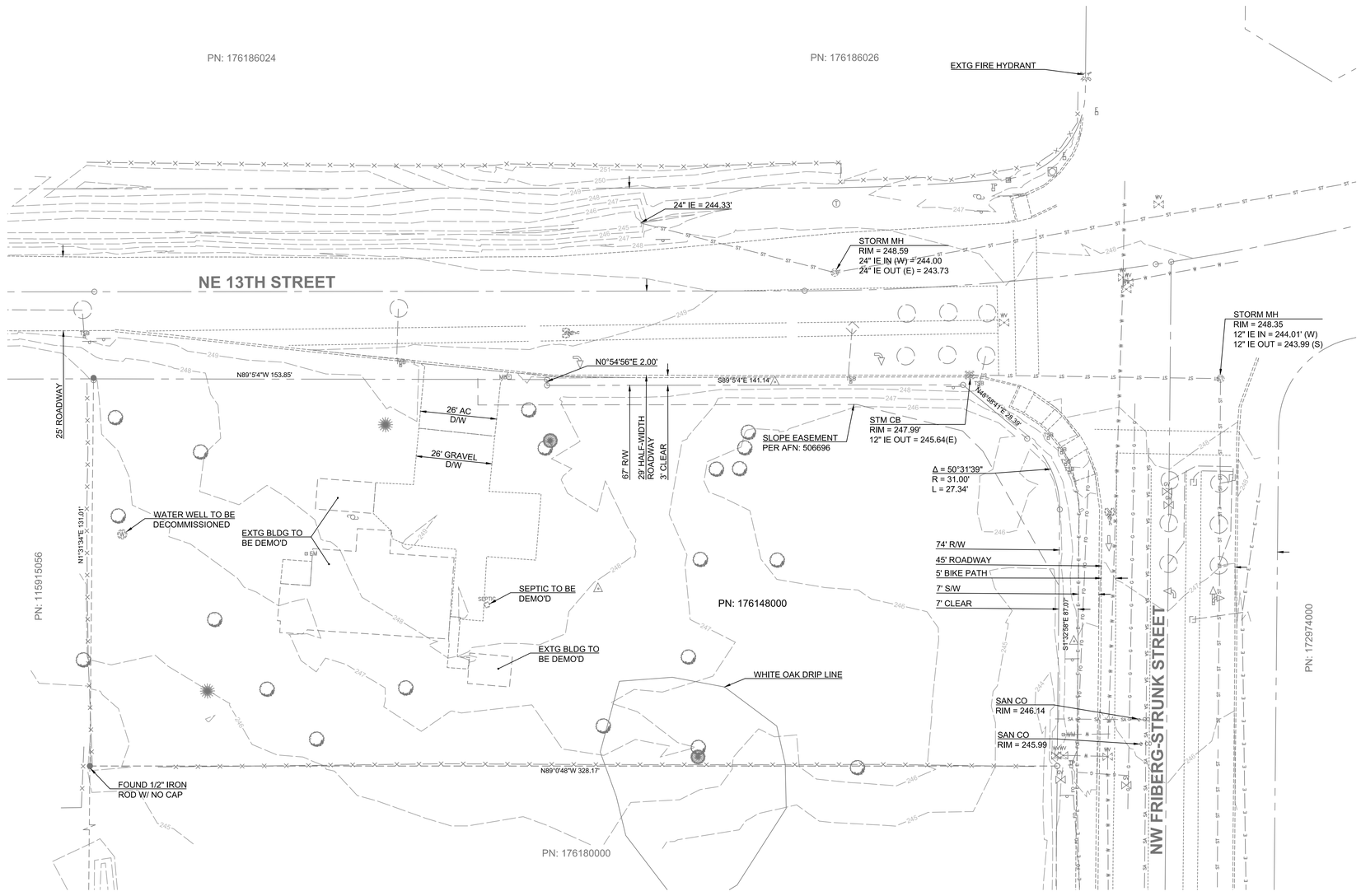
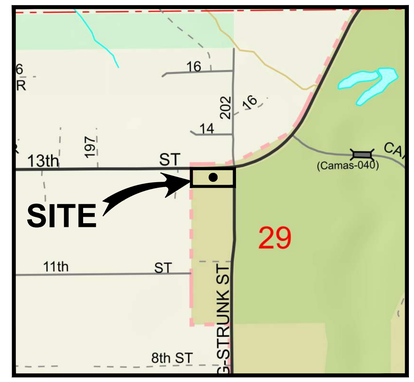
13th Street Site Plan

Located in the NW ¼ of Section 29, T2N, R3E, W.M.
City of Camas, Washington





VICINITY MAP
NOT TO SCALE

Sheet Index

1. Existing Conditions Plan
2. Preliminary Site Plan
3. Preliminary Utility Plan
4. Preliminary Grading Plan
5. Existing Tree Survey TP
6. Preliminary Landscape Plan L1
7. Final Landscape Details PD
8. Preliminary Irrigation Details ID

GENERAL NOTES

APPLICANT:
Taz Kahn
3993 NW Currawong Court
Camas, WA 98607
TKahnusa@gmail.com

OWNER:
Pak USA Camas LLC
20107 NE 13th Street
Camas, WA 98607

CIVIL ENGINEER:
PLS Engineering
Contact: Travis Johnson, PE
604 W Evergreen Blvd
Vancouver, WA 98660
PH: (360) 944-6519
pm@plsengineering.com

SITE ADDRESS:
Parcel # 176148-000
20101 NE 13TH ST
Camas, WA 98607

HORIZONTAL DATUM:
NAD 83 (2011) Washington State plane coordinate system, south zone, us survey feet. Based on real time kinematic corrections from the Washington State reference network.

VERTICAL DATUM:
NGVD 1929(47) based on real time kinematic corrections from the Washington State reference network.

Scale 1" = 20'

20 10 0 20

N

ENGINEERING
PLS

Existing Conditions Plan For:
13th Street Site Plan
A Subdivision Located In The City Of Camas, Washington
Engineering - Surveying - Planning

604 W. Evergreen Blvd., Vancouver, WA 98660 | PH (360) 944-6519 | Fax (360) 944-6539

Revisions

1	2	3	4	5	6

SCOTT W. GILLILAND
STATE OF WASHINGTON
22773
REGISTERED PROFESSIONAL ENGINEER
8/31/23

Project No. 3632	
SCALE:	H: 1" = 20' V: N/A
DESIGNED BY:	SWG
DRAFTED BY:	JSV
REVIEWED BY:	TGJ

1
8

13th Street Site Plan

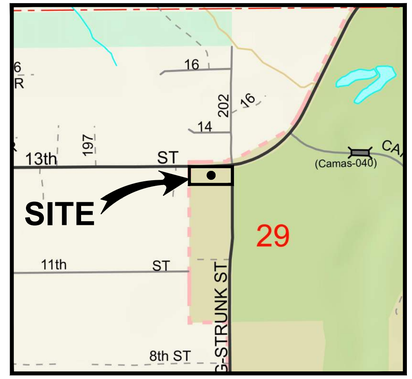
Located in the NW ¼ of Section 29, T2N, R3E, W.M.
City of Camas, Washington

PARCEL STATISTICS		
ZONE: Business Park BP		
Gross Site Area	42,208 SQ FT	0.97 AC
Critical Areas	0 SQ FT	0 AC
	REQUIRED	PROPOSED
Density	N/A	N/A
Maximum Lot Coverage	50%	20%
Setbacks		
North	15'	15'
South	15'	15'
East	15'	15'
West	50'	50'
Maximum Building Height	None	28'
Total Parking Spaces *	20	20
Standard Parking Spaces	70% Min of Total	20
Compact Spaces (C)	30% Max of Total	0
Gas Fill-up Stalls *	1 Per Nozzle (8)	8
ADA Spaces (ADA)	1 Per 25 of Total (1)	1
Spaces with Electric Vehicle Charging Infrastructure (E)	10% Now (2) + 10% Future (2)	2 Now + 2 Future

*Note: The Gas stalls are not actually parking stalls and do not count towards the required ADA and EV calculations.

REQUIRED PARKING CALCULATIONS:

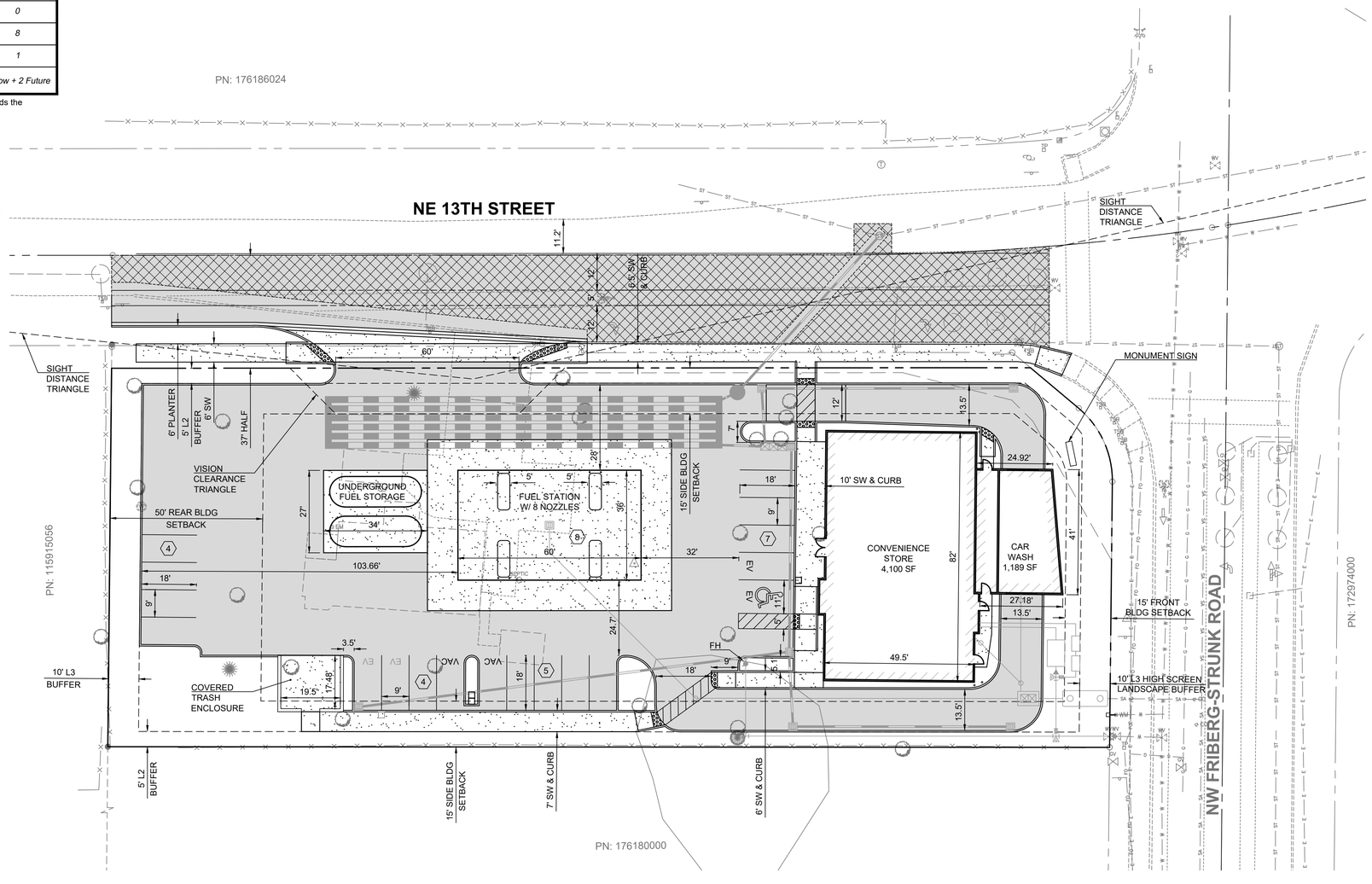
4100 sf c-store @ 1/250 sf	= 17
8 nozzle gas station @ 1/nozzle	= 8
1 stall carwash w/ 2 employees @ 2/stall+1/2 employees	= 3
Total	= 28
Excluding Gas Fill-up Stalls	= 20



VICINITY MAP
NOT TO SCALE

Legend	
Proposed Asphalt Concrete	
Proposed Cement Concrete	
Proposed Grind and Overlay	

Scale 1" = 20'
20 10 0 20



GENERAL NOTES

APPLICANT:
Taz Kahn
3993 NW Currawong Court
Camas, WA 98607
TKahnusa@gmail.com

OWNER:
Pak USA Camas LLC
20107 NE 13th Street
Camas, WA 98607

CIVIL ENGINEER:
PLS Engineering
Contact: Travis Johnson, PE
604 W Evergreen Blvd
Vancouver, WA 98660
PH: (360) 944-6519
pm@plsengineering.com

SITE ADDRESS:
Parcel # 176148-000
20101 NE 13TH ST
Camas, WA 98607

SITE STATISTICS:
Existing Site Area: 42,257 SF (0.97 Acre)
ROW Dedication: 1,832 SF (0.04 Acre)
Developed Site: 42,257 SF (0.93 Acre)

ENGINEERING
PLS
604 W. Evergreen Blvd., Vancouver, WA 98660 | PH (360) 944-6519 | Fax (360) 944-6539

Preliminary Site Plan For:
13th Street Site Plan
A Subdivision Located In The City Of Camas, Washington
Engineering - Surveying - Planning

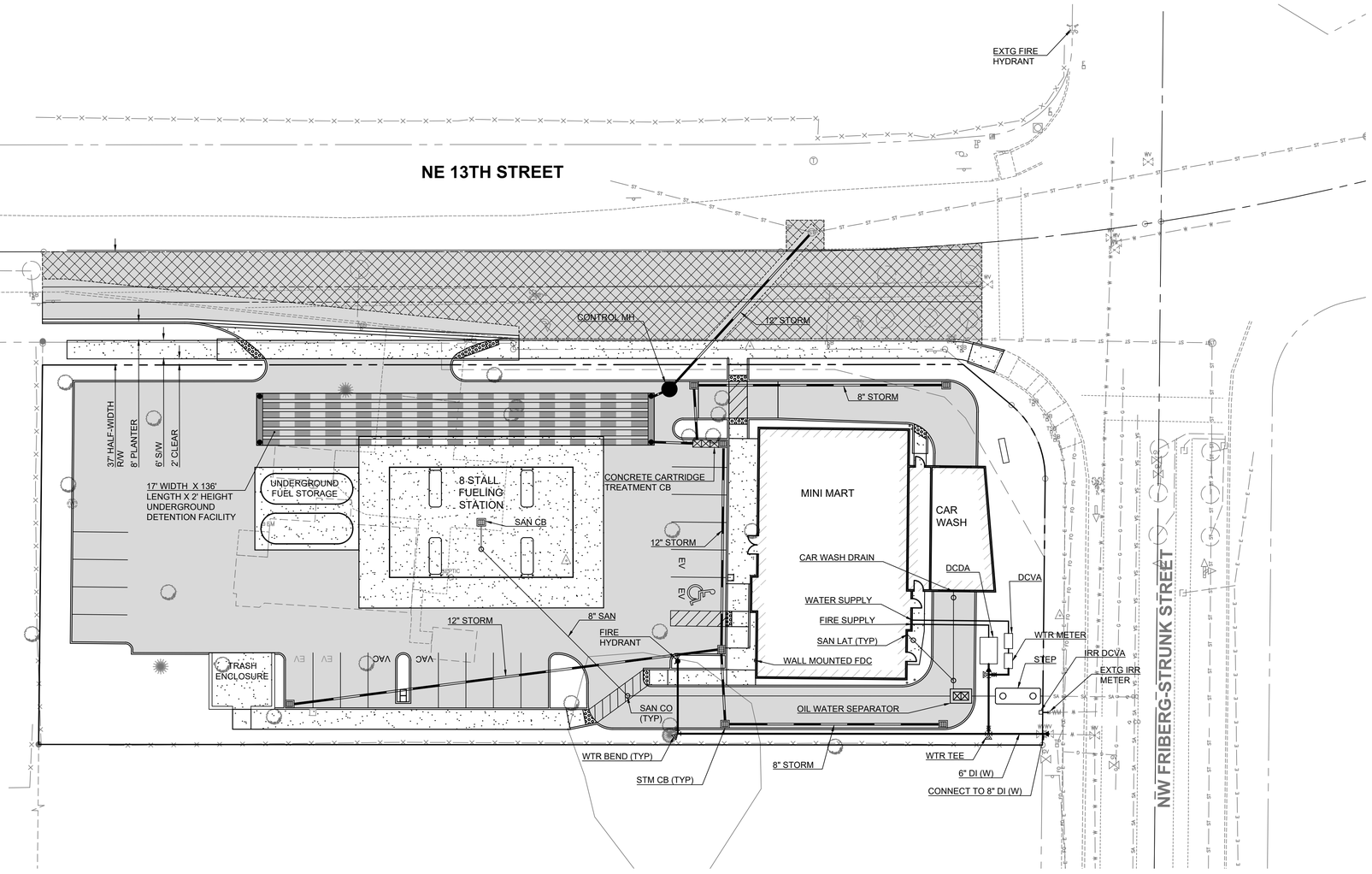
Revisions

1	2	3	4	5	6

SCOTT W. GILLILAND — STATE OF WASHINGTON — 42773 — REGISTERED PROFESSIONAL ENGINEER — 11/2023

Project No.	3632
SCALE:	H: 1" = 20' V: N/A
DESIGNED BY:	SWG
DRAFTED BY:	JSV
REVIEWED BY:	TGJ

2
8



Legend	
Proposed Asphalt Concrete	
Proposed Cement Concrete	
Proposed Grind and Overlay	

Scale 1" = 20'

20 10 0 20

N

ENGINEERING | PLS

Preliminary Utility Plan For:

13th Street Site Plan

A Subdivision Located In The City Of Camas, Washington

Engineering - Surveying - Planning | 604 W. Evergreen Blvd., Vancouver, WA 98660 | PH (360) 944-6519 | Fax (360) 944-6539

Revisions

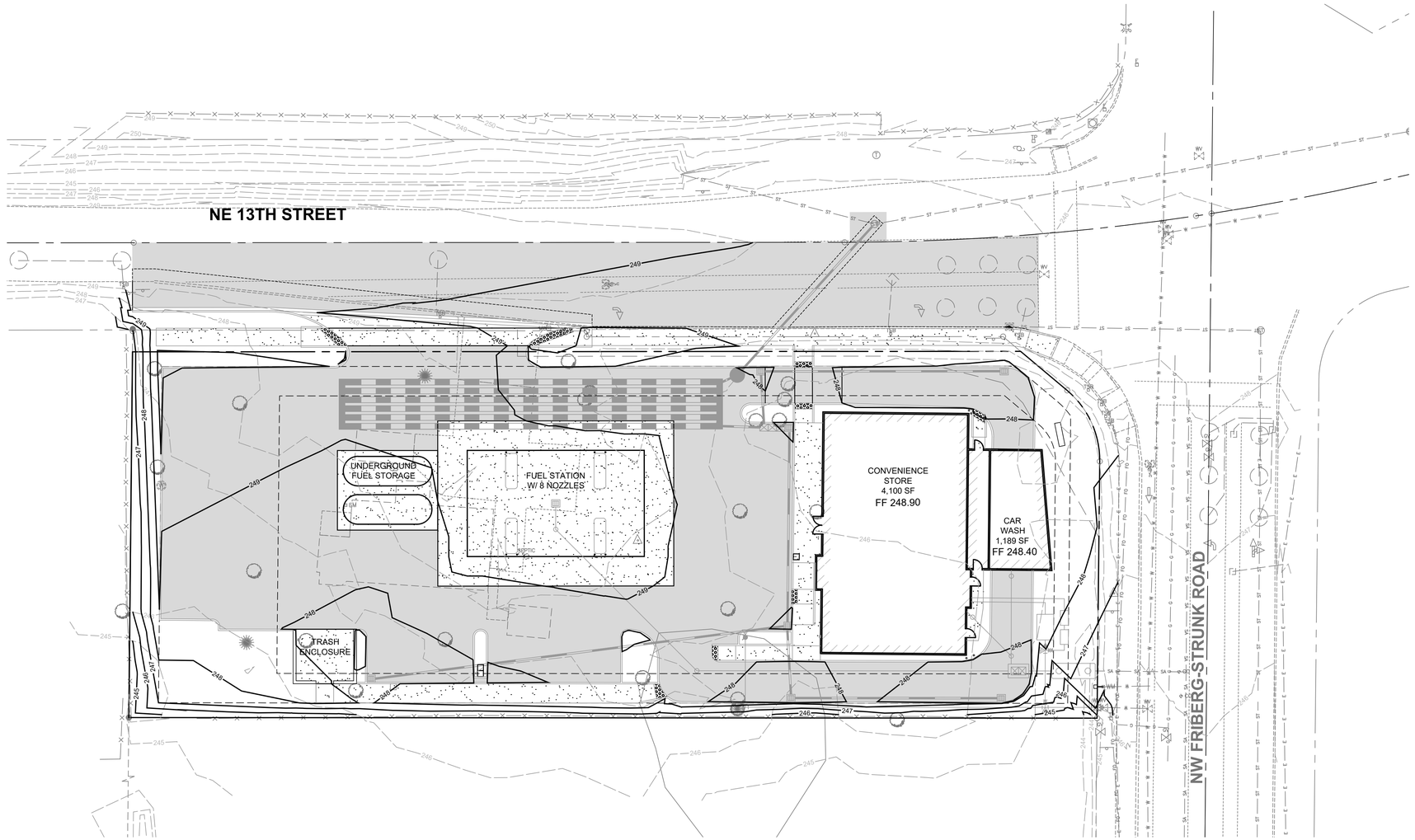
1	2	3	4	5	6

SCOTT W. GILLILAND — STATE OF WASHINGTON — 42773 — REGISTERED PROFESSIONAL ENGINEER — 11/22/23

Project No. 3632	
SCALE:	H: 1" = 20' V: N/A
DESIGNED BY:	SWG
DRAFTED BY:	JSV
REVIEWED BY:	TGJ

3

8



UNADJUSTED VOLUMES	
CUT	620 CY
FILL	1,730 CY

Legend	
Proposed Asphalt Concrete	
Proposed Cement Concrete	
Proposed Grind and Overlay	

Scale 1" = 20'

20 10 0 20

ENGINEERING | PLS

Preliminary Grading Plan For:

13th Street Site Plan

A Subdivision Located In The City Of Camas, Washington

Engineering - Surveying - Planning | 604 W. Evergreen Blvd., Vancouver, WA 98660 | PH (360) 944-6519 | Fax (360) 944-6539

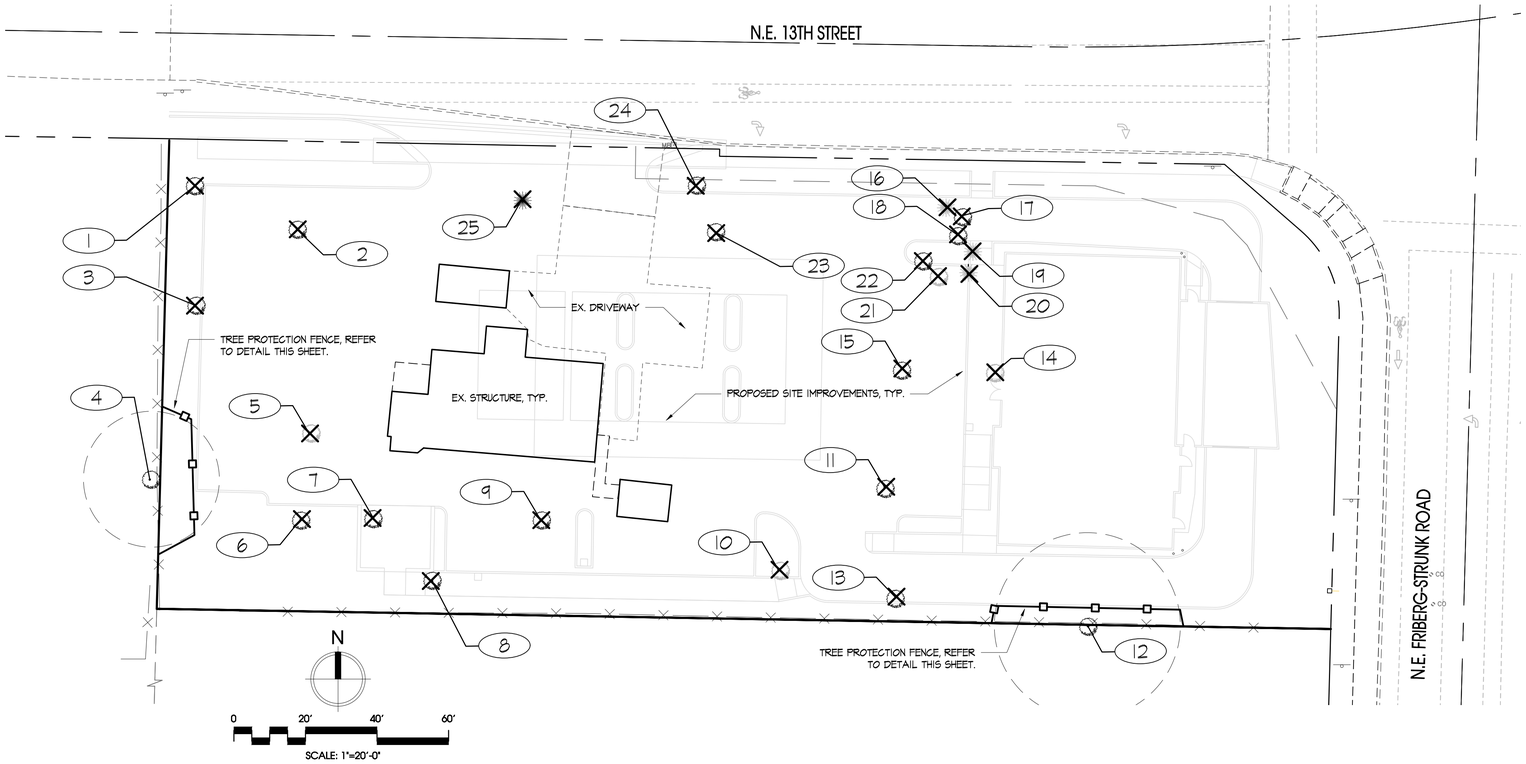
Revisions

1	2	3	4	5	6

SCOTT W. GILLILAND — STATE OF WASHINGTON — 42773 — REGISTERED PROFESSIONAL ENGINEER — 11/2023

Project No. 3632	
SCALE:	H: 1" = 20' V: N/A
DESIGNED BY:	SWG
DRAFTED BY:	JSV
REVIEWED BY:	TGJ

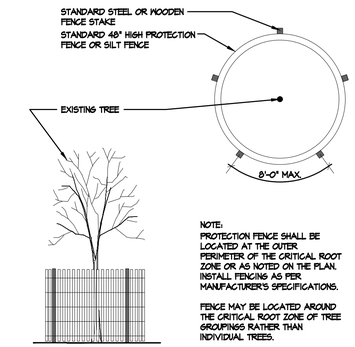
4 / 8



SITE STATISTICS	
.93± AC	SITE AREA
19	TREE UNITS REQUIRED (20 / ACRE)
0	TREE UNITS RETAINED

SYMBOL LEGEND	
SYMBOL	DESCRIPTION
	EXISTING SIGNIFICANT DECIDUOUS TREE (12" CAL. OR GREATER)
	EXISTING SIGNIFICANT EVERGREEN TREE (8" CAL. OR GREATER)
	EXISTING DECIDUOUS (LESS THAN 12" CAL.)
	EXISTING EVERGREEN TREE (LESS THAN 8" CAL.)
	EXISTING SIGNIFICANT TREES TO BE REMOVED
	ROOT PROTECTION ZONE AREA (RPZ)
	TREE PROTECTION FENCE LOCATION (4' CHAIN LINK, ORANGE PVC FENCE OR SILT FENCE) (ALSO DENOTES AREA WHERE NO IMPACTS TO THE ROOT PROTECTION ZONE SHALL OCCUR). SEE DETAIL THIS SHEET.

CERTIFIED ARBORIST
ISA
Robert Phipps,
PN-8751A



NOTE:
PROTECTION FENCE SHALL BE LOCATED AT THE OUTER PERIMETER OF THE CRITICAL ROOT ZONE OR AS NOTED ON THE PLAN. INSTALL FENCING AS PER MANUFACTURER'S SPECIFICATIONS.

FENCE MAY BE LOCATED AROUND THE CRITICAL ROOT ZONE OF TREE GROUPINGS RATHER THAN INDIVIDUAL TREES.

A Tree Protection Fencing Detail
Not To Scale — SECTION / PLAN VIEW

TREE PROTECTION TIME LINE & NARRATIVE

EXISTING ON-SITE AND OFF-SITE TREE LOCATIONS AND SIZES HAVE BEEN OBTAINED VIA SURVEY INFORMATION AND SITE OBSERVATIONS.

NO EXISTING TREES WITHIN THE PROJECT BOUNDARIES ARE PROPOSED TO BE RETAINED.

TREE PROTECTION FENCING SHALL BE PLACED AS SHOWN TO PROTECT THE OFF-SITE TREE NEAR THE S.E. CORNER OF THE SITE.

TREE PROTECTION / EROSION CONTROL FENCING SHALL BE ESTABLISHED PRIOR TO EXCAVATION. IT IS RECOMMENDED TO BE INSTALLED AT THE SAME TIME EROSION CONTROL MEASURES ARE INSTALLED. WHERE TREE FENCE AND EROSION CONTROL FENCE ARE LOCATED AT THE SAME LOCATION, EROSION FENCE THEN SERVES AS TREE PROTECTION FENCE. SEE DETAIL THIS SHEET.

TREES DETERMINED TO BE A SAFETY HAZARD AT THE TIME OF CONSTRUCTION MAY BE REMOVED. THE SITE WILL MAINTAIN A MINIMUM TREE UNIT COUNT OF 20 TREES PER ACRE IN ACCORDANCE WITH CITY OF CAMAS MUNICIPAL CODE CC 18.13.051.

TREE PROTECTION NOTES

1) NO PERSON MAY CONDUCT ANY OF THE FOLLOWING ACTIVITIES WITHIN THE DRIP LINE OF THE TREES DESIGNATED TO REMAIN INCLUDING, BUT NOT LIMITED TO: PARKING EQUIPMENT, FUELING, SERVICING EQUIPMENT, PLACING SOLVENTS, STORING BUILDING MATERIAL AND SOIL DEPOSITS, DUMPING CONCRETE WASHOUT AND LOCATING BURN HOLES.
2) DURING CONSTRUCTION, NO PERSON SHALL ATTACH ANY OBJECT TO THE TREES DESIGNATED FOR PROTECTION.
3) THE CONTRACTOR SHALL FOLLOW THE GRADING PLAN PROVIDED BY THE PROJECT CIVIL ENGINEER. GRADING ACTIVITIES SHALL BE CONDUCTED IN A MANNER TO MINIMIZE THE IMPACTS TO THE TREES MARKED FOR PRESERVATION.
4) THE EXCAVATOR SHALL KEEP A SHARP PAIR OF LOPPERS AND A SHARP 12" PRUNING SAW ACCESSIBLE ON-SITE DURING GRADING OPERATIONS. ANY ROOTS LARGER THAN ½" SHALL BE PRUNED TO THE FACE OF THE CUT (USING A SHARP PAIR OF LOPPERS OR A SHARP 12" PRUNING SAW) AND SHALL NOT BE TORN FROM THE GROUND BY MECHANICAL EXCAVATION.
5) SPECIAL CARE SHALL BE EXERCISED IN WORKING NEAR THE TREES TO BE RETAINED. THIS INCLUDES HAND EXCAVATING THE ROOTS AT THE EDGE OF THE EXCAVATION AND CUTTING ROOTS WITH A LOPPER OR PRUNING SAW. PRUNING THE ROOTS AT THE EDGE OF EXCAVATION WILL MINIMIZE BREAKAGE OF HEALTHY ROOTS BEYOND THE EDGE OF THE PROPOSED EXCAVATION.
6) EXCEPT FOR THE PROPOSED IMPROVEMENTS SHOWN WITHIN THE DRIP LINES OF THE TREES NOTED TO BE RETAINED THE GRADE SHALL NOT BE ELEVATED OR REDUCED FROM EXISTING GRADE.
7) IF THE GRADE ADJACENT TO A PRESERVED TREE IS RAISED SUCH THAT IT COULD SLOUGH OR ERODE INTO THE TREE'S DRIP LINE, IT SHALL BE PERMANENTLY STABILIZED.
8) THE TREES NOTED TO RETAINED SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION. CLEARING OPERATIONS SHALL BE CONDUCTED SO AS TO EXPOSE THE SMALLEST PRACTICAL AREA OF SOIL TO EROSION FOR THE LEAST POSSIBLE TIME. REFER TO THE PROJECT'S EROSION CONTROL PLAN FOR MORE INFORMATION.
9) THE PROJECT SHALL NOT INSTALL AN IMPERVIOUS SURFACE OTHER THAN THOSE SPECIFICALLY SHOWN ON THE PLANS WITHIN THE DRIP LINE OF THE TREES TO BE RETAINED.
10) UTILITY TRENCHES SHALL BE LOCATED OUTSIDE OF THE DRIP LINE OF THE TREES TO BE RETAINED.
11) ONGOING TREE MAINTENANCE SHALL BE THE RESPONSIBILITY OF THE LAND OWNER. TREES SHALL BE MAINTAINED IN ACCORDANCE WITH ANSI AMERICAN NATIONAL STANDARDS INSTITUTE'S AS WELL AS OTHER APPLICABLE FEDERAL, STATE AND LOCAL STANDARDS PERTAINING TO TREE CARE OPERATIONS.

- ANSI Z133 ARBORICULTURAL OPERATIONS- SAFETY REQUIREMENTS
- ANSI A300 PART 1 PRUNING

Tree Data

Tree No.	Species	DBH	RPZ	Tree Condition	Condition Notes
1	Prunus spp. (Plum)	12"	12'	poor	Diseases or Conks, Visible Decay
2	Malus spp. (Apple)	19"	19'	fair	Diseases or Conks, Leaning
3	Malus spp. (Apple)	13"	13'	fair	Dieback 30% - 60%
4	Robinia pseudoacacia (Black Locust)	19"	19'	fair	Heavy Leaning (>60%)
5	Acer palmatum (Japanese maple)	9"	9'	poor	Dieback 30% - 60%, Visible Decay
6	Thuja plicata (Western Redcedar)	18"	18'	good	
7	Malus spp. (Apple)	18"	18'	poor	Branch Failures, Biotic Damage (Pests/Fungus), Dieback 60%-90%, Diseases or Conks, Visible Decay
8	Acer palmatum (Japanese maple)	12"	12'	good	
9	Malus spp. (Apple)	17"	17'	fair	Biotic Damage (Pests/Fungus), Dieback 30% - 60%, Leaning
10	Malus spp. (Apple)	11"	11'	poor	Included Bark, Dieback 30% - 60%, Leaning
11	Acer saccharum (Sugar Maple)	22"	22'	good	Dieback 30% - 60%
12	Aesculus californica (California Buckeye)	26"	26'	fair	Branch Failures, Dieback 30% - 60%, Leaning
13	Quercus garryana (OR White Oak)	43"	43'	fair	Leaning
14	Aesculus californica (California Buckeye)	10"	10'	fair	Dieback 30% - 60%
15	Robinia pseudoacacia (Black Locust)	25"	25'	fair	Branch Failures, Dieback 30% - 60%, Leaning
16	Picea pungens (Blue Spruce)	6"	6'	poor	Branch Failures, Branches Suppressed, Dieback 30% - 60%, Visible Decay
17	Acer saccharum (Sugar Maple)	18"	18'	poor	Branch Failures, Branches Suppressed, Dieback 30% - 60%, Visible Decay
18	Acer saccharum (Sugar Maple)	19"	19'	poor	Branch Failures, Branches Suppressed, Dieback 30% - 60%, Visible Decay
19	Picea pungens (Blue Spruce)	7"	7'	poor	Branch Failures, Branches Suppressed, Dieback 30% - 60%, Visible Decay
20	Thuja occidentalis (Aborvitae)	6"	6'	poor	Branch Failures, Branches Suppressed, Co-dominant, Dieback 30% - 60%, Visible Decay
21	Malus spp. (Apple)	6"	6'	poor	Branch Failures, Branches Suppressed, Dieback 30% - 60%, Visible Decay
22	Acer saccharum (Sugar Maple)	20"	20'	poor	Branch Failures, Branches Suppressed, Dieback 30% - 60%, Visible Decay
23	Acer palmatum (Japanese maple)	15"	15'	good	
24	Robinia pseudoacacia (Black Locust)	33"	33'	poor	Branch Failures, Dieback 30% - 60%, Leaning, Visible Decay
25	Thuja plicata (Western Redcedar)	44"	44'	fair	Leaning, Visible Decay

Planning Solutions, Inc
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Suite 275
VANCOUVER, WA 9866
VOICE: 360-750-9000 FAX: 360-713-61
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PRELIMINARY
NOT FOR CONSTRUCTION
PBS ENGINEERING + ENVIRONMENTAL SURVEYING
PBSUSA.COM

13TH STREET GAS STATION

20101 NE 13th Street
Camas, Washington

DRAWN: CB/RP	CHECKED: CB
SCALE: 1" = 20'-0"	DATE: 11.03.23
JOB #: 23-1837	
ISSUED FOR: PLR	
REVISIONS:	
1	
2	
3	
4	
5	
6	

SHEET NAME:
EXISTING TREE SURVEY

SHEET #:
TP
SHEET 5 OF 8

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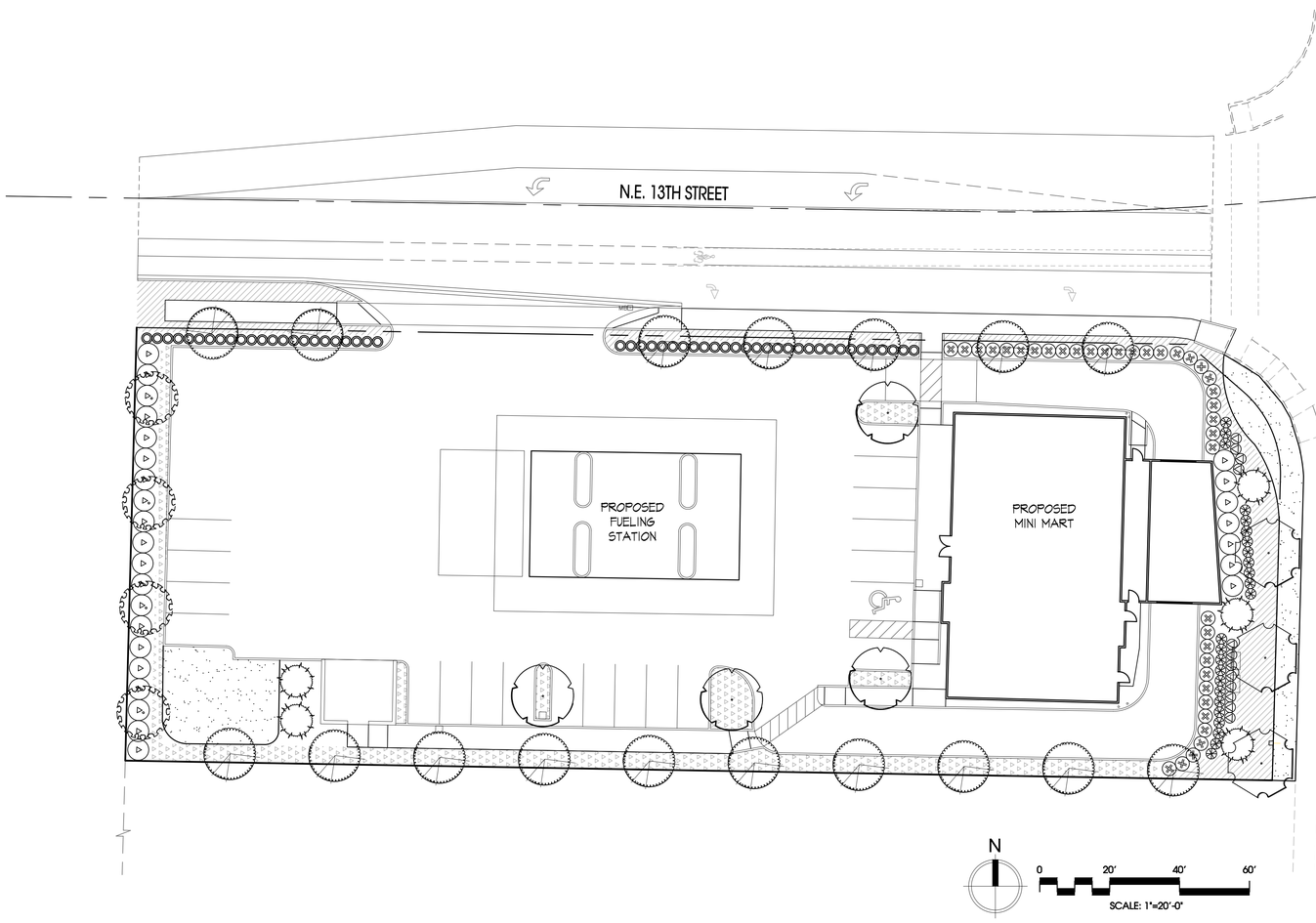

Trees and Shrubs in Sight Distance Triangles, Typ.
All shrubs within sight distance triangles shall be maintained so that foliage height above pavement does not exceed 2.5 feet. Street trees within sight distance triangles shall be limbed up to a height of 10 feet consistent with ANSI A300 standards to provide for sight distance visibility.

TREE LEGEND

SYMBOL	BOTANICAL / COMMON NAME	SIZE	QUANTITY	TREE UNITS
TREES				
	ACER RUBRUM 'ARMSTRONG' ARMSTRONG MAPLE	2" cal. min.	17	17
	CARPINUS BETULUS 'FASTIGIATA' PYRAMIDAL EUROPEAN HORNBEAM	2" cal. min.	4	4
	LIRIODENDRON TULIPERA 'JFS-OZ' EMERALD CITY TULIP TREE	2" cal. min.	3	3
	THUJA PLICATA 'HOGAN' WESTERN RED CEDAR	6' HT min.	5	5
	TILIA CORDATA 'CORZAM' CORINTHIAN LINDEN	2" cal. min.	4	4
			TOTAL TREE UNITS	33
SHRUBS				
	LIGUSTRUM JAPONICUM 'TEXANUM' WAX PRIVET	5 GAL.	38	
	MAHONIA REPENS CREEPING OREGON GRAPE	2 GAL.	12	
	MYRICA CALIFORNICA PACIFIC WAX MYRTLE	5 GAL.	27	
	PRUNUS LAUROCERASUS 'OTTO LUYKEN' OTTO LUYKEN'S LAUREL	5 GAL.	52	
	VIBURNUM DAVIDII DAVID VIBURNUM	2 GAL.	24	
GROUNDCOVER				
	ARCTOSTAPHYLOS UVA URSI 'MASS.' MASSACHUSETTS KINNICKINNICK	1 GAL.	30" O.C.	
	RUBUS CALYCINOIDES CREEPING RASPBERRY	1 GAL.	30" O.C.	
	LAWN (SEED OR SOD) PER OWNER			

TREE UNIT SUMMARY

SITE AREA	.93± AC
REQUIRED TREE UNITS / ACRE	20
TOTAL REQUIRED TREE UNITS	19
EXISTING TREE UNITS RETAINED	0
TREE UNITS PROPOSED TO PLANT	33
TREE UNITS PROVIDED	33

PLANTING NOTES

1. ALL BOUNDARIES, EASEMENTS, UTILITIES AND LEGAL ENCUMBRANCES TO BE CONFIRMED WITH OWNER PRIOR TO BEGINNING WORK. PROPERTY LINES AND SURVEY INFORMATION PROVIDED BY **PLS ENGINEERING**
2. IN NO WAY IS THIS PLAN TO BE INTERPRETED TO EXCEED THE LEGAL BOUNDARIES OF THE OWNER'S REAL PROPERTY.
3. THE LANDSCAPE DESIGNER ASSUMES NO RESPONSIBILITY FOR THE LOCATION OF BOUNDARIES, UTILITIES AND WETLANDS.
4. THIS PLAN SHALL BE INSTALLED TO MEET ALL APPLICABLE CITY, COUNTY, STATE AND FEDERAL CODES.
5. THIS PLAN SHALL BE CONSIDERED PRELIMINARY UNTIL APPROVED BY ALL GOVERNING AGENCIES. IMPLEMENTATION OF THIS PLAN SHALL NOT PROCEED UNTIL ISSUANCE OF ALL RELATED PERMITS.
6. PLANT QUANTITIES ARE FOR INFORMATION ONLY. IN CASE OF ANY DISCREPANCY, THE PLAN SHALL GOVERN.
7. ALL WORK IS TO BE PERFORMED BY LICENSED CONTRACTORS AND EXPERIENCED WORKERS.
8. THE CONTRACTOR IS TO VERIFY THE LOCATION OF EXISTING UNDERGROUND UTILITIES AND STRUCTURES PRIOR TO PERFORMING ANY EXCAVATION. CONTRACTOR SHALL REPAIR ANY DAMAGE TO UTILITIES CAUSED BY THE CONTRACTOR'S WORK, AT NO ADDITIONAL COST TO THE OWNER. CONTACT ALL UTILITY PROVIDERS SERVING THE SITE AREA 48 HOURS PRIOR TO ANY EXCAVATION.
9. ALL PLANT MATERIALS SHALL MATCH SPECIFICATIONS PER SPECIES AND SHALL COMPLY WITH ANSI Z60.1 'STANDARD FOR NURSERY STOCK'.
10. THE CONTRACTOR SHALL ADHERE TO THE WASHINGTON ASSOCIATION OF NURSERYMEN'S GUIDELINES FOR PLANTING PRACTICES.
11. THE CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING ELEMENTS ON AND OFF SITE, RESULTING FROM THE CONTRACTOR'S WORK.
12. THE CONTRACTOR IS RESPONSIBLE FOR THE VIABILITY OF ALL PLANT MATERIAL FOR 2 YEARS AFTER COMPLETION OF PLANTING. DISEASED, DYING, OR DEAD PLANT MATERIAL SHALL BE REPLACED BY THE CONTRACTOR DURING THE TWO YEAR PERIOD AND MAINTAINED FOR AN ADDITIONAL 2 YEAR PERIOD.
13. IMMEDIATELY UPON BID AWARD, CONTRACTOR SHALL SECURE THE PLANT MATERIALS AS SPECIFIED FROM AVAILABLE SOURCES. IN THE EVENT THAT PLANT MATERIALS ARE NOT AVAILABLE, CONTACT LANDSCAPE ARCHITECT FOR APPROVED SUBSTITUTIONS. NO SUBSTITUTION FOR PLANT MATERIAL WILL BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL OF THE LANDSCAPE ARCHITECT.
14. TOP DRESS ALL SHRUB AND GROUND COVER AREAS (NOT LAWN) WITH 3" OF FIR BARK MULCH. SUBMIT SAMPLE TO THE LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO CONSTRUCTION.
15. TREE LOCATIONS MAY BE ADJUSTED IN THE FIELD TO SUIT SITE REQUIREMENTS AS DIRECTED BY THE LANDSCAPE ARCHITECT.
16. THE CONTRACTOR SHALL ENSURE THAT ALL EXCAVATED PLANTING PITS HAVE POSITIVE DRAINAGE. PLANT PITS FULLY FLOODED WITH WATER SHALL DRAIN WITHIN (12) HOURS OF FILLING.
17. FINISH GRADE SHALL BE SET TO ALLOW POSITIVE DRAINAGE
18. ROTOTILL 2" OF COMPOST INTO ALL PLANTED AREAS.
19. INCORPORATE PEAT INTO THE ROOT ZONE OF RHODODENDRONS, AZALEAS AND OTHER ACID LOVING PLANTS.
20. INCORPORATE 10-20-20 FERTILIZER INTO THE ROOT ZONE OF ALL NEW PLANTINGS.
21. RONSTAR, OR APPROVED EQUAL, PREEMERGENT HERBICIDE TO BE APPLIED TO ALL PLANTED AREAS PER MANUFACTURERS INSTRUCTIONS.
22. EXISTING VEGETATION TO BE SPRAYED WITH ROUNDUP, OR APPROVED EQUAL, PER MANUFACTURERS INSTRUCTIONS. SUFFICIENT TIME SHALL BE GIVEN TO ALLOW EXISTING MATERIAL TO DIE. REMOVE EXISTING ST. THE PROPERTY OWNER IS RESPONSIBLE FOR MAINTAINING TURF PLANTED WITHIN THE RIGHT OF WAY.
23. CROWN LAWN AREAS AND GRADE TO PROVIDE POSITIVE DRAINAGE.
24. ROLL LAWN AREA TO INSURE PROPER COMPACTION TO MINIMIZE SETTLING.
25. AMEND SOIL IN LAWN AREAS WITH 80 LBS. OF DOLOMITE LIME AND 40 LBS. OF 10-20-20 SLOW RELEASE FERTILIZER OR EQUIVALENT. PROVIDE A 3" LAYER OF SANDY LOAM TOPSOIL FOR LAWN AND BED AREA.
26. SEED LAWN AREAS WITH GRASS SEED MANUFACTURER'S RECOMMENDATIONS. COVER SEED WITH FINE MULCH APPLIED WITH ROLLER OR HYDROSEED.
27. THE PROPERTY OWNER IS RESPONSIBLE FOR MAINTAINING TURF PLANTED WITHIN THE RIGHT OF WAY.
28. PLANT MATERIAL SHALL BE PLANTED W/ ROOT CROWN 1" ABOVE FINISHED GRADE TO ALLOW POSITIVE DRAINAGE AWAY FROM CROWN.
29. STAKE ALL TREES OVER 6 FT. IN HEIGHT PER DETAILS ON THIS SHEET.
30. REFER TO DETAILS FOR ADDITIONAL INFORMATION.
31. ALL PLANTINGS SHALL BE HAND WATERED OR IRRIGATED BY AN AUTOMATIC UNDERGROUND SPRINKLER SYSTEM.
32. ALL PLANT MATERIALS FURNISHED ARE TO BE HEALTHY, UNIFORMLY BRANCHED AND WITH WELL DEVELOPED FIBROUS ROOT SYSTEMS.
33. ALL PLANT MATERIALS FURNISHED ARE TO BE FREE FROM DEAD OR BROKEN BRANCHES, LICHENS, SCARS, BROKEN BARK OR WOUNDS. ALL PLANT MATERIALS WILL BE INSECT, WEED, AND DISEASE FREE ACCORDING TO THE REQUIREMENTS OF THE **WASHINGTON** STATE DEPARTMENT OF AGRICULTURE FOR NURSERY PLANT MATERIALS SOLD FOR WHOLESALE OR RETAIL. ALL PRUNING WOUNDS MUST BE WELL HEALED WITH NO EVIDENCE OF DECAY.
34. FIELD CONFIRM ALL SITE CONDITIONS, AREAS AND SIZES PRIOR TO BIDDING & CONSTRUCTION. DO NOT SCALE FROM PLANS.

IRRIGATION NOTE

ALL LANDSCAPE AREAS SHALL BE HAND WATERED OR IRRIGATED WITH AN AUTOMATIC DRIP AND/OR SPRAY IRRIGATION SYSTEM. REFER TO CIVIL ENGINEERING PLANS FOR WATER SOURCE.

REFER TO SHEET PD FOR LANDSCAPE DETAILS AND NOTES
REFER TO SHEET ID FOR IRRIGATION DETAILS AND NOTES.

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STATE OF WASHINGTON · CHRISTOPHER A. BALMER · EXP. · LANDSCAPE ARCHITECT · LICENSED

PRELIMINARY NOT FOR CONSTRUCTION SUBJECT TO CITY APPROVAL

13TH STREET GAS STATION

20101 NE 13th Street
Camas, Washington

DRAWN: CB | CHECKED: CB
SCALE: 1" = 20'-0" | DATE: 11.08.23
JOB #: 23-1887
ISSUED FOR: PLR
REVISIONS:
1
2
3
4
5
6
SHEET NAME:

SHEET #: L1
SHEET 6 OF 8

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LANDSCAPING GENERAL NOTES:

1. DEVELOPER SHALL SUBMIT A LANDSCAPE PLAN SHOWING PLANT TYPE, LOCATION, AND QUANTITY OF PLANTS, THAT IS DESIGNED BY A QUALIFIED LANDSCAPE DESIGNER.
2. SHOW THE LOCATION OF SIDEWALK, LIGHT POLES, MAIL BOXES, DRIVEWAYS, FIRE HYDRANTS, INTERSECTIONS, AND ANY OTHER APPURTENANCE THAT MAY INFLUENCE THE PLACEMENT OF PLANTS.
3. LANDSCAPING SHALL BE SELECTED AND LOCATED TO DETER SOUND, FILTER AIR CONTAMINANTS, CURTAIL EROSION, MINIMIZE STORM WATER RUN-OFF, CONTRIBUTE TO LIVING PRIVACY, REDUCE THE VISUAL IMPACTS OF BUILDINGS/EQUIPMENT AND PAVED AREAS, SCREEN, REDUCE GLARE, AND EMPHASIZE OR SEPARATE OUTDOOR SPACES OF DIFFERENT USES OR CHARACTER.
4. LANDSCAPING SHALL BE DESIGNED TO BE HARMONIOUS WITH THE LOCAL SETTING AND WITH NEIGHBORING DEVELOPMENTS.
5. PLANTS AND TREES SHALL COMPLEMENT OR SUPPLEMENT SURROUNDING NATURAL VEGETATION.
6. PLANTS AND TREES CHOSEN SHALL BE IN SCALE WITH THE STRUCTURES AND EQUIPMENT DEVELOPMENT, KEEPING IN MIND THE MATURE SIZE OF PLANTINGS.
7. MINIMUM LANDSCAPING AS A PERCENT OF GROSS SITE AREA SHALL BE 15%.
8. DEVELOPER SHALL PROVIDE AN IRRIGATION PLAN.
   - 8.1 APPROPRIATE IRRIGATION SYSTEMS SHALL BE INSTALLED WHERE NEEDED TO ASSURE LANDSCAPING SUCCESS.
   - 8.2 DESIGN OF LANDSCAPING THAT INCLUDES XERISCAPE PRINCIPLES IS ENCOURAGED TO REDUCE LONG-TERM MAINTENANCE DEMANDS AND TO CONSERVE WATER.
   - 8.3 XERISCAPE IS DEFINED AS LANDSCAPE DESIGN, WHICH WOULD INCORPORATE PLANT MATERIALS THAT REQUIRE LITTLE OR NO IRRIGATION AND RELY ON NATURAL MOISTURE AND RAINFALL FOR SURVIVAL ONCE ESTABLISHED.
9. LANDSCAPE SHALL BE DESIGNED WITH MAINTENANCE IN MIND:
   - 9.1 DEVELOPER SHALL PROVIDE A MAINTENANCE PLAN DESCRIBING FUNDING, RESPONSIBILITY, AND FREQUENCY OF MAINTENANCE.
   - 9.2 PLANTS AND TREES THAT MINIMIZE UPKEEP AND MAINTENANCE SHALL BE SELECTED.
   - 9.3 TREES, AS THEY GROW, SHALL BE PRUNED TO THEIR NATURAL FORM TO PROVIDE AT LEAST 10 FEET OF CLEARANCE ABOVE SIDEWALKS AND 12 FEET ABOVE STREET ROADWAY SURFACES.
   - 9.4 SHRUBS SHALL BE MAINTAINED TO A MAXIMUM HEIGHT OF 42 INCHES FROM TOP OF CURB TO TOP OF PLANT. ENSURE THAT SHRUBS ARE TRIMMED BACK FROM FACE OF CURB.
10. WHERE THERE ARE OVERHEAD UTILITY LINES, TREE SPECIES THAT WILL NOT INTERFERE WITH THOSE LINES SHALL BE CHOSEN. DEVELOPER IS TO VERIFY WITH UTILITY ON SPECIES SELECTION.
11. TREES SHALL NOT BE PLANTED WITHIN 2 FEET OF ANY PERMANENT HARD SURFACE PAVING OR WALKWAY.
12. PARKING AND LOADING AREAS SHALL BE SCREENED FROM HORIZONTAL VIEW WITH THE USE OF DENSE LANDSCAPING, MOUNDS OR BERMS.
13. PERIMETER AND SECURITY FENCING SHALL BE CONSTRUCTED TO MINIMIZE VISUAL IMPACT. WALLS OR FENCES SEPARATING ADJOINING PARCELS MAY BE LOCATED AT THE PROPERTY LINE. SECURITY FENCING SHALL BLEND INTO AND BE COMPATIBLE WITH LANDSCAPING AND SURROUNDING ENVIRONMENT. FENCING SHALL HAVE EARTH TONE COLORS OF BROWN, TAN GRAY, OR GREEN, WALLS SHALL BE CONSTRUCTED OF MATERIALS COMPATIBLE WITH THE BUILDING ACRHITECTURE, LANDSCAPING, AND SURROUNDING ENVIRONMENT.
14. SITE AND BUILDING LIGHTING SHALL BE DESIGNED TO MINIMIZE GLARE OR OBJECTIONABLE EFFECTS TO THE ADJACENT PROPERTIES. SITE LIGHTING POLES SHALL NOT EXCEED 20 FEET IN HEIGHT AND SHALL DIRECT THE LIGHT DOWNWARD. LIGHTING SOURCES VIEWED FROM ABOVE OR BELOW ON ADJACENT PROPERTY SHALL BE SHIELDED. BUILDING LIGHTING IS TO BE CONCEALED AND INDIRECT. SITE LIGHTING IS TO BE DESIGNED TO PROVIDE UNIFORM DISTRIBUTION AND THE LIGHT LEVELS SHALL BE ADEQUATE FOR REASONABLE SECURITY AND SAFETY ON THE PREMISES.
15. EARTH BERMS MAY BE USED TO PROVIDE VARIATION IN THE GROUND PLANE AND FOR SCREENING INTERIOR PROTIONS OF THE SITE. CARE MUST BE TAKEN IN THEIR DESIGN TO AVOID CREATING AN ARTIFICIAL APPEARING LANDSCAPE. THE BERMED AREAS SHALL BE AS LONG, AS GRADUAL, AND AS GRACEFUL AS SPACE WILL ALLOW, AND SHOULD HAVE A MINIMUM HEIGHT ABOVE SURROUNDING GRADE OF THREE FEET. MAXIMUM SLOPES FOR BERMED AREAS SHALL BE 3:1 FOR TURF AREAS AND 2:1 FOR GROUNDCOVER AREAS.

LANDSCAPING W/IN R.O.W. NOTES:

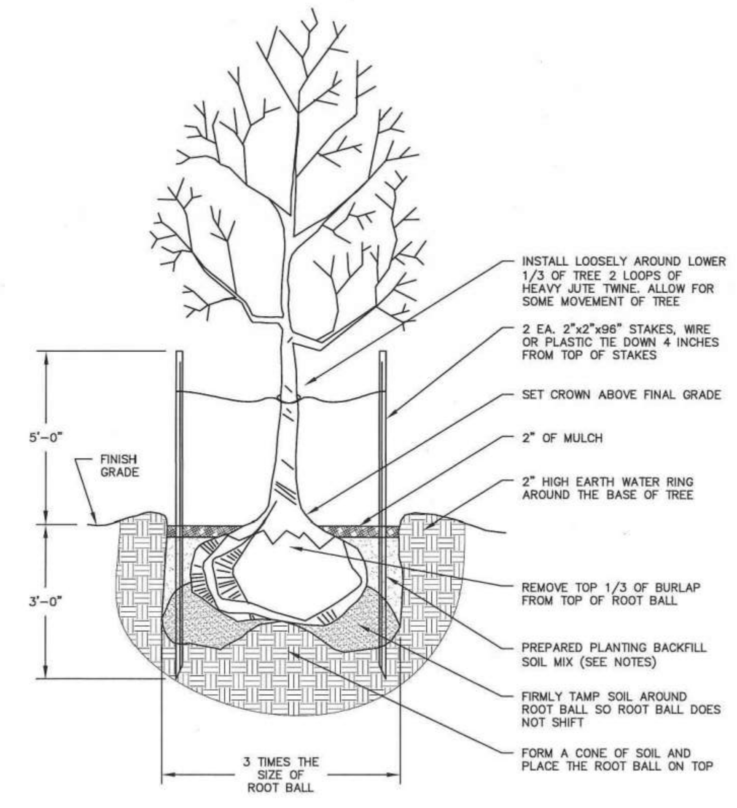
1. TREES SHALL NOT BE PLANTED CLOSER THAN 25 FEET FROM THE CURB LINE OF THE INTERSECTIONS OF STREETS OR ALLEYS, AND NOT CLOSER THAN 10 FEET FROM DRIVEWAYS, FIRE HYDRANTS, OR UTILITY POLES.
2. STREET TREES SHALL NOT BE PLANTED CLOSER THAN 20 FEET TO LIGHT STANDARDS. EXCEPT FOR PUBLIC SAFETY, NO NEW LIGHT STANDARD SHOULD BE POSITIONED CLOSER THAN 10 FEET TO ANY EXISTING STREET TREE, AND PREFERABLY SUCH LOCATIONS WILL BE AT LEAST 20 FEED DISTANCE.
3. TREES SHALL NOT BE PLANTED CLOSER THAN 2-1/2 FEET FROM THE FACE OF THE CURB EXCEPT AT INTERSECTIONS, WHERE IT SHOULD BE 25 FEET FROM THE CURB IN A CURB RETURN AREA..
4. EXISTING TREES MAY BE USED AS STREET TREES IF THERE WILL BE NO DAMAGE FROM THE DEVELOPMENT WHICH WILL KILL OR WEAKEN THE TREE.
5. VISION CLEARANCE HAZARDS SHALL BE AVOIDED AND VISION CLEARANCE STANDARDS SHALL BE ADHERED TO.

City of Camas WASHINGTON — LANDSCAPE DETAIL: LANDSCAPING NOTES — NOT TO SCALE — DETAIL NO. LS1 — DETAIL APPROVED BY / DATE 5-17-19 — REVISION: 3 — DATE: 5/17/2019 — ST-PLANTING.DWG

PLANTING NOTES:

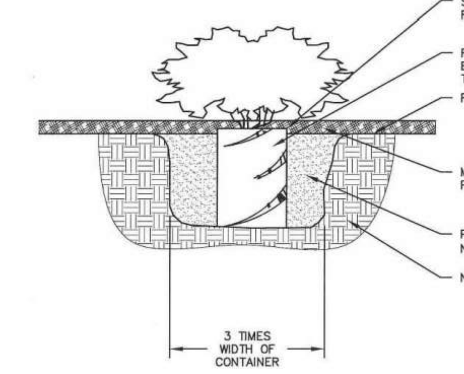
1. ALL PLANTING TO BE OF NURSERY STOCK GRADE NO. 1 OR BETTER AND MUST BE APPROVED PRIOR TO PLANTING.
2. ALL PLANTING HOLES SHALL BE EXCAVATED THREE TIMES THE DIAMETER OF THE TREE ROOT BALL OR ROOT SYSTEM.
3. DECIDUOUS TREES SHALL HAVE STRAIGHT TRUNKS, BE FULL BRANCHED, HAVE A MINIMUM CALIPER OF 2 INCHES AND BE ADEQUATELY STAKED FOR PLANTING. CALIPER OF TREES SHALL BE LARGER WHEN REQUIRED BY OTHER CITY STANDARDS OR PLANS.
4. EVERGREEN TREES SHALL BE A MINIMUM OF THREE FEET IN HEIGHT, FULLY BRANCHED AND ADEQUATELY STAKED FOR PLANTING.
5. DECIDUOUS TREES SHALL BE A MINIMUM 2" CALIPER UNLESS APPROVED BY THE CITY.
6. POTTED OR B&B PLANTS SHALL BE A MINIMUM SIZE OF 3 GALLONS UNLESS APPROVED BY THE CITY..
7. SHRUBS SHALL BE PLANTED ACCORDING TO RECOGNIZED LANDSCAPE STANDARD PRACTICE FOR MAINTENANCE, APPEARANCE, HEALTH OF THE PLANTS, AND OVERALL AESTHETICS.
8. PLANT UPRIGHT AND FACE TO GIVE BEST APPEARANCE OR RELATIONSHIP TO OTHER PLANTS AND STRUCTURES.
   - 8.1. LOOSEN AND REMOVE TWINE BINDING AND BURLAP FROM AROUND THE TOP OF EACH ROOT BALL.
   - 8.2. SET TREES AN INCH ABOVE FINISH GRADE.
   - 8.3. STAKE OR GUY TREES IMMEDIATELY AFTER PLANTING (SEE DETAIL PL3, PL4, & PL5)
   - 8.4. REMOVE STAKES OR GUY WIRES ONE YEAR AFTER INSTALLATION.
9. PLACE AND COMPACT BACKFILL SOIL MIXTURE CAREFULLY TO AVOID INJURY TO ROOTS, AND TO FILL ALL VOIDS. BACKFILL MIX SHALL CONSIST OF 1/4 APPROVED HUMUS MATERIAL TO 3/4 TOPSOIL, PLUS SOIL AMENDMENTS/FERTILIZERS AS PER SOIL ANALYSIS (TO BE PERFORMED PRIOR TO PLANTING TREES).
10. WHEN HOLE IS NEARLY FILLED, COMPLETELY SOAK AND ALLOW WATER TO DRAIN AWAY. FILL HOLE TO FINISH GRADE. PROVIDE 2 INCH HIGH BERM WATER RING AT THE BASE OF EACH TREE. REMOVE BERM AT THE END OF CONTRACT MAINTENANCE PERIOD.
11. GROUND COVER, SHALL BE PLANTED ACCORDING TO RECOGNIZED LANDSCAPE STANDARD PRACTICE FOR MAINTENANCE, APPEARANCE, OVERALL AESTHETICS, AND HEALTH OF THE PLANTS.
12. TREES, AS THEY GROW, SHALL BE PRUNED TO THEIR NATURAL FORM TO PROVIDE AT LEAST 10 FEET OF CLEARANCE ABOVE SIDEWALKS AND 14 FEET ABOVE STREET ROADWAY SURFACES.
13. TREE MAINTENANCE – IN ORDER TO INSURE ESTABLISHMENT, SURVIVAL AND GROWTH, TREES SHALL BE MULCHED WITH 4" DEEP COMPOST AND WATERED AS NECESSARY DURING THE FIRST TWO GROWING SEASONS. PRUNING TO BE AS FOLLOWS:
   - 13.1. YEAR 1 – ONLY DEAD, BROKEN, OR CROSSING BRANCHES SHALL BE PRUNED.
   - 13.2. YEAR 2 – A CLASS 1 PRUNE, PURSUANT TO NATIONAL ARBORIST ASSOCIATION STANDARDS, SHALL BE PERFORMED. THE PURPOSE OF THIS PRUNING IS TO ESTABLISH PROPER SCAFFOLD BRANCHING, RAISE THE CROWN FOR ROAD/SIDEWALK CLEARANCE, AND REMOVE ANY DEAD, DYING OR CROSSING BRANCHES.
   - 13.3. YEAR 3 – A CLASS 1 PRUNE, PURSUANT TO NATIONAL ARBORIST ASSOCIATION STANDARDS, SHALL BE PERFORMED. THE PURPOSE OF THIS PRUNING IS TO CONTINUE TO ESTABLISH THE PROPER SCAFFOLD BRANCHING, CONTINUE TO RAISE THE CROSSING FOR ROAD/SIDEWALK CLEARANCE, AND TO REMOVE ANY DEAD, DYING, OR CROSSING BRANCHES.
14. DEFNITIONS:
   - 14.1. BALLED AND BURLAPPED (B&B) – TREES AND SHRUBS WITH A LARGE BALL OF SOIL AROUND THE ROOTS WRAPPED IN BURLAP.
   - 14.2. BARE-ROOT – OFFERED BY NURSERIES IN WINTER AND EARLY SPRING WITH ALL THE SOIL REMOVED FROM THEIR ROOTS.
   - 14.3. CALIPER – THE DIAMETER OF THE TRUNK MEASURED AT 4-FEET FROM THE GROUND.
   - 14.4. GROUND COVER – LIVING MATERIAL THAT DOES NOT INCLUDE BARK CHIPS OR OTHER MULCH.

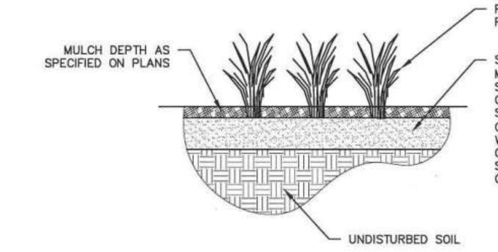
City of Camas WASHINGTON — LANDSCAPE DETAIL: PLANTING NOTES — NOT TO SCALE — DETAIL NO. LS2 — DETAIL APPROVED BY / DATE 5-17-19 — REVISION: 3 — DATE: 5/17/2019 — ST-PLANTING.DWG



NOTES:
1. A ROOT BARRIER SHOULD BE INSTALLED AT THE EDGE OF PAVEMENT OR 4 FEET WIDE AND 6 FEET WIDE RECTANGLE AROUND THE TREE. SEE DETAILS PL7, PL8 & PL9
2. BACKFILL MIX SHALL CONSIST OF THE FOLLOWING: 0.75 PART TOPSOIL, 0.25 PART APPROVED HUMUS MATERIAL, SOIL AMENDMENTS/FERTILIZERS AS PER SOIL ANALYSIS (TO BE PERFORMED BEFORE PLANTING TREES).

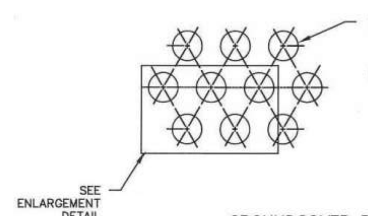
City of Camas WASHINGTON — LANDSCAPE DETAIL: DECIDUOUS BALLED/BURLAP TREE PLANTING — NOT TO SCALE — DETAIL NO. LS4 — DETAIL APPROVED BY / DATE 5-17-19 — REVISION: 2 — DATE: 5/17/2019 — ST-PLANTING.DWG





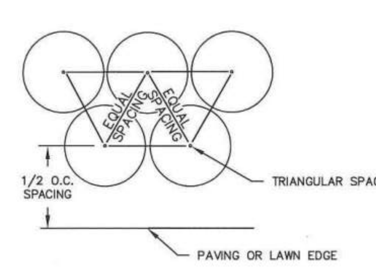
NOTES:
1. SCARIFY BOTTOM AND SIDES OF HOLE PRIOR TO PLANTING.
2. KEEP PLANTS MOIST AND SHADED UNTIL PLANTING.
3. BACKFILL MIX SHALL CONSIST OF THE FOLLOWING: 0.75 PART TOPSOIL, 0.25 PART APPROVED HUMUS MATERIAL, SOIL AMENDMENTS/FERTILIZERS AS PER SOIL ANALYSIS (TO BE PERFORMED BEFORE PLANTING).

City of Camas WASHINGTON — LANDSCAPE DETAIL: SHRUB CONTAINER PLANTING — NOT TO SCALE — DETAIL NO. LS5 — DETAIL APPROVED BY / DATE 5-17-19 — REVISION: 2 — DATE: 5/17/2019 — ST-PLANTING.DWG



1. ALL GROUNDCOVER SHALL BE PLANTED AT EQUAL TRIANGULAR SPACING OR ON CENTER SPACING AS SPECIFIED ON PLANTING PLAN.
2. LOCATE GROUNDCOVER ONE HALF OF SPECIFIED SPACING DISTANCE FROM ANY CURB, SIDEWALK, OR OTHER HARD SURFACE, UNLESS OTHERWISE SPECIFIED.

GROUNDCOVER PLANTING DETAIL



ENLARGEMENT DETAIL: TRIANGULAR SPACING

City of Camas WASHINGTON — LANDSCAPE DETAIL: GROUNDCOVER PLANTING DETAIL — NOT TO SCALE — DETAIL NO. LS7 — DETAIL APPROVED BY / DATE 5-17-19 — REVISION: 2 — DATE: 5/17/2019 — ST-PLANTING.DWG

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STATE OF WASHINGTON — CHRISTOPHER A BAUMANN — NO 635 — EXP. 02-20-2025 — LICENSED LANDSCAPE ARCHITECT

PRELIMINARY
NOT FOR CONSTRUCTION
SUBJECT TO APPROVAL

13TH STREET GAS STATIOIN

20101 NE 13th Street
Camas, Washington

DRAWN: HA/CB	CHECKED: CB
SCALE: AS SHOWN	DATE: 11.03.23
JOB #: 23-1837	
ISSUED FOR: PLR	
REVISIONS:	

SHEET NAME:
FINAL LANDSCAPE DETAILS

SHEET #: PD

SHEET 7 OF 8

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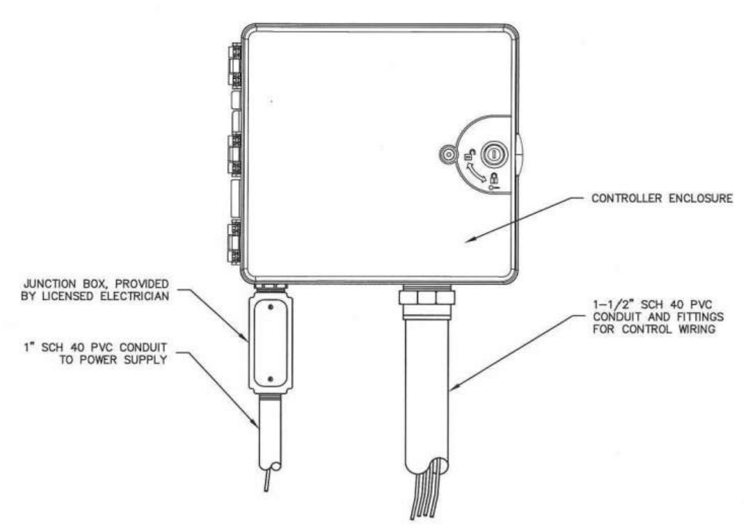
IRRIGATION CONSTRUCTION NOTES:

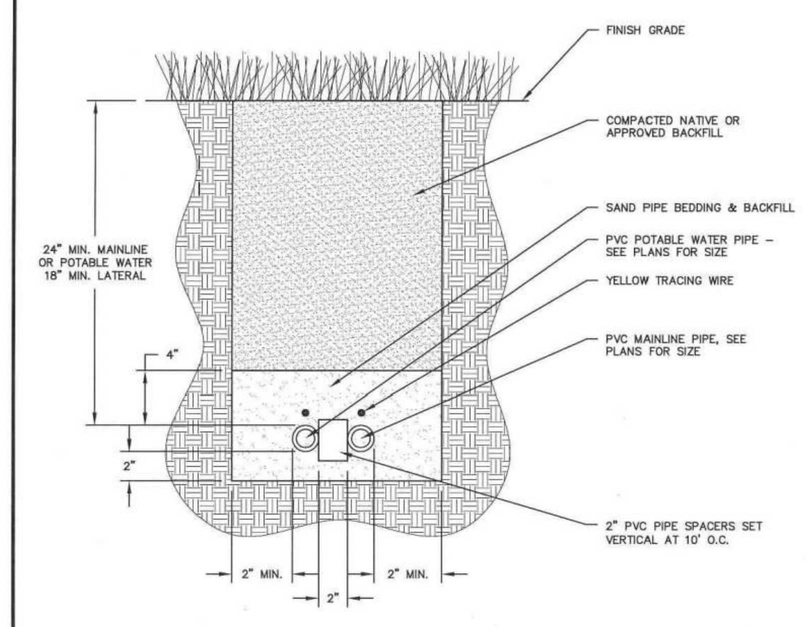
1. THE CONTRACTOR SHALL INSPECT THE SITE AND VERIFY CONDITIONS AND DIMENSIONS PRIOR TO CONSTRUCTION.
2. IRRIGATION PLANS ARE SCHEMATIC REPRESENTATIONS ONLY. PLACE LINES IN A COMMON TRENCH WHENEVER POSSIBLE. FIELD ADJUST LINES TO AVOID CONFLICT WITH UTILITIES.
3. IRRIGATION IS COORDINATED WITH THE PLANTING PLAN AND SITE IMPROVEMENTS AND IS DESIGNED WITH TRIANGULAR SPACING GIVING HEAD TO HEAD COVERAGE. COORDINATE IRRIGATION HEAD LAYOUT WITH NEW PLANT MATERIALS. LOCATE SPRAY HEADS 30" FROM BASE OF TREE. DO NOT ALTER HEAD LOCATION, PIPE LAYOUT, OR VALVE LOCATION WITHOUT WRITTEN APPROVAL FROM THE CITY ENGINEER. NOTIFY THE CITY ENGINEER IF DISCREPANCIES OCCUR BETWEEN THE PLANS AND FIELD CONDITIONS.
4. ALL COMPONENTS OF IRRIGATION SYSTEM SHALL BE INSTALLED AND PROPERLY ADJUSTED TO PROVIDE ADEQUATE COVERAGE AND MINIMIZATION OF OVER SPRAY ONTO WALKS, BUILDINGS, PARKING AREAS, ETC.
5. ALL PIPE SIZES INDICATED ARE MINIMUMS. CONTRACTOR MAY NOT DECREASE PIPE SIZE. LARGER PIPE SIZES MAY BE USED AT NO ADDITIONAL COST TO OWNER. IRRIGATION LATERALS ARE SIZED BEGINNING AT THE AUTOMATIC VALVE AND CONTINUING IN DIRECTION OF FLOW. REDUCTIONS IN PIPE SIZE ARE LABELED BEGINNING DOWNSTREAM OF NEAREST FITTING. ALL LATERALS NOT SIZED ARE MINIMUM 3/4".
6. INSTALL ALL IRRIGATION PIPE AND CONTROL WIRES IN MINIMUM 4" PVC SLEEVE BELOW ALL PAVED SURFACES UNLESS OTHERWISE INDICATED ON THE PLANS. INSTALL SLEEVES PRIOR TO PLACEMENT OF PAVEMENTS AND PAVEMENT SUB-BASE. SEE PIPE SLEEVING DETAIL FOR FURTHER REQUIREMENTS.
7. COORDINATE IRRIGATION POINTS OF CONNECTION AND LOCATION OF AUTOMATIC CONTROL VALVES WITH THE ENGINEER. COORDINATE ALL WORK WITH OTHER TRADES, I.E. ELECTRICAL, MASONRY, ETC.
8. CONTRACTOR TO PROGRAM AUTOMATIC CONTROLLER TO ALLOW FOR THE EQUIVALENT OF 1" OF WATER PER WEEK.
9. ALL PIPES SHALL BE TRENCHED. PROVIDE POSITIVE DRAINAGE OF MAINLINE. PLACE MANUAL DRAIN AT LOW POINTS IN MAINLINE. IDENTIFY LOCATIONS ON AS-BUILTS.
10. USE 45° ELBOWS INSTEAD OF 90° ELBOWS ON ALL MAINLINES 2-1/2" AND LARGER. INSTALL CONCRETE THRUST BLOCKS AT ALL MAINLINE CHANGES IN DIRECTION. POUR MINIMUM OF 1 CUBIC FOOT OF CONCRETE ON UNDISTURBED SOIL. WRAP PIPE IN PLASTIC PRIOR TO COVERING WITH CONCRETE.
11. CONTRACTOR TO INSTALL CONTROLLER, CPU ELECTRICAL, PHONE AND ACCESSORIES AS REQUIRED. CONTRACTOR TO FURNISH CONTROL WIRES FROM VALVES TO CONTROLLER. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING 110 VOLT SERVICE FROM BUILDING TO EXISTING JUNCTION BOX IN CONTROLLER HOUSING AND CONNECT CONTROLLER SERVICE.
12. ALL TONING WIRE, WHERE REQUIRED, SHALL BE 14 GAUGE COPPER CLAD STEEL WITH HDPE DIRECT BURY INSULATION. SEAL SPLICE CONNECTIONS WITH 3M DBY OR KING GEL CAPS.
13. ALL DIRECT BURY CONTROL WIRING AND CABLING SHALL HAVE SPLICE CONNECTIONS SEALED WITH 3M DBY OR RAIN BIRD DB SERIES WIRE CONNECTORS IN A SPLICE BOX.
14. SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS.
15. WATER METER SHALL BE INSTALLED BY THE CITY. CONTRACTOR RESPONSIBLE FOR CONNECTIONS DOWNSTREAM OF WATER METER.
16. CONTRACTOR TO VERIFY WATER PRESSURE TO ENSURE THAT PRESSURE MATCHES THE SYSTEM DESIGN PRESSURE.
17. WHERE REQUIRED, CONTRACTOR SHALL PROVIDE AN APPROPRIATELY SIZED POLYMER IRRIGATION VALVE BOX LARGE ENOUGH TO CONTAIN THE SPECIFIED COMPONENTS. VALVE BOXES SHALL BE RAINBIRD VB SERIES, CARSON, OR APPROVED EQUIVALENT.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION CONSTRUCTION NOTES | NOT TO SCALE | DETAIL NO. IR1 | DETAIL APPROVED BY | DATE 6-19-19 | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



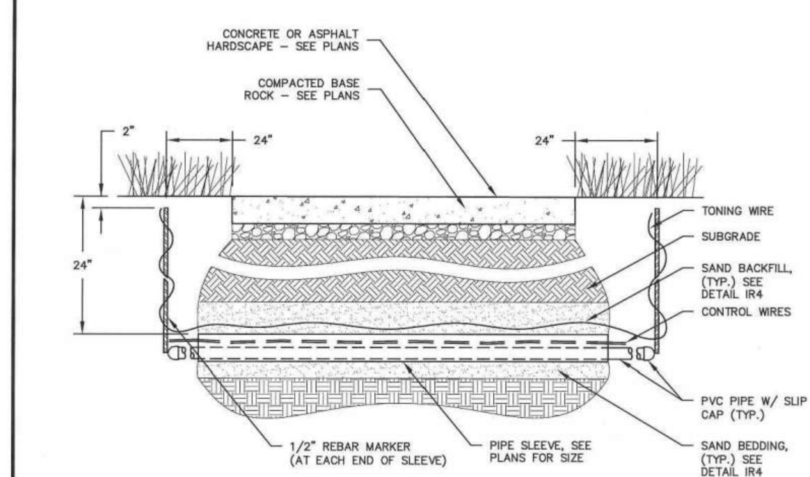
NOTES:
1. IRRIGATION CONTROLLER SHALL BE A RAINBIRD ESP-LXME SERIES PROGRAMMABLE CONTROLLER, OR APPROVED EQUAL.
2. INTERIOR INSTALLATIONS DO NOT REQUIRE AN ENCLOSURE WHEN MOUNTED WITHIN THE UTILITY ROOM OF A RESTROOM OR OTHER FACILITY WHERE THE PUBLIC HAS NO ACCESS.
3. FOR EXTERIOR WALL MOUNTED APPLICATIONS SEE DETAIL IR3.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION CONTROLLER – INDOOR MOUNT | NOT TO SCALE | DETAIL NO. IR2 | DETAIL APPROVED BY | DATE 6-19-19 | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



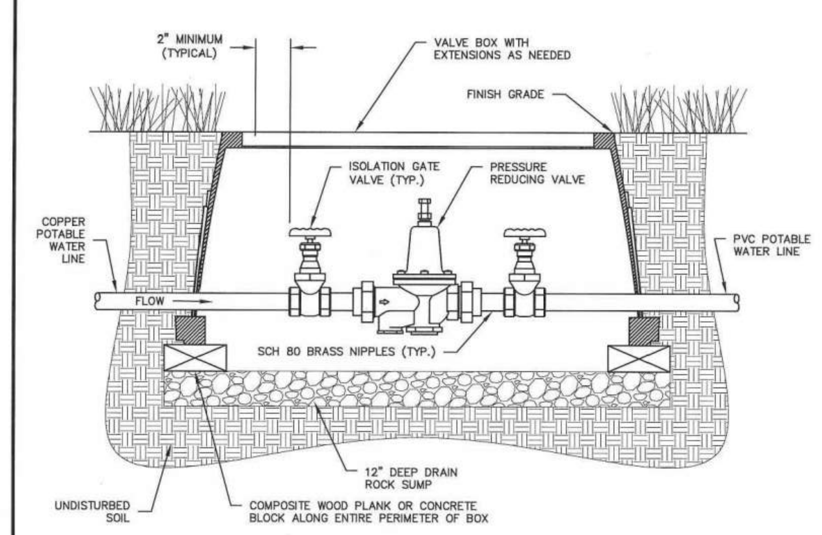
NOTES:
1. ALL TONING WIRE SHALL BE 14 GAUGE YELLOW HDPE INSULATED COPPER CLAD STEEL. SEAL SPLICE CONNECTIONS WITH 3M DBY OR KING GEL CAPS.
2. PROVIDE A 48 INCH COIL OF TONING WIRE IN EACH VALVE BOX.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION TRENCH | NOT TO SCALE | DETAIL NO. IR4 | DETAIL APPROVED BY | DATE 6-19-19 | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



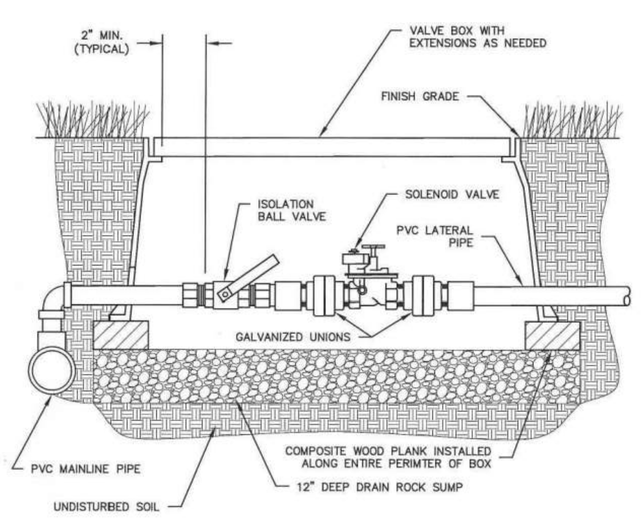
NOTES:
1. CONTRACTOR SHALL PROVIDE AN APPROPRIATELY SIZED IRRIGATION POLYMER VALVE BOX LARGE ENOUGH TO CONTAIN THE SPECIFIED COMPONENTS. VALVE BOXES SHALL BE RAINBIRD VB SERIES, CARSON, OR APPROVED EQUIVALENT.
2. PROVIDE TONING WIRE ALONG ALL PIPE SLEEVING.
3. ALL TONING WIRE SHALL BE 14 GAUGE YELLOW HDPE INSULATED COPPER CLAD STEEL. SEAL SPLICE CONNECTIONS WITH 3M DBY OR KING GEL CAPS.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION PIPE SLEEVE | NOT TO SCALE | DETAIL NO. IR5 | DETAIL APPROVED BY | DATE 6-19-19 | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



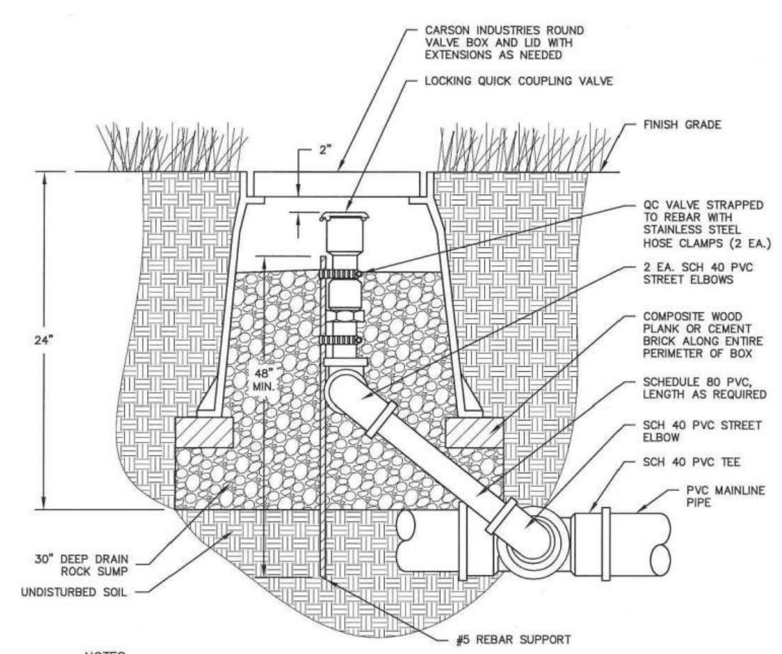
NOTES:
1. CONTRACTOR SHALL PROVIDE AN APPROPRIATELY SIZED POLYMER IRRIGATION VALVE BOX LARGE ENOUGH TO CONTAIN THE SPECIFIED COMPONENTS. VALVE BOXES SHALL BE RAINBIRD VB SERIES, CARSON, OR APPROVED EQUIVALENT.
2. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.
3. PRESSURE REDUCING VALVE SHALL BE A WATTS M/N 25AUB-Z3 WITH DOUBLE UNION END CONNECTIONS, OR APPROVED EQUAL.
4. FOR APPLICATIONS WHERE DRINKING FOUNTAINS ARE SUPPLIED, ALL COMPONENTS SHALL BE SUITABLE FOR POTABLE WATER.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION PRESSURE REGULATOR | NOT TO SCALE | DETAIL NO. IR6 | DETAIL APPROVED BY | DATE 6-19-19 | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



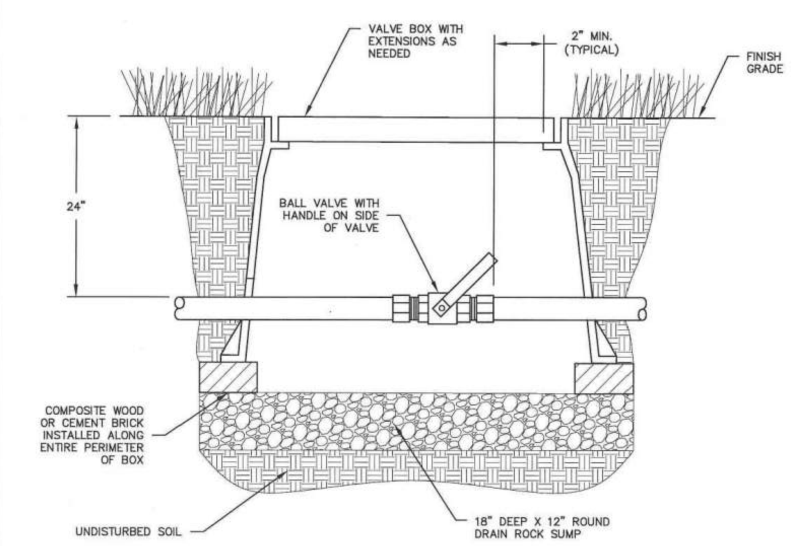
NOTES:
1. CONTRACTOR SHALL PROVIDE AN APPROPRIATELY SIZED POLYMER IRRIGATION VALVE BOX LARGE ENOUGH TO CONTAIN THE SPECIFIED COMPONENTS. VALVE BOXES SHALL BE RAINBIRD VB SERIES, CARSON, OR APPROVED EQUIVALENT.
2. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION SOLENOID VALVE | NOT TO SCALE | DETAIL NO. IR7 | DETAIL APPROVED BY | DATE 6-19-19 | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



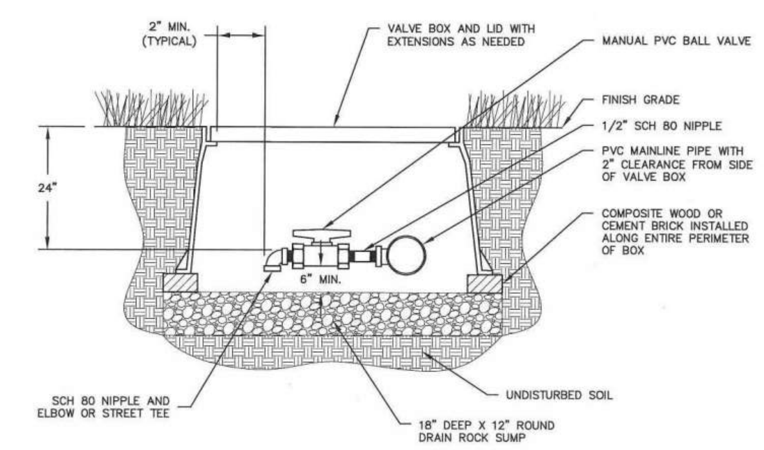
NOTES:
1. CONTRACTOR SHALL PROVIDE AN APPROPRIATELY SIZED POLYMER IRRIGATION VALVE BOX LARGE ENOUGH TO CONTAIN THE SPECIFIED COMPONENTS. VALVE BOXES SHALL BE RAINBIRD VB SERIES, CARSON, OR APPROVED EQUIVALENT.
2. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.
3. SWING JOINT SIZE SHALL BE SAME SIZE AS VALVE BOTTOM INLET.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION QUICK COUPLING VALVE | NOT TO SCALE | DETAIL NO. IR9 | DETAIL APPROVED BY | DATE 6-19-19 | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



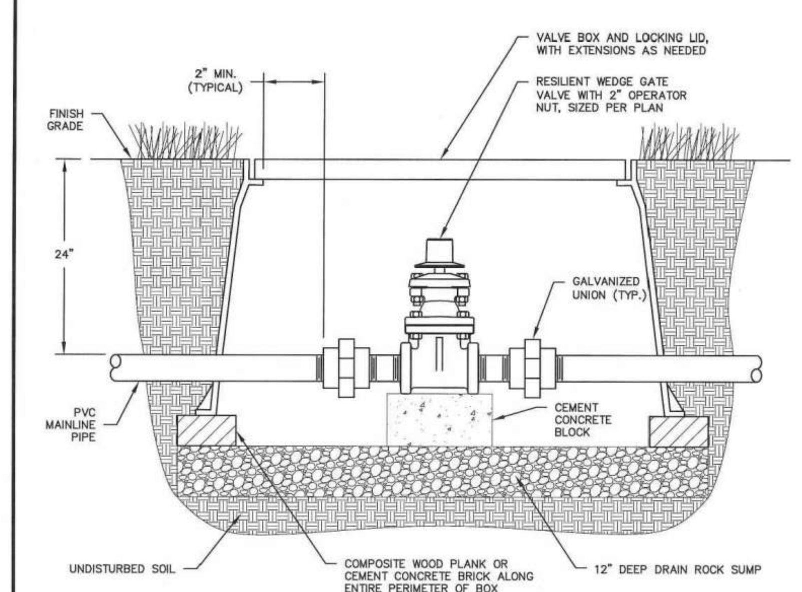
NOTES:
1. CONTRACTOR SHALL PROVIDE AN APPROPRIATELY SIZED POLYMER IRRIGATION VALVE BOX LARGE ENOUGH TO CONTAIN THE SPECIFIED COMPONENTS. VALVE BOXES SHALL BE RAINBIRD VB SERIES, CARSON, OR APPROVED EQUIVALENT.
2. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION ISOLATION BALL VALVE | NOT TO SCALE | DETAIL NO. IR10 | DETAIL APPROVED BY | DATE 6-19-19 | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



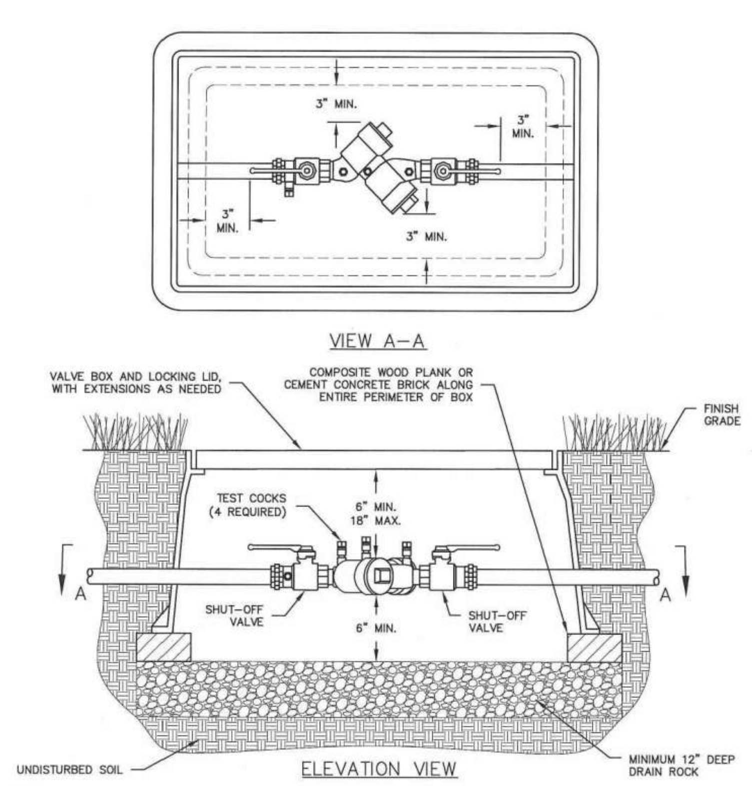
NOTES:
1. CONTRACTOR SHALL PROVIDE AN APPROPRIATELY SIZED POLYMER IRRIGATION VALVE BOX LARGE ENOUGH TO CONTAIN THE SPECIFIED COMPONENTS. VALVE BOXES SHALL BE RAINBIRD VB SERIES, CARSON, OR APPROVED EQUIVALENT.
2. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.
3. CONTRACTOR RESPONSIBLE FOR LOCATING DRAIN VALVE AT LOWEST POINT OF MAINLINE TO ENSURE POSITIVE DRAINAGE.
4. ALLOW FOR 1" CLEARANCE FROM HOLE IN BOX TO TOP OF PIPE.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION MANUAL DRAIN VALVE | NOT TO SCALE | DETAIL NO. IR11 | DETAIL APPROVED BY | DATE 6-19-19 | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



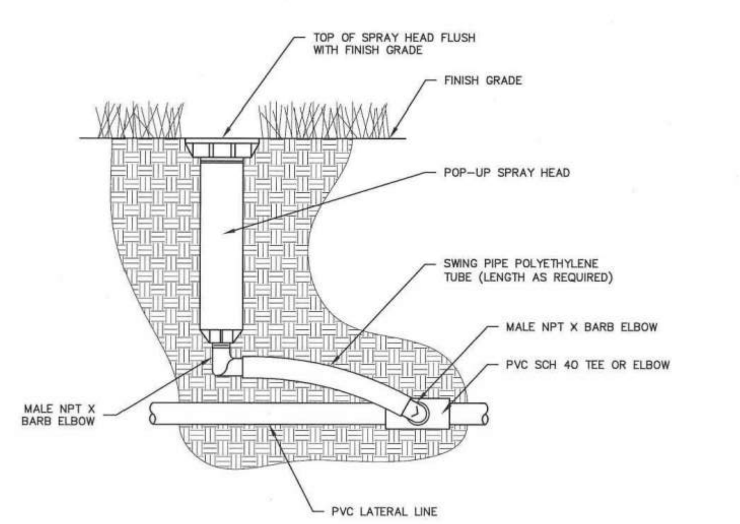
NOTES:
1. CONTRACTOR SHALL PROVIDE AN APPROPRIATELY SIZED POLYMER IRRIGATION VALVE BOX LARGE ENOUGH TO CONTAIN THE SPECIFIED COMPONENTS. VALVE BOXES SHALL BE RAINBIRD VB SERIES, CARSON, OR APPROVED EQUIVALENT.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION MANUAL GATE VALVE | NOT TO SCALE | DETAIL NO. IR12 | DETAIL APPROVED BY | DATE 6-19-19 | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



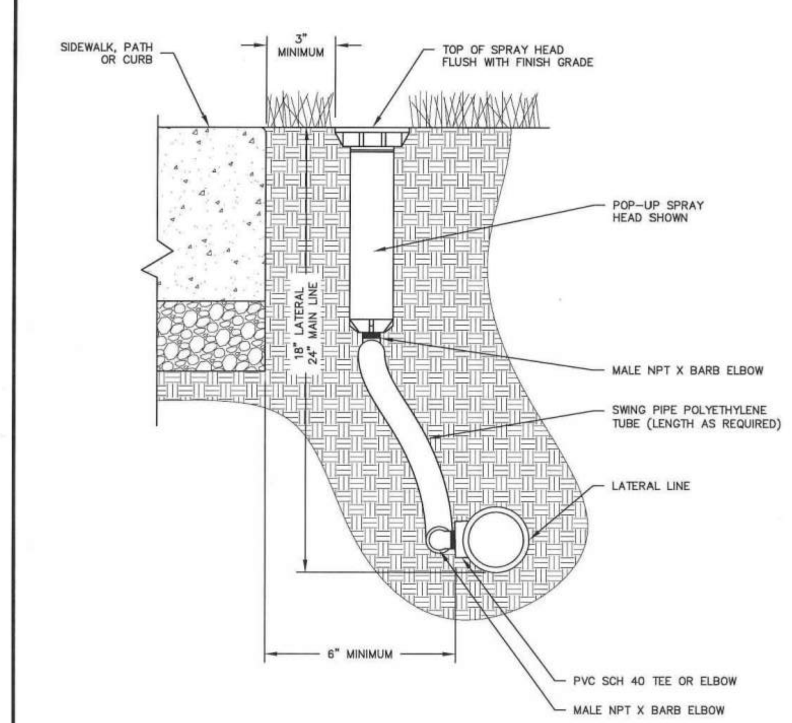
NOTES:
1. CONTRACTOR SHALL PROVIDE AN APPROPRIATELY SIZED POLYMER IRRIGATION VALVE BOX LARGE ENOUGH TO CONTAIN THE SPECIFIED COMPONENTS. VALVE BOXES SHALL BE RAINBIRD VB SERIES, CARSON, OR APPROVED EQUIVALENT.
2. APPROVED DOUBLE CHECK VALVE ASSEMBLY TO LAY HORIZONTAL WITH GROUND. TEST COCKS TO EITHER FACE OUTWARDS OR UPWARDS FROM ASSEMBLY.
3. DESIGNED FOR BACK SIPHONING AND BACK PRESSURE.
4. THOROUGHLY FLUSH LINES PRIOR TO INSTALLATION OF BACKFLOW PREVENTER.
5. THE DCVA MAY BE INSTALLED ABOVE OR BELOW THE GROUND PROVIDED ALL CLEARANCES ARE MET.
6. DO NOT INSTALL IN AN AREA SUBJECT TO FLOODING. MUST BE ACCESSIBLE AND PROTECTED FROM FREEZING CONDITIONS.
7. THE DOUBLE CHECK VALVE BACKFLOW PREVENTER ASSEMBLY SHALL BE ASSE LISTED 1015 APPROVED AND INCLUDE FULL PORT BALL VALVES WITH RESILIENT SEATS AND UNION CONNECTIONS.
8. A PLUMBING PERMIT IS REQUIRED. PLEASE CONTACT THE CITY OF CAMAS BUILDING DEPARTMENT.
9. MUST BE TESTED AFTER INSTALLATION BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER. TEST RESULTS SHALL BE SENT TO THE CITY OF CAMAS WATER DEPARTMENT.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION DOUBLE CHECK VALVE ASSY. | NOT TO SCALE | DETAIL NO. IR13 | DETAIL APPROVED BY | DATE 6-19-19 | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



NOTES:
1. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.
2. SWING PIPE SHALL BE POLYEHTYLENE AND SIZE SHALL NOT BE LESS THAN HEAD INLET SIZE.
3. POP-UP SPRAY HEADS SHALL BE RAIN BIRD 1800 OR APPROVED EQUAL, SUBMITTAL REQUIRED.
4. WHEN SPRAY HEADS ARE LOCATED ALONG SIDEWALK OR CURBING THE HEADS SHALL BE MINIMUM 3" FROM HARDSCAPE AND PIPES MINIMUM 6" FROM HARDSCAPE.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION POP-UP SPRAY HEAD | NOT TO SCALE | DETAIL NO. IR15 | DETAIL APPROVED BY | DATE 6-19-19 | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



NOTES:
1. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.
2. SWING PIPE SHALL BE POLYEHTYLENE AND SIZE SHALL NOT BE LESS THAN HEAD INLET SIZE.
3. WHEN SPRAY HEADS ARE LOCATED ALONG SIDEWALK OR CURBING THE HEADS SHALL BE MINIMUM 3" FROM HARDSCAPE AND PIPES MINIMUM 6" FROM HARDSCAPE.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION HEAD PLACEMENT ALONG HARDSCAPE | NOT TO SCALE | DETAIL NO. IR16 | DETAIL APPROVED BY | DATE 6-19-19 | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG

Planning Solutions, Inc
Creating Solution to Complex Issue
4400 NE 77th Avenue
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VOICE: 360-750-9000 FAX: 360-713-61
www.planningsolutionsinc.co

STATE OF WASHINGTON · CHRISTOPHER A BAUMANN · LICENSED LANDSCAPE ARCHITECT · NO 635 · EXP. 02-20-2025

PRELIMINARY
NOT FOR CONSTRUCTION
SUBJECT TO APPROVAL

13TH STREET GAS STATIOIN

20101 NE 13th Street
Camas, Washington

DRAWN: Camas	CHECKED: CB
SCALE: AS SHOWN	DATE: 11.03.23
JOB #: 23-1837	
ISSUED FOR: PLR	
REVISIONS:	
1	
2	
3	
4	
5	
6	

SHEET NAME:
PRELIMINARY IRRIGATION DETAILS

SHEET #:
ID
SHEET 8 OF 8

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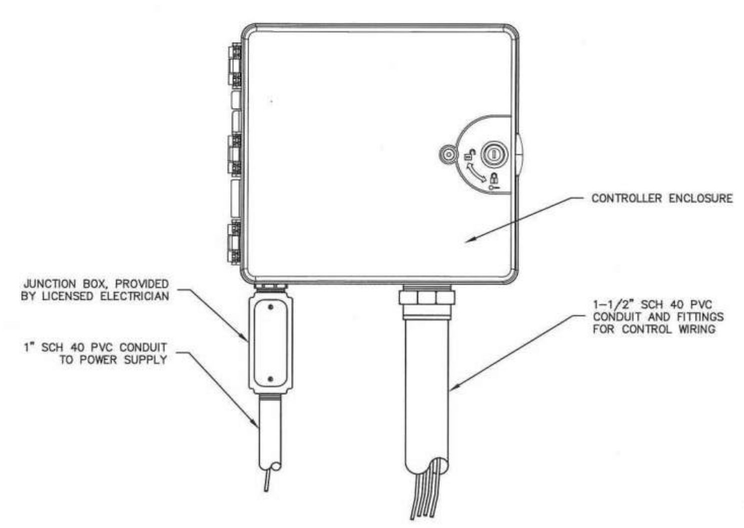
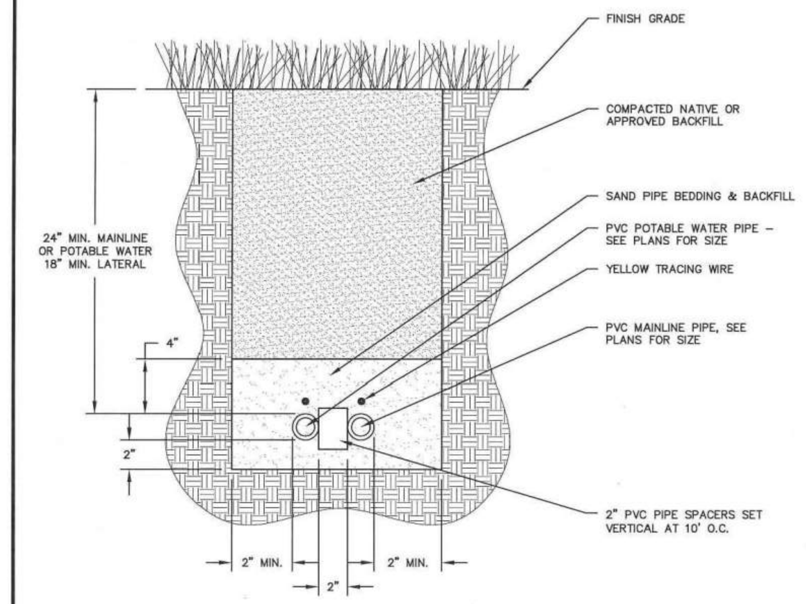
IRRIGATION CONSTRUCTION NOTES:
1. THE CONTRACTOR SHALL INSPECT THE SITE AND VERIFY CONDITIONS AND DIMENSIONS PRIOR TO CONSTRUCTION.
2. IRRIGATION PLANS ARE SCHEMATIC REPRESENTATIONS ONLY. PLACE LINES IN A COMMON TRENCH WHENEVER POSSIBLE. FIELD ADJUST LINES TO AVOID CONFLICT WITH UTILITIES.
3. IRRIGATION IS COORDINATED WITH THE PLANTING PLAN AND SITE IMPROVEMENTS AND IS DESIGNED WITH TRIANGULAR SPACING GIVING HEAD TO HEAD COVERAGE. COORDINATE IRRIGATION HEAD LAYOUT WITH NEW PLANT MATERIALS. LOCATE SPRAY HEADS 30" FROM BASE OF TREE. DO NOT ALTER HEAD LOCATION, PIPE LAYOUT, OR VALVE LOCATION WITHOUT WRITTEN APPROVAL FROM THE CITY ENGINEER. NOTIFY THE CITY ENGINEER IF DISCREPANCIES OCCUR BETWEEN THE PLANS AND FIELD CONDITIONS.
4. ALL COMPONENTS OF IRRIGATION SYSTEM SHALL BE INSTALLED AND PROPERLY ADJUSTED TO PROVIDE ADEQUATE COVERAGE AND MINIMIZATION OF OVER SPRAY ONTO WALKS, BUILDINGS, PARKING AREAS, ETC.
5. ALL PIPE SIZES INDICATED ARE MINIMUMS. CONTRACTOR MAY NOT DECREASE PIPE SIZE. LARGER PIPE SIZES MAY BE USED AT NO ADDITIONAL COST TO OWNER. IRRIGATION LATERALS ARE SIZED BEGINNING AT THE AUTOMATIC VALVE AND CONTINUING IN DIRECTION OF FLOW. REDUCTIONS IN PIPE SIZE ARE LABELED BEGINNING DOWNSTREAM OF NEAREST FITTING. ALL LATERALS NOT SIZED ARE MINIMUM 3/4".
6. INSTALL ALL IRRIGATION PIPE AND CONTROL WIRES IN MINIMUM 4" PVC SLEEVE BELOW ALL PAVED SURFACES UNLESS OTHERWISE INDICATED ON THE PLANS. INSTALL SLEEVES PRIOR TO PLACEMENT OF PAVEMENTS AND PAVEMENT SUB-BASE. SEE PIPE SLEEVING DETAIL FOR FURTHER REQUIREMENTS.
7. COORDINATE IRRIGATION POINTS OF CONNECTION AND LOCATION OF AUTOMATIC CONTROL VALVES WITH THE ENGINEER. COORDINATE ALL WORK WITH OTHER TRADES, I.E. ELECTRICAL, MASONRY, ETC.
8. CONTRACTOR TO PROGRAM AUTOMATIC CONTROLLER TO ALLOW FOR THE EQUIVALENT OF 1" OF WATER PER WEEK.
9. ALL PIPES SHALL BE TRENCHED. PROVIDE POSITIVE DRAINAGE OF MAINLINE. PLACE MANUAL DRAIN AT LOW POINTS IN MAINLINE. IDENTIFY LOCATIONS ON AS-BUILTS.
10. USE 45° ELBOWS INSTEAD OF 90° ELBOWS ON ALL MAINLINES 2-1/2" AND LARGER. INSTALL CONCRETE THRUST BLOCKS AT ALL MAINLINE CHANGES IN DIRECTION. POUR MINIMUM OF 1 CUBIC FOOT OF CONCRETE ON UNDISTURBED SOIL. WRAP PIPE IN PLASTIC PRIOR TO COVERING WITH CONCRETE.
11. CONTRACTOR TO INSTALL CONTROLLER, CPU ELECTRICAL, PHONE AND ACCESSORIES AS REQUIRED. CONTRACTOR TO FURNISH CONTROL WIRES FROM VALVES TO CONTROLLER. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING 110 VOLT SERVICE FROM BUILDING TO EXISTING JUNCTION BOX IN CONTROLLER HOUSING AND CONNECT CONTROLLER SERVICE.
12. ALL TONING WIRE, WHERE REQUIRED, SHALL BE 14 GAUGE COPPER CLAD STEEL WITH HDPE DIRECT BURY INSULATION. SEAL SPLICE CONNECTIONS WITH 3M DBY OR KING GEL CAPS.
13. ALL DIRECT BURY CONTROL WIRING AND CABLING SHALL HAVE SPLICE CONNECTIONS SEALED WITH 3M DBY OR RAIN BIRD DB SERIES WIRE CONNECTORS IN A SPLICE BOX.
14. SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS.
15. WATER METER SHALL BE INSTALLED BY THE CITY. CONTRACTOR RESPONSIBLE FOR CONNECTIONS DOWNSTREAM OF WATER METER.
16. CONTRACTOR TO VERIFY WATER PRESSURE TO ENSURE THAT PRESSURE MATCHES THE SYSTEM DESIGN PRESSURE.
17. WHERE REQUIRED, CONTRACTOR SHALL PROVIDE AN APPROPRIATELY SIZED POLYMER IRRIGATION VALVE BOX LARGE ENOUGH TO CONTAIN THE SPECIFIED COMPONENTS. VALVE BOXES SHALL BE RAINBIRD VB SERIES, CARSON, OR APPROVED EQUIVALENT.

City of Camas WASHINGTON — LANDSCAPE DETAIL — IRRIGATION CONSTRUCTION NOTES — NOT TO SCALE — DETAIL NO. IR1 — DETAIL APPROVED BY / DATE 6-19-19 — REVISION: 2 — DATE: 6/19/2019 — ST-IRRIGATION.DWG



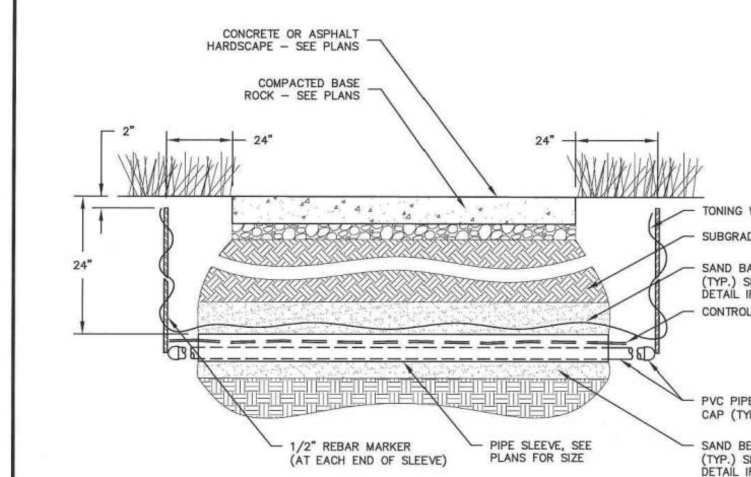
NOTES:
1. IRRIGATION CONTROLLER SHALL BE A RAINBIRD ESP-LXME SERIES PROGRAMMABLE CONTROLLER, OR APPROVED EQUAL.
2. INTERIOR INSTALLATIONS DO NOT REQUIRE AN ENCLOSURE WHEN MOUNTED WITHIN THE UTILITY ROOM OF A RESTROOM OR OTHER FACILITY WHERE THE PUBLIC HAS NO ACCESS.
3. FOR EXTERIOR WALL MOUNTED APPLICATIONS SEE DETAIL IR3.

City of Camas WASHINGTON — LANDSCAPE DETAIL — IRRIGATION CONTROLLER – INDOOR MOUNT — NOT TO SCALE — DETAIL NO. IR2 — DETAIL APPROVED BY / DATE 6-19-19 — REVISION: 2 — DATE: 6/19/2019 — ST-IRRIGATION.DWG



NOTES:
1. ALL TONING WIRE SHALL BE 14 GAUGE YELLOW HDPE INSULATED COPPER CLAD STEEL. SEAL SPLICE CONNECTIONS WITH 3M DBY OR KING GEL CAPS.
2. PROVIDE A 48 INCH COIL OF TONING WIRE IN EACH VALVE BOX.

City of Camas WASHINGTON — LANDSCAPE DETAIL — IRRIGATION TRENCH — NOT TO SCALE — DETAIL NO. IR4 — DETAIL APPROVED BY / DATE 6-19-19 — REVISION: 2 — DATE: 6/19/2019 — ST-IRRIGATION.DWG



NOTES:
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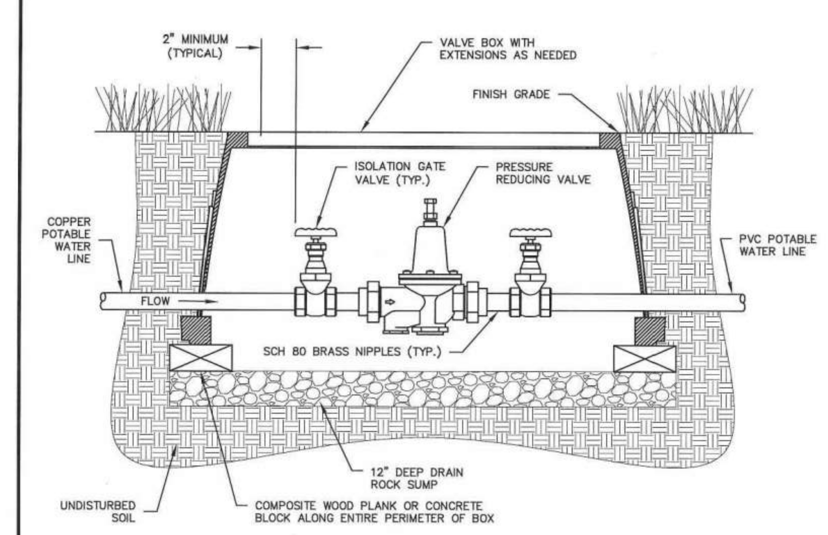
2. PROVIDE TONING WIRE ALONG ALL PIPE SLEEVING.
3. ALL TONING WIRE SHALL BE 14 GAUGE YELLOW HDPE INSULATED COPPER CLAD STEEL. SEAL SPLICE CONNECTIONS WITH 3M DBY OR KING GEL CAPS.

City of Camas WASHINGTON — LANDSCAPE DETAIL — IRRIGATION PIPE SLEEVE — NOT TO SCALE — DETAIL NO. IR5 — DETAIL APPROVED BY / DATE 6-19-19 — REVISION: 2 — DATE: 6/19/2019 — ST-IRRIGATION.DWG



NOTES:
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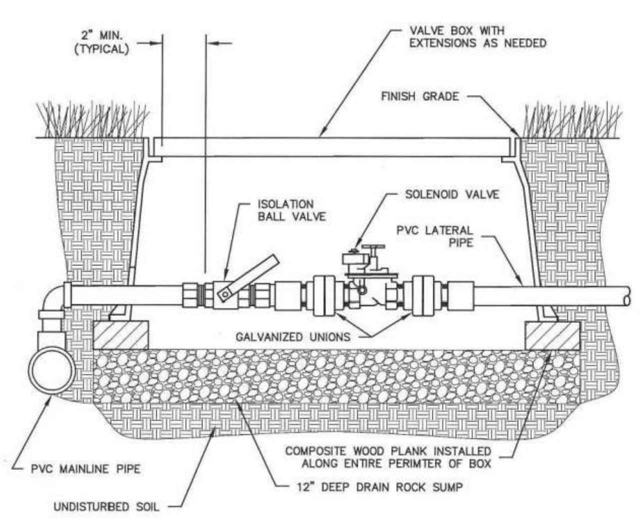
2. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.
3. PRESSURE REDUCING VALVE SHALL BE A WATTS M/N 25AUB-Z3 WITH DOUBLE UNION END CONNECTIONS, OR APPROVED EQUAL.
4. FOR APPLICATIONS WHERE DRINKING FOUNTAINS ARE SUPPLIED, ALL COMPONENTS SHALL BE SUITABLE FOR POTABLE WATER.

City of Camas WASHINGTON — LANDSCAPE DETAIL — IRRIGATION PRESSURE REGULATOR — NOT TO SCALE — DETAIL NO. IR6 — DETAIL APPROVED BY / DATE 6-19-19 — REVISION: 2 — DATE: 6/19/2019 — ST-IRRIGATION.DWG



NOTES:
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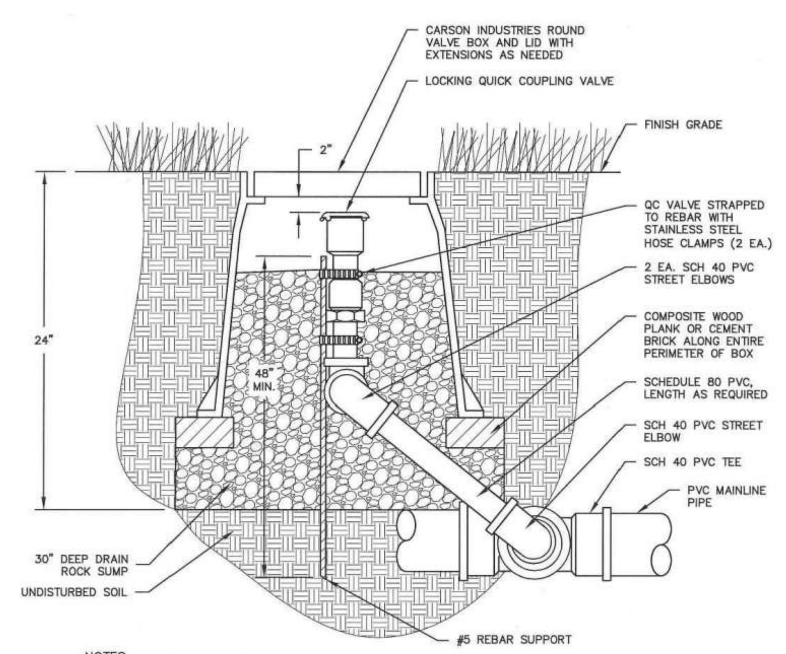
2. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.

City of Camas WASHINGTON — LANDSCAPE DETAIL — IRRIGATION SOLENOID VALVE — NOT TO SCALE — DETAIL NO. IR7 — DETAIL APPROVED BY / DATE 6-19-19 — REVISION: 2 — DATE: 6/19/2019 — ST-IRRIGATION.DWG



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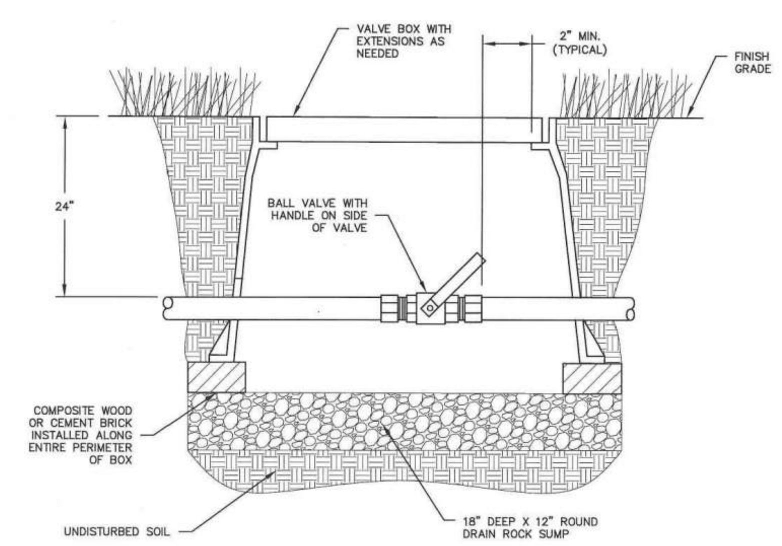
2. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.
3. SWING JOINT SIZE SHALL BE SAME SIZE AS VALVE BOTTOM INLET.

City of Camas WASHINGTON — LANDSCAPE DETAIL — IRRIGATION QUICK COUPLING VALVE — NOT TO SCALE — DETAIL NO. IR9 — DETAIL APPROVED BY / DATE 6-19-19 — REVISION: 2 — DATE: 6/19/2019 — ST-IRRIGATION.DWG



NOTES:
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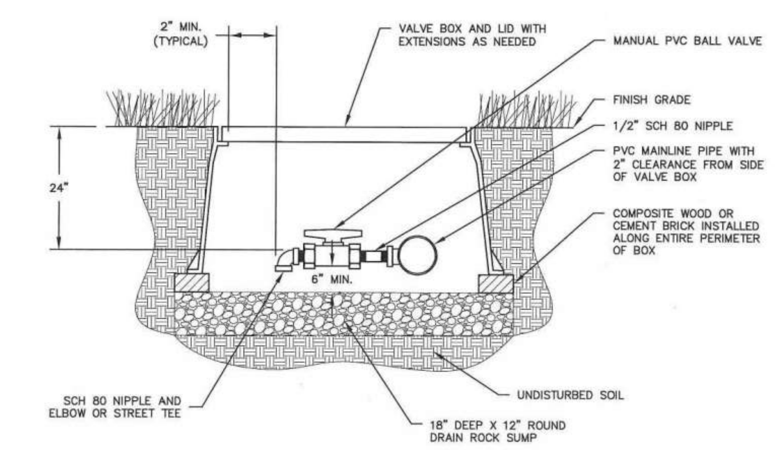
2. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.

City of Camas WASHINGTON — LANDSCAPE DETAIL — IRRIGATION ISOLATION BALL VALVE — NOT TO SCALE — DETAIL NO. IR10 — DETAIL APPROVED BY / DATE 6-19-19 — REVISION: 2 — DATE: 6/19/2019 — ST-IRRIGATION.DWG



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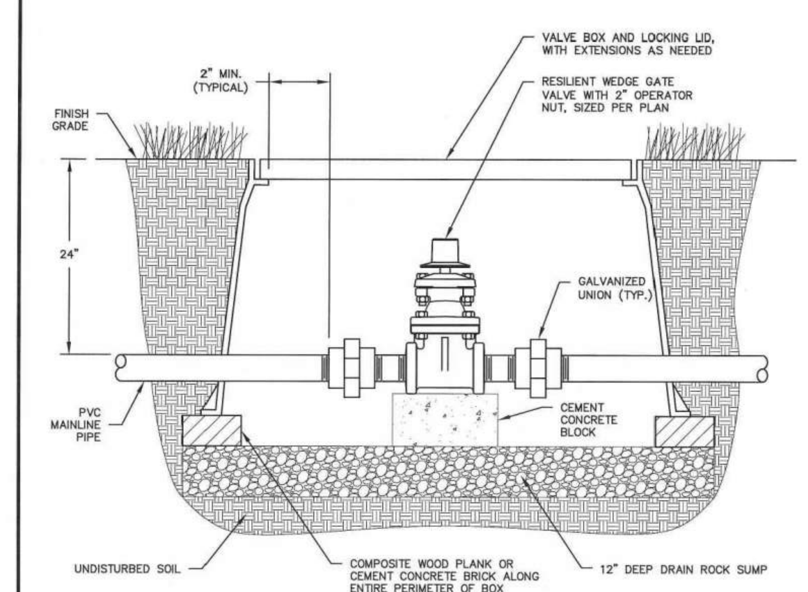
2. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.
3. CONTRACTOR RESPONSIBLE FOR LOCATING DRAIN VALVE AT LOWEST POINT OF MAINLINE TO ENSURE POSITIVE DRAINAGE.
4. ALLOW FOR 1" CLEARANCE FROM HOLE IN BOX TO TOP OF PIPE.

City of Camas WASHINGTON — LANDSCAPE DETAIL — IRRIGATION MANUAL DRAIN VALVE — NOT TO SCALE — DETAIL NO. IR11 — DETAIL APPROVED BY / DATE 6-19-19 — REVISION: 2 — DATE: 6/19/2019 — ST-IRRIGATION.DWG



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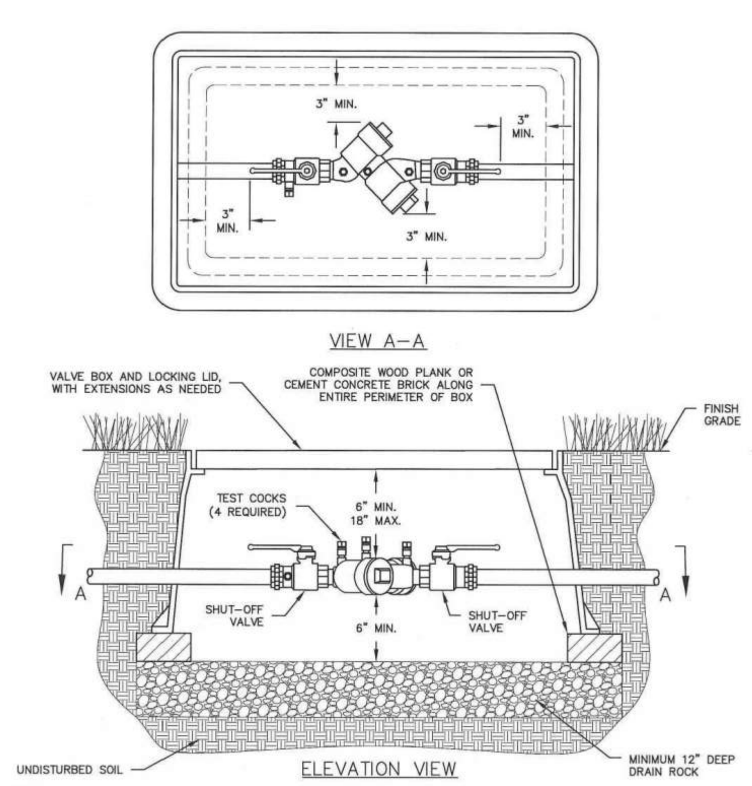
City of Camas WASHINGTON — LANDSCAPE DETAIL — IRRIGATION MANUAL GATE VALVE — NOT TO SCALE — DETAIL NO. IR12 — DETAIL APPROVED BY / DATE 6-19-19 — REVISION: 2 — DATE: 6/19/2019 — ST-IRRIGATION.DWG



NOTES:
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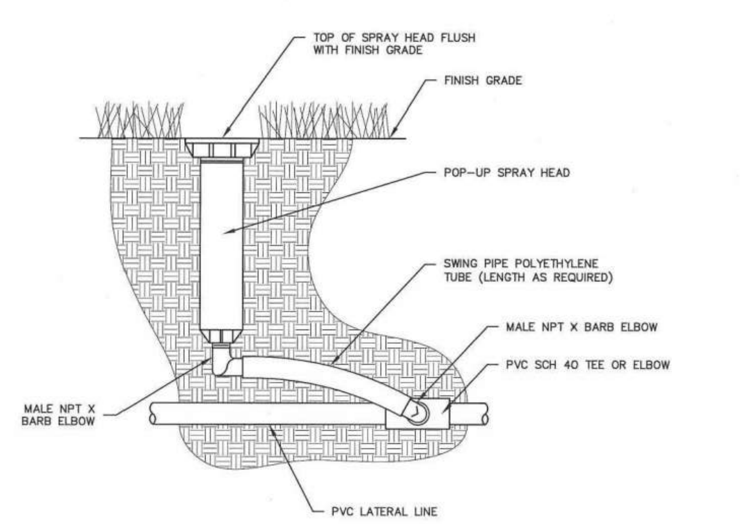
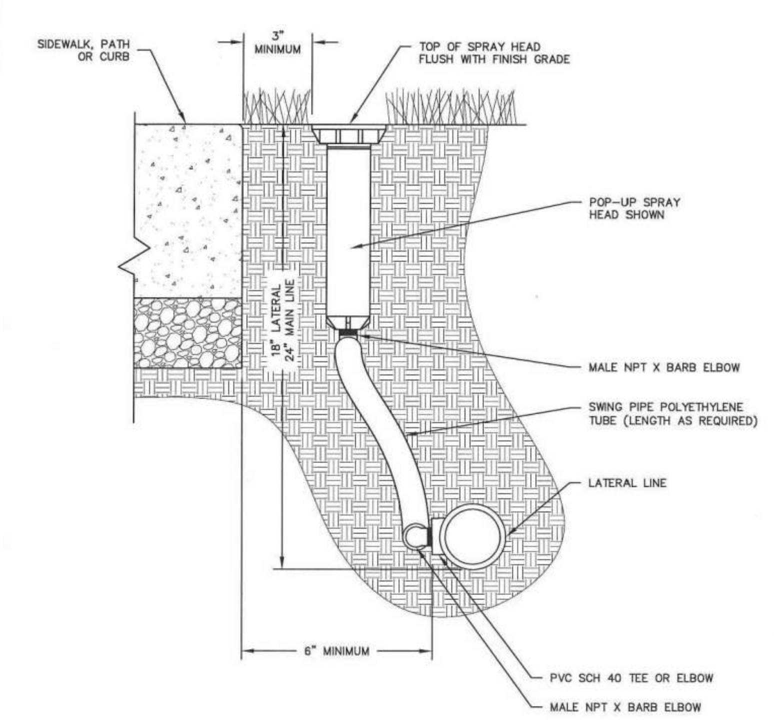
2. APPROVED DOUBLE CHECK VALVE ASSEMBLY TO LAY HORIZONTAL WITH GROUND. TEST COCKS TO EITHER FACE OUTWARDS OR UPWARDS FROM ASSEMBLY.
3. DESIGNED FOR BACK SIPHONING AND BACK PRESSURE.
4. THOROUGHLY FLUSH LINES PRIOR TO INSTALLATION OF BACKFLOW PREVENTER.
5. THE DCVA MAY BE INSTALLED ABOVE OR BELOW THE GROUND PROVIDED ALL CLEARANCES ARE MET.
6. DO NOT INSTALL IN AN AREA SUBJECT TO FLOODING. MUST BE ACCESSIBLE AND PROTECTED FROM FREEZING CONDITIONS.
7. THE DOUBLE CHECK VALVE BACKFLOW PREVENTER ASSEMBLY SHALL BE ASSE LISTED 1015 APPROVED AND INCLUDE FULL PORT BALL VALVES WITH RESILIENT SEATS AND UNION CONNECTIONS.
8. A PLUMBING PERMIT IS REQUIRED. PLEASE CONTACT THE CITY OF CAMAS BUILDING DEPARTMENT.
9. MUST BE TESTED AFTER INSTALLATION BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER. TEST RESULTS SHALL BE SENT TO THE CITY OF CAMAS WATER DEPARTMENT.

City of Camas WASHINGTON — LANDSCAPE DETAIL — IRRIGATION DOUBLE CHECK VALVE ASSY. — NOT TO SCALE — DETAIL NO. IR13 — DETAIL APPROVED BY / DATE 6-19-19 — REVISION: 2 — DATE: 6/19/2019 — ST-IRRIGATION.DWG



NOTES:
1. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.
2. SWING PIPE SHALL BE POLYEHTYLENE AND SIZE SHALL NOT BE LESS THAN HEAD INLET SIZE.
3. POP-UP SPRAY HEADS SHALL BE RAIN BIRD 1800 OR APPROVED EQUAL, SUBMITTAL REQUIRED.
4. WHEN SPRAY HEADS ARE LOCATED ALONG SIDEWALK OR CURBING THE HEADS SHALL BE MINIMUM 3" FROM HARDSCAPE AND PIPES MINIMUM 6" FROM HARDSCAPE.

City of Camas WASHINGTON — LANDSCAPE DETAIL — IRRIGATION POP-UP SPRAY HEAD — NOT TO SCALE — DETAIL NO. IR15 — DETAIL APPROVED BY / DATE 6-19-19 — REVISION: 2 — DATE: 6/19/2019 — ST-IRRIGATION.DWG



NOTES:
1. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.
2. SWING PIPE SHALL BE POLYEHTYLENE AND SIZE SHALL NOT BE LESS THAN HEAD INLET SIZE.
3. WHEN SPRAY HEADS ARE LOCATED ALONG SIDEWALK OR CURBING THE HEADS SHALL BE MINIMUM 3" FROM HARDSCAPE AND PIPES MINIMUM 6" FROM HARDSCAPE.

City of Camas WASHINGTON — LANDSCAPE DETAIL — IRRIGATION HEAD PLACEMENT ALONG HARDSCAPE — NOT TO SCALE — DETAIL NO. IR16 — DETAIL APPROVED BY / DATE 6-19-19 — REVISION: 2 — DATE: 6/19/2019 — ST-IRRIGATION.DWG

Planning Solutions, Inc
Creating Solutions to Complex Issues
4400 NE 77th Avenue
Suite 275
VANCOUVER, WA 9866
VOICE: 360-750-9000 FAX: 360-713-61
www.planningsolutionsinc.co

STATE OF WASHINGTON — CHRISTOPHER A BAUMANN — LICENSED LANDSCAPE ARCHITECT — NO 635 — EXP. 02-20-2025

PRELIMINARY — NOT FOR CONSTRUCTION — SUBJECT TO APPROVAL

13TH STREET GAS STATIOIN

20101 NE 13th Street
Camas, Washington

DRAWN: Camas	CHECKED: CB
SCALE: AS SHOWN	DATE: 9.15.23
JOB #: 23-1837	
ISSUED FOR: PLR	
REVISIONS: 1, 2, 3, 4, 5, 6	

SHEET NAME:
PRELIMINARY IRRIGATION DETAILS

SHEET #: ID
SHEET 8 OF 8

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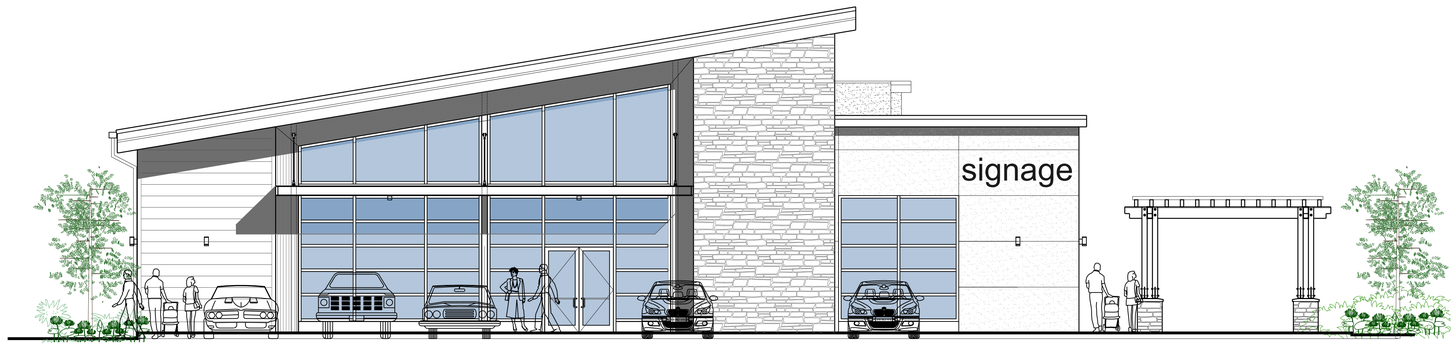
13th Street Site Plan



LEGEND OF SYMBOLS

NORTH ARROW

DETAIL NUMBER
DETAIL TAG
SHEET NUMBER

DETAIL NUMBER
SECTION/ELEVATION TAG
SHEET NUMBER

INDICATE REVISED AREA
REVISION
REVISION NUMBER

ROOM NAME
ROOM TAG
ROOM NUMBER

WALL TYPE TAG

KEY NOTE TAG

DOOR SCHEDULE KEY

WINDOW SCHEDULE KEY

GRID DESIGNATION

INTERIOR ELEVATION

ABBREVIATIONS

#	POUND OR NUMBER	EXIST'G	EXISTING	P.C.C.	PRE-CAST CONCRETE
&	AND	E.J.	EXPANSION JOINT	P-LAM	PLASTIC LAMINATED
@	AT	EXT	EXTERIOR	PLUMB	PLUMBING
ACT	ACOUSTIC CEILING TILE	FD	FLOOR DRAIN	PLYWD	PLYWOOD
A.F.F.	ABOVE FINISHED FLOOR	FEC	FIRE EXTINGUISHER CABINET	P.T.	PRESSURE TREATED
ALUM	ALUMINUM	F.F.L.	FINISH FLOOR LINE	PNT	PAINT/PAINTED
ANOD	ANODIZE	FIXT	FIXTURE	PVC	POLYVINYL CHLORIDE
BSMT	BASEMENT	FLR	FLOOR	RBR	RUBBER
BYND	BEYOND	F.O.	FACE OF	RCP	REFLECTED CEILING PLAN
BOT	BOTTOM	FRP	FIBER GLASS REINFORCED PLASTIC	RD.	ROOF DRAIN
C.I.P.	CAST IN PLACE			REQ'D	REQUIRED
CHNL	CHANNEL	FND	FOUNDATION	RM	ROOM
C.J.	CONTROL JOINT	GA	GAUGE	SIM	SIMILAR
CLG	CEILING	GALV	GALVANIZED	SPEC	SPECIFICATION OR SPECIFIED
CLR	CLEAR	GWB	GYPSUM BOARD	SPKLR	SPRINKLER
CMU	CONCRETE MASONRY UNIT	H.C.	HOLLOW CORE	SSTL	STAINLESS STEEL
COL	COLUMN	HT.	HEIGHT	S.T.C.	SOUND TRANSMISSION CONTROL
COMPR	COMPRESSIBLE	H.M.	HOLLOW METAL	STL	STEEL
CONC	CONCRETE	HR.	HOUR	STRUCT'L	STRUCTURAL
CONT	CONTINUOUS	HVAC	HEATING VENTILATING AND AIR CONDITIONING	TBD	TO BE DETERMINE
CPT	CARPET			T&G	TONGUE AND GROOVE
CT	CERAMIC TILE	INSUL	INSULATED OR INSULATION	TELE	TELEPHONE
DBL	DOUBLE	INT	INTERIOR	T.O.	TOP OF
DEMO	DEMOLISH	LO	LOW	T.O.B.	TOP OF BEAM
DIA	DIAMETER	MAX.	MAXIMUM	T.O.C.	TOP OF CONCRETE
DIM	DIMENSION	MEL	MELAMINE	T.O.F.	TOP OF FLOOR
DN	DOWN	M.O.	MASONRY OPENING	T.O.P	TOP OF PLATE
DR	DOOR	MECH	MECHANICAL	T.O.R	TOP OF ROOF
DWG	DRAWING	MEMBER	MEMBRANE	T.O.S.	TOP OD STEEL
EA	EACH	MIN	MINIMUM	TP	TOILET PAPER DISPENSER
EIFS	EXTERIOR INSULATION & FINISH SYSTEM	MRGWB	MOISTURE RESISTANT GYPSUM WALL BOARD	T/D	TELEPHONE DATA
				TYP	TYPICAL
EL	ELEVATION	MTL	METAL	U.O.N.	UNLESS OTHERWISE NOTED
ELEC	ELECTRICAL	N.I.C.	NOT IN CONTRACT	U/S	UNDERSIDE
ELEV	ELEVATOR	NO NOM	NUMBER NOMINAL	V.I.F.	VERIFIED IN FIELD
EPDM	ETHYLENE PROPYLENE DIENE M-CLASS ROOFING	O.C.	ON CENTER	V.P.	VISION PANEL
		O.H.	OPPOSITE HAND	W/	WITH
EQ	EQUAL	O/	OVER	WD	WOOD

WILSON
ARCHITECTS, PLLC
404 E 15TH ST. #7
VANCOUVER, WA.
98663
(360) 696-4722

11895 REGISTERED ARCHITECT
RYAN C. WILSON
STATE OF WASHINGTON

13th Street Site Plan

DATE	SCALE
05-10-23	
JOB NO. 222	DRAWN BY RGM

REVISIONS:

1	
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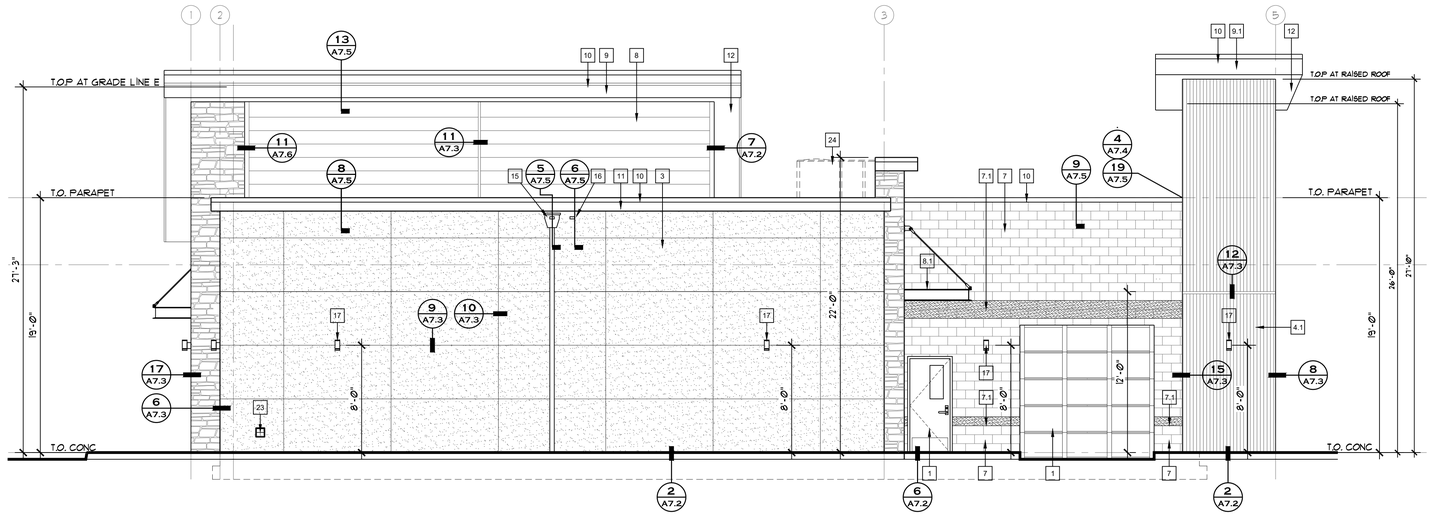
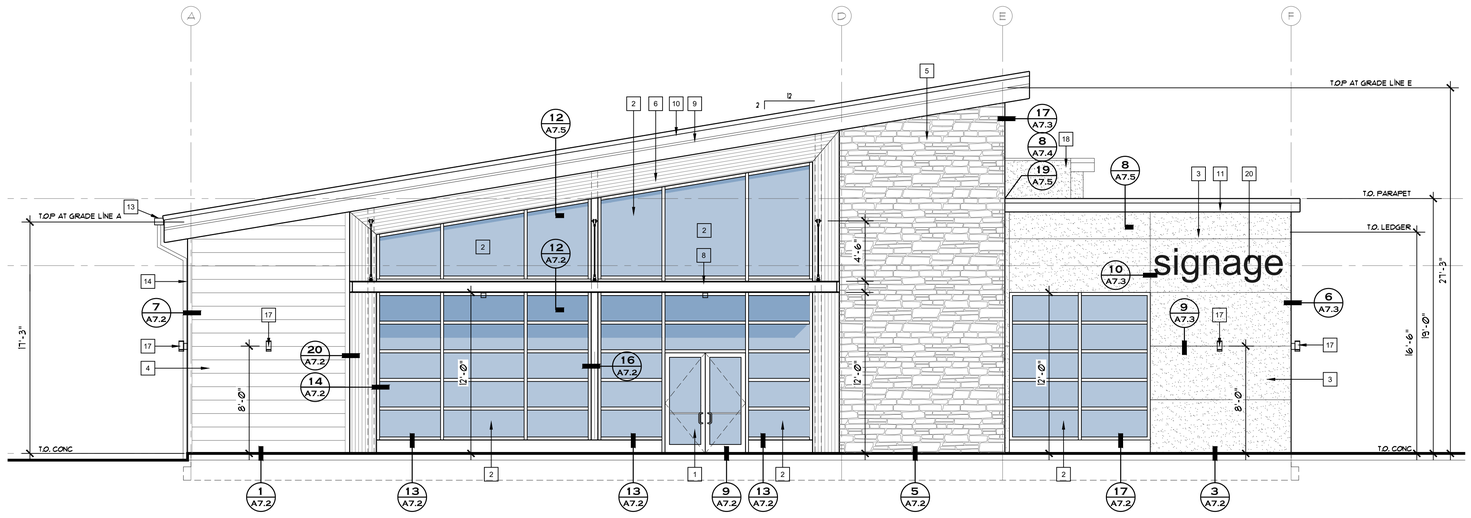
C

PROJECT TEAM
SHEET INDEX
LEGEND
ABBREVIATIONS



2 SOUTH ELEVATION
SCALE: 3/16" = 1'-0"



1 EAST ELEVATION
SCALE: 3/16" = 1'-0"

KEY NOTES

1. STORE FRONT SEE SCHEDULE
2. DOOR SEE SCHEDULE
3. FIBER CEMENT PANEL
4. METAL PANEL TYPE 1 SEE DETAIL 4/A7.5
4.1 METAL PANEL TYPE 2 SEE DETAIL 4/A7.5
5. VENEER STONE
6. COMPOSITE WOOD SIDING
7. CMU TYPE 1
7.1 CMU TYPE 2
8. METAL CANOPY TYPE 1
8.1 METAL CANOPY TYPE 2
9. METAL FASCIA TYPE 1
9.1 METAL FASCIA TYPE 2
10. METAL CAPPING
11. METAL CORNICE
12. COMPOSITE WOOD
13. METAL GUTER
14. DOWNSPOUT
15. CONDUCTOR SEE DETAIL 1/A7.6
16. OVERFLOW SEE DETAIL 5/A7.5, 15/A7.5
17. LIGHTING FIXTURE TYPE 1
18. RAISED PARAPET BEYOND
19. METAL ROOFING
20. SIGNAGE TYPE 1 (MINI MART)
21. SIGNAGE TYPE 2 (CARWASH)
22. SIGNAGE TYPE 3 (CARWASH)
23. HOSE BIB WITH 8 1/2"X8 1/4" STAINLESS STEEL HOSE BOX SEE DETAIL 3/A7.4
24. HVAC SEE MECH PLAN

GENERAL NOTES

WILSON
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11895 REGISTERED ARCHITECT
RYAN C. WILSON
STATE OF WASHINGTON

13th Street Site Plan

DATE	SCALE
05-10-23	
JOB NO.	DRAWN BY
222	RGM

REVISIONS:
1
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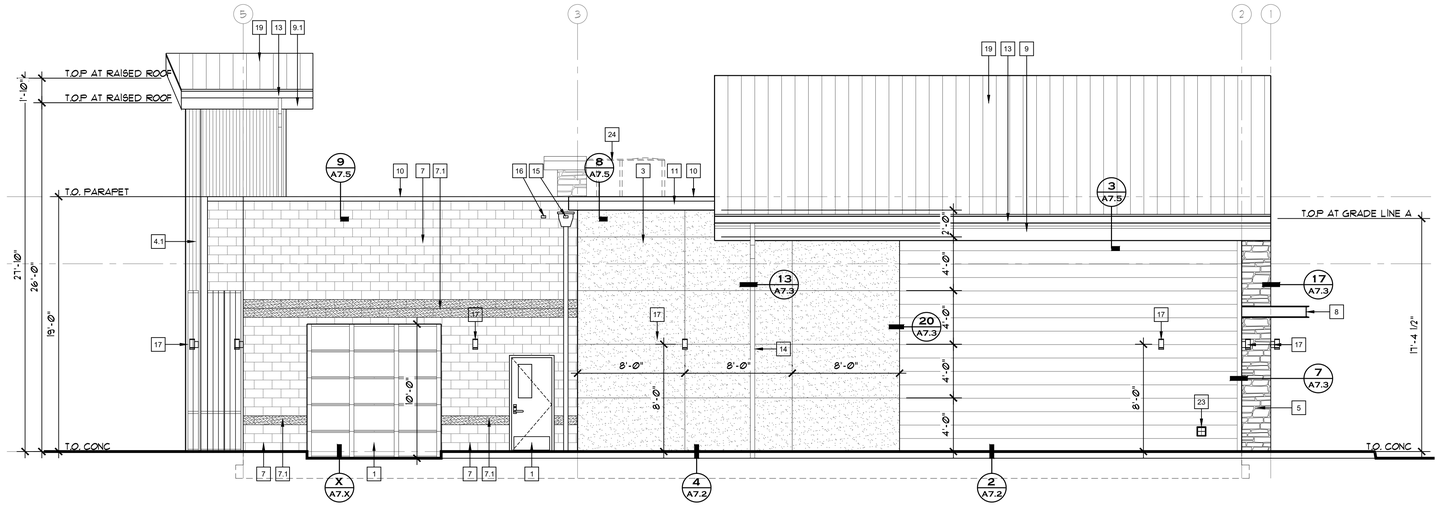
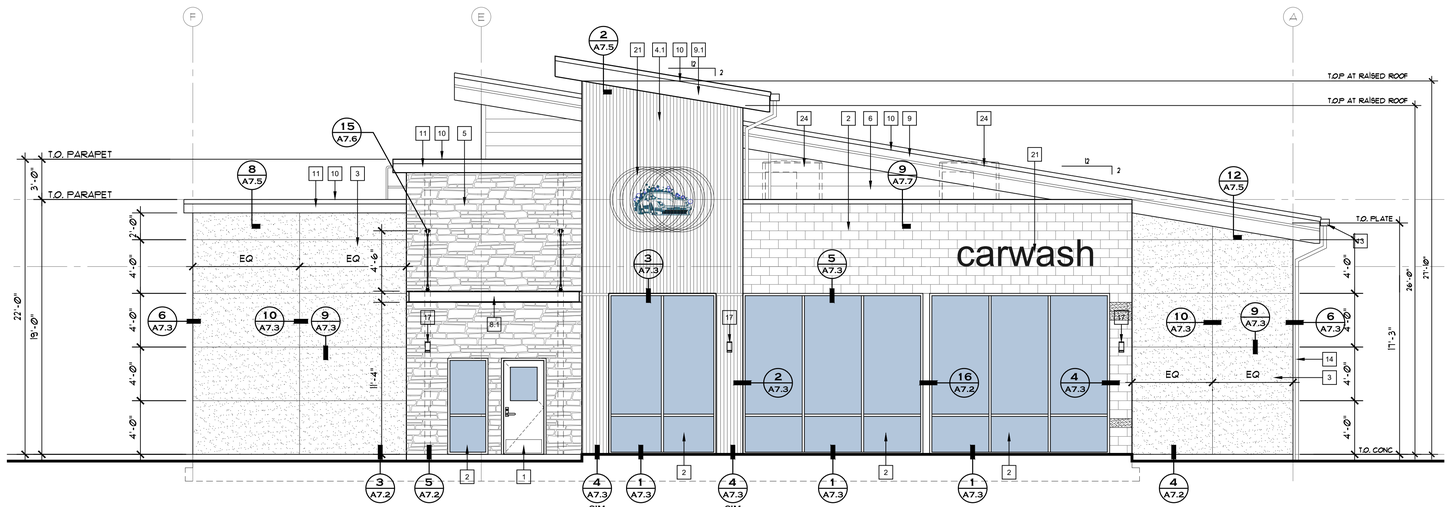
A2.1
BUILDING ELEVATIONS & KEY NOTES



2 NORTH ELEVATION
SCALE: 3/16" = 1'-0"



1 WEST ELEVATION
SCALE: 3/16" = 1'-0"

KEY NOTES

1. STORE FRONT SEE SCHEDULE
2. DOOR SEE SCHEDULE
3. FIBER CEMENT PANEL
4. METAL PANEL TYPE 1 SEE DETAIL 4/A7.5
4.1. METAL PANEL TYPE 2 SEE DETAIL 4/A7.5
5. VENEER STONE
6. COMPOSITE WOOD SIDING
7. CMU TYPE 1
7.1. CMU TYPE 2
8. METAL CANOPY TYPE 1
8.1. METAL CANOPY TYPE 2
9. METAL FASCIA TYPE 1
9.1. METAL FASCIA TYPE 2
10. METAL CAPPING
11. METAL CORNICE
12. COMPOSITE WOOD
13. METAL GUTER
14. DOWNSPOUT
15. CONDUCTOR SEE DETAIL 1/A7.6
16. OVERFLOW SEE DETAIL 5/A7.5, 15/A7.5
17. LIGHTING FIXTURE TYPE 1
18. RAISED PARAPET BEYOND
19. METAL ROOFING
20. SIGNAGE TYPE 1 (MINI MART)
21. SIGNAGE TYPE 2 (CARWASH)
22. SIGNAGE TYPE 3 (CARWASH)
23. HOSE BIB WITH 8 1/2"X8 1/4" STAINLESS STEEL HOSE BOX SEE DETAIL 3/A7.4
24. HVAC SEE MECH PLAN

GENERAL NOTES

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VANCOUVER, WA.
98663
(360) 696-4722

11895 REGISTERED ARCHITECT
RYAN C. WILSON
STATE OF WASHINGTON

13th Street Site Plan

DATE	SCALE
05-10-23	
JOB NO. 222	DRAWN BY RGM

REVISIONS:
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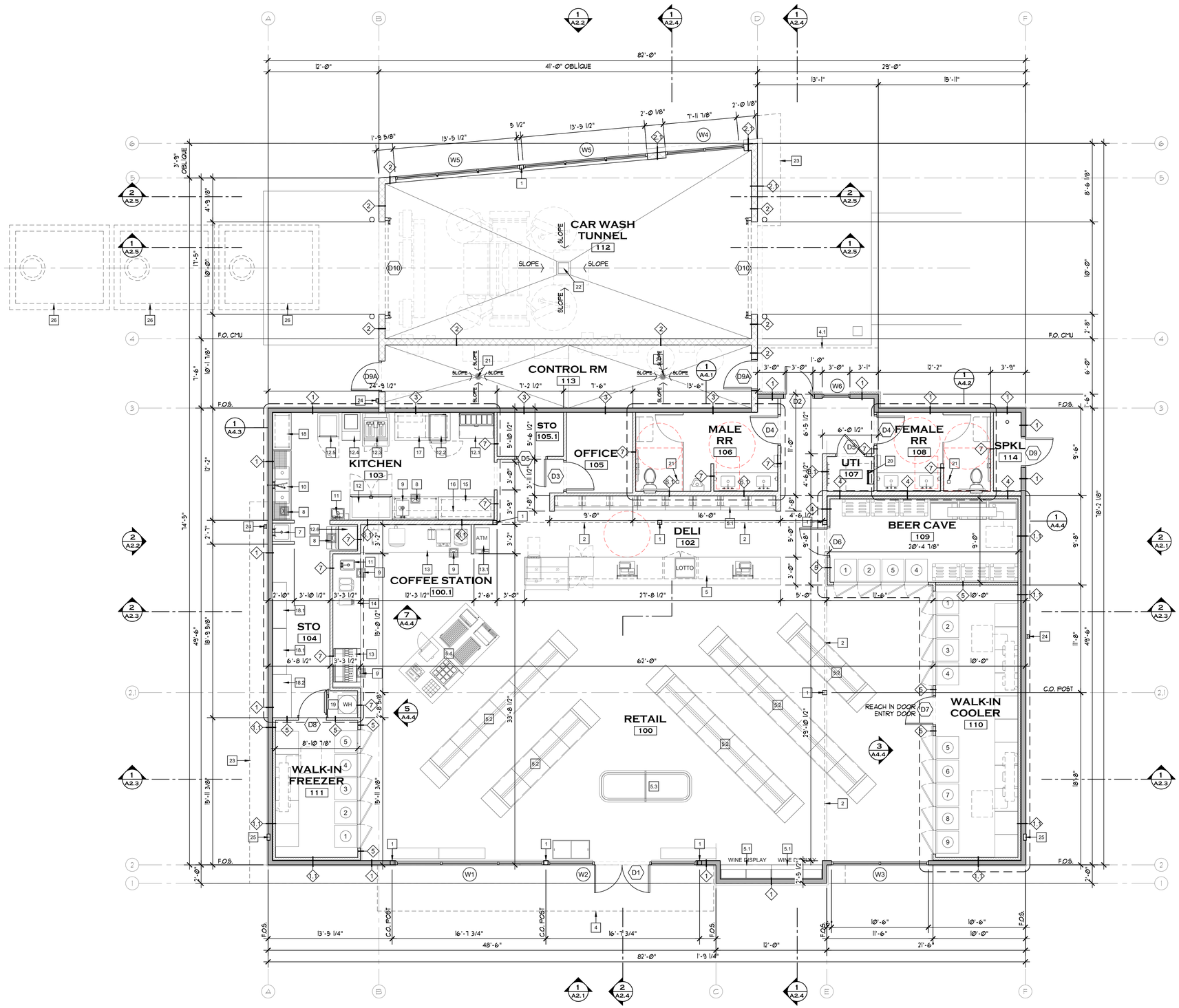
A2.2
BUILDING ELEVATIONS & KEY NOTES



FLOOR PLAN

SCALE: 3/16" = 1'-Ø"

KEY NOTES

1. STEEL POST PER STRUCT'L
2. BEAM PER STRUCT'L
3. ELECTRIC PANEL SEE ELECT'L DRAWING
4. CANOPY TYPE 1
4.1 CANOPY TYPE 2
5. CABINET COUNTER WITH POS, LOTTO AND DISPLAY DELI
5.1 DISPLAY CABINET
5.2 GONDOLA
5.3 GRAB AND GO
5.4 HOT CASE FOOD STATION
6. NOT USED
7. MOP SINK
8. FLOOR SINK
9. PREP SINK
10. 3 COMPARTMENT SINK
11. HANDWASH SINK
11.1 DROP-IN SINK
12. 56" FREEZER
12.1 PIZZA PREPARATION REFRIGERATOR
12.2 MULTI-COOK OVEN
12.3 VENTLESS FRYER
12.4 BREAD AND BATTER STATION
12.5 REACH-IN REFRIGERATOR
12.6 ICE MAKER, CUBE-STYLE
13. SODA ICE & BEVERAGE DISPENSER
13.1 ATM MACHINE
14. DRINKING FOUNTAIN BAR STATION
15. 30X60 WORKING TABLE
16. SHELVING WALL MOUNTED
17. 36X44 WORKING TABLE
18. 24X60 WORKING TABLE
18.1 WIRE SHELVING
18.2 BAG IN BOX SYRUP TANK RACK
19. WATER HEATER
20. ROOF HATCH WITH FIXED LADDER
21. FLOOR DRAIN
22. FLOOR DRAIN (CARWASH TUNNEL)
23. ROOF LINE
24. DOWNSPOUT
25. 8 1/2"X8 1/4" STAINLESS STEEL HOSE BIBB SEE DETAIL 3/A7.4
26. UNDERGROUND TANK

GENERAL NOTES

1. ALL INTERIOR DIMENSIONS ARE TO FACE OF STUD UNLESS NOTED OTHERWISE.
2. ALL DENOTED DIMENSIONS ARE TO BE USED. PLANS SHALL NOT BE SCALED.
3. EXTERIOR WALLS ARE 2"X6 STUD, INT SHEAR WALLS ARE 2X6 @ 16" O.C. UNLESS NOTED OTHERWISE, SEE STRUCTURAL.
4. SEE PLUMBING DRAWINGS FOR DIMENSIONS TO PLUMBING FIXTURES.
5. LOCATION OF (N) KNOX BOX. VERIFY EXACT LOCATION WITH FIRE MARSHALL PRIOR TO INSTALLING.
6. ELECTRICAL PLAN SEE ELECTRICAL DWG'S.
7. MECHANICAL PLAN SEE MECHANICAL DWG'S.
8. WALL ASSEMBLY SEE DWG A7.1
9. DOOR SCHEDULE SEE DWG A8.1
10. WINDOW SCHEDULE SEE DWG A9.1
11. EQUIPMENT SCHEDULE SEE DWG A3.4
12. FINISH SCHEDULE SEE DWG A10.1

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VANCOUVER, WA.
98663
(360) 696-4722

11895 REGISTERED ARCHITECT
RYAN C. WILSON
STATE OF WASHINGTON

13th Street Site Plan

DATE	SCALE
05-10-23	
JOB NO. 222	DRAWN BY RGM

REVISIONS:
1
2
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A3.1

FLOOR PLAN.
KEY NOTES

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.cityofcamas.us

November 30, 2023

Travis Johnson
pm@plsengineering.com

Taz Khan
tkhanusa@gmail.com

RE: Application Review for 20101 NE 13th Street – Planning Cases SPRV23-06, ARCH23-07, CA23-08, DR23-09 and SEPA23-12

Dear Travis,

Thank you for your application submittal for the 13th Street Gas Station. I am the case planner assigned to this project. The purpose of this letter is to inform you that the application submitted on November 9, 2023, has been deemed incomplete and there are items that need to be addressed before we move forward with the review process.

Once the items below are submitted, staff will review the information to verify whether the application can be deemed complete. As a reminder, staff is not authorized to waive any requirement of the City Code. Any omission or failure by staff to recite applicable code requirements shall not constitute a waiver by the City of any standard or requirement.

The items necessary for completeness are as follows:

ENGINEERING

The items noted below were submitted with the initial application and require revisions and/or resubmittals as noted below.

CMC 18.18.040.D:

- The civil plans were submitted at a scale of 1" = 20' instead of the required scale of 1" = 50'.

CMC 18.18.040.E:

- A circulation plan was not submitted. It stated in the narrative that drive aisles are wide enough, but a plan sheet showing the circulation of fuel delivery trucks and deliveries to the market is required.
- The TIA traffic impact analysis has been sent to the City of Vancouver for review and comments.

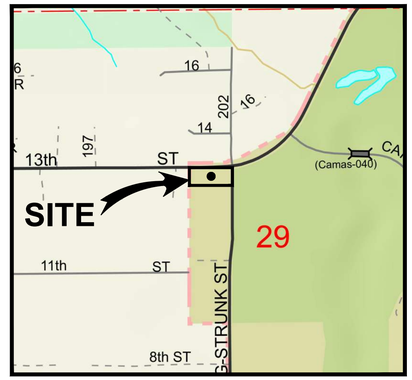
CMC 18.18.040.F:

- A preliminary TIR was submitted however, the report refers to a 35-lot subdivision project in Section A.1, first paragraph. Revise and resubmit the PTIR.
- The preliminary stormwater plans are included on the preliminary utility plans.

If you have any questions related to this project, please feel free to contact me by email: YSennewald@cityofcamas.us or by phone: (360) 817-7269.

Respectfully,

Yvette Sennewald, Senior Planner



VICINITY MAP
NOT TO SCALE

Legend	
Proposed Asphalt Concrete	
Proposed Cement Concrete	

Scale 1" = 20'
20 10 0 20

N

PN: 176186024

NE 13TH STREET

PN: 115915056

PN: 172974000

PN: 176180000

NW FRIBERG-STRUNK ROAD

WB-67 – Interstate Semi-Trailer

11.2'
60'
12'
5'
6.5' SW & CURB
6' PLANTER
5' L2 BUFFER
6' SW
37' HALF
UNDERGROUND FUEL STORAGE
FUEL STATION W/ 8 NOZZLES
5'
5'
28'
35'
60'
32'
85.66'
24.7'
18'
9'
10' SW & CURB
CONVENIENCE STORE 4,100 SF
82'
CAR WASH 1,189 SF
41'
24.92'
27.18'
13.5'
15' FRONT BLDG SETBACK
49.5'
MONUMENT SIGN
10' L3 HIGH SCREEN LANDSCAPE BUFFER
10' L3 BUFFER
COVERED TRASH ENCLOSURE
19.5'
17.48'
3.5'
VAC
EV
FH
5' L2 BUFFER
15' SIDE BLDG SETBACK
7' SW & CURB
6' SW & CURB

GENERAL NOTES

APPLICANT:
Taz Kahn
3993 NW Currawong Court
Camas, WA 98607
TKahnusa@gmail.com

OWNER:
Pak USA Camas LLC
20107 NE 13th Street
Camas, WA 98607

CIVIL ENGINEER:
PLS Engineering
Contact: Travis Johnson, PE
604 W Evergreen Blvd
Vancouver, WA 98660
PH: (360) 944-6519
pm@plsengineering.com

SITE ADDRESS:
Parcel # 176148-000
20101 NE 13TH ST
Camas, WA 98607

CIRCULATION DISCUSSION:
This plan shows that a WB-67 truck can enter and exit the site for deliveries. Note that the turning path does not impact access to the gas pumps. This is the largest possible design vehicle. Since it can access the site, smaller delivery vehicles can as well.

Preliminary Circulation Plan For: 13th Street Site Plan

A Subdivision Located In The City Of Camas, Washington

Engineering - Surveying - Planning

ENGINEERING
PLS
604 W. Evergreen Blvd., Vancouver, WA 98660 | PH (360) 944-6519 | Fax (360) 944-6539

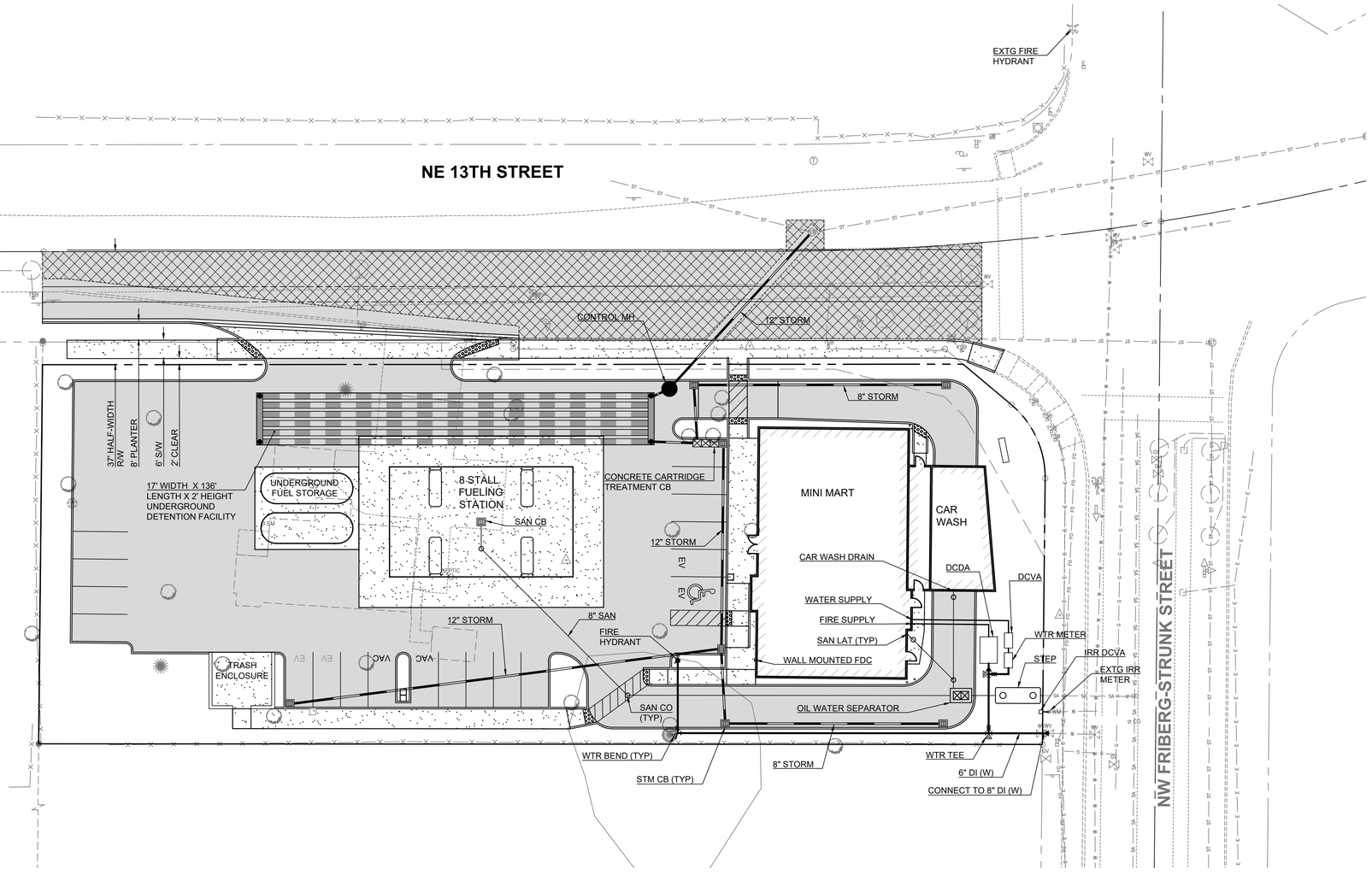
Revisions

1	2	3	4	5	6

SCOTT W. GILLILAND
STATE OF WASHINGTON
42773
REGISTERED PROFESSIONAL ENGINEER
11/2023

Project No. 3632	
SCALE:	H: 1" = 20' V: N/A
DESIGNED BY:	SWG
DRAFTED BY:	JSV
REVIEWED BY:	TGJ

1
1



Legend	
Proposed Asphalt Concrete	
Proposed Cement Concrete	
Proposed Grind and Overlay	

Scale 1" = 20'

20 10 0 20

N

ENGINEERING | PLS

Preliminary Stormwater Plan For:

13th Street Site Plan

A Subdivision Located In The City Of Camas, Washington

Engineering - Surveying - Planning | 604 W. Evergreen Blvd., Vancouver, WA 98660 | PH (360) 944-6519 | Fax (360) 944-6539

Revisions

1	2	3	4	5	6

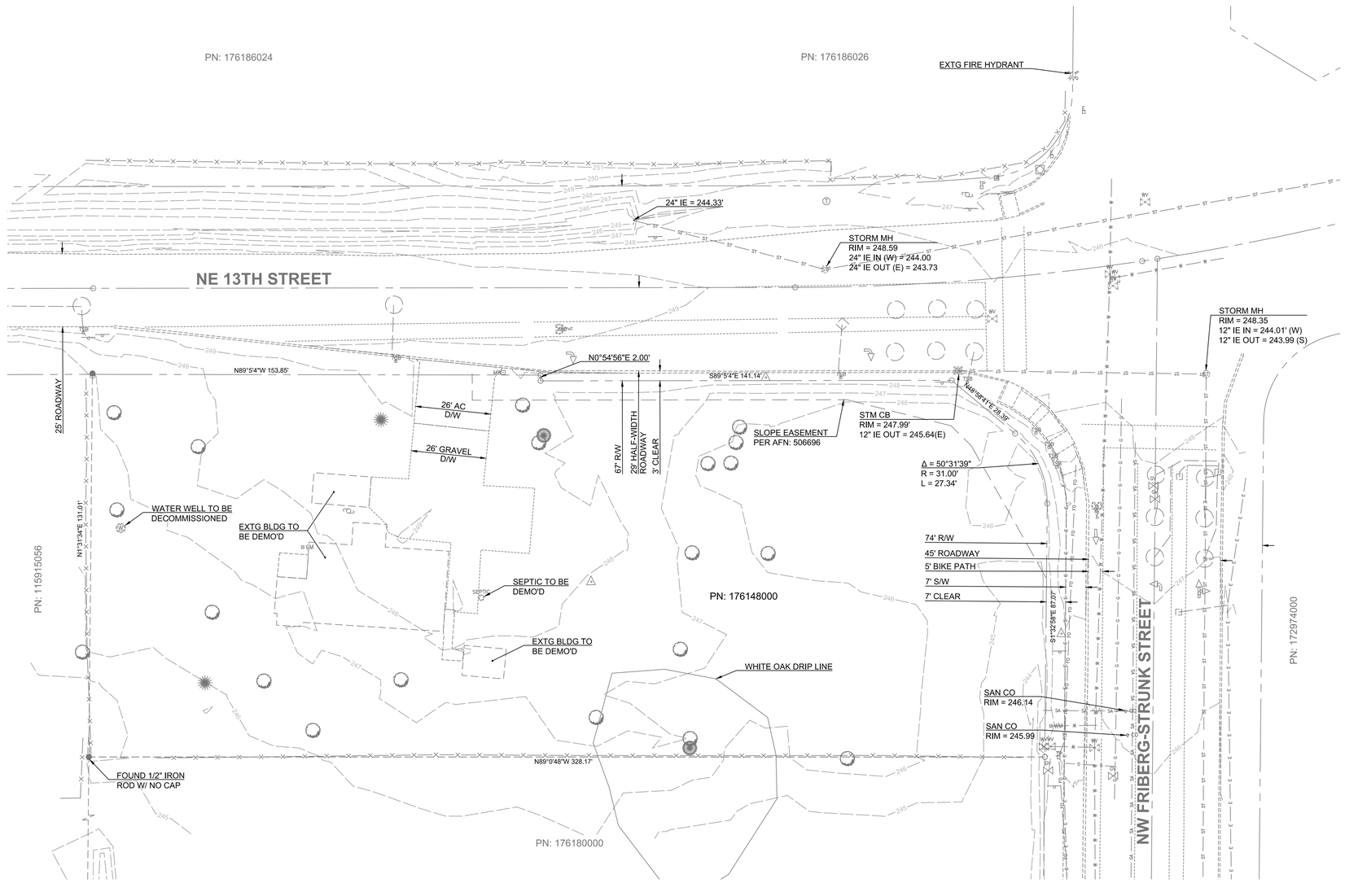
SCOTT W. GILLILAND — STATE OF WASHINGTON — 42773 — REGISTERED PROFESSIONAL ENGINEER — 11/22/23

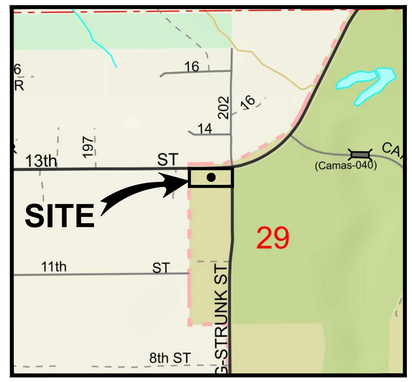
Project No. 3632	
SCALE:	H: 1" = 20' V: N/A
DESIGNED BY:	SWG
DRAFTED BY:	JSV
REVIEWED BY:	TGJ

1 / 1

13th Street Site Plan

Located in the NW ¼ of Section 29, T2N, R3E, W.M.
City of Camas, Washington





VICINITY MAP
NOT TO SCALE

Sheet Index

1. Existing Conditions Plan
2. Preliminary Site Plan
3. Preliminary Utility Plan
4. Preliminary Grading Plan
5. Existing Tree Survey TP
6. Preliminary Landscape Plan L1
7. Final Landscape Details PD
8. Preliminary Irrigation Details ID

GENERAL NOTES

APPLICANT:
Taz Kahn
3993 NW Currawong Court
Camas, WA 98607
TKahnusa@gmail.com

OWNER:
Pak USA Camas LLC
20107 NE 13th Street
Camas, WA 98607

CIVIL ENGINEER:
PLS Engineering
Contact: Travis Johnson, PE
604 W Evergreen Blvd
Vancouver, WA 98660
PH: (360) 944-6519
pm@plsengineering.com

SITE ADDRESS:
Parcel # 176148-000
20101 NE 13TH ST
Camas, WA 98607

HORIZONTAL DATUM:
NAD 83 (2011) Washington State plane coordinate system, south zone, us survey feet. Based on real time kinematic corrections from the Washington State reference network.

VERTICAL DATUM:
NGVD 1929(47) based on real time kinematic corrections from the Washington State reference network.

Scale 1" = 20'
20 10 0 20

N

ENGINEERING
PLS

Existing Conditions Plan For:
13th Street Site Plan
A Subdivision Located In The City Of Camas, Washington
Engineering - Surveying - Planning

604 W. Evergreen Blvd., Vancouver, WA 98660 | PH (360) 944-6519 | Fax (360) 944-6539

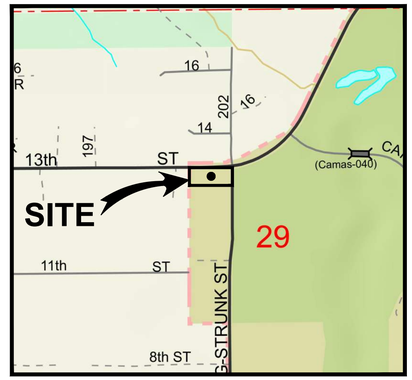
Revisions

1	2	3	4	5	6

SCOTT W. GILLILAND
STATE OF WASHINGTON
22773
REGISTERED
PROFESSIONAL ENGINEER
8/21/23

Project No. 3632	
SCALE:	H: 1" = 20' V: N/A
DESIGNED BY:	SWG
DRAFTED BY:	JSV
REVIEWED BY:	TGJ

1
8



VICINITY MAP
NOT TO SCALE

Legend	
Proposed Asphalt Concrete	
Proposed Cement Concrete	

Scale 1" = 20'
20 10 0 20

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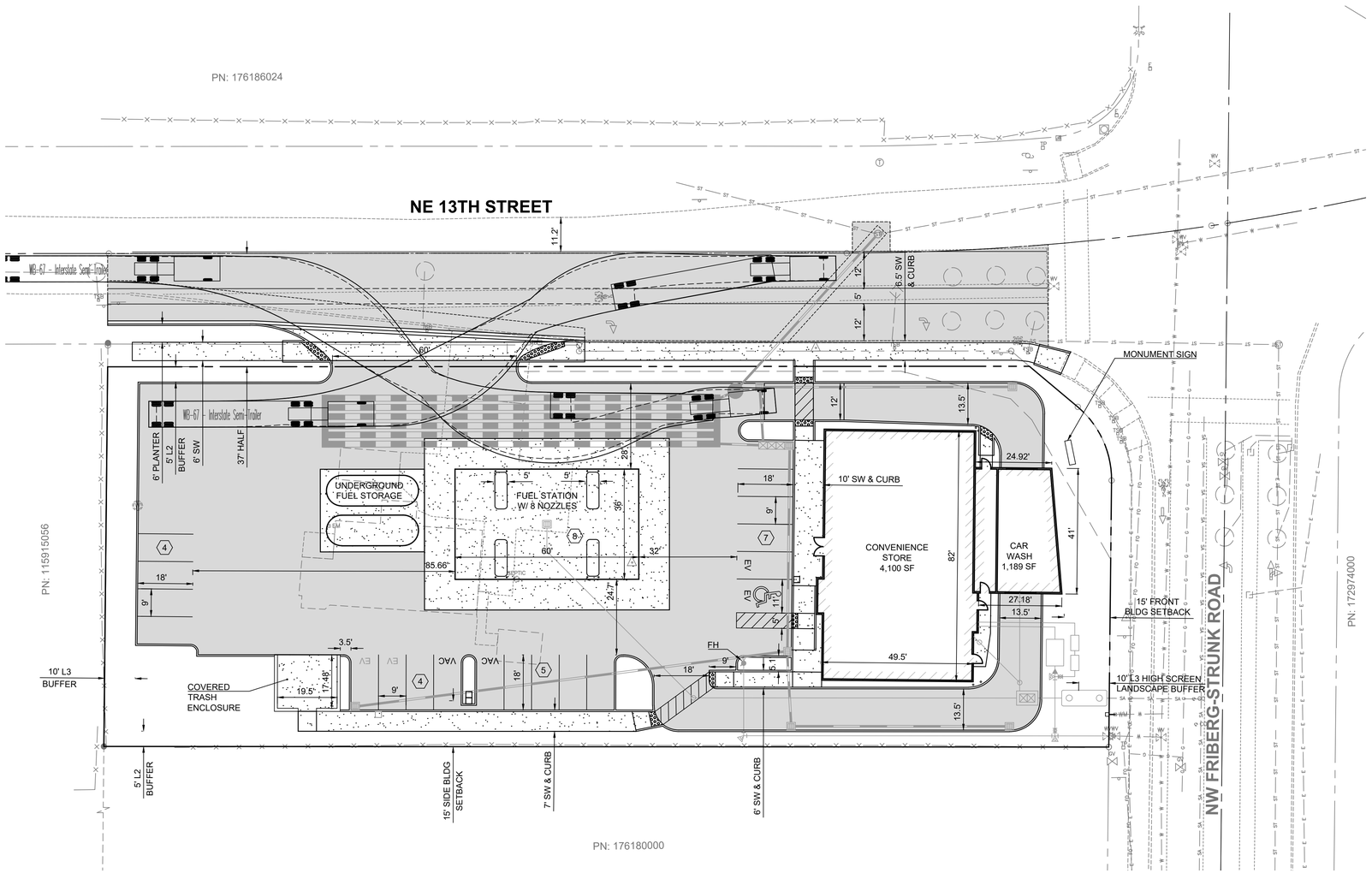

GENERAL NOTES

APPLICANT:
Taz Kahn
3993 NW Currawong Court
Camas, WA 98607
TKahnusa@gmail.com

OWNER:
Pak USA Camas LLC
20107 NE 13th Street
Camas, WA 98607

CIVIL ENGINEER:
PLS Engineering
Contact: Travis Johnson, PE
604 W Evergreen Blvd
Vancouver, WA 98660
PH: (360) 944-6519
pm@plsengineering.com

SITE ADDRESS:
Parcel # 176148-000
20101 NE 13TH ST
Camas, WA 98607

CIRCULATION DISCUSSION:
This plan shows that a WB-67 truck can enter and exit the site for deliveries. Note that the turning path does not impact access to the gas pumps. This is the largest possible design vehicle. Since it can access the site, smaller delivery vehicles can as well.

Preliminary Circulation Site Plan

Preliminary Circulation Plan For:

13th Street

A Subdivision Located In The City Of Camas, Washington

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PLS
Engineering - Surveying - Planning | 604 W. Evergreen Blvd., Vancouver, WA 98660 | PH (360) 944-6519 | Fax (360) 944-6539

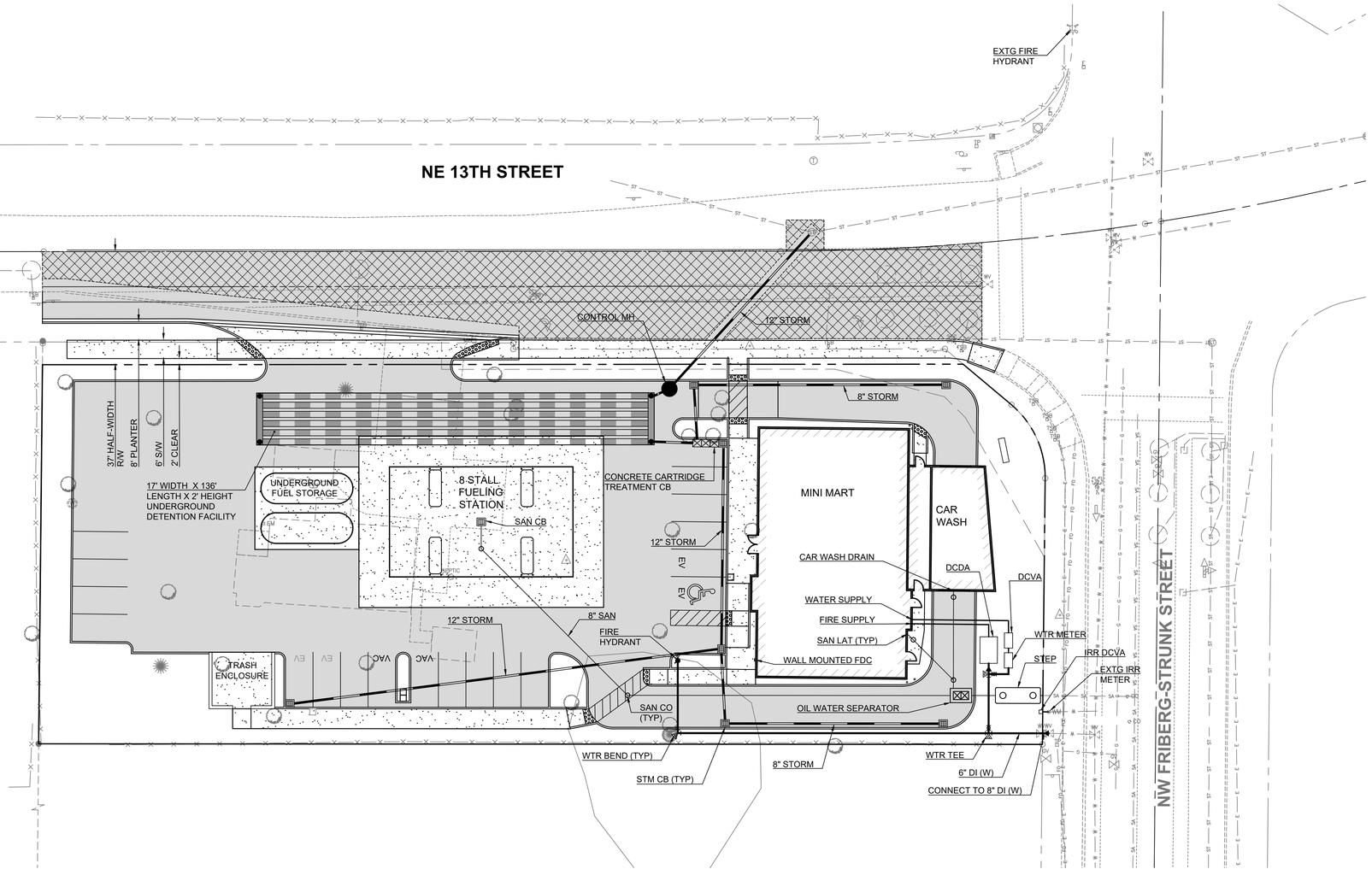
Revisions

1	2	3	4	5	6

SCOTT W. GILLILAND
STATE OF WASHINGTON
42773
REGISTERED PROFESSIONAL ENGINEER
11/2023

Project No. 3632	
SCALE:	H: 1" = 20' V: N/A
DESIGNED BY:	SWG
DRAFTED BY:	JSV
REVIEWED BY:	TGJ

1
1



Legend	
Proposed Asphalt Concrete	
Proposed Cement Concrete	
Proposed Grind and Overlay	

Scale 1" = 20'

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Preliminary Stormwater Plan For:

13th Street Site Plan

A Subdivision Located In The City Of Camas, Washington

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Revisions

1	2	3	4	5	6

SCOTT W. GILLILAND — STATE OF WASHINGTON — 42773 — REGISTERED PROFESSIONAL ENGINEER — 11/22/23

Project No. 3632	
SCALE:	H: 1" = 20' V: N/A
DESIGNED BY:	SWG
DRAFTED BY:	JSV
REVIEWED BY:	TGJ

1 / 1

13th Street Site Plan

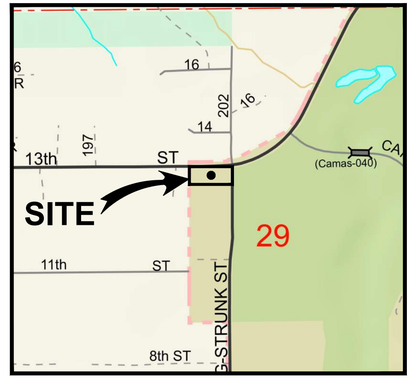
Located in the NW ¼ of Section 29, T2N, R3E, W.M.
City of Camas, Washington

PARCEL STATISTICS		
ZONE: Business Park BP		
Gross Site Area	42,208 SQ FT	0.97 AC
Critical Areas	0 SQ FT	0 AC
	REQUIRED	PROPOSED
Density	N/A	N/A
Maximum Lot Coverage	50%	20%
Setbacks		
North	15'	15'
South	15'	15'
East	15'	15'
West	50'	50'
Maximum Building Height	None	28'
Total Parking Spaces *	20	20
Standard Parking Spaces	70% Min of Total	20
Compact Spaces (C)	30% Max of Total	0
Gas Fill-up Stalls *	1 Per Nozzle (8)	8
ADA Spaces (ADA)	1 Per 25 of Total (1)	1
Spaces with Electric Vehicle Charging Infrastructure (E)	10% Now (2) + 10% Future (2)	2 Now + 2 Future

*Note: The Gas stalls are not actually parking stalls and do not count towards the required ADA and EV calculations.

REQUIRED PARKING CALCULATIONS:

4100 sf c-store @ 1/250 sf	= 17
8 nozzle gas station @ 1/nozzle	= 8
1 stall carwash w/ 2 employees @ 2/stall+1/2 employees	= 3
Total	= 28
Excluding Gas Fill-up Stalls	= 20



VICINITY MAP
NOT TO SCALE

Legend	
Proposed Asphalt Concrete	
Proposed Cement Concrete	
Proposed Grind and Overlay	

Scale 1" = 20'
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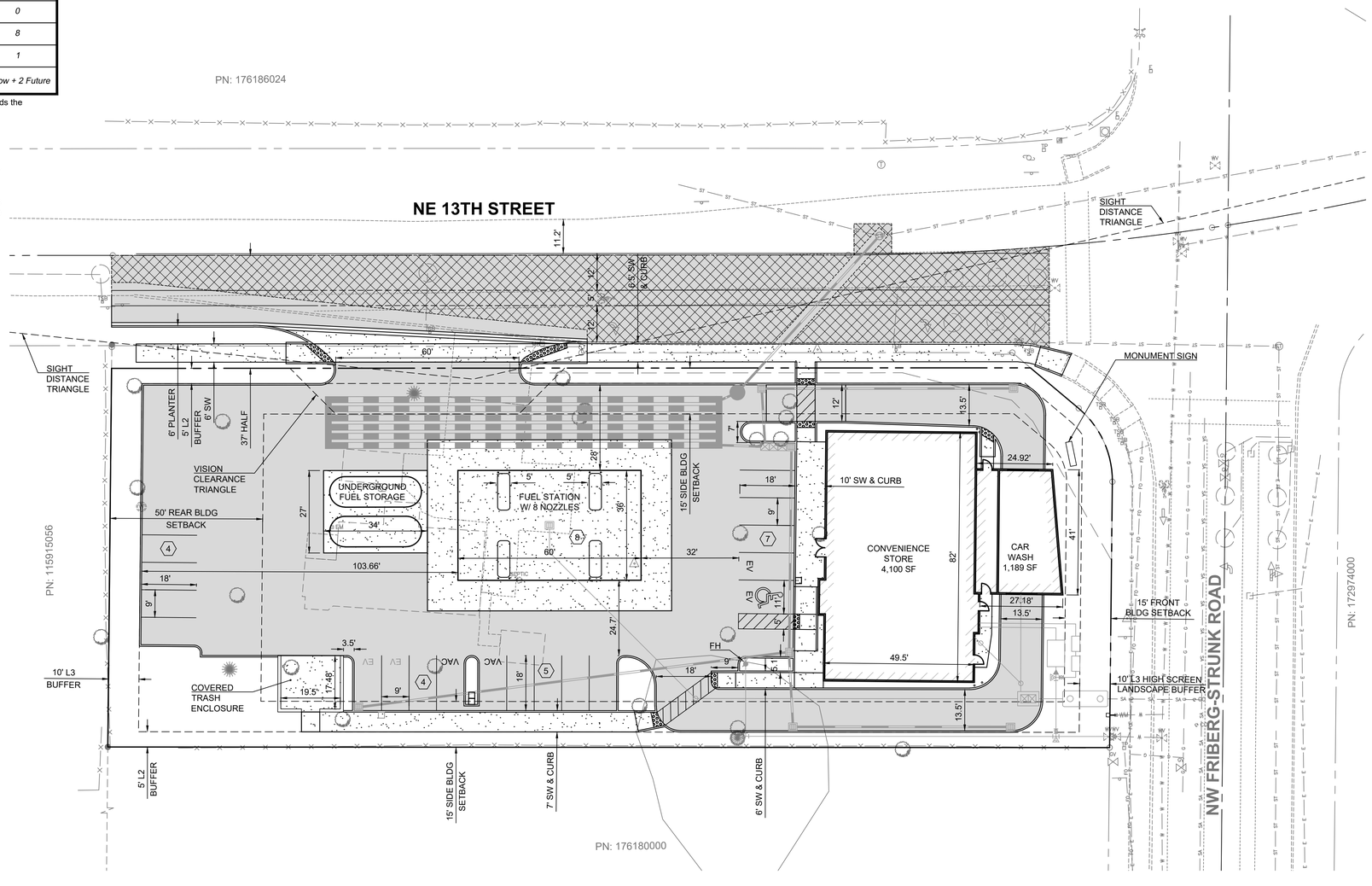

GENERAL NOTES

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CIVIL ENGINEER:
PLS Engineering
Contact: Travis Johnson, PE
604 W Evergreen Blvd
Vancouver, WA 98660
PH: (360) 944-6519
pm@plsengineering.com

SITE ADDRESS:
Parcel # 176148-000
20101 NE 13TH ST
Camas, WA 98607

SITE STATISTICS:
Existing Site Area: 42,257 SF (0.97 Acre)
ROW Dedication: 1,832 SF (0.04 Acre)
Developed Site: 42,257 SF (0.93 Acre)

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Preliminary Site Plan For:
13th Street Site Plan
A Subdivision Located In The City Of Camas, Washington

Revisions

1	2	3	4	5	6

SCOTT W. GILLILAND — STATE OF WASHINGTON — 42773 — REGISTERED PROFESSIONAL ENGINEER — 11/2023

Project No.	3632
SCALE:	H: 1" = 20' V: N/A
DESIGNED BY:	SWG
DRAFTED BY:	JSV
REVIEWED BY:	TGJ

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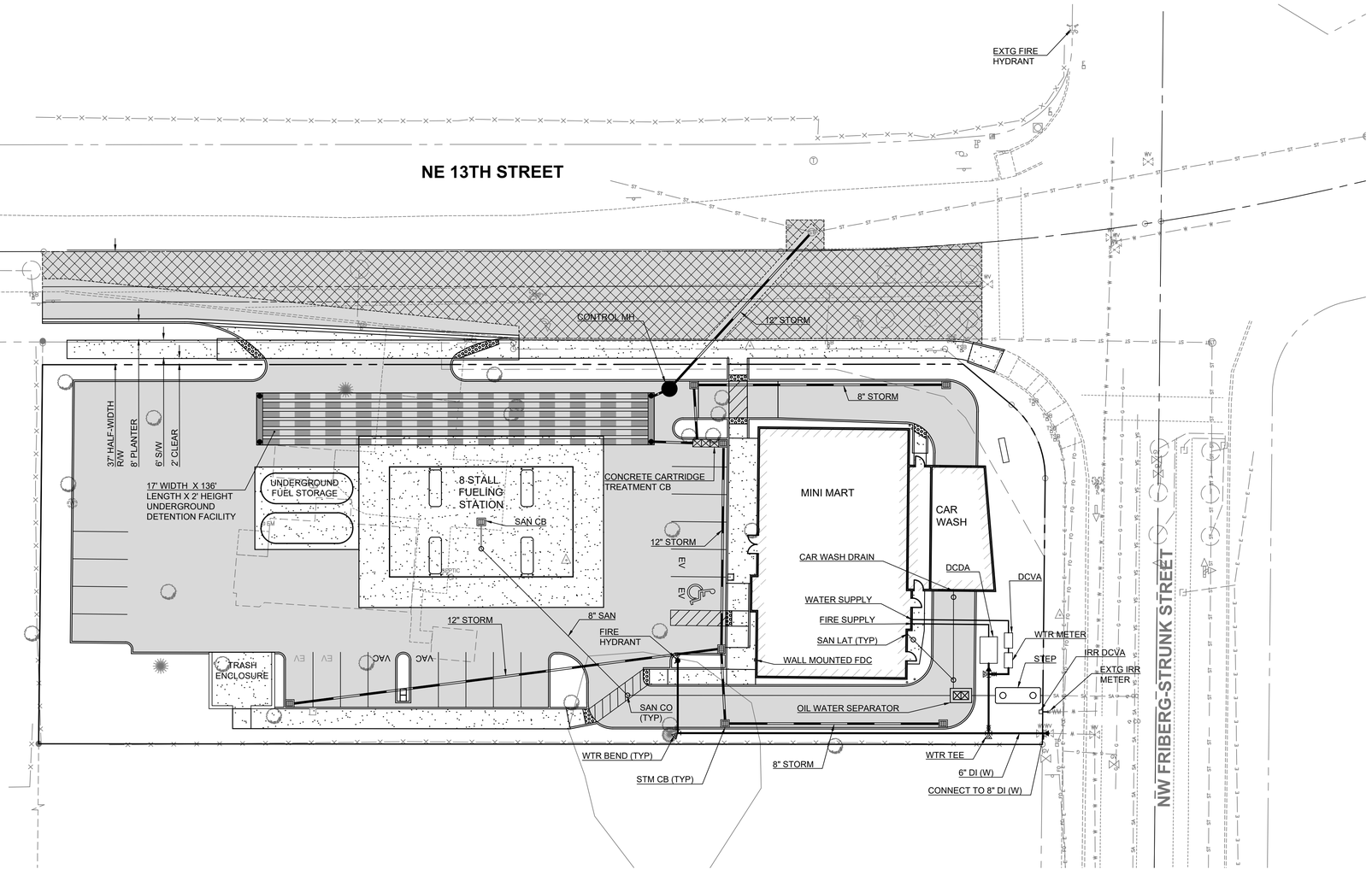

Legend	
Proposed Asphalt Concrete	
Proposed Cement Concrete	
Proposed Grind and Overlay	

Scale 1" = 20'

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Preliminary Utility Plan For:

13th Street Site Plan

A Subdivision Located In The City Of Camas, Washington

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Revisions

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SCOTT W. GILLILAND — STATE OF WASHINGTON — 42773 — REGISTERED PROFESSIONAL ENGINEER — 11/22/23

Project No. 3632	
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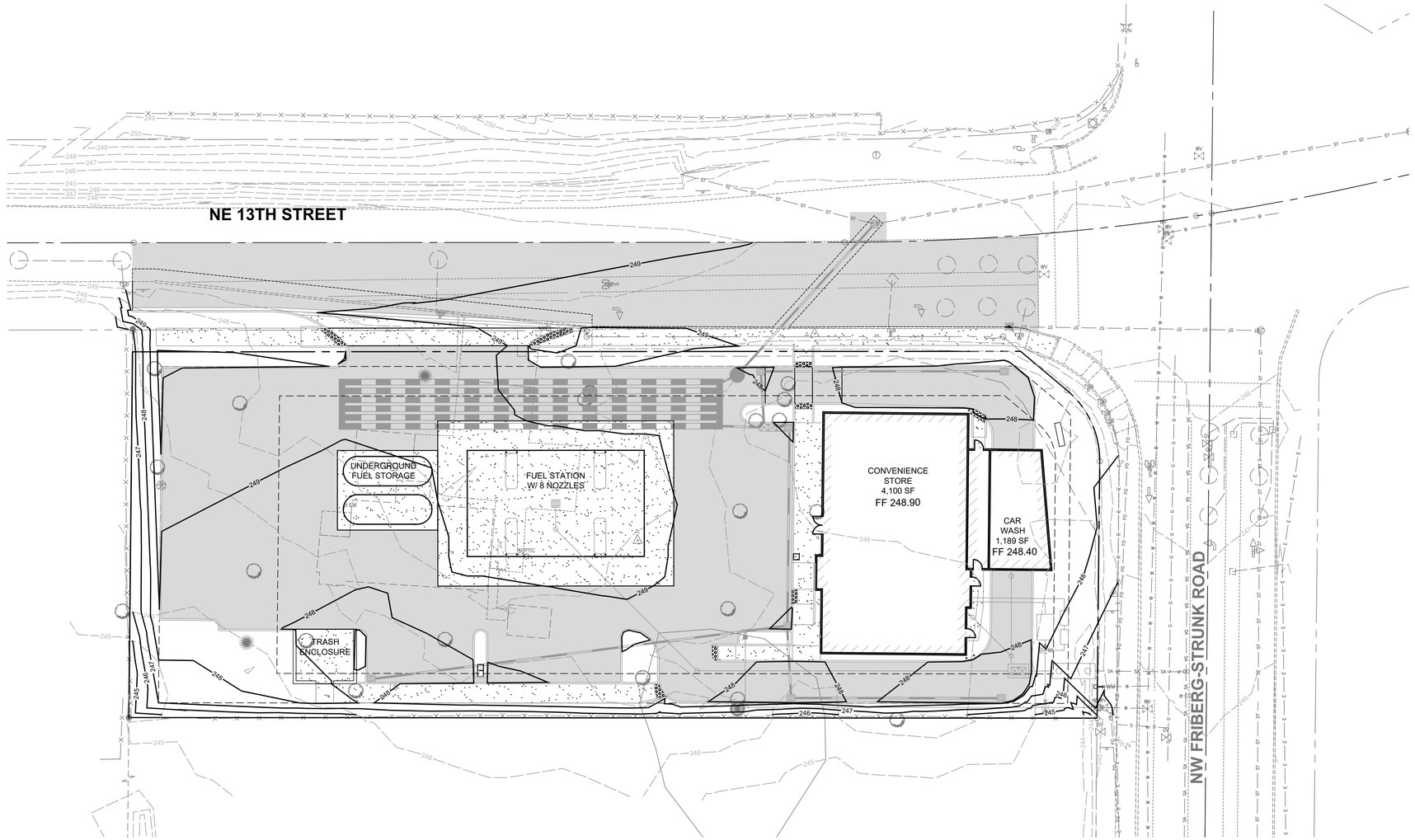

UNADJUSTED VOLUMES	
CUT	620 CY
FILL	1,730 CY

Legend	
Proposed Asphalt Concrete	
Proposed Cement Concrete	
Proposed Grind and Overlay	

Scale 1" = 20'

20 10 0 20

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Preliminary Grading Plan For:

13th Street Site Plan

A Subdivision Located In The City Of Camas, Washington

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Revisions

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SCOTT W. GILLILAND — STATE OF WASHINGTON — 42773 — REGISTERED PROFESSIONAL ENGINEER — 11/2023

Project No. 3632	
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DESIGNED BY:	SWG
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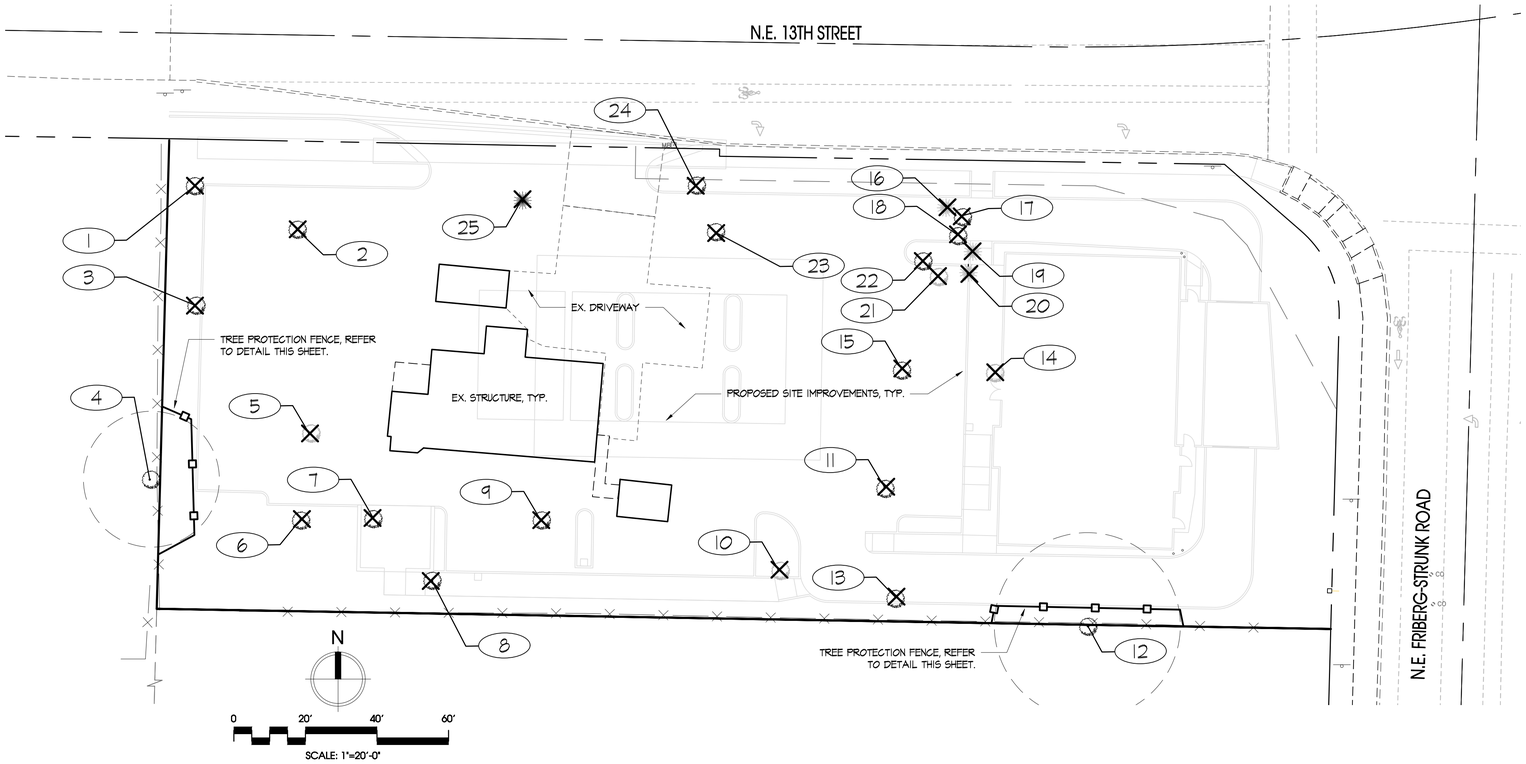
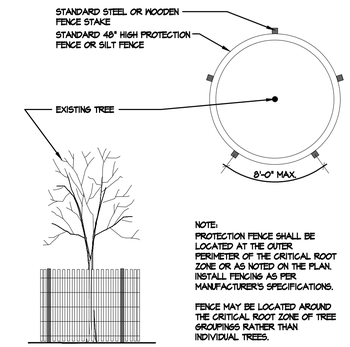
4 / 8



SITE STATISTICS	
93± AC	SITE AREA
19	TREE UNITS REQUIRED (20 / ACRE)
0	TREE UNITS RETAINED

SYMBOL LEGEND	
SYMBOL	DESCRIPTION
	EXISTING SIGNIFICANT DECIDUOUS TREE (12" CAL. OR GREATER)
	EXISTING SIGNIFICANT EVERGREEN TREE (8" CAL. OR GREATER)
	EXISTING DECIDUOUS (LESS THAN 12" CAL.)
	EXISTING EVERGREEN TREE (LESS THAN 8" CAL.)
	EXISTING SIGNIFICANT TREES TO BE REMOVED
	ROOT PROTECTION ZONE AREA (RPZ)
	TREE PROTECTION FENCE LOCATION (4' CHAIN LINK, ORANGE PVC FENCE OR SILT FENCE) (ALSO DENOTES AREA WHERE NO IMPACTS TO THE ROOT PROTECTION ZONE SHALL OCCUR). SEE DETAIL THIS SHEET.

CERTIFIED ARBORIST
ISA
Robert Phipps,
PN-8751A



NOTE:
PROTECTION FENCE SHALL BE LOCATED AT THE OUTER PERIMETER OF THE CRITICAL ROOT ZONE OR AS NOTED ON THE PLAN. INSTALL FENCING AS PER MANUFACTURER'S SPECIFICATIONS.

FENCE MAY BE LOCATED AROUND THE CRITICAL ROOT ZONE OF TREE GROUPINGS RATHER THAN INDIVIDUAL TREES.

A Tree Protection Fencing Detail
Not To Scale — SECTION / PLAN VIEW

TREE PROTECTION TIME LINE & NARRATIVE

EXISTING ON-SITE AND OFF-SITE TREE LOCATIONS AND SIZES HAVE BEEN OBTAINED VIA SURVEY INFORMATION AND SITE OBSERVATIONS.

NO EXISTING TREES WITHIN THE PROJECT BOUNDARIES ARE PROPOSED TO BE RETAINED.

TREE PROTECTION FENCING SHALL BE PLACED AS SHOWN TO PROTECT THE OFF-SITE TREE NEAR THE S.E. CORNER OF THE SITE.

TREE PROTECTION / EROSION CONTROL FENCING SHALL BE ESTABLISHED PRIOR TO EXCAVATION. IT IS RECOMMENDED TO BE INSTALLED AT THE SAME TIME EROSION CONTROL MEASURES ARE INSTALLED. WHERE TREE FENCE AND EROSION CONTROL FENCE ARE LOCATED AT THE SAME LOCATION, EROSION FENCE THEN SERVES AS TREE PROTECTION FENCE. SEE DETAIL THIS SHEET.

TREES DETERMINED TO BE A SAFETY HAZARD AT THE TIME OF CONSTRUCTION MAY BE REMOVED. THE SITE WILL MAINTAIN A MINIMUM TREE UNIT COUNT OF 20 TREES PER ACRE IN ACCORDANCE WITH CITY OF CAMAS MUNICIPAL CODE CC 18.13.051.

TREE PROTECTION NOTES

1) NO PERSON MAY CONDUCT ANY OF THE FOLLOWING ACTIVITIES WITHIN THE DRIP LINE OF THE TREES DESIGNATED TO REMAIN INCLUDING, BUT NOT LIMITED TO: PARKING EQUIPMENT, FUELING, SERVICING EQUIPMENT, PLACING SOLVENTS, STORING BUILDING MATERIAL AND SOIL DEPOSITS, DUMPING CONCRETE WASHOUT AND LOCATING BURN HOLES.
2) DURING CONSTRUCTION, NO PERSON SHALL ATTACH ANY OBJECT TO THE TREES DESIGNATED FOR PROTECTION.
3) THE CONTRACTOR SHALL FOLLOW THE GRADING PLAN PROVIDED BY THE PROJECT CIVIL ENGINEER. GRADING ACTIVITIES SHALL BE CONDUCTED IN A MANNER TO MINIMIZE THE IMPACTS TO THE TREES MARKED FOR PRESERVATION.
4) THE EXCAVATOR SHALL KEEP A SHARP PAIR OF LOPPERS AND A SHARP 12" PRUNING SAW ACCESSIBLE ON-SITE DURING GRADING OPERATIONS. ANY ROOTS LARGER THAN ½" SHALL BE PRUNED TO THE FACE OF THE CUT (USING A SHARP PAIR OF LOPPERS OR A SHARP 12" PRUNING SAW) AND SHALL NOT BE TORN FROM THE GROUND BY MECHANICAL EXCAVATION.
5) SPECIAL CARE SHALL BE EXERCISED IN WORKING NEAR THE TREES TO BE RETAINED. THIS INCLUDES HAND EXCAVATING THE ROOTS AT THE EDGE OF THE EXCAVATION AND CUTTING ROOTS WITH A LOPPER OR PRUNING SAW. PRUNING THE ROOTS AT THE EDGE OF EXCAVATION WILL MINIMIZE BREAKAGE OF HEALTHY ROOTS BEYOND THE EDGE OF THE PROPOSED EXCAVATION.
6) EXCEPT FOR THE PROPOSED IMPROVEMENTS SHOWN WITHIN THE DRIP LINES OF THE TREES NOTED TO BE RETAINED THE GRADE SHALL NOT BE ELEVATED OR REDUCED FROM EXISTING GRADE.
7) IF THE GRADE ADJACENT TO A PRESERVED TREE IS RAISED SUCH THAT IT COULD SLOUGH OR ERODE INTO THE TREE'S DRIP LINE, IT SHALL BE PERMANENTLY STABILIZED.
8) THE TREES NOTED TO RETAINED SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION. CLEARING OPERATIONS SHALL BE CONDUCTED SO AS TO EXPOSE THE SMALLEST PRACTICAL AREA OF SOIL TO EROSION FOR THE LEAST POSSIBLE TIME. REFER TO THE PROJECT'S EROSION CONTROL PLAN FOR MORE INFORMATION.
9) THE PROJECT SHALL NOT INSTALL AN IMPERVIOUS SURFACE OTHER THAN THOSE SPECIFICALLY SHOWN ON THE PLANS WITHIN THE DRIP LINE OF THE TREES TO BE RETAINED.
10) UTILITY TRENCHES SHALL BE LOCATED OUTSIDE OF THE DRIP LINE OF THE TREES TO BE RETAINED.
11) ONGOING TREE MAINTENANCE SHALL BE THE RESPONSIBILITY OF THE LAND OWNER. TREES SHALL BE MAINTAINED IN ACCORDANCE WITH ANSI AMERICAN NATIONAL STANDARDS INSTITUTE'S AS WELL AS OTHER APPLICABLE FEDERAL, STATE AND LOCAL STANDARDS PERTAINING TO TREE CARE OPERATIONS.

- ANSI Z133 ARBORICULTURAL OPERATIONS- SAFETY REQUIREMENTS
- ANSI A300 PART 1 PRUNING

Tree Data

Tree No.	Species	DBH	RPZ	Tree Condition	Condition Notes
1	Prunus spp. (Plum)	12"	12'	poor	Diseases or Conks, Visible Decay
2	Malus spp. (Apple)	19"	19'	fair	Diseases or Conks, Leaning
3	Malus spp. (Apple)	13"	13'	fair	Dieback 30% - 60%
4	Robinia pseudoacacia (Black Locust)	19"	19'	fair	Heavy Leaning (>60%)
5	Acer palmatum (Japanese maple)	9"	9'	poor	Dieback 30% - 60%, Visible Decay
6	Thuja plicata (Western Redcedar)	18"	18'	good	
7	Malus spp. (Apple)	18"	18'	poor	Branch Failures, Biotic Damage (Pests/Fungus), Dieback 60%-90%, Diseases or Conks, Visible Decay
8	Acer palmatum (Japanese maple)	12"	12'	good	
9	Malus spp. (Apple)	17"	17'	fair	Biotic Damage (Pests/Fungus), Dieback 30% - 60%, Leaning
10	Malus spp. (Apple)	11"	11'	poor	Included Bark, Dieback 30% - 60%, Leaning
11	Acer saccharum (Sugar Maple)	22"	22'	good	Dieback 30% - 60%
12	Aesculus californica (California Buckeye)	26"	26'	fair	Branch Failures, Dieback 30% - 60%, Leaning
13	Quercus garryana (OR White Oak)	43"	43'	fair	Leaning
14	Aesculus californica (California Buckeye)	10"	10'	fair	Dieback 30% - 60%
15	Robinia pseudoacacia (Black Locust)	25"	25'	fair	Branch Failures, Dieback 30% - 60%, Leaning
16	Picea pungens (Blue Spruce)	6"	6'	poor	Branch Failures, Branches Suppressed, Dieback 30% - 60%, Visible Decay
17	Acer saccharum (Sugar Maple)	18"	18'	poor	Branch Failures, Branches Suppressed, Dieback 30% - 60%, Visible Decay
18	Acer saccharum (Sugar Maple)	19"	19'	poor	Branch Failures, Branches Suppressed, Dieback 30% - 60%, Visible Decay
19	Picea pungens (Blue Spruce)	7"	7'	poor	Branch Failures, Branches Suppressed, Dieback 30% - 60%, Visible Decay
20	Thuja occidentalis (Aborvitae)	6"	6'	poor	Branch Failures, Branches Suppressed, Co-dominant, Dieback 30% - 60%, Visible Decay
21	Malus spp. (Apple)	6"	6'	poor	Branch Failures, Branches Suppressed, Dieback 30% - 60%, Visible Decay
22	Acer saccharum (Sugar Maple)	20"	20'	poor	Branch Failures, Branches Suppressed, Dieback 30% - 60%, Visible Decay
23	Acer palmatum (Japanese maple)	15"	15'	good	
24	Robinia pseudoacacia (Black Locust)	33"	33'	poor	Branch Failures, Dieback 30% - 60%, Leaning, Visible Decay
25	Thuja plicata (Western Redcedar)	44"	44'	fair	Leaning, Visible Decay

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Creating Solution to Complex Issue
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Suite 275
VANCOUVER, WA 9866
VOICE: 360-750-9000 FAX: 360-713-61
www.planningsolutionsinc.co

PRELIMINARY
NOT FOR CONSTRUCTION
PBS ENGINEERING + ENVIRONMENTAL SURVEYING PBSUSA.COM

13TH STREET GAS STATION

20101 NE 13th Street
Camas, Washington

DRAWN: CB/RP	CHECKED: CB
SCALE: 1" = 20'-0"	DATE: 11.03.23
JOB #: 23-1837	
ISSUED FOR: PLR	
REVISIONS:	
1	
2	
3	
4	
5	
6	

SHEET NAME:
EXISTING TREE SURVEY

SHEET #:
TP
SHEET 5 OF 8

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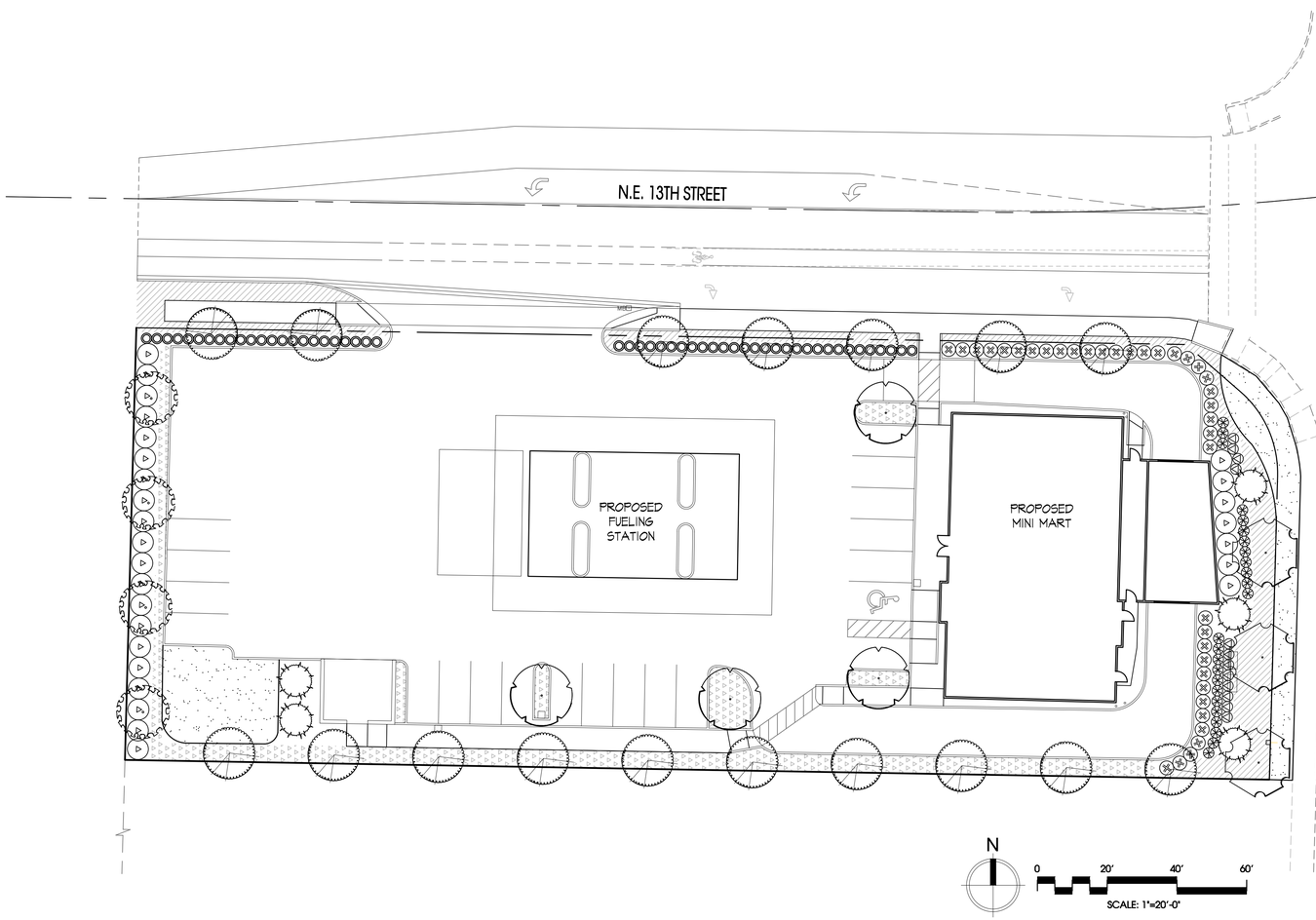

Trees and Shrubs in Sight Distance Triangles, Typ.
All shrubs within sight distance triangles shall be maintained so that foliage height above pavement does not exceed 2.5 feet. Street trees within sight distance triangles shall be limbed up to a height of 10 feet consistent with ANSI A300 standards to provide for sight distance visibility.

TREE LEGEND

SYMBOL	BOTANICAL / COMMON NAME	SIZE	QUANTITY	TREE UNITS
TREES				
	ACER RUBRUM 'ARMSTRONG' ARMSTRONG MAPLE	2" cal. min.	17	17
	CARPINUS BETULUS 'FASTIGIATA' PYRAMIDAL EUROPEAN HORNBEAM	2" cal. min.	4	4
	LIRIODENDRON TULIPERA 'JFS-OZ' EMERALD CITY TULIP TREE	2" cal. min.	3	3
	THUJA PLICATA 'HOGAN' WESTERN RED CEDAR	6' HT min.	5	5
	TILIA CORDATA 'CORZAM' CORINTHIAN LINDEN	2" cal. min.	4	4
			TOTAL TREE UNITS	33
SHRUBS				
	LIGUSTRUM JAPONICUM 'TEXANUM' WAX PRIVET	5 GAL.	38	
	MAHONIA REPENS CREEPING OREGON GRAPE	2 GAL.	12	
	MYRICA CALIFORNICA PACIFIC WAX MYRTLE	5 GAL.	27	
	PRUNUS LAUROCERASUS 'OTTO LUYKEN' OTTO LUYKEN'S LAUREL	5 GAL.	52	
	VIBURNUM DAVIDII DAVID VIBURNUM	2 GAL.	24	
GROUNDCOVER				
	ARCTOSTAPHYLOS UVA URSI 'MASS.' MASSACHUSETTS KINNICKINNICK	1 GAL.	30" O.C.	
	RUBUS CALYCINOIDES CREEPING RASPBERRY	1 GAL.	30" O.C.	
	LAWN (SEED OR SOD) PER OWNER			

TREE UNIT SUMMARY

SITE AREA	.93± AC
REQUIRED TREE UNITS / ACRE	20
TOTAL REQUIRED TREE UNITS	19
EXISTING TREE UNITS RETAINED	0
TREE UNITS PROPOSED TO PLANT	33
TREE UNITS PROVIDED	33

PLANTING NOTES

1. ALL BOUNDARIES, EASEMENTS, UTILITIES AND LEGAL ENCUMBRANCES TO BE CONFIRMED WITH OWNER PRIOR TO BEGINNING WORK. PROPERTY LINES AND SURVEY INFORMATION PROVIDED BY **PLS ENGINEERING**
2. IN NO WAY IS THIS PLAN TO BE INTERPRETED TO EXCEED THE LEGAL BOUNDARIES OF THE OWNER'S REAL PROPERTY.
3. THE LANDSCAPE DESIGNER ASSUMES NO RESPONSIBILITY FOR THE LOCATION OF BOUNDARIES, UTILITIES AND WETLANDS.
4. THIS PLAN SHALL BE INSTALLED TO MEET ALL APPLICABLE CITY, COUNTY, STATE AND FEDERAL CODES.
5. THIS PLAN SHALL BE CONSIDERED PRELIMINARY UNTIL APPROVED BY ALL GOVERNING AGENCIES. IMPLEMENTATION OF THIS PLAN SHALL NOT PROCEED UNTIL ISSUANCE OF ALL RELATED PERMITS.
6. PLANT QUANTITIES ARE FOR INFORMATION ONLY. IN CASE OF ANY DISCREPANCY, THE PLAN SHALL GOVERN.
7. ALL WORK IS TO BE PERFORMED BY LICENSED CONTRACTORS AND EXPERIENCED WORKERS.
8. THE CONTRACTOR IS TO VERIFY THE LOCATION OF EXISTING UNDERGROUND UTILITIES AND STRUCTURES PRIOR TO PERFORMING ANY EXCAVATION. CONTRACTOR SHALL REPAIR ANY DAMAGE TO UTILITIES CAUSED BY THE CONTRACTOR'S WORK, AT NO ADDITIONAL COST TO THE OWNER. CONTACT ALL UTILITY PROVIDERS SERVING THE SITE AREA 48 HOURS PRIOR TO ANY EXCAVATION.
9. ALL PLANT MATERIALS SHALL MATCH SPECIFICATIONS PER SPECIES AND SHALL COMPLY WITH ANSI Z60.1 'STANDARD FOR NURSERY STOCK'.
10. THE CONTRACTOR SHALL ADHERE TO THE WASHINGTON ASSOCIATION OF NURSERYMEN'S GUIDELINES FOR PLANTING PRACTICES.
11. THE CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING ELEMENTS ON AND OFF SITE, RESULTING FROM THE CONTRACTOR'S WORK.
12. THE CONTRACTOR IS RESPONSIBLE FOR THE VIABILITY OF ALL PLANT MATERIAL FOR 2 YEARS AFTER COMPLETION OF PLANTING. DISEASED, DYING, OR DEAD PLANT MATERIAL SHALL BE REPLACED BY THE CONTRACTOR DURING THE TWO YEAR PERIOD AND MAINTAINED FOR AN ADDITIONAL 2 YEAR PERIOD.
13. IMMEDIATELY UPON BID AWARD, CONTRACTOR SHALL SECURE THE PLANT MATERIALS AS SPECIFIED FROM AVAILABLE SOURCES. IN THE EVENT THAT PLANT MATERIALS ARE NOT AVAILABLE, CONTACT LANDSCAPE ARCHITECT FOR APPROVED SUBSTITUTIONS. NO SUBSTITUTION FOR PLANT MATERIAL WILL BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL OF THE LANDSCAPE ARCHITECT.
14. TOP DRESS ALL SHRUB AND GROUND COVER AREAS (NOT LAWN) WITH 3" OF FIR BARK MULCH. SUBMIT SAMPLE TO THE LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO CONSTRUCTION.
15. TREE LOCATIONS MAY BE ADJUSTED IN THE FIELD TO SUIT SITE REQUIREMENTS AS DIRECTED BY THE LANDSCAPE ARCHITECT.
16. THE CONTRACTOR SHALL ENSURE THAT ALL EXCAVATED PLANTING PITS HAVE POSITIVE DRAINAGE. PLANT PITS FULLY FLOODED WITH WATER SHALL DRAIN WITHIN (12) HOURS OF FILLING.
17. FINISH GRADE SHALL BE SET TO ALLOW POSITIVE DRAINAGE
18. ROTOTILL 2" OF COMPOST INTO ALL PLANTED AREAS.
19. INCORPORATE PEAT INTO THE ROOT ZONE OF RHODODENDRONS, AZALEAS AND OTHER ACID LOVING PLANTS.
20. INCORPORATE 10-20-20 FERTILIZER INTO THE ROOT ZONE OF ALL NEW PLANTINGS.
21. RONSTAR, OR APPROVED EQUAL, PREEMERGENT HERBICIDE TO BE APPLIED TO ALL PLANTED AREAS PER MANUFACTURERS INSTRUCTIONS.
22. EXISTING VEGETATION TO BE SPRAYED WITH ROUNDUP, OR APPROVED EQUAL, PER MANUFACTURERS INSTRUCTIONS. SUFFICIENT TIME SHALL BE GIVEN TO ALLOW EXISTING MATERIAL TO DIE. REMOVE EXISTING 27. THE PROPERTY OWNER IS RESPONSIBLE FOR MAINTAINING TURF PLANTED WITHIN THE RIGHT OF WAY.
23. CROWN LAWN AREAS AND GRADE TO PROVIDE POSITIVE DRAINAGE.
24. ROLL LAWN AREA TO INSURE PROPER COMPACTION TO MINIMIZE SETTLING.
25. AMEND SOIL IN LAWN AREAS WITH 80 LBS. OF DOLOMITE LIME AND 40 LBS. OF 10-20-20 SLOW RELEASE FERTILIZER OR EQUIVALENT. PROVIDE A 3" LAYER OF SANDY LOAM TOPSOIL FOR LAWN AND BED AREA.
26. SEED LAWN AREAS WITH GRASS SEED MANUFACTURER'S RECOMMENDATIONS. COVER SEED WITH FINE MULCH APPLIED WITH ROLLER OR HYDROSEED.
27. THE PROPERTY OWNER IS RESPONSIBLE FOR MAINTAINING TURF PLANTED WITHIN THE RIGHT OF WAY.
28. PLANT MATERIAL SHALL BE PLANTED W/ ROOT CROWN 1" ABOVE FINISHED GRADE TO ALLOW POSITIVE DRAINAGE AWAY FROM CROWN.
29. STAKE ALL TREES OVER 6 FT. IN HEIGHT PER DETAILS ON THIS SHEET.
30. REFER TO DETAILS FOR ADDITIONAL INFORMATION.
31. ALL PLANTINGS SHALL BE HAND WATERED OR IRRIGATED BY AN AUTOMATIC UNDERGROUND SPRINKLER SYSTEM.
32. ALL PLANT MATERIALS FURNISHED ARE TO BE HEALTHY, UNIFORMLY BRANCHED AND WITH WELL DEVELOPED FIBROUS ROOT SYSTEMS.
33. ALL PLANT MATERIALS FURNISHED ARE TO BE FREE FROM DEAD OR BROKEN BRANCHES, LICHENS, SCARS, BROKEN BARK OR WOUNDS. ALL PLANT MATERIALS WILL BE INSECT, WEED, AND DISEASE FREE ACCORDING TO THE REQUIREMENTS OF THE **WASHINGTON** STATE DEPARTMENT OF AGRICULTURE FOR NURSERY PLANT MATERIALS SOLD FOR WHOLESALE OR RETAIL. ALL PRUNING WOUNDS MUST BE WELL HEALED WITH NO EVIDENCE OF DECAY.
34. FIELD CONFIRM ALL SITE CONDITIONS, AREAS AND SIZES PRIOR TO BIDDING & CONSTRUCTION. DO NOT SCALE FROM PLANS.

IRRIGATION NOTE

ALL LANDSCAPE AREAS SHALL BE HAND WATERED OR IRRIGATED WITH AN AUTOMATIC DRIP AND/OR SPRAY IRRIGATION SYSTEM. REFER TO CIVIL ENGINEERING PLANS FOR WATER SOURCE.

REFER TO SHEET PD FOR LANDSCAPE DETAILS AND NOTES
REFER TO SHEET ID FOR IRRIGATION DETAILS AND NOTES.

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STATE OF WASHINGTON · CHRISTOPHER A. BALMER · EXP. · LICENSED LANDSCAPE ARCHITECT

PRELIMINARY NOT FOR CONSTRUCTION SUBJECT TO CITY APPROVAL

13TH STREET GAS STATION

20101 NE 13th Street
Camas, Washington

DRAWN: CB | CHECKED: CB
SCALE: 1" = 20'-0" | DATE: 11.08.23
JOB #: 23-1887
ISSUED FOR: PLR
REVISIONS:
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SHEET NAME:

SHEET #: L1
SHEET 6 OF 8

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LANDSCAPING GENERAL NOTES:

1. DEVELOPER SHALL SUBMIT A LANDSCAPE PLAN SHOWING PLANT TYPE, LOCATION, AND QUANTITY OF PLANTS, THAT IS DESIGNED BY A QUALIFIED LANDSCAPE DESIGNER.
2. SHOW THE LOCATION OF SIDEWALK, LIGHT POLES, MAIL BOXES, DRIVEWAYS, FIRE HYDRANTS, INTERSECTIONS, AND ANY OTHER APPURTENANCE THAT MAY INFLUENCE THE PLACEMENT OF PLANTS.
3. LANDSCAPING SHALL BE SELECTED AND LOCATED TO DETER SOUND, FILTER AIR CONTAMINANTS, CURTAIL EROSION, MINIMIZE STORM WATER RUN-OFF, CONTRIBUTE TO LIVING PRIVACY, REDUCE THE VISUAL IMPACTS OF BUILDINGS/EQUIPMENT AND PAVED AREAS, SCREEN, REDUCE GLARE, AND EMPHASIZE OR SEPARATE OUTDOOR SPACES OF DIFFERENT USES OR CHARACTER.
4. LANDSCAPING SHALL BE DESIGNED TO BE HARMONIOUS WITH THE LOCAL SETTING AND WITH NEIGHBORING DEVELOPMENTS.
5. PLANTS AND TREES SHALL COMPLEMENT OR SUPPLEMENT SURROUNDING NATURAL VEGETATION.
6. PLANTS AND TREES CHOSEN SHALL BE IN SCALE WITH THE STRUCTURES AND EQUIPMENT DEVELOPMENT, KEEPING IN MIND THE MATURE SIZE OF PLANTINGS.
7. MINIMUM LANDSCAPING AS A PERCENT OF GROSS SITE AREA SHALL BE 15%.
8. DEVELOPER SHALL PROVIDE AN IRRIGATION PLAN.
   - 8.1 APPROPRIATE IRRIGATION SYSTEMS SHALL BE INSTALLED WHERE NEEDED TO ASSURE LANDSCAPING SUCCESS.
   - 8.2 DESIGN OF LANDSCAPING THAT INCLUDES XERISCAPE PRINCIPLES IS ENCOURAGED TO REDUCE LONG-TERM MAINTENANCE DEMANDS AND TO CONSERVE WATER.
   - 8.3 XERISCAPE IS DEFINED AS LANDSCAPE DESIGN, WHICH WOULD INCORPORATE PLANT MATERIALS THAT REQUIRE LITTLE OR NO IRRIGATION AND RELY ON NATURAL MOISTURE AND RAINFALL FOR SURVIVAL ONCE ESTABLISHED.
9. LANDSCAPE SHALL BE DESIGNED WITH MAINTENANCE IN MIND:
   - 9.1 DEVELOPER SHALL PROVIDE A MAINTENANCE PLAN DESCRIBING FUNDING, RESPONSIBILITY, AND FREQUENCY OF MAINTENANCE.
   - 9.2 PLANTS AND TREES THAT MINIMIZE UPKEEP AND MAINTENANCE SHALL BE SELECTED.
   - 9.3 TREES, AS THEY GROW, SHALL BE PRUNED TO THEIR NATURAL FORM TO PROVIDE AT LEAST 10 FEET OF CLEARANCE ABOVE SIDEWALKS AND 12 FEET ABOVE STREET ROADWAY SURFACES.
   - 9.4 SHRUBS SHALL BE MAINTAINED TO A MAXIMUM HEIGHT OF 42 INCHES FROM TOP OF CURB TO TOP OF PLANT. ENSURE THAT SHRUBS ARE TRIMMED BACK FROM FACE OF CURB.
10. WHERE THERE ARE OVERHEAD UTILITY LINES, TREE SPECIES THAT WILL NOT INTERFERE WITH THOSE LINES SHALL BE CHOSEN. DEVELOPER IS TO VERIFY WITH UTILITY ON SPECIES SELECTION.
11. TREES SHALL NOT BE PLANTED WITHIN 2 FEET OF ANY PERMANENT HARD SURFACE PAVING OR WALKWAY.
12. PARKING AND LOADING AREAS SHALL BE SCREENED FROM HORIZONTAL VIEW WITH THE USE OF DENSE LANDSCAPING, MOUNDS OR BERMS.
13. PERIMETER AND SECURITY FENCING SHALL BE CONSTRUCTED TO MINIMIZE VISUAL IMPACT. WALLS OR FENCES SEPARATING ADJOINING PARCELS MAY BE LOCATED AT THE PROPERTY LINE. SECURITY FENCING SHALL BLEND INTO AND BE COMPATIBLE WITH LANDSCAPING AND SURROUNDING ENVIRONMENT. FENCING SHALL HAVE EARTH TONE COLORS OF BROWN, TAN GRAY, OR GREEN. WALLS SHALL BE CONSTRUCTED OF MATERIALS COMPATIBLE WITH THE BUILDING ACRHITECTURE, LANDSCAPING, AND SURROUNDING ENVIRONMENT.
14. SITE AND BUILDING LIGHTING SHALL BE DESIGNED TO MINIMIZE GLARE OR OBJECTIONABLE EFFECTS TO THE ADJACENT PROPERTIES. SITE LIGHTING POLES SHALL NOT EXCEED 20 FEET IN HEIGHT AND SHALL DIRECT THE LIGHT DOWNWARD. LIGHTING SOURCES VIEWED FROM ABOVE OR BELOW ON ADJACENT PROPERTY SHALL BE SHIELDED. BUILDING LIGHTING IS TO BE CONCEALED AND INDIRECT. SITE LIGHTING IS TO BE DESIGNED TO PROVIDE UNIFORM DISTRIBUTION AND THE LIGHT LEVELS SHALL BE ADEQUATE FOR REASONABLE SECURITY AND SAFETY ON THE PREMISES.
15. EARTH BERMS MAY BE USED TO PROVIDE VARIATION IN THE GROUND PLANE AND FOR SCREENING INTERIOR PROTIONS OF THE SITE. CARE MUST BE TAKEN IN THEIR DESIGN TO AVOID CREATING AN ARTIFICIAL APPEARING LANDSCAPE. THE BERMED AREAS SHALL BE AS LONG, AS GRADUAL, AND AS GRACEFUL AS SPACE WILL ALLOW, AND SHOULD HAVE A MINIMUM HEIGHT ABOVE SURROUNDING GRADE OF THREE FEET. MAXIMUM SLOPES FOR BERMED AREAS SHALL BE 3:1 FOR TURF AREAS AND 2:1 FOR GROUNDCOVER AREAS.

LANDSCAPING W/IN R.O.W. NOTES:

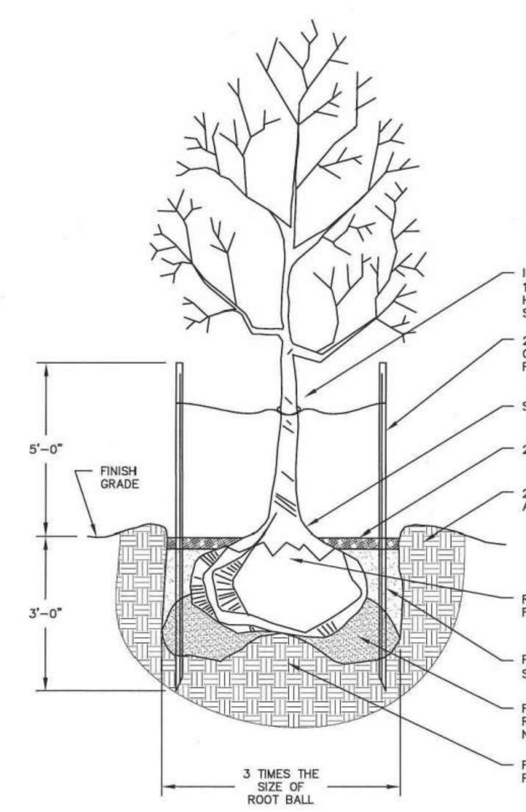
1. TREES SHALL NOT BE PLANTED CLOSER THAN 25 FEET FROM THE CURB LINE OF THE INTERSECTIONS OF STREETS OR ALLEYS, AND NOT CLOSER THAN 10 FEET FROM DRIVEWAYS, FIRE HYDRANTS, OR UTILITY POLES.
2. STREET TREES SHALL NOT BE PLANTED CLOSER THAN 20 FEET TO LIGHT STANDARDS. EXCEPT FOR PUBLIC SAFETY, NO NEW LIGHT STANDARD SHOULD BE POSITIONED CLOSER THAN 10 FEET TO ANY EXISTING STREET TREE, AND PREFERABLY SUCH LOCATIONS WILL BE AT LEAST 20 FEED DISTANCE.
3. TREES SHALL NOT BE PLANTED CLOSER THAN 2-1/2 FEET FROM THE FACE OF THE CURB EXCEPT AT INTERSECTIONS, WHERE IT SHOULD BE 25 FEET FROM THE CURB IN A CURB RETURN AREA..
4. EXISTING TREES MAY BE USED AS STREET TREES IF THERE WILL BE NO DAMAGE FROM THE DEVELOPMENT WHICH WILL KILL OR WEAKEN THE TREE.
5. VISION CLEARANCE HAZARDS SHALL BE AVOIDED AND VISION CLEARANCE STANDARDS SHALL BE ADHERED TO.

City of Camas WASHINGTON | LANDSCAPE DETAIL
LANDSCAPING NOTES
DETAIL APPROVED BY 5-17-19 DATE | NOT TO SCALE | REVISION: 3 | DATE: 5/17/2019 | DETAIL NO. LS1 | ST-PLANTING.DWG

PLANTING NOTES:

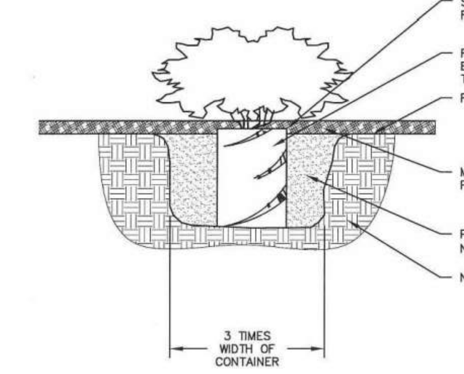
1. ALL PLANTING TO BE OF NURSERY STOCK GRADE NO. 1 OR BETTER AND MUST BE APPROVED PRIOR TO PLANTING.
2. ALL PLANTING HOLES SHALL BE EXCAVATED THREE TIMES THE DIAMETER OF THE TREE ROOT BALL OR ROOT SYSTEM.
3. DECIDUOUS TREES SHALL HAVE STRAIGHT TRUNKS, BE FULL BRANCHED, HAVE A MINIMUM CALIPER OF 2 INCHES AND BE ADEQUATELY STAKED FOR PLANTING. CALIPER OF TREES SHALL BE LARGER WHEN REQUIRED BY OTHER CITY STANDARDS OR PLANS.
4. EVERGREEN TREES SHALL BE A MINIMUM OF THREE FEET IN HEIGHT, FULLY BRANCHED AND ADEQUATELY STAKED FOR PLANTING.
5. DECIDUOUS TREES SHALL BE A MINIMUM 2" CALIPER UNLESS APPROVED BY THE CITY.
6. POTTED OR B&B PLANTS SHALL BE A MINIMUM SIZE OF 3 GALLONS UNLESS APPROVED BY THE CITY..
7. SHRUBS SHALL BE PLANTED ACCORDING TO RECOGNIZED LANDSCAPE STANDARD PRACTICE FOR MAINTENANCE, APPEARANCE, HEALTH OF THE PLANTS, AND OVERALL AESTHETICS.
8. PLANT UPRIGHT AND FACE TO GIVE BEST APPEARANCE OR RELATIONSHIP TO OTHER PLANTS AND STRUCTURES.
   - 8.1. LOOSEN AND REMOVE TWINE BINDING AND BURLAP FROM AROUND THE TOP OF EACH ROOT BALL.
   - 8.2. SET TREES AN INCH ABOVE FINISH GRADE.
   - 8.3. STAKE OR GUY TREES IMMEDIATELY AFTER PLANTING (SEE DETAIL PL3, PL4, & PL5)
   - 8.4. REMOVE STAKES OR GUY WIRES ONE YEAR AFTER INSTALLATION.
9. PLACE AND COMPACT BACKFILL SOIL MIXTURE CAREFULLY TO AVOID INJURY TO ROOTS, AND TO FILL ALL VOIDS. BACKFILL MIX SHALL CONSIST OF 1/4 APPROVED HUMUS MATERIAL TO 3/4 TOPSOIL, PLUS SOIL AMENDMENTS/FERTILIZERS AS PER SOIL ANALYSIS (TO BE PERFORMED PRIOR TO PLANTING TREES).
10. WHEN HOLE IS NEARLY FILLED, COMPLETELY SOAK AND ALLOW WATER TO DRAIN AWAY. FILL HOLE TO FINISH GRADE. PROVIDE 2 INCH HIGH BERM WATER RING AT THE BASE OF EACH TREE. REMOVE BERM AT THE END OF CONTRACT MAINTENANCE PERIOD.
11. GROUND COVER, SHALL BE PLANTED ACCORDING TO RECOGNIZED LANDSCAPE STANDARD PRACTICE FOR MAINTENANCE, APPEARANCE, OVERALL AESTHETICS, AND HEALTH OF THE PLANTS.
12. TREES, AS THEY GROW, SHALL BE PRUNED TO THEIR NATURAL FORM TO PROVIDE AT LEAST 10 FEET OF CLEARANCE ABOVE SIDEWALKS AND 14 FEET ABOVE STREET ROADWAY SURFACES.
13. TREE MAINTENANCE – IN ORDER TO INSURE ESTABLISHMENT, SURVIVAL AND GROWTH, TREES SHALL BE MULCHED WITH 4" DEEP COMPOST AND WATERED AS NECESSARY DURING THE FIRST TWO GROWING SEASONS. PRUNING TO BE AS FOLLOWS:
   - 13.1. YEAR 1 – ONLY DEAD, BROKEN, OR CROSSING BRANCHES SHALL BE PRUNED.
   - 13.2. YEAR 2 – A CLASS 1 PRUNE, PURSUANT TO NATIONAL ARBORIST ASSOCIATION STANDARDS, SHALL BE PERFORMED. THE PURPOSE OF THIS PRUNING IS TO ESTABLISH PROPER SCAFFOLD BRANCHING, RAISE THE CROWN FOR ROAD/SIDEWALK CLEARANCE, AND REMOVE ANY DEAD, DYING OR CROSSING BRANCHES.
   - 13.3. YEAR 3 – A CLASS 1 PRUNE, PURSUANT TO NATIONAL ARBORIST ASSOCIATION STANDARDS, SHALL BE PERFORMED. THE PURPOSE OF THIS PRUNING IS TO CONTINUE TO ESTABLISH THE PROPER SCAFFOLD BRANCHING, CONTINUE TO RAISE THE CROSSING FOR ROAD/SIDEWALK CLEARANCE, AND TO REMOVE ANY DEAD, DYING, OR CROSSING BRANCHES.
14. DEFNITIONS:
   - 14.1. BALLED AND BURLAPPED (B&B) – TREES AND SHRUBS WITH A LARGE BALL OF SOIL AROUND THE ROOTS WRAPPED IN BURLAP.
   - 14.2. BARE-ROOT – OFFERED BY NURSERIES IN WINTER AND EARLY SPRING WITH ALL THE SOIL REMOVED FROM THEIR ROOTS.
   - 14.3. CALIPER – THE DIAMETER OF THE TRUNK MEASURED AT 4-FEET FROM THE GROUND.
   - 14.4. GROUND COVER – LIVING MATERIAL THAT DOES NOT INCLUDE BARK CHIPS OR OTHER MULCH.

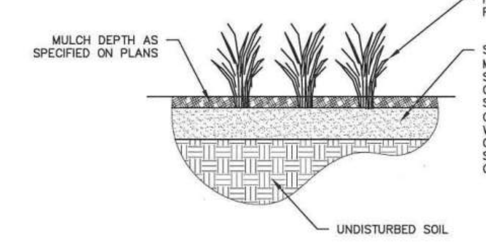
City of Camas WASHINGTON | LANDSCAPE DETAIL
PLANTING NOTES
DETAIL APPROVED BY 5-17-19 DATE | NOT TO SCALE | REVISION: 3 | DATE: 5/17/2019 | DETAIL NO. LS2 | ST-PLANTING.DWG



NOTES:
1. A ROOT BARRIER SHOULD BE INSTALLED AT THE EDGE OF PAVEMENT OR 4 FEET WIDE AND 6 FEET WIDE RECTANGLE AROUND THE TREE. SEE DETAILS PL7, PL8 & PL9
2. BACKFILL MIX SHALL CONSIST OF THE FOLLOWING: 0.75 PART TOPSOIL, 0.25 PART APPROVED HUMUS MATERIAL, SOIL AMENDMENTS/FERTILIZERS AS PER SOIL ANALYSIS (TO BE PERFORMED BEFORE PLANTING TREES).

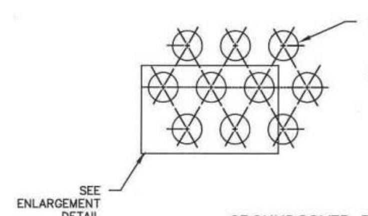
City of Camas WASHINGTON | LANDSCAPE DETAIL
DECIDUOUS BALLED/BURLAP TREE PLANTING
DETAIL APPROVED BY 5-17-19 DATE | NOT TO SCALE | REVISION: 2 | DATE: 5/17/2019 | DETAIL NO. LS4 | ST-PLANTING.DWG





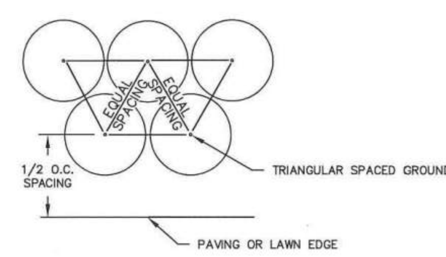
NOTES:
1. SCARIFY BOTTOM AND SIDES OF HOLE PRIOR TO PLANTING.
2. KEEP PLANTS MOIST AND SHADED UNTIL PLANTING.
3. BACKFILL MIX SHALL CONSIST OF THE FOLLOWING: 0.75 PART TOPSOIL, 0.25 PART APPROVED HUMUS MATERIAL, SOIL AMENDMENTS/FERTILIZERS AS PER SOIL ANALYSIS (TO BE PERFORMED BEFORE PLANTING).

City of Camas WASHINGTON | LANDSCAPE DETAIL
SHRUB CONTAINER PLANTING
DETAIL APPROVED BY 5-17-19 DATE | NOT TO SCALE | REVISION: 2 | DATE: 5/17/2019 | DETAIL NO. LS5 | ST-PLANTING.DWG



1. ALL GROUNDCOVER SHALL BE PLANTED AT EQUAL TRIANGULAR SPACING OR ON CENTER SPACING AS SPECIFIED ON PLANTING PLAN.
2. LOCATE GROUNDCOVER ONE HALF OF SPECIFIED SPACING DISTANCE FROM ANY CURB, SIDEWALK, OR OTHER HARD SURFACE, UNLESS OTHERWISE SPECIFIED.

GROUNDCOVER PLANTING DETAIL



ENLARGEMENT DETAIL: TRIANGULAR SPACING

City of Camas WASHINGTON | LANDSCAPE DETAIL
GROUNDCOVER PLANTING DETAIL
DETAIL APPROVED BY 5-17-19 DATE | NOT TO SCALE | REVISION: 2 | DATE: 5/17/2019 | DETAIL NO. LS7 | ST-PLANTING.DWG

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STATE OF WASHINGTON — CHRISTOPHER A BAUMANN — LICENSED LANDSCAPE ARCHITECT — NO 635 — EXP. 02-20-2025

PRELIMINARY
NOT FOR CONSTRUCTION
SUBJECT TO APPROVAL

13TH STREET GAS STATIOIN

20101 NE 13th Street
Camas, Washington

DRAWN: HA/CB	CHECKED: CB
SCALE: AS SHOWN	DATE: 11.03.23
JOB #: 23-1837	
ISSUED FOR: PLR	
REVISIONS:	

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SHEET NAME:
FINAL LANDSCAPE DETAILS

SHEET #:
PD
SHEET 7 OF 8

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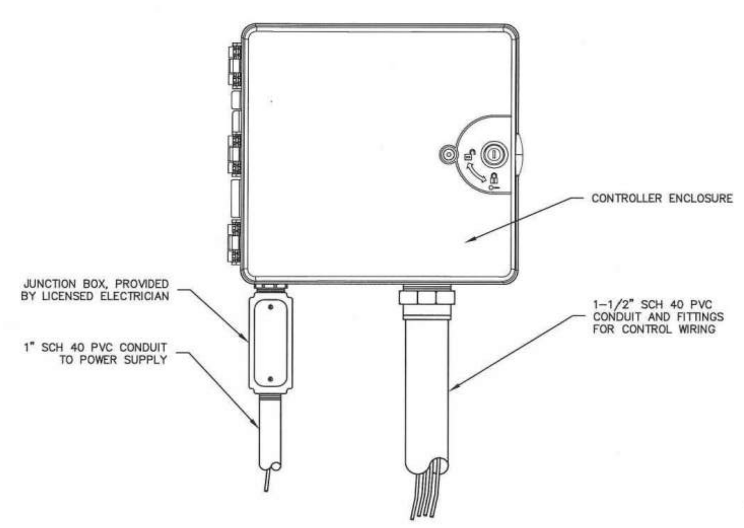
IRRIGATION CONSTRUCTION NOTES:

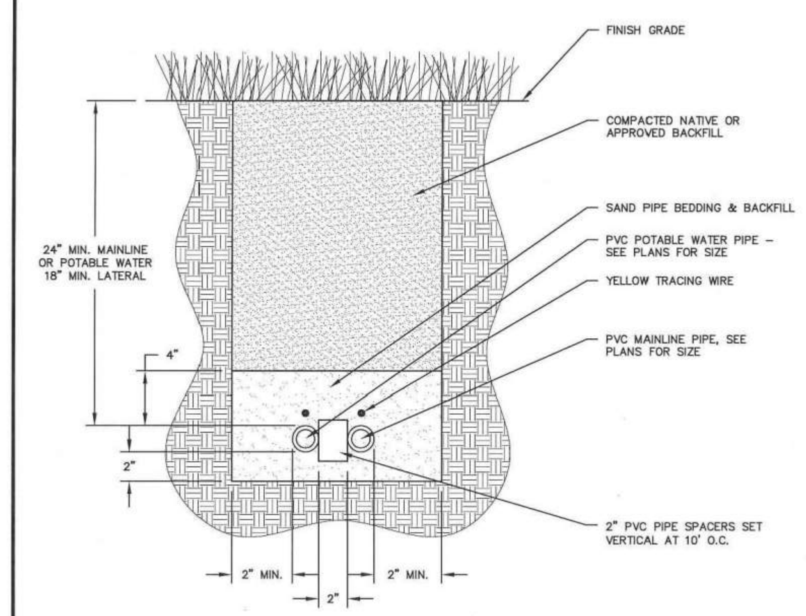
1. THE CONTRACTOR SHALL INSPECT THE SITE AND VERIFY CONDITIONS AND DIMENSIONS PRIOR TO CONSTRUCTION.
2. IRRIGATION PLANS ARE SCHEMATIC REPRESENTATIONS ONLY. PLACE LINES IN A COMMON TRENCH WHENEVER POSSIBLE. FIELD ADJUST LINES TO AVOID CONFLICT WITH UTILITIES.
3. IRRIGATION IS COORDINATED WITH THE PLANTING PLAN AND SITE IMPROVEMENTS AND IS DESIGNED WITH TRIANGULAR SPACING GIVING HEAD TO HEAD COVERAGE. COORDINATE IRRIGATION HEAD LAYOUT WITH NEW PLANT MATERIALS. LOCATE SPRAY HEADS 30" FROM BASE OF TREE. DO NOT ALTER HEAD LOCATION, PIPE LAYOUT, OR VALVE LOCATION WITHOUT WRITTEN APPROVAL FROM THE CITY ENGINEER. NOTIFY THE CITY ENGINEER IF DISCREPANCIES OCCUR BETWEEN THE PLANS AND FIELD CONDITIONS.
4. ALL COMPONENTS OF IRRIGATION SYSTEM SHALL BE INSTALLED AND PROPERLY ADJUSTED TO PROVIDE ADEQUATE COVERAGE AND MINIMIZATION OF OVER SPRAY ONTO WALKS, BUILDINGS, PARKING AREAS, ETC.
5. ALL PIPE SIZES INDICATED ARE MINIMUMS. CONTRACTOR MAY NOT DECREASE PIPE SIZE. LARGER PIPE SIZES MAY BE USED AT NO ADDITIONAL COST TO OWNER. IRRIGATION LATERALS ARE SIZED BEGINNING AT THE AUTOMATIC VALVE AND CONTINUING IN DIRECTION OF FLOW. REDUCTIONS IN PIPE SIZE ARE LABELED BEGINNING DOWNSTREAM OF NEAREST FITTING. ALL LATERALS NOT SIZED ARE MINIMUM 3/4".
6. INSTALL ALL IRRIGATION PIPE AND CONTROL WIRES IN MINIMUM 4" PVC SLEEVE BELOW ALL PAVED SURFACES UNLESS OTHERWISE INDICATED ON THE PLANS. INSTALL SLEEVES PRIOR TO PLACEMENT OF PAVEMENTS AND PAVEMENT SUB-BASE. SEE PIPE SLEEVING DETAIL FOR FURTHER REQUIREMENTS.
7. COORDINATE IRRIGATION POINTS OF CONNECTION AND LOCATION OF AUTOMATIC CONTROL VALVES WITH THE ENGINEER. COORDINATE ALL WORK WITH OTHER TRADES, I.E. ELECTRICAL, MASONRY, ETC.
8. CONTRACTOR TO PROGRAM AUTOMATIC CONTROLLER TO ALLOW FOR THE EQUIVALENT OF 1" OF WATER PER WEEK.
9. ALL PIPES SHALL BE TRENCHED. PROVIDE POSITIVE DRAINAGE OF MAINLINE. PLACE MANUAL DRAIN AT LOW POINTS IN MAINLINE. IDENTIFY LOCATIONS ON AS-BUILTS.
10. USE 45° ELBOWS INSTEAD OF 90° ELBOWS ON ALL MAINLINES 2-1/2" AND LARGER. INSTALL CONCRETE THRUST BLOCKS AT ALL MAINLINE CHANGES IN DIRECTION. POUR MINIMUM OF 1 CUBIC FOOT OF CONCRETE ON UNDISTURBED SOIL. WRAP PIPE IN PLASTIC PRIOR TO COVERING WITH CONCRETE.
11. CONTRACTOR TO INSTALL CONTROLLER, CPU ELECTRICAL, PHONE AND ACCESSORIES AS REQUIRED. CONTRACTOR TO FURNISH CONTROL WIRES FROM VALVES TO CONTROLLER. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING 110 VOLT SERVICE FROM BUILDING TO EXISTING JUNCTION BOX IN CONTROLLER HOUSING AND CONNECT CONTROLLER SERVICE.
12. ALL TONING WIRE, WHERE REQUIRED, SHALL BE 14 GAUGE COPPER CLAD STEEL WITH HDPE DIRECT BURY INSULATION. SEAL SPLICE CONNECTIONS WITH 3M DBY OR KING GEL CAPS.
13. ALL DIRECT BURY CONTROL WIRING AND CABLING SHALL HAVE SPLICE CONNECTIONS SEALED WITH 3M DBY OR RAIN BIRD DB SERIES WIRE CONNECTORS IN A SPLICE BOX.
14. SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS.
15. WATER METER SHALL BE INSTALLED BY THE CITY. CONTRACTOR RESPONSIBLE FOR CONNECTIONS DOWNSTREAM OF WATER METER.
16. CONTRACTOR TO VERIFY WATER PRESSURE TO ENSURE THAT PRESSURE MATCHES THE SYSTEM DESIGN PRESSURE.
17. WHERE REQUIRED, CONTRACTOR SHALL PROVIDE AN APPROPRIATELY SIZED POLYMER IRRIGATION VALVE BOX LARGE ENOUGH TO CONTAIN THE SPECIFIED COMPONENTS. VALVE BOXES SHALL BE RAINBIRD VB SERIES, CARSON, OR APPROVED EQUIVALENT.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION CONSTRUCTION NOTES | NOT TO SCALE | DETAIL NO. IR1 | DETAIL APPROVED BY 6-19-19 DATE | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



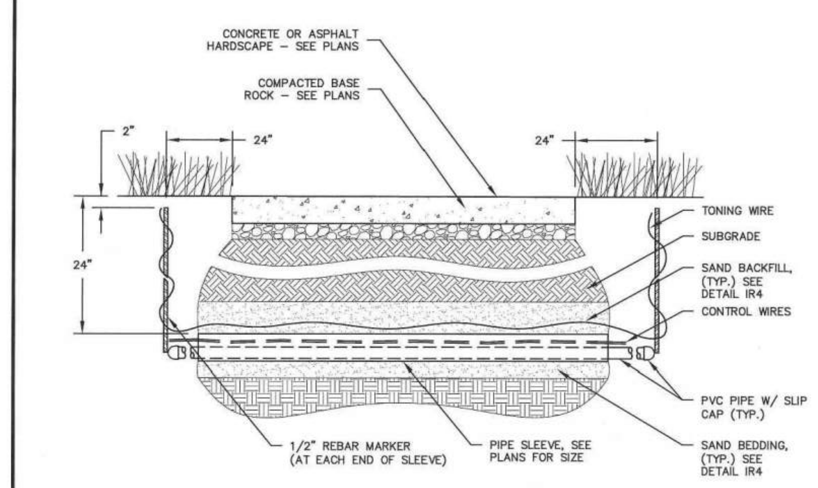
NOTES:
1. IRRIGATION CONTROLLER SHALL BE A RAINBIRD ESP-LXME SERIES PROGRAMMABLE CONTROLLER, OR APPROVED EQUAL.
2. INTERIOR INSTALLATIONS DO NOT REQUIRE AN ENCLOSURE WHEN MOUNTED WITHIN THE UTILITY ROOM OF A RESTROOM OR OTHER FACILITY WHERE THE PUBLIC HAS NO ACCESS.
3. FOR EXTERIOR WALL MOUNTED APPLICATIONS SEE DETAIL IR3.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION CONTROLLER – INDOOR MOUNT | NOT TO SCALE | DETAIL NO. IR2 | DETAIL APPROVED BY 6-19-19 DATE | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



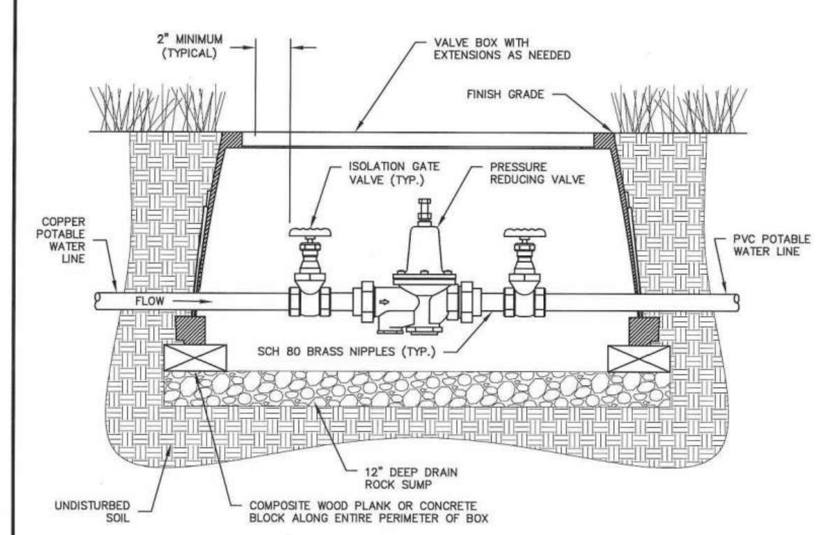
NOTES:
1. ALL TONING WIRE SHALL BE 14 GAUGE YELLOW HDPE INSULATED COPPER CLAD STEEL. SEAL SPLICE CONNECTIONS WITH 3M DBY OR KING GEL CAPS.
2. PROVIDE A 48 INCH COIL OF TONING WIRE IN EACH VALVE BOX.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION TRENCH | NOT TO SCALE | DETAIL NO. IR4 | DETAIL APPROVED BY 6-19-19 DATE | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



NOTES:
1. CONTRACTOR SHALL PROVIDE AN APPROPRIATELY SIZED IRRIGATION POLYMER VALVE BOX LARGE ENOUGH TO CONTAIN THE SPECIFIED COMPONENTS. VALVE BOXES SHALL BE RAINBIRD VB SERIES, CARSON, OR APPROVED EQUIVALENT.
2. PROVIDE TONING WIRE ALONG ALL PIPE SLEEVING.
3. ALL TONING WIRE SHALL BE 14 GAUGE YELLOW HDPE INSULATED COPPER CLAD STEEL. SEAL SPLICE CONNECTIONS WITH 3M DBY OR KING GEL CAPS.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION PIPE SLEEVE | NOT TO SCALE | DETAIL NO. IR5 | DETAIL APPROVED BY 6-19-19 DATE | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



NOTES:
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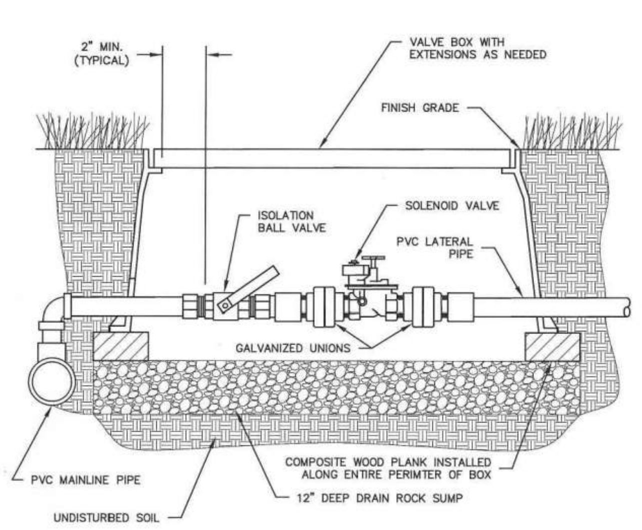
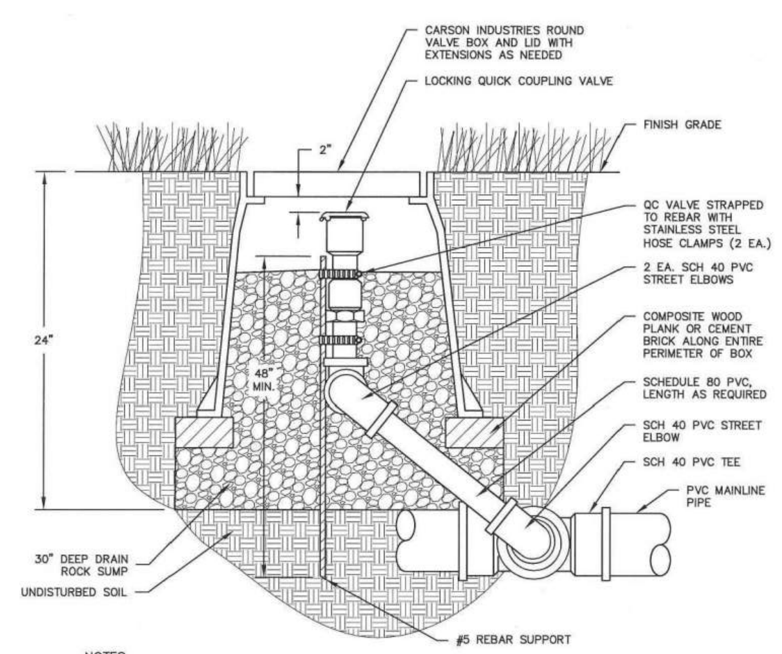
2. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.
3. PRESSURE REDUCING VALVE SHALL BE A WATTS M/N 25AUB-Z3 WITH DOUBLE UNION END CONNECTIONS, OR APPROVED EQUAL.
4. FOR APPLICATIONS WHERE DRINKING FOUNTAINS ARE SUPPLIED, ALL COMPONENTS SHALL BE SUITABLE FOR POTABLE WATER.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION PRESSURE REGULATOR | NOT TO SCALE | DETAIL NO. IR6 | DETAIL APPROVED BY 6-19-19 DATE | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



NOTES:
1. CONTRACTOR SHALL PROVIDE AN APPROPRIATELY SIZED POLYMER IRRIGATION VALVE BOX LARGE ENOUGH TO CONTAIN THE SPECIFIED COMPONENTS. VALVE BOXES SHALL BE RAINBIRD VB SERIES, CARSON, OR APPROVED EQUIVALENT.
2. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION SOLENOID VALVE | NOT TO SCALE | DETAIL NO. IR7 | DETAIL APPROVED BY 6-19-19 DATE | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



NOTES:
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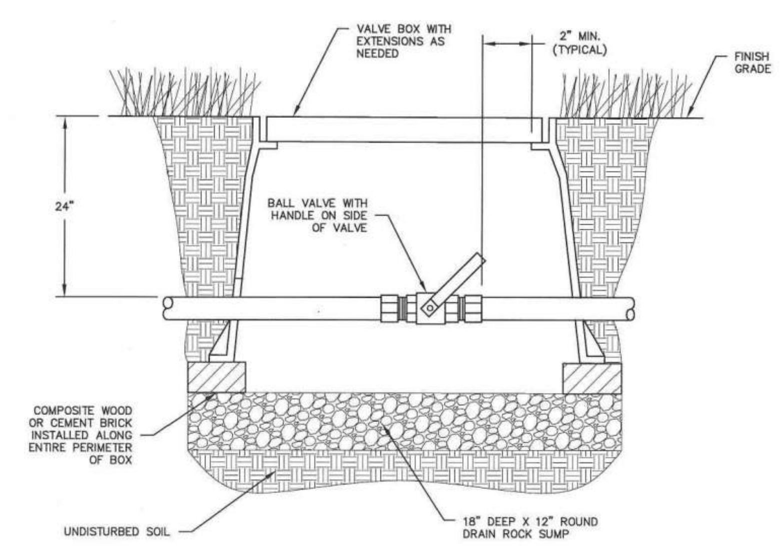
2. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.
3. SWING JOINT SIZE SHALL BE SAME SIZE AS VALVE BOTTOM INLET.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION QUICK COUPLING VALVE | NOT TO SCALE | DETAIL NO. IR9 | DETAIL APPROVED BY 6-19-19 DATE | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



NOTES:
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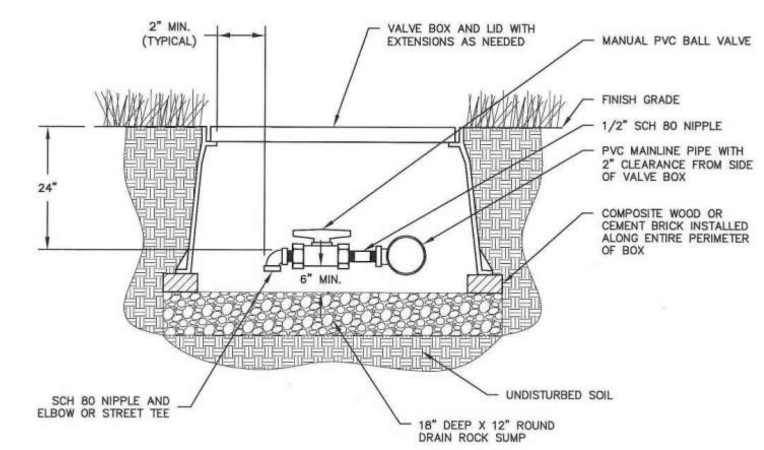
2. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION ISOLATION BALL VALVE | NOT TO SCALE | DETAIL NO. IR10 | DETAIL APPROVED BY 6-19-19 DATE | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



NOTES:
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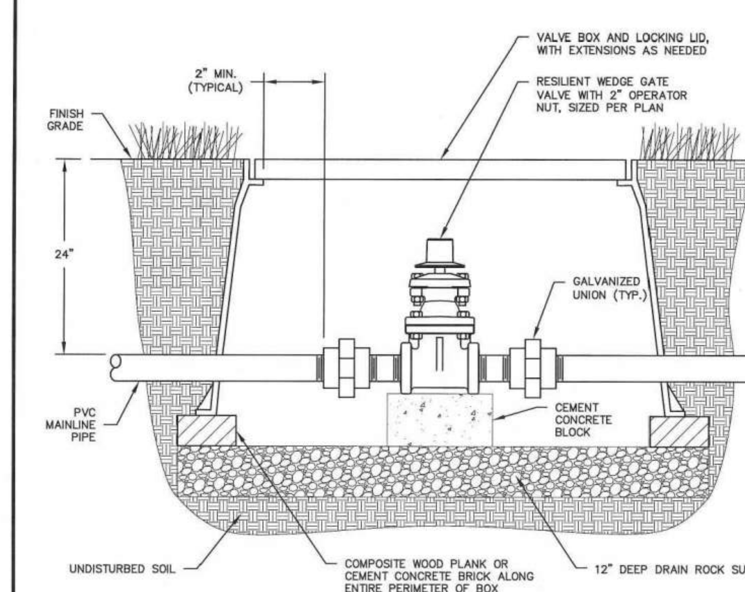
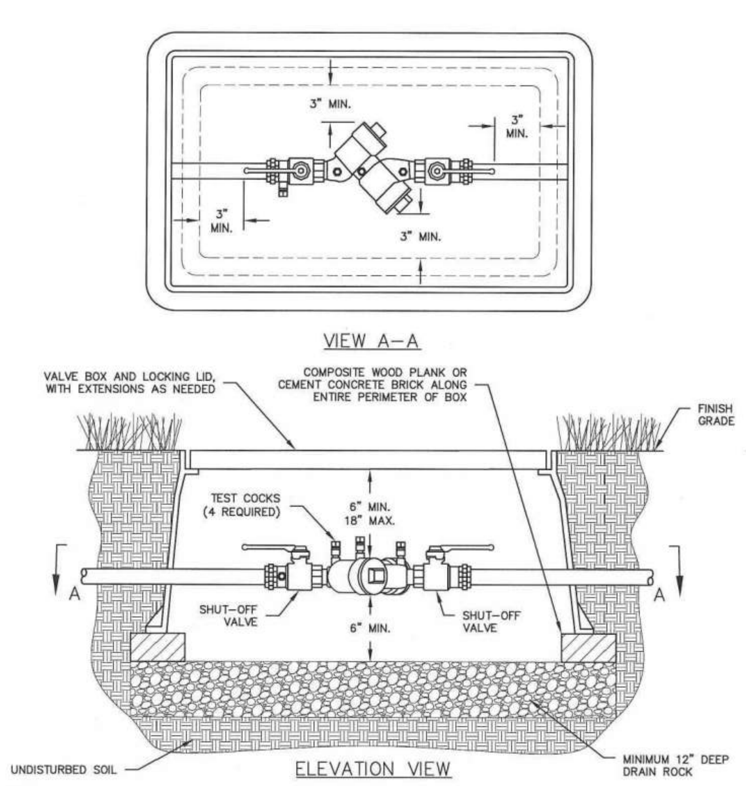
2. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.
3. CONTRACTOR RESPONSIBLE FOR LOCATING DRAIN VALVE AT LOWEST POINT OF MAINLINE TO ENSURE POSITIVE DRAINAGE.
4. ALLOW FOR 1" CLEARANCE FROM HOLE IN BOX TO TOP OF PIPE.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION MANUAL DRAIN VALVE | NOT TO SCALE | DETAIL NO. IR11 | DETAIL APPROVED BY 6-19-19 DATE | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



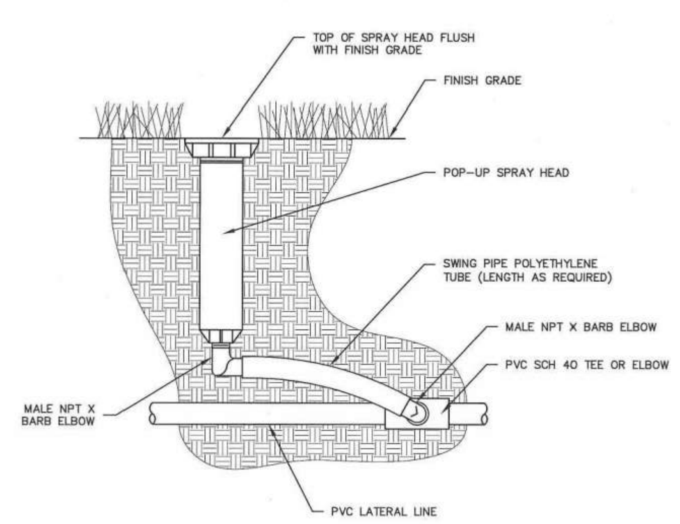
NOTES:
1. CONTRACTOR SHALL PROVIDE AN APPROPRIATELY SIZED POLYMER IRRIGATION VALVE BOX LARGE ENOUGH TO CONTAIN THE SPECIFIED COMPONENTS. VALVE BOXES SHALL BE RAINBIRD VB SERIES, CARSON, OR APPROVED EQUIVALENT.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION MANUAL GATE VALVE | NOT TO SCALE | DETAIL NO. IR12 | DETAIL APPROVED BY 6-19-19 DATE | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



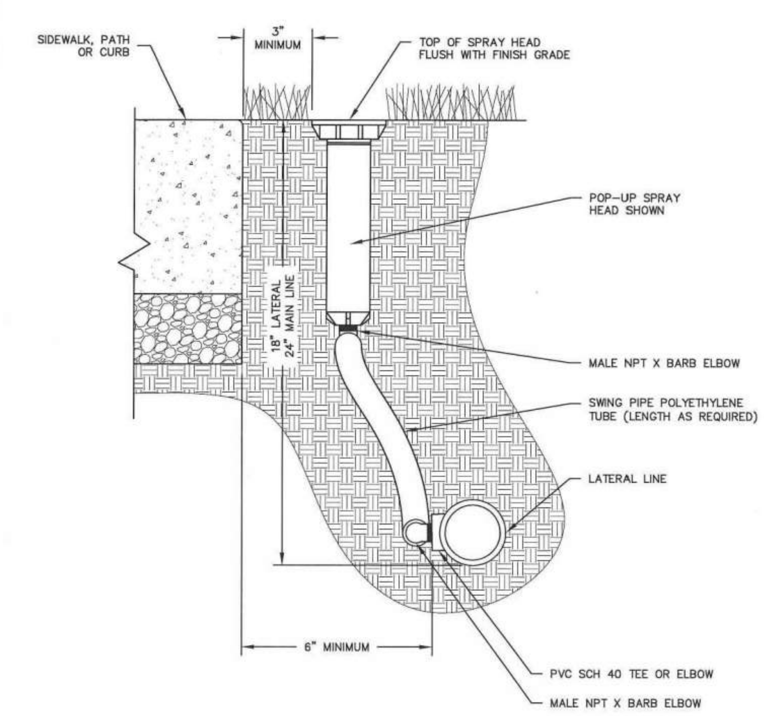
NOTES:
1. CONTRACTOR SHALL PROVIDE AN APPROPRIATELY SIZED POLYMER IRRIGATION VALVE BOX LARGE ENOUGH TO CONTAIN THE SPECIFIED COMPONENTS. VALVE BOXES SHALL BE RAINBIRD VB SERIES, CARSON, OR APPROVED EQUIVALENT.
2. APPROVED DOUBLE CHECK VALVE ASSEMBLY TO LAY HORIZONTAL WITH GROUND. TEST COCKS TO EITHER FACE OUTWARDS OR UPWARDS FROM ASSEMBLY.
3. DESIGNED FOR BACK SIPHONING AND BACK PRESSURE.
4. THOROUGHLY FLUSH LINES PRIOR TO INSTALLATION OF BACKFLOW PREVENTER.
5. THE DCVA MAY BE INSTALLED ABOVE OR BELOW THE GROUND PROVIDED ALL CLEARANCES ARE MET.
6. DO NOT INSTALL IN AN AREA SUBJECT TO FLOODING. MUST BE ACCESSIBLE AND PROTECTED FROM FREEZING CONDITIONS.
7. THE DOUBLE CHECK VALVE BACKFLOW PREVENTER ASSEMBLY SHALL BE ASSE LISTED 1015 APPROVED AND INCLUDE FULL PORT BALL VALVES WITH RESILIENT SEATS AND UNION CONNECTIONS.
8. A PLUMBING PERMIT IS REQUIRED. PLEASE CONTACT THE CITY OF CAMAS BUILDING DEPARTMENT.
9. MUST BE TESTED AFTER INSTALLATION BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER. TEST RESULTS SHALL BE SENT TO THE CITY OF CAMAS WATER DEPARTMENT.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION DOUBLE CHECK VALVE ASSY. | NOT TO SCALE | DETAIL NO. IR13 | DETAIL APPROVED BY 6-19-19 DATE | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



NOTES:
1. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.
2. SWING PIPE SHALL BE POLYEHTYLENE AND SIZE SHALL NOT BE LESS THAN HEAD INLET SIZE.
3. POP-UP SPRAY HEADS SHALL BE RAIN BIRD 1800 OR APPROVED EQUAL, SUBMITTAL REQUIRED.
4. WHEN SPRAY HEADS ARE LOCATED ALONG SIDEWALK OR CURBING THE HEADS SHALL BE MINIMUM 3" FROM HARDSCAPE AND PIPES MINIMUM 6" FROM HARDSCAPE.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION POP-UP SPRAY HEAD | NOT TO SCALE | DETAIL NO. IR15 | DETAIL APPROVED BY 6-19-19 DATE | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG



NOTES:
1. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.
2. SWING PIPE SHALL BE POLYEHTYLENE AND SIZE SHALL NOT BE LESS THAN HEAD INLET SIZE.
3. WHEN SPRAY HEADS ARE LOCATED ALONG SIDEWALK OR CURBING THE HEADS SHALL BE MINIMUM 3" FROM HARDSCAPE AND PIPES MINIMUM 6" FROM HARDSCAPE.

City of Camas WASHINGTON | LANDSCAPE DETAIL | IRRIGATION HEAD PLACEMENT ALONG HARDSCAPE | NOT TO SCALE | DETAIL NO. IR16 | DETAIL APPROVED BY 6-19-19 DATE | REVISION: 2 | DATE: 6/19/2019 | ST-IRRIGATION.DWG

Planning Solutions, Inc
Creating Solutions to Complex Issues
4400 NE 77th Avenue
Suite 275
VANCOUVER, WA 9866
VOICE: 360-750-9000 FAX: 360-713-61
www.planningsolutionsinc.co

STATE OF WASHINGTON · CHRISTOPHER A BAUMANN · LICENSED LANDSCAPE ARCHITECT · NO 635 · EXP. 02-20-2025

PRELIMINARY
NOT FOR CONSTRUCTION
SUBJECT TO APPROVAL

13TH STREET GAS STATIOIN

20101 NE 13th Street
Camas, Washington

DRAWN: Camas	CHECKED: CB
SCALE: AS SHOWN	DATE: 11.03.23
JOB #: 23-1837	
ISSUED FOR: PLR	
REVISIONS: 1, 2, 3, 4, 5, 6	

SHEET NAME:
PRELIMINARY IRRIGATION DETAILS

SHEET #: ID
SHEET 8 OF 8

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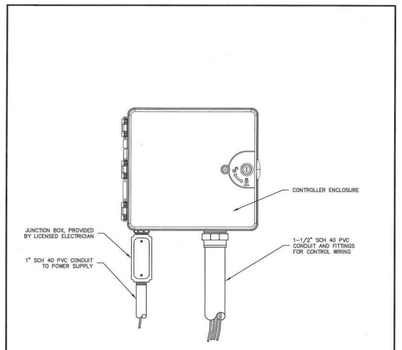
IRRIGATION CONSTRUCTION NOTES:

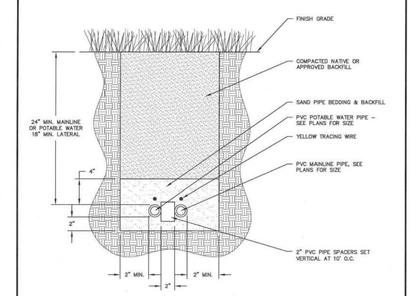
1. THE CONTRACTOR SHALL INSPECT THE SITE AND VERIFY CONDITIONS AND DIMENSIONS PRIOR TO CONSTRUCTION.
2. IRRIGATION PLANS ARE SCHEMATIC REPRESENTATIONS ONLY. PLACE LINES IN A COMMON TRENCH WHENEVER POSSIBLE. FIELD ADJUST LINES TO AVOID CONFLICT WITH UTILITIES.
3. IRRIGATION IS COORDINATED WITH THE PLANTING PLAN AND SITE IMPROVEMENTS AND IS DESIGNED WITH TRIANGULAR SPACING GIVING HEAD TO HEAD COVERAGE. COORDINATE IRRIGATION HEAD LAYOUT WITH NEW PLANT MATERIALS. LOCATE SPRAY HEADS 30" FROM BASE OF TREE. DO NOT ALTER HEAD LOCATION, PIPE LAYOUT, OR VALVE LOCATION WITHOUT WRITTEN APPROVAL FROM THE CITY ENGINEER. NOTIFY THE CITY ENGINEER IF DISCREPANCIES OCCUR BETWEEN THE PLANS AND FIELD CONDITIONS.
4. ALL COMPONENTS OF IRRIGATION SYSTEM SHALL BE INSTALLED AND PROPERLY ADJUSTED TO PROVIDE ADEQUATE COVERAGE AND MINIMIZATION OF OVER SPRAY ONTO WALKS, BUILDINGS, PARKING AREAS, ETC.
5. ALL PIPE SIZES INDICATED ARE MINIMUMS. CONTRACTOR MAY NOT DECREASE PIPE SIZE. LARGER PIPE SIZES MAY BE USED AT NO ADDITIONAL COST TO OWNER. IRRIGATION LATERALS ARE SIZED BEGINNING AT THE AUTOMATIC VALVE AND CONTINUING IN DIRECTION OF FLOW. REDUCTIONS IN PIPE SIZE ARE LABELED BEGINNING DOWNSTREAM OF NEAREST FITTING. ALL LATERALS NOT SIZED ARE MINIMUM 3/4".
6. INSTALL ALL IRRIGATION PIPE AND CONTROL WIRES IN MINIMUM 4" PVC SLEEVE BELOW ALL PAVED SURFACES UNLESS OTHERWISE INDICATED ON THE PLANS. INSTALL SLEEVES PRIOR TO PLACEMENT OF PAVEMENTS AND PAVEMENT SUB-BASE. SEE PIPE SLEEVING DETAIL FOR FURTHER REQUIREMENTS.
7. COORDINATE IRRIGATION POINTS OF CONNECTION AND LOCATION OF AUTOMATIC CONTROL VALVES WITH THE ENGINEER. COORDINATE ALL WORK WITH OTHER TRADES, I.E. ELECTRICAL, MASONRY, ETC.
8. CONTRACTOR TO PROGRAM AUTOMATIC CONTROLLER TO ALLOW FOR THE EQUIVALENT OF 1" OF WATER PER WEEK.
9. ALL PIPES SHALL BE TRENCHED. PROVIDE POSITIVE DRAINAGE OF MAINLINE. PLACE MANUAL DRAIN AT LOW POINTS IN MAINLINE. IDENTIFY LOCATIONS ON AS-BUILTS.
10. USE 45° ELBOWS INSTEAD OF 90° ELBOWS ON ALL MAINLINES 2-1/2" AND LARGER. INSTALL CONCRETE THRUST BLOCKS AT ALL MAINLINE CHANGES IN DIRECTION. POUR MINIMUM OF 1 CUBIC FOOT OF CONCRETE ON UNDISTURBED SOIL. WRAP PIPE IN PLASTIC PRIOR TO COVERING WITH CONCRETE.
11. CONTRACTOR TO INSTALL CONTROLLER, CPU ELECTRICAL, PHONE AND ACCESSORIES AS REQUIRED. CONTRACTOR TO FURNISH CONTROL WIRES FROM VALVES TO CONTROLLER. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING 110 VOLT SERVICE FROM BUILDING TO EXISTING JUNCTION BOX IN CONTROLLER HOUSING AND CONNECT CONTROLLER SERVICE.
12. ALL TONING WIRE SHALL BE 14 GAUGE YELLOW HOPE INSULATED COPPER CLAD STEEL WITH HOPE DIRECT BURY INSULATION. SEAL SPLICE CONNECTIONS WITH 3M DBY OR KING GEL CAPS.
13. ALL DIRECT BURY CONTROL WIRING AND CABLING SHALL HAVE SPLICE CONNECTIONS SEALED WITH 3M DBY OR RAIN BIRD DB SERIES WIRE CONNECTORS IN A SPLICE BOX.
14. SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS.
15. WATER METER SHALL BE INSTALLED BY THE CITY. CONTRACTOR RESPONSIBLE FOR CONNECTIONS DOWNSTREAM OF WATER METER.
16. CONTRACTOR TO VERIFY WATER PRESSURE TO ENSURE THAT PRESSURE MATCHES THE SYSTEM DESIGN PRESSURE.
17. WHERE REQUIRED, CONTRACTOR SHALL PROVIDE AN APPROPRIATELY SIZED POLYMER IRRIGATION VALVE BOX LARGE ENOUGH TO CONTAIN THE SPECIFIED COMPONENTS. VALVE BOXES SHALL BE RAINBIRD VB SERIES, CARSON, OR APPROVED EQUIVALENT.

LANDSCAPE DETAIL — IRRIGATION CONSTRUCTION NOTES — NOT TO SCALE — DETAIL NO. IR1
DETAIL APPROVED BY: — DATE: — REVISION: 2 — DATE: 6/19/2019



NOTES:
1. IRRIGATION CONTROLLER SHALL BE A RAINBIRD ESP-LXME SERIES PROGRAMMABLE CONTROLLER, OR APPROVED EQUAL.
2. INTERIOR INSTALLATIONS DO NOT REQUIRE AN ENCLOSURE WHEN MOUNTED WITHIN THE UTILITY ROOM OF A RESTROOM OR OTHER FACILITY WHERE THE PUBLIC HAS NO ACCESS.
3. FOR EXTERIOR WALL MOUNTED APPLICATIONS SEE DETAIL IR3.

LANDSCAPE DETAIL — IRRIGATION CONTROLLER – INDOOR MOUNT — NOT TO SCALE — DETAIL NO. IR2
DETAIL APPROVED BY: — DATE: — REVISION: 2 — DATE: 6/19/2019



NOTES:
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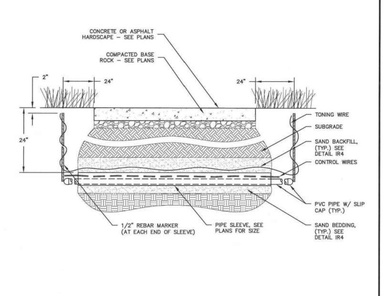
2. PROVIDE A 48 INCH COIL OF TONING WIRE IN EACH VALVE BOX.

LANDSCAPE DETAIL — IRRIGATION TRENCH — NOT TO SCALE — DETAIL NO. IR4
DETAIL APPROVED BY: — DATE: — REVISION: 2 — DATE: 6/19/2019



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2. PROVIDE TONING WIRE ALONG ALL PIPE SLEEVING.
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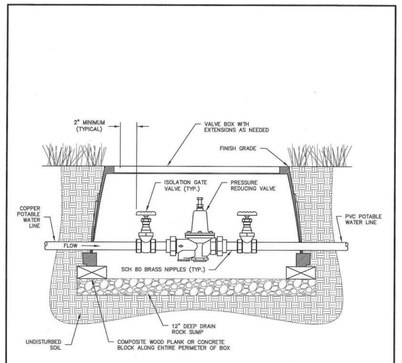
LANDSCAPE DETAIL — IRRIGATION PIPE SLEEVE — NOT TO SCALE — DETAIL NO. IR5
DETAIL APPROVED BY: — DATE: — REVISION: 2 — DATE: 6/19/2019



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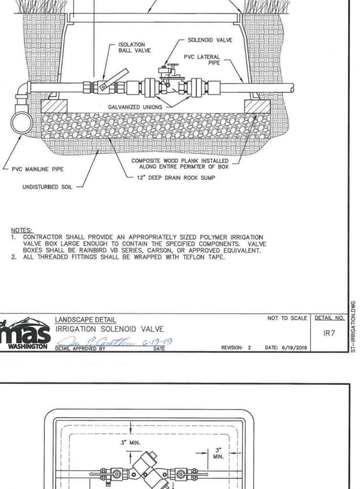
2. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.
3. PRESSURE REDUCING VALVE SHALL BE A WATTS M/N 25AUB-Z3 WITH DOUBLE UNION END CONNECTIONS, OR APPROVED EQUAL.
4. FOR APPLICATIONS WHERE DRINKING FOUNTAINS ARE SUPPLIED, ALL COMPONENTS SHALL BE SUITABLE FOR POTABLE WATER.

LANDSCAPE DETAIL — IRRIGATION PRESSURE REGULATOR — NOT TO SCALE — DETAIL NO. IR6
DETAIL APPROVED BY: — DATE: — REVISION: 2 — DATE: 6/19/2019



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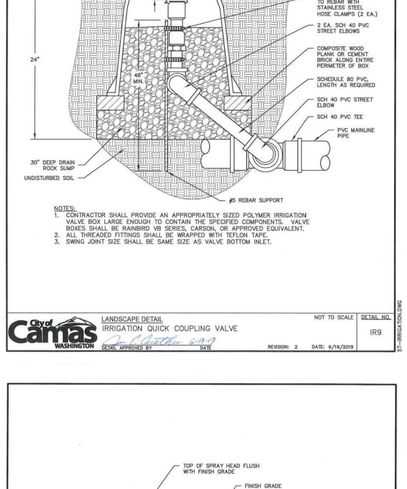
LANDSCAPE DETAIL — IRRIGATION SOLENOID VALVE — NOT TO SCALE — DETAIL NO. IR7
DETAIL APPROVED BY: — DATE: — REVISION: 2 — DATE: 6/19/2019



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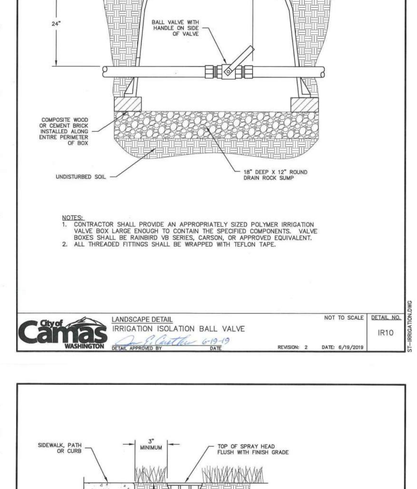
2. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.
3. SWING JOINT SIZE SHALL BE SAME SIZE AS VALVE BOTTOM INLET.

LANDSCAPE DETAIL — IRRIGATION QUICK COUPLING VALVE — NOT TO SCALE — DETAIL NO. IR9
DETAIL APPROVED BY: — DATE: — REVISION: 2 — DATE: 6/19/2019



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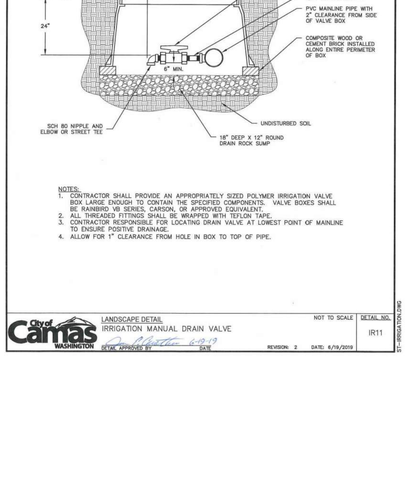
LANDSCAPE DETAIL — IRRIGATION ISOLATION BALL VALVE — NOT TO SCALE — DETAIL NO. IR10
DETAIL APPROVED BY: — DATE: — REVISION: 2 — DATE: 6/19/2019



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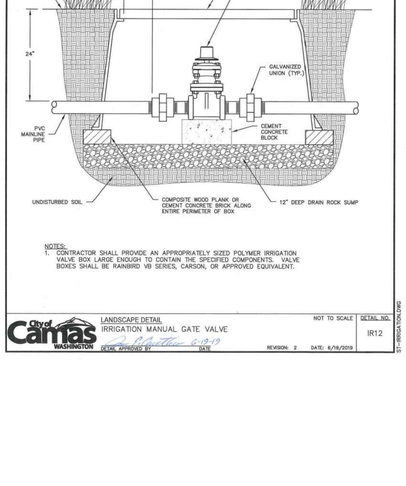
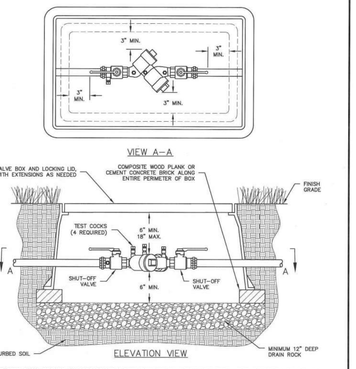
1. CONTRACTOR SHALL PROVIDE AN APPROPRIATELY SIZED POLYMER IRRIGATION VALVE BOX LARGE ENOUGH TO CONTAIN THE SPECIFIED COMPONENTS. VALVE BOXES SHALL BE RAINBIRD VB SERIES, CARSON, OR APPROVED EQUIVALENT.
2. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.
3. CONTRACTOR RESPONSIBLE FOR LOCATING DRAIN VALVE AT LOWEST POINT OF MAINLINE TO ENSURE POSITIVE DRAINAGE.
4. ALLOW FOR 1" CLEARANCE FROM HOLE IN BOX TO TOP OF PIPE.

LANDSCAPE DETAIL — IRRIGATION MANUAL DRAIN VALVE — NOT TO SCALE — DETAIL NO. IR11
DETAIL APPROVED BY: — DATE: — REVISION: 2 — DATE: 6/19/2019



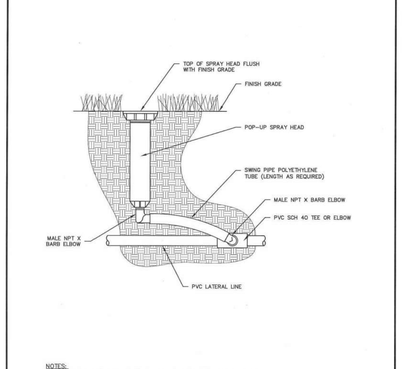
NOTES:
1. CONTRACTOR SHALL PROVIDE AN APPROPRIATELY SIZED POLYMER IRRIGATION VALVE BOX LARGE ENOUGH TO CONTAIN THE SPECIFIED COMPONENTS. VALVE BOXES SHALL BE RAINBIRD VB SERIES, CARSON, OR APPROVED EQUIVALENT.

LANDSCAPE DETAIL — IRRIGATION MANUAL GATE VALVE — NOT TO SCALE — DETAIL NO. IR12
DETAIL APPROVED BY: — DATE: — REVISION: 2 — DATE: 6/19/2019



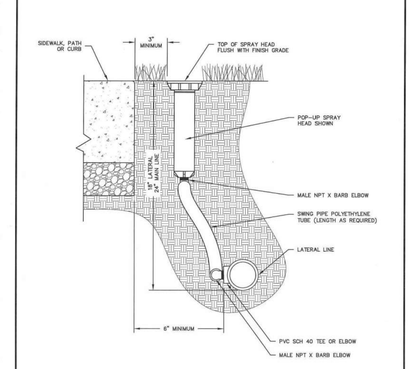
NOTES:
1. CONTRACTOR SHALL PROVIDE AN APPROPRIATELY SIZED POLYMER IRRIGATION VALVE BOX LARGE ENOUGH TO CONTAIN THE SPECIFIED COMPONENTS. VALVE BOXES SHALL BE RAINBIRD VB SERIES, CARSON, OR APPROVED EQUIVALENT.
2. APPROVED DOUBLE CHECK VALVE ASSEMBLY TO LAY HORIZONTAL WITH GROUND. TEST COCKS TO EITHER FACE OUTWARDS OR UPWARDS FROM ASSEMBLY.
3. DESIGNED FOR BACK SIPHONING AND BACK PRESSURE.
4. THOROUGHLY FLUSH LINES PRIOR TO INSTALLATION OF BACKFLOW PREVENTER.
5. DO NOT INSTALL UNLESS MINIMUM AND MAXIMUM CLEARANCES ARE MET.
6. DO NOT INSTALL IN AN AREA SUBJECT TO FLOODING. MUST BE ACCESSIBLE AND PROTECTED FROM FREEZING CONDITIONS.
7. THE DOUBLE CHECK VALVE BACKFLOW PREVENTER ASSEMBLY SHALL BE ASSE LISTED 1015 APPROVED AND INCLUDE FULL PORT BALL VALVES WITH RESILIENT SEATS AND UNION CONNECTIONS.
8. A PLUMBING PERMIT IS REQUIRED. PLEASE CONTACT THE CITY OF CAMAS BUILDING DEPARTMENT.
9. MUST BE TESTED AFTER INSTALLATION BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER. TEST RESULTS SHALL BE SENT TO THE CITY OF CAMAS WATER DEPARTMENT.

LANDSCAPE DETAIL — IRRIGATION DOUBLE CHECK VALVE ASSY. — NOT TO SCALE — DETAIL NO. IR13
DETAIL APPROVED BY: — DATE: — REVISION: 2 — DATE: 6/19/2019



NOTES:
1. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.
2. SWING PIPE SHALL BE POLYETHYLENE AND SIZE SHALL NOT BE LESS THAN HEAD INLET SIZE.
3. POP-UP SPRAY HEADS SHALL BE RAIN BIRD 1800 OR APPROVED EQUAL, SUBMITTAL REQUIRED.
4. WHEN SPRAY HEADS ARE LOCATED ALONG SIDEWALK OR CURBING THE HEADS SHALL BE MINIMUM 3" FROM HARDSCAPE AND PIPES MINIMUM 6" FROM HARDSCAPE.

LANDSCAPE DETAIL — IRRIGATION POP-UP SPRAY HEAD — NOT TO SCALE — DETAIL NO. IR15
DETAIL APPROVED BY: — DATE: — REVISION: 2 — DATE: 6/19/2019



NOTES:
1. ALL THREADED FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE.
2. SWING PIPE SHALL BE POLYETHYLENE AND SHALL NOT BE LESS THAN HEAD INLET SIZE.
3. WHEN SPRAY HEADS ARE LOCATED ALONG SIDEWALK OR CURBING THE HEADS SHALL BE MINIMUM 3" FROM HARDSCAPE AND PIPES MINIMUM 6" FROM HARDSCAPE.

LANDSCAPE DETAIL — IRRIGATION HEAD PLACEMENT ALONG HARDSCAPE — NOT TO SCALE — DETAIL NO. IR16
DETAIL APPROVED BY: — DATE: — REVISION: 2 — DATE: 6/19/2019

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www.planningsolutionsinc.co

STATE OF WASHINGTON — CHRISTOPHER A BAUMAN — LICENSED LANDSCAPE ARCHITECT — EXP. DATE

PRELIMINARY — NOT FOR CONSTRUCTION — SUBJECT TO APPROVAL

13TH STREET GAS STATION

20101 NE 13th Street
Camas, Washington

DRAWN: Camas	CHECKED: CB
SCALE: AS SHOWN	DATE: 9.15.23
JOB #: 23-1837	
ISSUED FOR: PLR	
REVISIONS:	
1	
2	
3	
4	
5	
6	

SHEET NAME:
PRELIMINARY IRRIGATION DETAILS

SHEET #: ID

SHEET 8 OF 8

582

DISCLAIMER AND LIMITATIONS: ANY WORK CONTAINED HEREIN INCLUDING BUT NOT LIMITED TO PLANS AND DOCUMENTS ARE INSTRUMENTS OF SERVICE INTENDED FOR USE SOLELY WITH RESPECT TO THIS PROJECT. ALL WORK SHALL BE CONSIDERED CONCEPTUAL AND SUBJECT TO CHANGE. THESE INSTRUMENTS OF SERVICE SHALL BE CONSIDERED A WORK IN PROGRESS WHERE UNKNOWN FACTORS EXIST AND JURISDICTIONAL REQUIREMENTS HAVE NOT BEEN VERIFIED. DUE TO THE HIGH DEGREE OF UNCERTAINTY ASSOCIATED WITH A CONCEPTUAL DESIGN, THESE INSTRUMENTS OF SERVICE SHALL NOT BE USED AS THE BASIS FOR A FINANCIAL EVALUATION OR CONSTRUCTION COST ESTIMATING. NO ASSURANCES ARE OFFERED OR IMPLIED AS TO THE OVERALL FEASIBILITY OF THE PROJECT. ALL WORK SHALL BE SUBJECT TO REVIEW AND FINAL APPROVAL BY ALL APPROPRIATE FEDERAL, STATE AND LOCAL AGENCIES AND SHALL CONTAIN THE PROFESSIONAL SEAL AND SIGNATURE OF ALL REQUIRED DESIGN PROFESSIONALS PRIOR TO ANY USE OF THESE DOCUMENTS. PLANNING SOLUTIONS, INC. AND ITS CONSULTANTS SHALL BE DEEMED THE AUTHORS AND OWNERS OF THEIR RESPECTIVE INSTRUMENTS OF SERVICE AND SHALL RETAIN ALL COMMON LAW STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING COPYRIGHTS.

PRELIMINARY TECHNICAL INFORMATION REPORT

NE 13th Street Site Plan

City of Camas, Washington

Prepared by:
PLS Engineering
Consulting Engineers and Planners
604 W Evergreen Blvd
Vancouver, WA 98660
(360) 944-6519
pm@plsengineering.com

Prepared for:
Taz Khan
3993 NW Currawong Court
Camas, WA 98607

Prepared: November of 2023

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- **Soils Map**
- **Critical Areas Map**
- **Basin Maps**

Appendix B: Design Calculations & Modeling

Appendix C: Geotechnical Report

Appendix D: Operations and Maintenance Manual

Appendix E: Construction Stormwater Pollution Prevention Plan (SWPPP)

Appendix F: Environmental Documentation

CERTIFICATE OF ENGINEER

NE 13th Street Gas Station Site Plan

Technical Information Report

The technical information and data contained in this report was prepared under the direction and supervision of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.

This document was prepared by:

Scott W. Gilliland, PE

Section A – Project Overview

Section A.1 – Site Information

This project will comply with current City of Camas Standards for Stormwater and Erosion Control per CMC Title 14. The Final Grading / Erosion Control / Drainage Plans have been prepared by the project civil engineer, PLS Engineering, Inc. The site will be served by public sewer and water provided by the City of Camas. This project proposes construction of a gas station along with associated structures, access, paved areas, sewer, water, and storm drain connections. Access to the site is from NE 13th Street.

The physical address of the site is currently 20101 NE 13th Street, but the postal office may change that prior to the completion of this project. The parcel serial number is 176148000. The property is located in the Northwest quarter of Section 29, T2N, R3E of the Willamette Meridian. The property is bordered by NE 13th Street on the north side, 1 acre single family lots to the West, NW Friburg-Strunk Street to the East, and Business Park to the South. The cumulative property area contains a total of 42,257 square feet (0.97 acres), with 1,832 square feet (.04 acres) of right of way dedication, resulting in 40,425 square feet (0.93 acres) of developed area. This technical information report will address the stormwater runoff associated with the construction which will take place.

The topography of the site is set below the bordering roadways by approximately 2' and slightly sloped from the high point at the NW corner of the site towards the SW and SE corners of the site. Elevations range from approximately 249' to 244'. Slopes are generally between 1% and 7%, while the slopes at the edge of the Northern and Eastern boundary roads are around 33%. The site contains a 1,600 square-foot house and a 150 square-foot shop. These structures are planned to be removed. The remainder of the site is filled with grass, landscaping, and a variety of trees. There are potential wetlands mapped on Clark County Maps South of the site. There is a White Oak located on the South edge of the site. Otherwise, there are no known water courses, areas prone to flooding, floodplains, shoreline areas, water bodies, unstable slopes, landslide hazard areas, habitat, critical areas, or historic sites located on the site. Site drainage follows the slope of the land going from the NW corner to the SE/SW corners. There are also some isolated low points on site. The site runoff currently flows to the South, but that is clearly not the historical flow from the site. It appears that when NE 13th Street, and NW Friburg-Strunk Street were created, they were raised above the property and effectively dammed off the site. Historically, the flow from this site traveled to the NE towards Lacamas Creek.

Site runoff from PGIS surfaces will be routed to a to a cartridge vault for treatment. The treated runoff and any other runoff not routed to the vault will flow to an underground detention system. The detention system was modeled using WWHM software to discharge flows in compliance with the SWMMWW. The detention system discharges to an existing MH in NE 13th Street where it will be routed to a roadside ditch located on the North side of NE Goodwin road where it will eventually reach Lacamas creek, returning the site flows to their historical flow path.

Existing frontage on NE 13th Street is currently flowing in two different directions. The North side of the street is routed to the East where it eventually flows into Lacamas Creek. The South side of the street is routed to the South where it is treated and discharged as part of a City road project. The discharge appears to flow to a Wetland located East of NW Friberg-Strunk Street. The site discharge

historically followed the flow path of the North side of the road and is being discharged to that storm system. Consequently, this project has two TDA's. Runoff from the South side of 13th is identified as TDA 1, and will only include the existing and proposed frontage improvements along 13th. TDA 2 will include the roadway improvements on the North side of 13th, as well as the site improvements.

Section B – Minimum Requirements

Section B.2 – Determination of Applicable Minimum Requirements

After site development, disturbed impervious surfaces will cover approximately 49,280 square feet, resulting in more than 5,000 square foot of hard surface area. Consequently, this site must meet all nine Minimum Requirements of the stormwater manual. The site area and the North side of 13th will discharge to TDA 2, and the frontage improvements on the South side of 13th will discharge to TDA 1. The minimum requirements for the TDA's will be different. The areas for each TDA are summarized below. The stormwater system is designed to comply with all City requirements for stormwater treatment and quantity control. The treatment regulations require treatment of 91% of the total runoff volume from pollution generating impervious surfaces while the quantity control regulations require that post-development discharges shall match pre-developed durations for the range of pre-developed discharge rates from 50% of the 2-year peak flow up to the full 50-year peak flow.

Total Site Area:

Existing hard surface	12,106 ft^2
New hard surface	35,442 ft^2
Replaced hard	7,566 ft^2
Native vegetation converted to lawn or landscaping	9,829 ft^2
Native vegetation converted to pasture	0 ft^2
Total land-disturbing activity	1.21 acre
Pollution-generating hard surface	30,977 ft^2
Pollution-generating pervious surface	0 ft^2
New Pollution-generating hard surface	23,634 f t^2
Total pollution-generating surfaces	31,200 ft^2
Total non-pollution-generating surfaces	20,078 ft^2

TDA 1:

Existing hard surface	7,566 ft^2
New hard surface	3,091 ft^2
Replaced hard	7,566 ft^2
Native vegetation converted to lawn or landscaping	895 ft^2
Native vegetation converted to pasture	0 ft^2
Total land-disturbing activity	0.26 acre
Pollution-generating hard surface	8,875 ft^2
Pollution-generating pervious surface	0 ft^2
New Pollution-generating hard surface	1,532 f t^2
Total pollution-generating surfaces	9,098 ft^2
Total non-pollution-generating surfaces	895 ft^2

TDA 2:

Existing hard surface	4,540 ft^2
New hard surface	32,351 ft^2
Replaced hard	0 ft^2
Native vegetation converted to lawn or landscaping	8,934 ft^2
Native vegetation converted to pasture	0 ft^2
Total land-disturbing activity	0.95 acre
Pollution-generating hard surface	22,102 ft^2
Pollution-generating pervious surface	0 ft^2
New Pollution-generating hard surface	22,102 ft^2
Total pollution-generating surfaces	22,102 ft^2
Total non-pollution-generating surfaces	19,183 ft^2

MR #1) Preparation of Stormwater Site Plans
All Stormwater System designs meet City of Camas Requirements for conveyance, quality control and quantity. See final construction documents for more details.

MR #2) Construction Stormwater Pollution Prevention
A Stormwater Pollution Prevention Plan is being included with this report and will be onsite for the duration of the project's construction.

MR #3) Source Control of Pollution
See Section D

MR #4) Preservation of Natural Drainage Systems and Outfalls
The historic flow path from the site was to the NE. The South side of 13th was artificially routed to away from the historic flow path and to the South. This flow path will remain unchanged. The North side of 13th is currently following the historic flow path to the NE and will remain unchanged. The site runoff was dammed off by the roadways located North and East of the site, and its historic flow path was changed to the South. This project will restore the site to its historic flow path. This will maintain and preserve the natural drainage systems.

MR #5) Onsite Stormwater Management
See Section E

MR #6) Runoff Treatment
See Section F

MR #7) Flow Control
See Section G

MR #8) Wetland Protection

Clark County maps show the potential for a Wetland located South of the site. See Appendix F for documentation showing that there are not any wetlands on the site.

MR #9) Operations and Maintenance
See Appendix D

Section C – Soils Evaluation

The soils are mapped by the NRCS as Wind River gravelly loam (WrB) for the majority of the site, and Cove silty clay loam (CwA) at the SW corner and Eastern edge of the site.

Earth Engineering Inc. investigated the site on August 4, 2023, and provided a Geotechnical report for the site on August 31, 2023. The geotechnical investigation identified the subsurface soils on site as hard silty clay soils. Consequently, the site was modeled assuming soil type SG4. The geotechnical report has been included in Appendix C and a soil map is included in Appendix A.

Section D – Source Control

The pollution risks involved with this project mainly include the sediment accumulation involved with construction. The Stormwater Pollution Prevention Plan is a document that notes our certain Best Management Practice's (BMP's) that will help prevent sediment laden water from leaving the site during construction. The Erosion Control Plan located in the final construction drawings will provide protection measures involved with minimizing the chance that sediment from the site could enter downstream waterways. The SWPPP is provided in Appendix E.

After construction is complete, this site will be a Gas Station, with special source control measures required. The following Source Control BMPs should be implemented after construction to meet the MR# 3 requirements:

- **BMP S409: BMP's for Fueling at Dedicated Stations**.
- **BMP S412: BMP's for Loading and Unloading Areas of Liquid or Solid Materials**.
- **BMP S426: BMP's for Spills of Oil and Hazardous Substances**.
- **BMP S455: BMP's for Spill Prevention and Cleanup**.

Section E – On-site Stormwater Management BMPs

Minimum Requirement 5 requires the applicant to employ On-site Stormwater Management BMPs in accordance with the following project thresholds, standards, and lists to infiltrate, disperse, and retain stormwater runoff on-site to the maximum extent feasible without causing flooding or erosion impacts. Based on section I-2.5.1 of the Western Washington Stormwater Manual the development is within the UGA on a parcel that is less than 5 acres therefore Low Impact Development Performance Standards and BMP T5.13; or List #2 will apply (applicant option). Due to negligible infiltration rates, this project will apply List #2. If certain BMP's are infeasible; infeasibility criteria per the 2019 Stormwater Management Manual for Western Washington are also noted.

List #2:
Lawn and Landscape areas:
BMP T5.13 Post-Construction Soil Quality and Depth:
This requirement will be met during final design and shown on final construction drawings.

Roofs:
BMPT5.30A or T5.30B Full Dispersion:
There is insufficient area and length to provide a 100' flow path to meet the requirements of full dispersion while still maintaining sufficient spacing to prevent overlap.

BMPT5.14A or BMPT5.14B Rain Gardens and Bioretention:
The soil permeability factor above groundwater is less than 0.3 inches per. Because the site soils don't accommodate infiltration, this is not a feasible infiltration BMP as part of Minimum requirement #5.

BMPT5.10C Downspout Dispersion Systems:
There is insufficient space to meet the required dispersion lengths and setbacks from the structures and the property lines.

BMP T5.10D Perforated Stub-out Connections
There is insufficient space to meet the required setback of 10' away from the structures and property lines, and infiltration rates are less than 0.3 inches per hour.

Other Hard Surfaces:
BMPT5.30A or T5.30B Full Dispersion:
There is insufficient area and length to provide a 100' flow path to meet the requirements of full dispersion while still maintaining sufficient spacing to prevent overlap.

BMPT5.15 Permeable Pavement:
Permeable pavement is insufficient due to soil infiltration above the groundwater table being less than 0.3 in/hr.

BMPT5.14A or BMPT5.14B Rain Gardens and Bioretention:
The soil permeability factor above groundwater is less than 0.3 inches per hour. Because the site soils don't accommodate infiltration, this is not a feasible infiltration BMP as part of Minimum requirement #5.

BMPT5.12 Sheet Flow Dispersion:
There is insufficient area and length to provide a 100' flow path to meet the requirements of full dispersion while still maintaining sufficient spacing to prevent overlap.

None of the List 2 requirements can be met by this project. Consequently, site stormwater runoff from this project will be treated and detained prior to discharge as described in Sections F and G of this report.

The following BMPs will be implemented to meet the MR# 5 requirements:

- **BMP T5.13: Post-Construction Soil Quality and Depth** for lawn and landscaped areas.
- **BMP D.2: Detention Tanks** for runoff from the site.
- **BMP V10.0: Manufactured Treatment Devices** for runoff from the site.
- **BMP T11.11: Coalescing Plate (CP) Separator** for treatment of fuel station spills, mini-mart grease, and car wash oils.

Section F – Runoff Treatment Analysis and Design

Treatment for the site will be accomplished with Contech treatment cartridges. Preliminary stormwater analysis with a WWHM model (see appendix B) identifies the water quality storm event for the site as 0.1213. This volume includes roof, landscape, and frontage runoff, which will not all be treated as part of the final design. The Contech sizing table below identifies treatment flow rates for different cartridges. For example, the 18" ZPG cartridges will each treat 0.028 cfs. Based on this preliminary analysis, there will be 5 or less 18" cartridges needed to treat the stormwater runoff from the site. Due to elevation issues it might be necessary to use low drop cartridges which would result in 7 or less ZPG cartridges. This site is very tight vertically, so the preliminary rim elevations and pipe IE's were sent to Contech who verified that their treatment cartridges will operate properly under the proposed backwater conditions.

Table 1-Contech Sizing Chart

	$2\ GPM/ft^2$			$1\ GPM/ft^2$			$1.67\ GPM/ft^2$		
StormFilter	Flow (GPM)	Flow (CFS)	Color	Flow (GPM)	Flow (CFS)	Color	Flow (GPM)	Flow (CFS)	Color
LowDrop	10	0.022	Gray (GRY)	5.00	0.011	Blue (BLU)	8.35	0.019	Yellow (YLW)
18"	15	0.033	Black (BLK)	7.50	0.017	Blue (BLU)	12.53	0.028	Red (RED)
27"	22.5	0.05	Gold (GLD)	11.50	0.025	Pink (PNK)	18.79	0.042	White (WHT)

Section G - Flow Control Analysis and Design

The stormwater quantity control system for this site has been designed based on the current stormwater quantity control requirements of the City of Camas. The quantity control standards require that stormwater discharges shall match developed discharge durations to pre-developed durations for the range of pre-developed discharge rates from 50% of the 2-year peak flow up to the full 50-year peak flow.

The runoff from this site will be detained in an underground detention facility. The preliminary design assumes 6 x 136' 24" CMP pipes placed in gravel. The gravel has a porosity of 0.40. Underground storage was modelled in WWHM using a trench. In order to properly model the 24" CMP in the underground storage, the porosity for the rock was calculated and averaged out to be 0.7326. The WWHM model shows that it passed and meets the discharge requirements of the SWMMWW.

See Appendix B for calculations.

Section H – Wetland Protection

There are not any wetlands on the site. See appendix F.

Section I – Other Permits

The project will be required to obtain preliminary site plan approval, final site plan approval, construction drawing approval, an NPDES construction stormwater permit, and building permit approval prior to construction.

Section J – Conveyance Systems Analysis and Design

Conveyance will be provided with the Final TIR.

Section K – Special Reports and Studies

A Geotechnical Report for the site is included in Appendix C. A Critical Areas report and a Mitigation plan are included in Appendix F. No other special studies are anticipated to be needed.

Section L –Operations and Maintenance Manual

The stormwater facility located on-site will be maintained by the site owner. An Operations and Maintenance Manual is included as Appendix D of this report.

SEPARATOR SHEET

APPENDIX A

Maps

Vicinity Map

Legend

- Taxlots
- All Roads
  - Interstate
  - State Route
  - Arterial
  - Forest Arterial
  - Minor Collector
  - Forest Collector
  - Private or Other

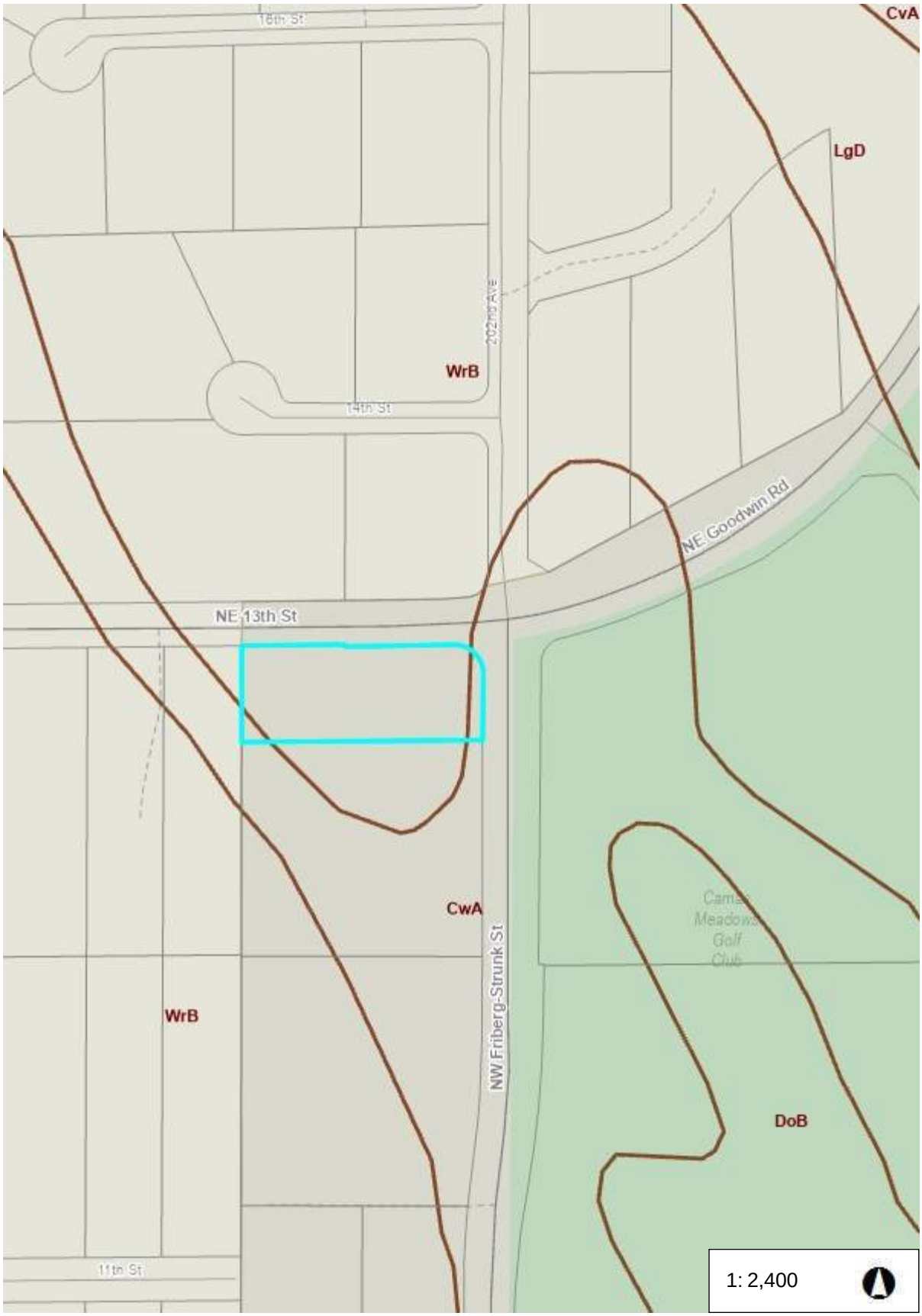
Notes:

1,000.0 0 500.00 1,000.0 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov

This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information. T... (i.e., parcel) boundaries cannot be used to determine th... location of property lines on the ground.

Soils Map



Legend

- Taxlots
- Soil Type

Notes:

400.0 0 200.00 400.0 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov

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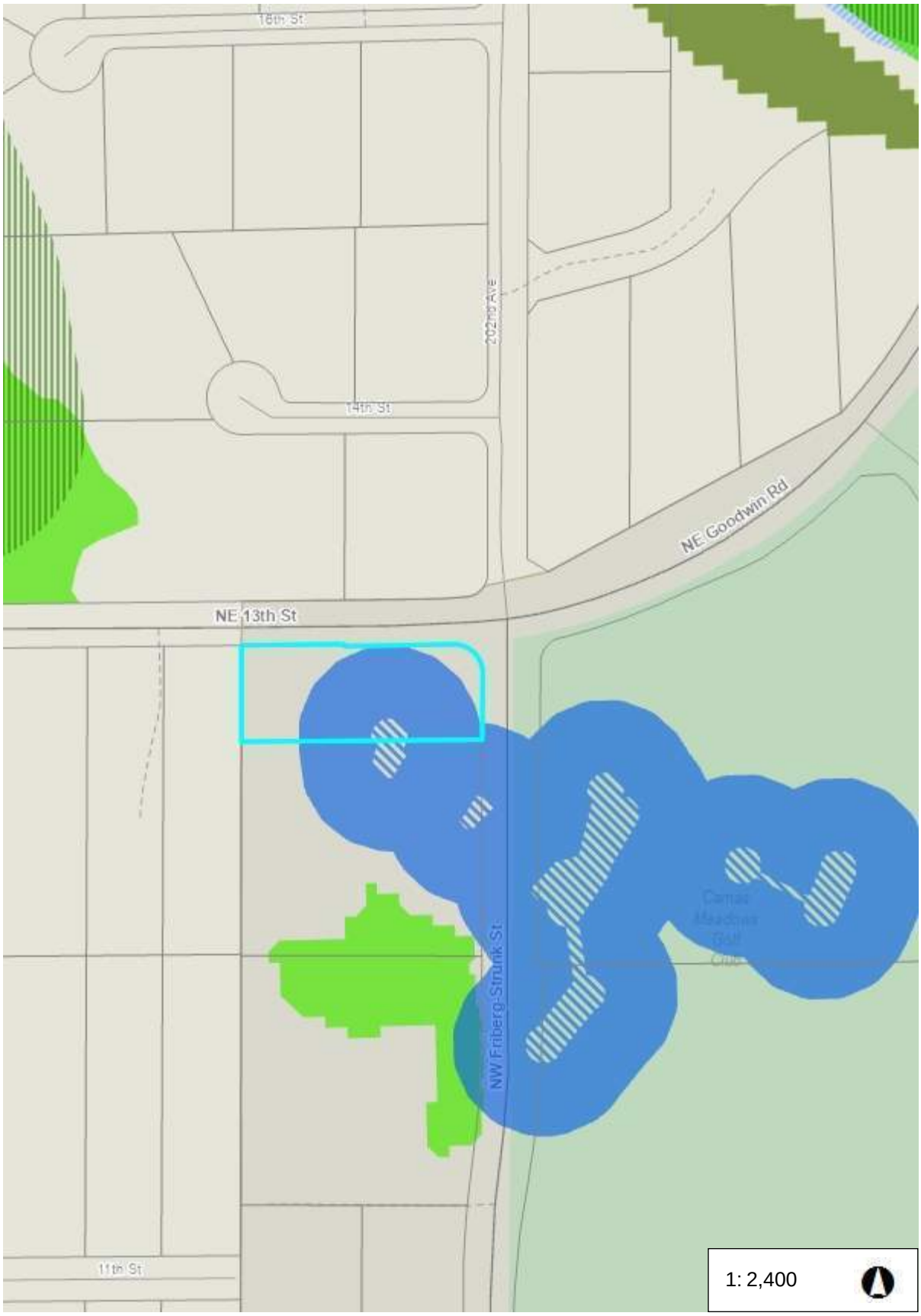
Critical Areas Map



Legend

- Taxlots
- Species
  - Species Area
  - Adjacent to Species Area
- Habitat
  - Habitat Area
  - Adjacent to Habitat Area
- Riparian Habitat
- Severe Erosion Hazard Areas
- Steep Slopes and Landslide H
  - Areas of Historic or Active Landslid
  - Areas of Potential Instability
  - Areas of Older Landslide Debris
  - Slopes > 15%
  - Slopes > 25%
- Potential Wetlands Presence
- Flood Zone Designation
  - Floodway
  - Floodway Fringe
  - 500 Year Flood Area
  - Area Not Studied
- Shoreline Designations
  - Aquatic
  - Natural
  - Urban Conservancy
  - Medium Intensity
  - High Intensity
  - Rural Conservancy Residential
  - Rural Conservancy Resource Land
- Critical Aquifer Recharge Area

Notes:

400.0 0 200.00 400.0 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov

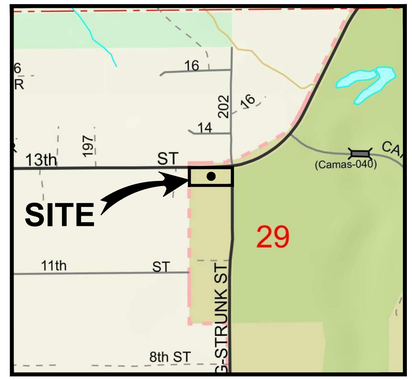
This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information. T... (i.e., parcel) boundaries cannot be used to determine th... location of property lines on the ground.

13th Street Site Plan

Located in the NW ¼ of Section 29, T2N, R3E, W.M.
City of Camas, Washington

Sheet Index

1. Predevelopment Basin Map
2. Postdevelopment Basin Map



VICINITY MAP
NOT TO SCALE

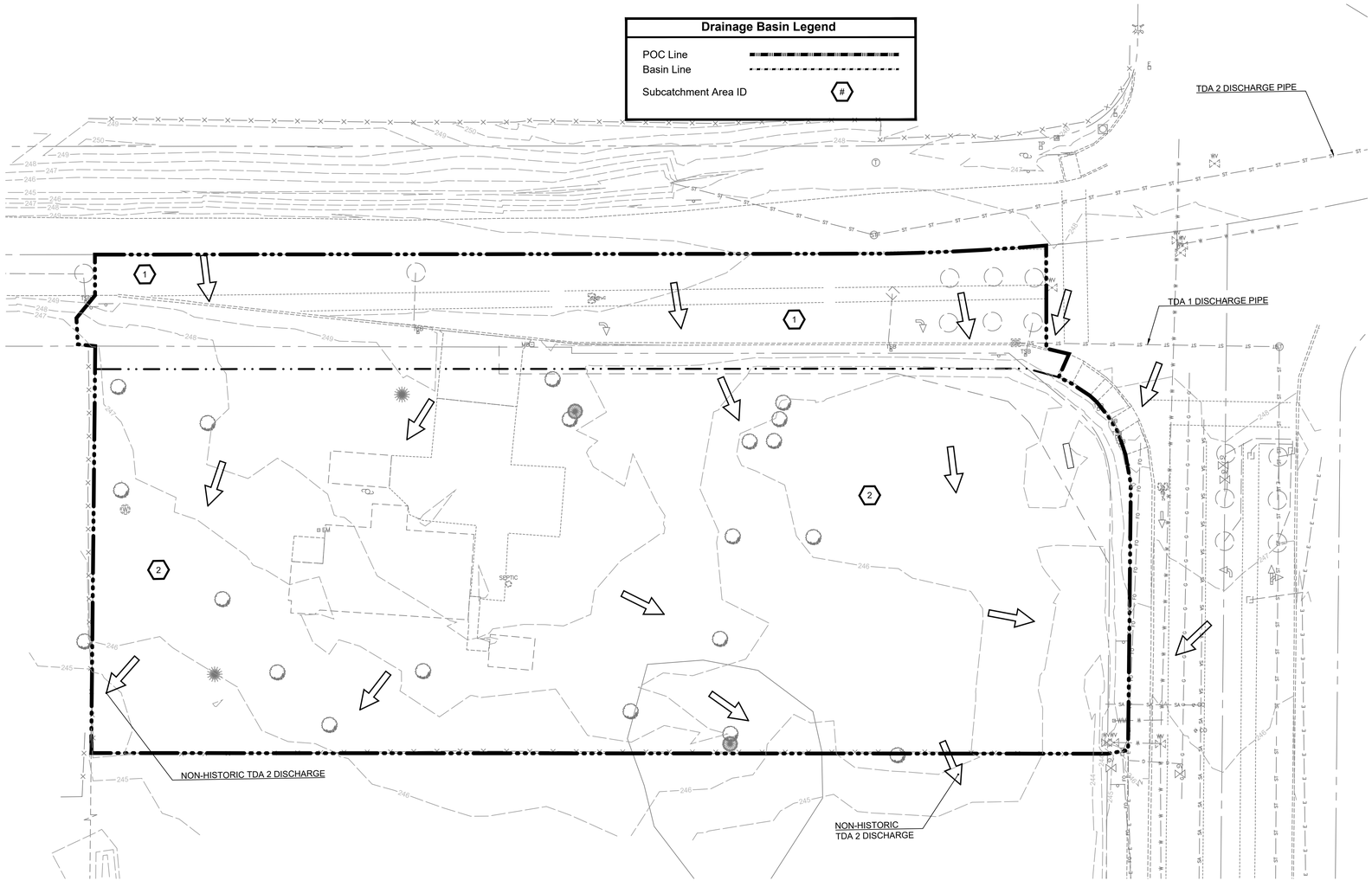
Extg TDA Totals			
	sqft	acre	
TDA 1 Area	11,551.38	0.2652	1
Frontage Road	7,565.86	0.1737	
Frontage Landscape	3,985.52	0.0915	
TDA 2 Area	41,285.00	0.9478	2
Site Driveway	2,449.31	0.0562	
Site Sidewalk	154.38	0.0035	
Site Roof	1,936.36	0.0445	
Site Landscape	36,744.94	0.8435	
Existing Site Area Modeled as Forested	41,285.00	0.9478	

Scale 1" = 20'
20 10 0 20

N

Drainage Basin Legend

POC Line
Basin Line
Subcatchment Area ID (#)



GENERAL NOTES

APPLICANT:
Taz Kahn
3993 NW Currawong Court
Camas, WA 98607
TKahnusa@gmail.com

OWNER:
Pak USA Camas LLC
20107 NE 13th Street
Camas, WA 98607

CIVIL ENGINEER:
PLS Engineering
Contact: Travis Johnson, PE
604 W Evergreen Blvd
Vancouver, WA 98660
PH: (360) 944-6519
pm@plsengineering.com

SITE ADDRESS:
Parcel # 176148-000
20101 NE 13TH ST
Camas, WA 98607

SITE STATISTICS:
Existing Site Area: 42,257 SF (0.97 Acre)
ROW Dedication: 1,832 SF (0.04 Acre)
Developed Site: 42,257 SF (0.93 Acre)

ENGINEERING
PLS

Predevelopment Basin Map For:
13th Street Site Plan
A Subdivision Located In The City Of Camas, Washington

Engineering - Surveying - Planning | 604 W. Evergreen Blvd., Vancouver, WA 98660 | PH (360) 944-6519 | Fax (360) 944-6539

Revisions
1 2 3 4 5 6

Project No.	3632
SCALE:	H: 1" = 50' V: N/A
DESIGNED BY:	SWG
DRAFTED BY:	JSV
REVIEWED BY:	TGJ

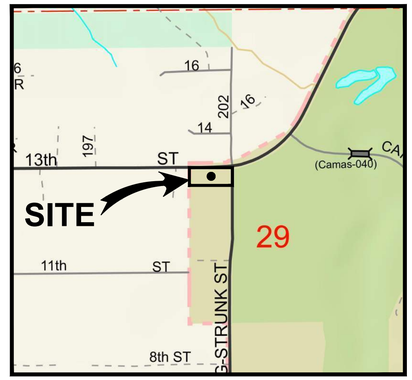
1
2

13th Street Site Plan

Located in the NW ¼ of Section 29, T2N, R3E, W.M.
City of Camas, Washington

Sheet Index

1. Predevelopment Basin Map
2. Postdevelopment Basin Map



VICINITY MAP
NOT TO SCALE

Basin Areas (sqft)						
Basin	Road	SW	Roof	Field	Landscape	Total
1 TDA 1 Basin 1 Frontage	9,097.51	1,559.09	-	-	894.78	11,551.38
2 TDA 2 Basin 3 Site	22,101.84	2,490.08	7,759.05	-	8,934.03	41,285.00
Total	31,199.36	4,049.16	7,759.05	-	9,828.81	52,836.38

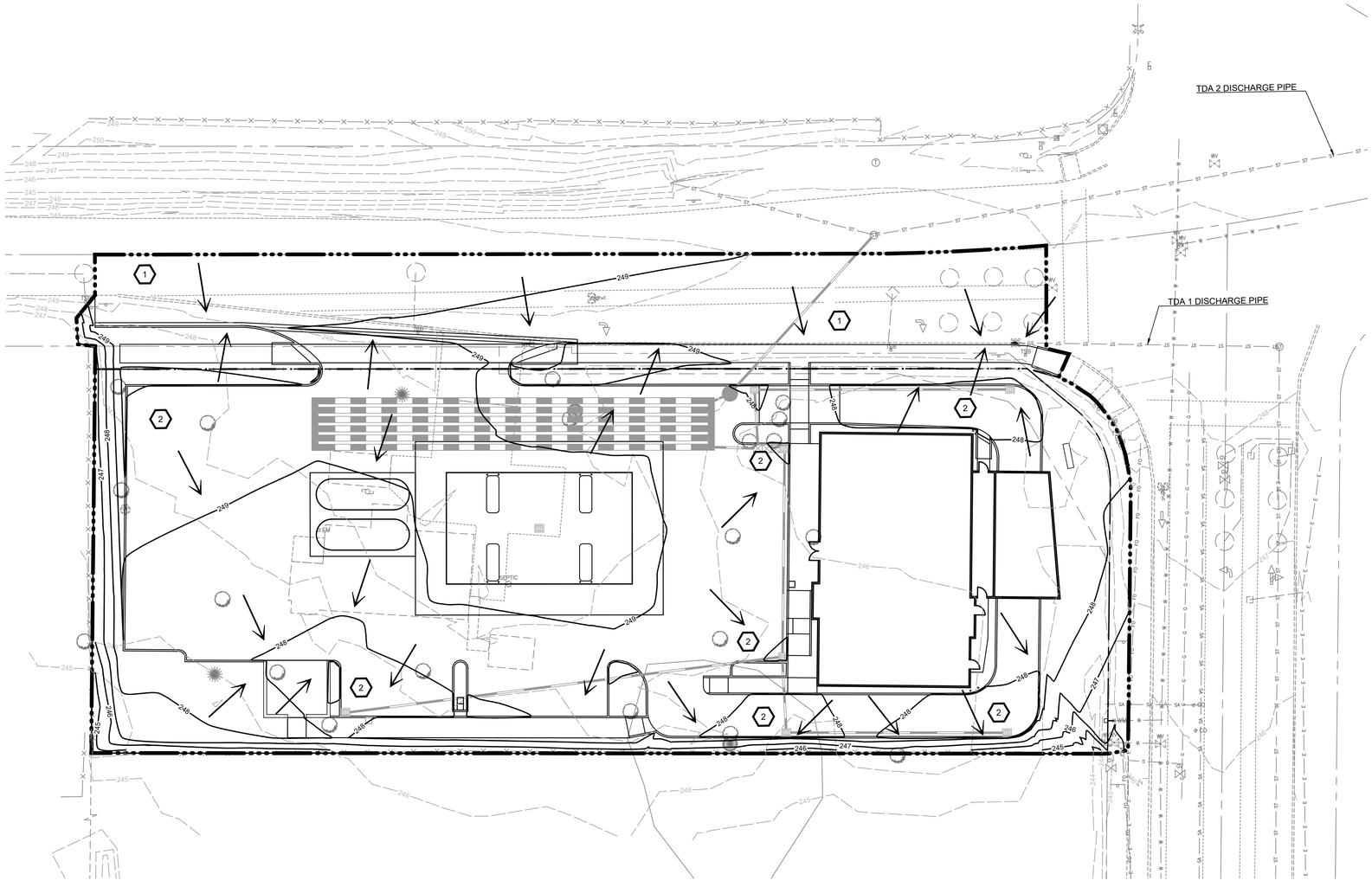
Basin Areas (acre)						
	Road	SW	Roof	Field	Landscape	Total
1 TDA 1 Basin 1 Frontage	0.2089	0.0358	-	-	0.0205	0.2652
2 TDA 2 Basin 3 Site	0.5074	0.0572	0.1781	-	0.2051	0.9478
	-	-	-	-	-	-
Total	0.7162	0.0930	0.1781	-	0.2256	1.2130

Scale 1" = 20'
20 10 0 20

N

Drainage Basin Legend

POC Line
Basin Line
Subcatchment Area ID #



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SITE ADDRESS:
Parcel # 176148-000
20101 NE 13TH ST
Camas, WA 98607

SITE STATISTICS:
Existing Site Area: 42,257 SF (0.97 Acre)
ROW Dedication: 1,832 SF (0.04 Acre)
Developed Site: 42,257 SF (0.93 Acre)

ENGINEERING | PLS

604 W. Evergreen Blvd., Vancouver, WA 98660 | PH (360) 944-6519 | Fax (360) 944-6539

Post-Development Basin Map For:
13th Street Site Plan
A Subdivision Located In The City Of Camas, Washington
Engineering - Surveying - Planning | 604 W. Evergreen Blvd., Vancouver, WA 98660 | PH (360) 944-6519 | Fax (360) 944-6539

Revisions

1	2	3	4	5	6

Project No.	3632
SCALE:	H: 1" = 50' V: N/A
DESIGNED BY:	SWG
DRAFTED BY:	JSV
REVIEWED BY:	TGJ

2
2

SEPARATOR SHEET

APPENDIX B

Design Calculations and Modeling

Proposed TDA Totals		
	sqft	acre
Total Development	**52,836.38**	**1.2130**
Road	31,199.36	0.7162
Sidewalk	4,049.16	0.0930
Roof	7,759.05	0.1781
Landscape	9,828.81	0.2256
Impervious Area	43,007.57	0.9873
Pervious Area	9,828.81	0.2256
Pollution Generating Impervious Surface Area (PGIS)	31,199.36	0.7162
TDA 1	**11,551.38**	**0.2652**
Road	9,097.51	0.2089
Sidewalk	1,559.09	0.0358
Landscape	894.78	0.0205
TDA 1 New Impervious	3,090.74	0.0710
TDA 1 Replaced Impervious	7,565.86	0.1737
TDA 1 New PGIS	1,531.66	0.0352
TDA 1 Replaced PGIS	7,565.86	0.1737
TDA 2	**41,285.00**	**0.9478**
Road	22,101.84	0.5074
Sidewalk	2,490.08	0.0572
Roof	7,759.05	0.1781
Landscape	8,934.03	0.2051
TDA 2 New Impervious	32,350.97	0.7427
TDA 2 Replaced Impervious	-	-
TDA 2 New PGIS	22,101.84	0.5074
TDA 2 Replaced PGIS	-	-

Extg TDA Totals		
	sqft	acre
TDA 1 Area	11,551.38	0.2652
Frontage Road	7,565.86	0.1737
Frontage Landscape	3,985.52	0.0915
TDA 2 Area	41,285.00	0.9478
Site Driveway	2,449.31	0.0562
Site Sidewalk	154.38	0.0035
Site Roof	1,936.36	0.0445
Site Landscape	36,744.94	0.8435
Existing Site Area Modeled as Forested	41,285.00	0.9478

Basin Areas (sqft)						
Basin	Road	SW	Roof	Field	Landscape	Total
TDA 1 Basin 1 Frontage	9,097.51	1,559.09	-	-	894.78	11,551.38
TDA 2 Basin 3 Site	22,101.84	2,490.08	7,759.05	-	8,934.03	41,285.00
Total	31,199.36	4,049.16	7,759.05	-	9,828.81	52,836.38

Basin Areas (acre)						
	Road	SW	Roof	Field	Landscape	Total
TDA 1 Basin 1 Frontage	0.2089	0.0358	-	-	0.0205	0.2652
TDA 2 Basin 3 Site	0.5074	0.0572	0.1781	-	0.2051	0.9478
	-	-	-	-	-	-
Total	0.7162	0.0930	0.1781	-	0.2256	1.2130

WWHM Basin Treatment Flow Analysis (cfs)						
	WQ	2-yr	10-yr	25-yr	50-yr	100-yr
Total Site Treatment	0.1213	0.568841	0.844412	0.987932	1.097315	1.208959

Underground Storage Calculations		
17' Wide x 2' Tall is	34.0000	SF
6x24" CMP is	18.8496	SF
Rock Storage @ 40% Porocity	6.0602	SF
Total Storage	24.9097	SF
Porocity Tweaked to match	**73.26%**	
Facility Length	130.0000	LF
Total Facility Volume	4,420.0000	CF
Facility Storage	3,238.2654	CF

SEPARATOR SHEET

WWHM2012

PROJECT REPORT

General Model Information

WWHM2012 Project Name: 13thPrelimStormAnalysis

Site Name:	13th Gas Station
Site Address:	
City:	
Report Date:	11/3/2023
Gage:	Lacamas
Data Start:	1948/10/01
Data End:	2008/09/30
Timestep:	15 Minute
Precip Scale:	1.300
Version Date:	2023/01/27
Version:	4.2.19

POC Thresholds

Low Flow Threshold for POC1:	50 Percent of the 2 Year
High Flow Threshold for POC1:	50 Year

Landuse Basin Data

Predeveloped Land Use

TDA 2 EXTG

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
SG4, Forest, Flat	0.9478
Pervious Total	0.9478
Impervious Land Use	acre
Impervious Total	0
Basin Total	0.9478

Mitigated Land Use

TDA 2 Basin 3 Site

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Lawn, Flat	0.2051
Pervious Total	0.2051

Impervious Land Use	acre
ROADS FLAT	0.5074
ROOF TOPS FLAT	0.1781
SIDEWALKS FLAT	0.0572
Impervious Total	0.7427
Basin Total	0.9478

Routing Elements
Predeveloped Routing

Mitigated Routing

Underground Detention

Bottom Length:	136.00 ft.
Bottom Width:	17.00 ft.
Trench bottom slope 1:	0 To 1
Trench Left side slope 0:	0 To 1
Trench right side slope 2:	0 To 1
Material thickness of first layer:	2
Pour Space of material for first layer:	0.7326
Material thickness of second layer:	0
Pour Space of material for second layer:	0
Material thickness of third layer:	0
Pour Space of material for third layer:	0

Discharge Structure

Riser Height:	2 ft.
Riser Diameter:	10 in.
Notch Type:	Rectangular
Notch Width:	0.270 ft.
Notch Height:	0.400 ft.
Orifice 1 Diameter:	1.900 in. Elevation:0 ft.

Element Flows To:
Outlet 1 Outlet 2

Gravel Trench Bed Hydraulic Table

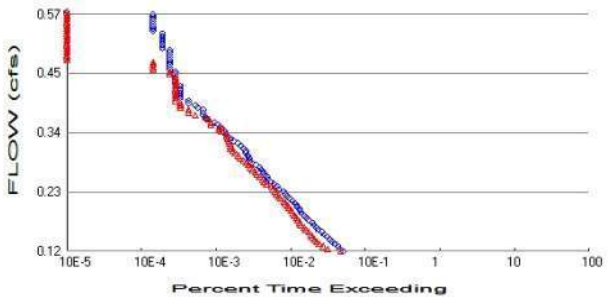
Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.053	0.000	0.000	0.000
0.0222	0.053	0.000	0.014	0.000
0.0444	0.053	0.001	0.020	0.000
0.0667	0.053	0.002	0.025	0.000
0.0889	0.053	0.003	0.029	0.000
0.1111	0.053	0.004	0.032	0.000
0.1333	0.053	0.005	0.035	0.000
0.1556	0.053	0.006	0.038	0.000
0.1778	0.053	0.006	0.041	0.000
0.2000	0.053	0.007	0.043	0.000
0.2222	0.053	0.008	0.046	0.000
0.2444	0.053	0.009	0.048	0.000
0.2667	0.053	0.010	0.050	0.000
0.2889	0.053	0.011	0.052	0.000
0.3111	0.053	0.012	0.054	0.000
0.3333	0.053	0.013	0.056	0.000
0.3556	0.053	0.013	0.058	0.000
0.3778	0.053	0.014	0.060	0.000
0.4000	0.053	0.015	0.062	0.000
0.4222	0.053	0.016	0.063	0.000
0.4444	0.053	0.017	0.065	0.000
0.4667	0.053	0.018	0.066	0.000
0.4889	0.053	0.019	0.068	0.000
0.5111	0.053	0.019	0.070	0.000
0.5333	0.053	0.020	0.071	0.000
0.5556	0.053	0.021	0.073	0.000
0.5778	0.053	0.022	0.074	0.000
0.6000	0.053	0.023	0.075	0.000
0.6222	0.053	0.024	0.077	0.000

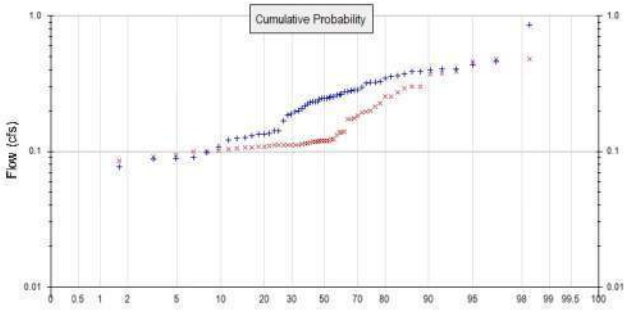
0.6444	0.053	0.025	0.078	0.000
0.6667	0.053	0.025	0.080	0.000
0.6889	0.053	0.026	0.081	0.000
0.7111	0.053	0.027	0.082	0.000
0.7333	0.053	0.028	0.083	0.000
0.7556	0.053	0.029	0.085	0.000
0.7778	0.053	0.030	0.086	0.000
0.8000	0.053	0.031	0.087	0.000
0.8222	0.053	0.032	0.088	0.000
0.8444	0.053	0.032	0.090	0.000
0.8667	0.053	0.033	0.091	0.000
0.8889	0.053	0.034	0.092	0.000
0.9111	0.053	0.035	0.093	0.000
0.9333	0.053	0.036	0.094	0.000
0.9556	0.053	0.037	0.095	0.000
0.9778	0.053	0.038	0.096	0.000
1.0000	0.053	0.038	0.098	0.000
1.0222	0.053	0.039	0.099	0.000
1.0444	0.053	0.040	0.100	0.000
1.0667	0.053	0.041	0.101	0.000
1.0889	0.053	0.042	0.102	0.000
1.1111	0.053	0.043	0.103	0.000
1.1333	0.053	0.044	0.104	0.000
1.1556	0.053	0.044	0.105	0.000
1.1778	0.053	0.045	0.106	0.000
1.2000	0.053	0.046	0.107	0.000
1.2222	0.053	0.047	0.108	0.000
1.2444	0.053	0.048	0.109	0.000
1.2667	0.053	0.049	0.110	0.000
1.2889	0.053	0.050	0.111	0.000
1.3111	0.053	0.051	0.112	0.000
1.3333	0.053	0.051	0.113	0.000
1.3556	0.053	0.052	0.114	0.000
1.3778	0.053	0.053	0.115	0.000
1.4000	0.053	0.054	0.115	0.000
1.4222	0.053	0.055	0.116	0.000
1.4444	0.053	0.056	0.117	0.000
1.4667	0.053	0.057	0.118	0.000
1.4889	0.053	0.057	0.119	0.000
1.5111	0.053	0.058	0.120	0.000
1.5333	0.053	0.059	0.121	0.000
1.5556	0.053	0.060	0.122	0.000
1.5778	0.053	0.061	0.123	0.000
1.6000	0.053	0.062	0.123	0.000
1.6222	0.053	0.063	0.127	0.000
1.6444	0.053	0.063	0.134	0.000
1.6667	0.053	0.064	0.141	0.000
1.6889	0.053	0.065	0.151	0.000
1.7111	0.053	0.066	0.161	0.000
1.7333	0.053	0.067	0.172	0.000
1.7556	0.053	0.068	0.185	0.000
1.7778	0.053	0.069	0.198	0.000
1.8000	0.053	0.070	0.211	0.000
1.8222	0.053	0.070	0.226	0.000
1.8444	0.053	0.071	0.241	0.000
1.8667	0.053	0.072	0.257	0.000
1.8889	0.053	0.073	0.274	0.000
1.9111	0.053	0.074	0.291	0.000

1.9333	0.053	0.075	0.309	0.000
1.9556	0.053	0.076	0.327	0.000
1.9778	0.053	0.076	0.346	0.000
2.0000	0.053	0.077	0.366	0.000

Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 0.9478
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0.2051
Total Impervious Area: 0.7427

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.237792
5 year	0.372265
10 year	0.445639
25 year	0.520497
50 year	0.565063
100 year	0.601747

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.143408
5 year	0.220762
10 year	0.285903
25 year	0.386617
50 year	0.47677
100 year	0.581482

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.186	0.173
1950	0.243	0.118
1951	0.322	0.120
1952	0.189	0.184
1953	0.254	0.109
1954	0.354	0.113
1955	0.197	0.109
1956	0.387	0.374
1957	0.294	0.118
1958	0.218	0.302

1959	0.127	0.091
1960	0.125	0.123
1961	0.349	0.196
1962	0.234	0.111
1963	0.260	0.119
1964	0.248	0.112
1965	0.222	0.175
1966	0.284	0.118
1967	0.248	0.116
1968	0.324	0.119
1969	0.264	0.461
1970	0.862	0.476
1971	0.136	0.100
1972	0.232	0.111
1973	0.231	0.133
1974	0.364	0.388
1975	0.198	0.109
1976	0.285	0.123
1977	0.008	0.094
1978	0.406	0.254
1979	0.275	0.215
1980	0.168	0.104
1981	0.386	0.293
1982	0.260	0.274
1983	0.432	0.172
1984	0.141	0.107
1985	0.109	0.138
1986	0.134	0.114
1987	0.234	0.137
1988	0.090	0.106
1989	0.098	0.105
1990	0.089	0.100
1991	0.253	0.111
1992	0.278	0.099
1993	0.327	0.255
1994	0.250	0.193
1995	0.207	0.299
1996	0.397	0.477
1997	0.459	0.376
1998	0.371	0.120
1999	0.278	0.198
2000	0.134	0.085
2001	0.077	0.082
2002	0.405	0.114
2003	0.319	0.139
2004	0.087	0.112
2005	0.131	0.111
2006	0.245	0.111
2007	0.121	0.228
2008	0.142	0.120

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.8622	0.4771
2	0.4595	0.4763
3	0.4322	0.4607
4	0.4060	0.3879

5	0.4054	0.3757
6	0.3967	0.3738
7	0.3870	0.3017
8	0.3860	0.2990
9	0.3714	0.2929
10	0.3637	0.2735
11	0.3544	0.2551
12	0.3485	0.2545
13	0.3270	0.2277
14	0.3237	0.2153
15	0.3216	0.1982
16	0.3187	0.1964
17	0.2943	0.1925
18	0.2848	0.1841
19	0.2841	0.1745
20	0.2782	0.1725
21	0.2776	0.1716
22	0.2748	0.1394
23	0.2638	0.1383
24	0.2598	0.1370
25	0.2598	0.1327
26	0.2543	0.1230
27	0.2529	0.1228
28	0.2500	0.1202
29	0.2480	0.1200
30	0.2476	0.1196
31	0.2446	0.1193
32	0.2435	0.1189
33	0.2343	0.1184
34	0.2338	0.1176
35	0.2319	0.1175
36	0.2309	0.1161
37	0.2223	0.1142
38	0.2183	0.1140
39	0.2075	0.1130
40	0.1982	0.1121
41	0.1973	0.1121
42	0.1885	0.1113
43	0.1857	0.1110
44	0.1681	0.1108
45	0.1421	0.1107
46	0.1410	0.1106
47	0.1364	0.1090
48	0.1344	0.1086
49	0.1343	0.1086
50	0.1308	0.1073
51	0.1269	0.1065
52	0.1254	0.1052
53	0.1211	0.1038
54	0.1087	0.1003
55	0.0983	0.0999
56	0.0905	0.0990
57	0.0892	0.0936
58	0.0875	0.0913
59	0.0775	0.0851
60	0.0078	0.0822

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.1189	1055	983	93	Pass
0.1234	965	655	67	Pass
0.1279	904	571	63	Pass
0.1324	818	507	61	Pass
0.1369	757	463	61	Pass
0.1414	699	434	62	Pass
0.1459	647	404	62	Pass
0.1504	587	388	66	Pass
0.1549	549	364	66	Pass
0.1595	490	333	67	Pass
0.1640	458	319	69	Pass
0.1685	429	291	67	Pass
0.1730	410	278	67	Pass
0.1775	367	263	71	Pass
0.1820	342	250	73	Pass
0.1865	317	236	74	Pass
0.1910	298	222	74	Pass
0.1955	281	213	75	Pass
0.2000	265	199	75	Pass
0.2045	254	192	75	Pass
0.2090	238	180	75	Pass
0.2135	225	169	75	Pass
0.2180	201	153	76	Pass
0.2226	187	146	78	Pass
0.2271	175	135	77	Pass
0.2316	169	129	76	Pass
0.2361	145	122	84	Pass
0.2406	139	115	82	Pass
0.2451	126	100	79	Pass
0.2496	114	92	80	Pass
0.2541	104	89	85	Pass
0.2586	101	80	79	Pass
0.2631	95	74	77	Pass
0.2676	90	71	78	Pass
0.2721	85	66	77	Pass
0.2766	81	61	75	Pass
0.2811	71	57	80	Pass
0.2856	62	53	85	Pass
0.2902	59	49	83	Pass
0.2947	58	44	75	Pass
0.2992	56	42	75	Pass
0.3037	53	38	71	Pass
0.3082	52	35	67	Pass
0.3127	49	33	67	Pass
0.3172	45	33	73	Pass
0.3217	41	32	78	Pass
0.3262	36	31	86	Pass
0.3307	33	30	90	Pass
0.3352	30	29	96	Pass
0.3397	28	29	103	Pass
0.3442	27	25	92	Pass
0.3487	25	23	92	Pass
0.3532	24	23	95	Pass

0.3578	22	18	81	Pass
0.3623	20	18	90	Pass
0.3668	16	17	106	Pass
0.3713	15	15	100	Pass
0.3758	14	11	78	Pass
0.3803	14	9	64	Pass
0.3848	14	9	64	Pass
0.3893	12	7	58	Pass
0.3938	11	7	63	Pass
0.3983	9	7	77	Pass
0.4028	9	6	66	Pass
0.4073	7	6	85	Pass
0.4118	7	6	85	Pass
0.4163	7	6	85	Pass
0.4208	7	6	85	Pass
0.4254	7	6	85	Pass
0.4299	7	6	85	Pass
0.4344	6	6	100	Pass
0.4389	6	6	100	Pass
0.4434	6	6	100	Pass
0.4479	6	6	100	Pass
0.4524	6	5	83	Pass
0.4569	6	5	83	Pass
0.4614	5	3	60	Pass
0.4659	5	3	60	Pass
0.4704	5	3	60	Pass
0.4749	5	3	60	Pass
0.4794	5	0	0	Pass
0.4839	5	0	0	Pass
0.4884	5	0	0	Pass
0.4930	5	0	0	Pass
0.4975	5	0	0	Pass
0.5020	4	0	0	Pass
0.5065	4	0	0	Pass
0.5110	4	0	0	Pass
0.5155	4	0	0	Pass
0.5200	4	0	0	Pass
0.5245	4	0	0	Pass
0.5290	4	0	0	Pass
0.5335	3	0	0	Pass
0.5380	3	0	0	Pass
0.5425	3	0	0	Pass
0.5470	3	0	0	Pass
0.5515	3	0	0	Pass
0.5560	3	0	0	Pass
0.5606	3	0	0	Pass
0.5651	3	0	0	Pass

Water Quality

Water Quality BMP Flow and Volume for POC #1

On-line facility volume:	0 acre-feet
On-line facility target flow:	0 cfs.
Adjusted for 15 min:	0 cfs.
Off-line facility target flow:	0 cfs.
Adjusted for 15 min:	0 cfs.

LID Report

LID Technique	Used for Treatment ?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Water Quality	Percent Water Quality Treated	Comment
Underground Detention POC	☐	154.69			☐	0.00			
Total Volume Infiltrated		154.69	0.00	0.00		0.00	0.00	0%	No Treat. Credit
Compliance with LID Standard 8% of 2-yr to 50% of 2-yr									Duration Analysis Result = Passed

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

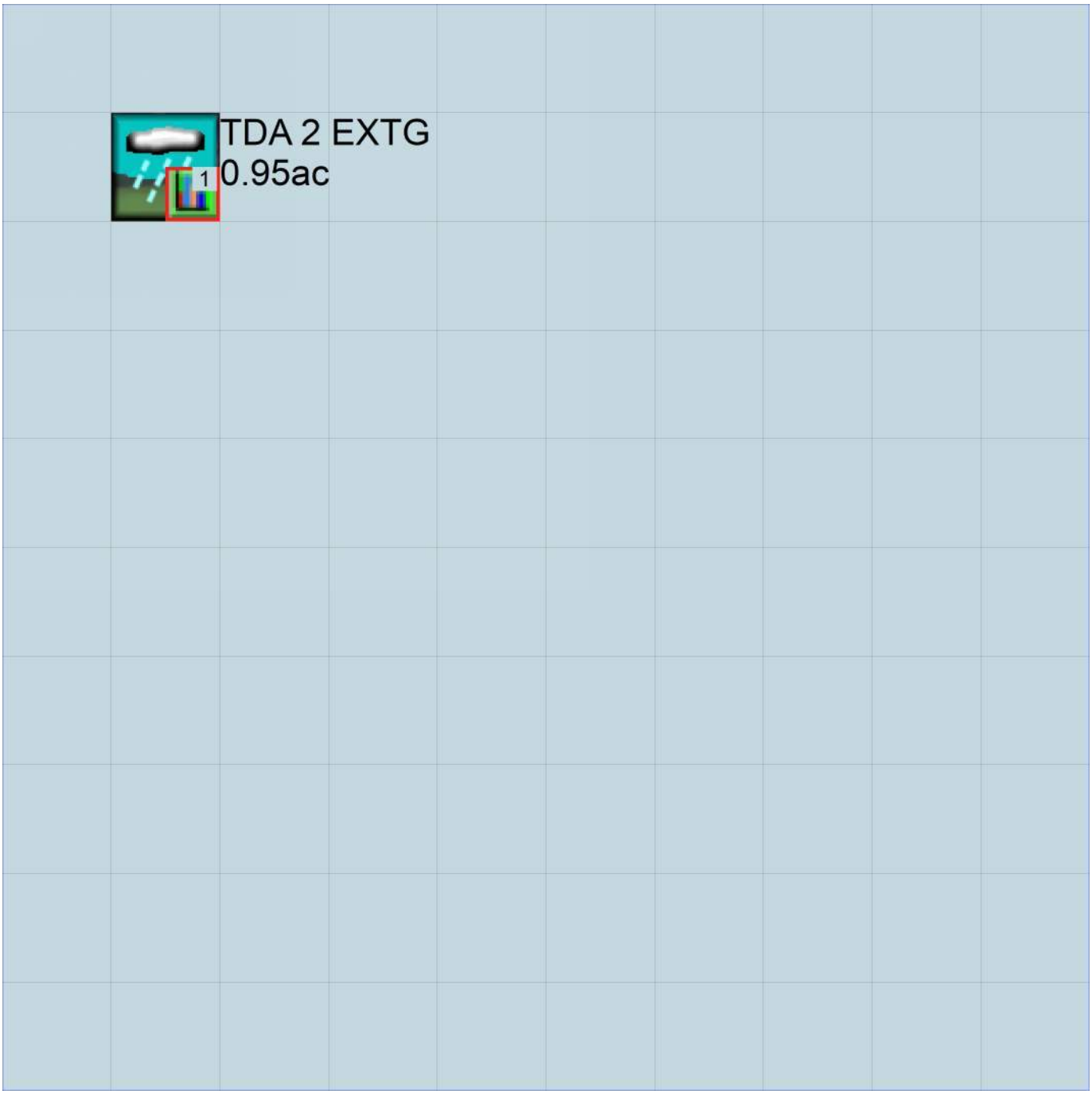
No PERLND changes have been made.

IMPLND Changes

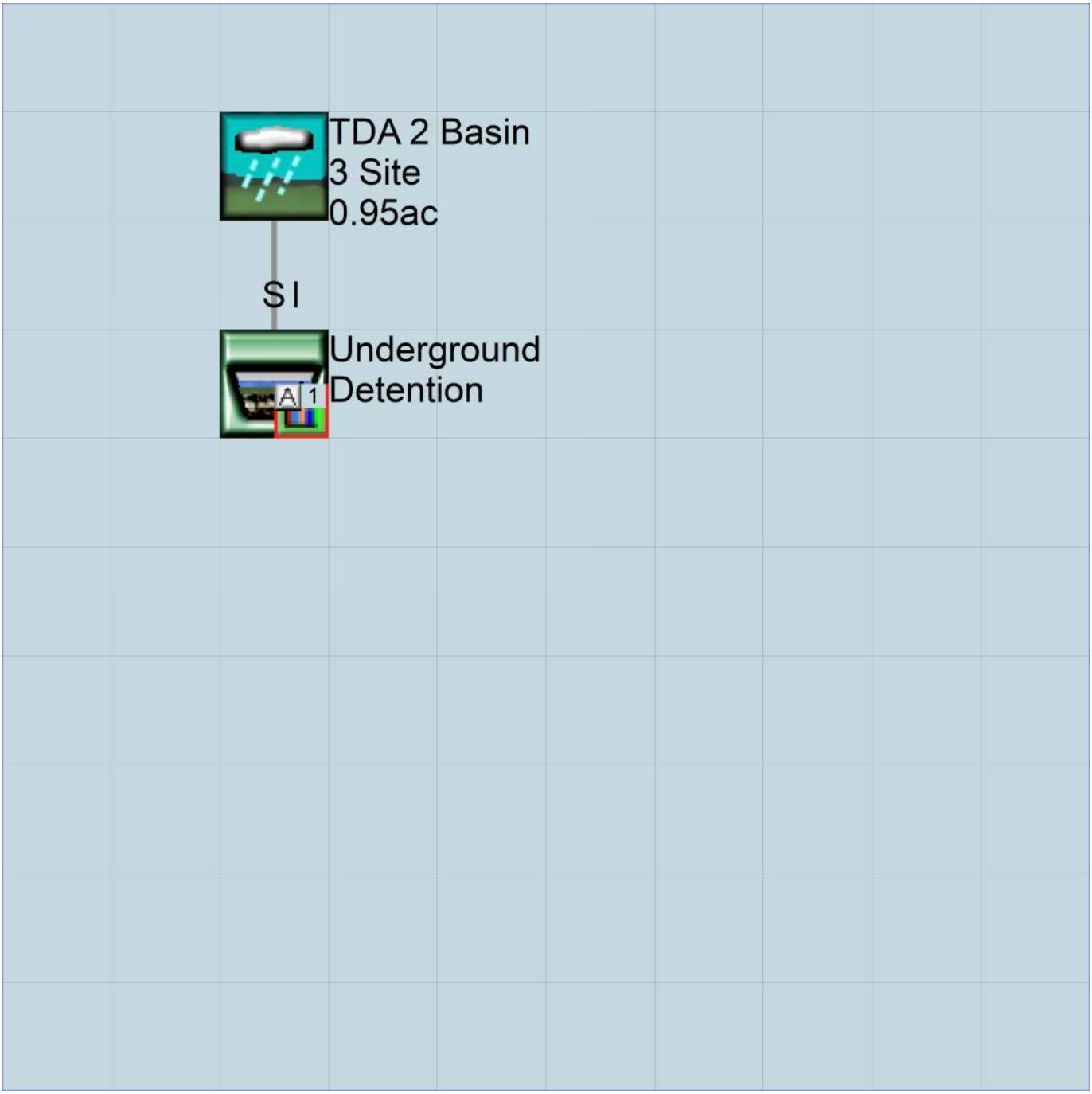
No IMPLND changes have been made.

Appendix

Predeveloped Schematic



Mitigated Schematic



Predeveloped UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2008 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                   UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   13thPrelimStormAnalysis.wdm
MESSU       25   Pre13thPrelimStormAnalysis.MES
            27   Pre13thPrelimStormAnalysis.L61
            28   Pre13thPrelimStormAnalysis.L62
            30   POC13thPrelimStormAnalysis1.dat
END FILES

OPN SEQUENCE
    INGRP              INDELT 00:15
      PERLND      28
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title---------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        TDA 2 EXTG                  MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                         User  t-series Engl Metr ***
                                      in  out           ***
   28     SG4, Forest, Flat       1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   28         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   28         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO
```

```
  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   28         0    0    0    0    0    0    0    0    0    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   28             0         6      0.04       400      0.05         0      0.96
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   28             0         0         3         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                            ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   28           0.2       0.4      0.35         2       0.4       0.7
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
               ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   28             0         0         0         0       2.5         1         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                     in  out           ***
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
  END IWAT-STATE1
```

```
END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
TDA 2 EXTG***
PERLND  28                      0.9478     COPY   501     12
PERLND  28                      0.9478     COPY   501     13

******Routing******
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG           ***
                                       in  out                              ***
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************ Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ******************* PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                  ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *      *  *  *  *  *        ***
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                     ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1.3            PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1.3            IMPLND   1 999 EXTNL  PREC
```

```
WDM      1 EVAP     ENGL    0.8            PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.8            IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY   501 OUTPUT MEAN   1 1     48.4      WDM    501 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13


END MASS-LINK

END RUN
```

Mitigated UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2008 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   13thPrelimStormAnalysis.wdm
MESSU       25   Mit13thPrelimStormAnalysis.MES
            27   Mit13thPrelimStormAnalysis.L61
            28   Mit13thPrelimStormAnalysis.L62
            30   POC13thPrelimStormAnalysis1.dat
END FILES

OPN SEQUENCE
    INGRP              INDELT 00:15
      PERLND      34
      IMPLND       1
      IMPLND       4
      IMPLND       8
      RCHRES       1
      COPY         1
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title---------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Underground Detention       MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                          in  out           ***
   34     SG4, Lawn, Flat         1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   34         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
```

```
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   34         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   34         0    0    0    0    0    0    0    0    0    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   34              0         6      0.02       400      0.05         0      0.96
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   34              0         0         3         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                                 ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   34            0.1       0.2      0.25         2       0.4      0.25
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
             ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   34              0         0         0         0       2.5         1         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                  in  out           ***
    1      ROADS/FLAT             1    1    1   27    0
    4      ROOF TOPS/FLAT         1    1    1   27    0
    8      SIDEWALKS/FLAT         1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************ Active Sections ****************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
    4         0    0    1    0    0    0
    8         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    4    1    9
    4         0    0    4    0    0    0    1    9
    8         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    0
    4         0    0    0    0    0
    8         0    0    0    0    0
```

```
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1            400      0.01       0.1       0.1
    4            400      0.01       0.1       0.1
    8            400      0.01       0.1       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
    4              0         0
    8              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
    4              0         0
    8              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
TDA 2 Basin 3 Site***
PERLND  34                      0.2051     RCHRES   1      2
PERLND  34                      0.2051     RCHRES   1      3
IMPLND   1                      0.5074     RCHRES   1      5
IMPLND   4                      0.1781     RCHRES   1      5
IMPLND   8                      0.0572     RCHRES   1      5

******Routing******
PERLND  34                      0.2051     COPY     1     12
IMPLND   1                      0.5074     COPY     1     15
IMPLND   4                      0.1781     COPY     1     15
IMPLND   8                      0.0572     COPY     1     15
PERLND  34                      0.2051     COPY     1     13
RCHRES   1                           1     COPY   501     16
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<----------------><---> User T-series  Engl Metr LKFG            ***
                                        in  out                             ***
    1     Underground Dete-016    1    1    1    1   28    0    1
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************* Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
```

```
    1         1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ******************* PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
    1         4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                    ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
           FG FG FG FG  possible  exit  *** possible  exit      possible  exit
            *  *  *  *    *  *  *  *  *       *  *  *  *  *        ***
    1        0  1  0  0    4  0  0  0  0       0  0  0  0  0       2  2  2  2  2
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
    1               1      0.03       0.0       0.0       0.5       0.0
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                       ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
         *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
    1            0         4.0  0.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
  FTABLE      1
   92    4
     Depth      Area    Volume  Outflow1 Velocity  Travel Time***
      (ft)   (acres) (acre-ft)   (cfs)   (ft/sec)    (Minutes)***
  0.000000  0.053076  0.000000  0.000000
  0.022222  0.053076  0.000864  0.014604
  0.044444  0.053076  0.001728  0.020653
  0.066667  0.053076  0.002592  0.025294
  0.088889  0.053076  0.003456  0.029207
  0.111111  0.053076  0.004320  0.032655
  0.133333  0.053076  0.005184  0.035771
  0.155556  0.053076  0.006049  0.038637
  0.177778  0.053076  0.006913  0.041305
  0.200000  0.053076  0.007777  0.043811
  0.222222  0.053076  0.008641  0.046181
  0.244444  0.053076  0.009505  0.048435
  0.266667  0.053076  0.010369  0.050588
  0.288889  0.053076  0.011233  0.052654
  0.311111  0.053076  0.012097  0.054642
  0.333333  0.053076  0.012961  0.056559
  0.355556  0.053076  0.013825  0.058414
  0.377778  0.053076  0.014689  0.060212
  0.400000  0.053076  0.015553  0.061958
  0.422222  0.053076  0.016418  0.063656
  0.444444  0.053076  0.017282  0.065309
  0.466667  0.053076  0.018146  0.066922
  0.488889  0.053076  0.019010  0.068497
  0.511111  0.053076  0.019874  0.070036
  0.533333  0.053076  0.020738  0.071543
  0.555556  0.053076  0.021602  0.073018
  0.577778  0.053076  0.022466  0.074464
  0.600000  0.053076  0.023330  0.075882
  0.622222  0.053076  0.024194  0.077275
  0.644444  0.053076  0.025058  0.078643
  0.666667  0.053076  0.025922  0.079987
  0.688889  0.053076  0.026787  0.081309
```

```
  0.711111  0.053076  0.027651  0.082610
  0.733333  0.053076  0.028515  0.083891
  0.755556  0.053076  0.029379  0.085153
  0.777778  0.053076  0.030243  0.086396
  0.800000  0.053076  0.031107  0.087622
  0.822222  0.053076  0.031971  0.088830
  0.844444  0.053076  0.032835  0.090023
  0.866667  0.053076  0.033699  0.091199
  0.888889  0.053076  0.034563  0.092361
  0.911111  0.053076  0.035427  0.093509
  0.933333  0.053076  0.036291  0.094642
  0.955556  0.053076  0.037155  0.095762
  0.977778  0.053076  0.038020  0.096869
  1.000000  0.053076  0.038884  0.097964
  1.022222  0.053076  0.039748  0.099046
  1.044444  0.053076  0.040612  0.100117
  1.066667  0.053076  0.041476  0.101177
  1.088889  0.053076  0.042340  0.102225
  1.111111  0.053076  0.043204  0.103263
  1.133333  0.053076  0.044068  0.104291
  1.155556  0.053076  0.044932  0.105308
  1.177778  0.053076  0.045796  0.106316
  1.200000  0.053076  0.046660  0.107314
  1.222222  0.053076  0.047524  0.108303
  1.244444  0.053076  0.048389  0.109283
  1.266667  0.053076  0.049253  0.110255
  1.288889  0.053076  0.050117  0.111218
  1.311111  0.053076  0.050981  0.112172
  1.333333  0.053076  0.051845  0.113119
  1.355556  0.053076  0.052709  0.114058
  1.377778  0.053076  0.053573  0.114989
  1.400000  0.053076  0.054437  0.115912
  1.422222  0.053076  0.055301  0.116829
  1.444444  0.053076  0.056165  0.117738
  1.466667  0.053076  0.057029  0.118640
  1.488889  0.053076  0.057893  0.119536
  1.511111  0.053076  0.058757  0.120424
  1.533333  0.053076  0.059622  0.121307
  1.555556  0.053076  0.060486  0.122182
  1.577778  0.053076  0.061350  0.123052
  1.600000  0.053076  0.062214  0.123916
  1.622222  0.053076  0.063078  0.127752
  1.644444  0.053076  0.063942  0.134049
  1.666667  0.053076  0.064806  0.141947
  1.688889  0.053076  0.065670  0.151139
  1.711111  0.053076  0.066534  0.161446
  1.733333  0.053076  0.067398  0.172749
  1.755556  0.053076  0.068262  0.184961
  1.777778  0.053076  0.069126  0.198013
  1.800000  0.053076  0.069991  0.211850
  1.822222  0.053076  0.070855  0.226428
  1.844444  0.053076  0.071719  0.241707
  1.866667  0.053076  0.072583  0.257656
  1.888889  0.053076  0.073447  0.274245
  1.911111  0.053076  0.074311  0.291448
  1.933333  0.053076  0.075175  0.309245
  1.955556  0.053076  0.076039  0.327614
  1.977778  0.053076  0.076903  0.346537
  2.000000  0.053076  0.077767  0.365998
  2.022222  0.053076  0.078947  0.396049
  END FTABLE  1
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1.3            PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1.3            IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.8            PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.8            IMPLND   1 999 EXTNL  PETINP
```

```
END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
RCHRES   1 HYDR   RO     1 1        1      WDM   1000 FLOW     ENGL      REPL
RCHRES   1 HYDR   STAGE  1 1        1      WDM   1001 STAG     ENGL      REPL
COPY     1 OUTPUT MEAN   1 1     48.4      WDM    701 FLOW     ENGL      REPL
COPY   501 OUTPUT MEAN   1 1     48.4      WDM    801 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>             <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK        2
PERLND     PWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    2

  MASS-LINK        3
PERLND     PWATER IFWO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    3

  MASS-LINK        5
IMPLND     IWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    5

  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15

  MASS-LINK       16
RCHRES     ROFLOW                          COPY           INPUT  MEAN
  END MASS-LINK   16


END MASS-LINK

END RUN
```

Predeveloped HSPF Message File

Mitigated HSPF Message File

```
ERROR/WARNING ID:   341   6

DATE/TIME: 1969/ 9/17 21:30

RCHRES:     1

The volume of water in this reach/mixed reservoir is greater than the value
in the "volume" column of the last row of RCHTAB().  To continue the
simulation the table has been extrapolated, based on information contained
in the last two rows.  This will usually result in some loss of accuracy.
If depth is being calculated it will also cause an error condition.
Relevant data are:

NROWS         V1         V2        VOL
92 3387.5     3438.9     3471.8
```

```
ERROR/WARNING ID:   341   5

DATE/TIME: 1969/ 9/17 21:30

RCHRES:     1

Calculation of relative depth, using Newton's method of successive
approximations, converged to an invalid value (not in range 0.0 to 1.0).
Probably ftable was extrapolated.  If extrapolation was small, no problem.
Remedy; extend ftable.  Relevant data are:

A          B          C      RDEP1      RDEP2  COUNT
0.0000E+00 4624.0     -7.584E+03    1.6401  1.6401E+00      2
```

```
ERROR/WARNING ID:   341   6

DATE/TIME: 1969/ 9/17 21:45

RCHRES:     1

The volume of water in this reach/mixed reservoir is greater than the value
in the "volume" column of the last row of RCHTAB().  To continue the
simulation the table has been extrapolated, based on information contained
in the last two rows.  This will usually result in some loss of accuracy.
If depth is being calculated it will also cause an error condition.
Relevant data are:

NROWS         V1         V2        VOL
92 3.3875E+03 3438.9     3616.7
```

```
ERROR/WARNING ID:   341   5

DATE/TIME: 1969/ 9/17 21:45

RCHRES:     1

Calculation of relative depth, using Newton's method of successive
approximations, converged to an invalid value (not in range 0.0 to 1.0).
Probably ftable was extrapolated.  If extrapolation was small, no problem.
Remedy; extend ftable.  Relevant data are:

A          B          C      RDEP1      RDEP2  COUNT
0.0000E+00 4624.0     -2.061E+04    4.4577  4.4577E+00      2
```

```
ERROR/WARNING ID:   341   6

DATE/TIME: 1969/ 9/17 22: 0

RCHRES:     1
```

The volume of water in this reach/mixed reservoir is greater than the value
in the "volume" column of the last row of RCHTAB(). To continue the
simulation the table has been extrapolated, based on information contained
in the last two rows. This will usually result in some loss of accuracy.
If depth is being calculated it will also cause an error condition.
Relevant data are:

NROWS	V1	V2	VOL
92	3.3875E+03	3438.9	3482.2

ERROR/WARNING ID: 341 5

DATE/TIME: 1969/ 9/17 22: 0

RCHRES: 1

Calculation of relative depth, using Newton's method of successive
approximations, converged to an invalid value (not in range 0.0 to 1.0).
Probably ftable was extrapolated. If extrapolation was small, no problem.
Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT
0.0000E+00	4624.0	-8.521E+03	1.8427	1.8427E+00	2

ERROR/WARNING ID: 341 6

DATE/TIME: 1970/ 1/22 17: 0

RCHRES: 1

The volume of water in this reach/mixed reservoir is greater than the value
in the "volume" column of the last row of RCHTAB(). To continue the
simulation the table has been extrapolated, based on information contained
in the last two rows. This will usually result in some loss of accuracy.
If depth is being calculated it will also cause an error condition.
Relevant data are:

NROWS	V1	V2	VOL
92	3.3875E+03	3438.9	3565.4

ERROR/WARNING ID: 341 5

DATE/TIME: 1970/ 1/22 17: 0

RCHRES: 1

Calculation of relative depth, using Newton's method of successive
approximations, converged to an invalid value (not in range 0.0 to 1.0).
Probably ftable was extrapolated. If extrapolation was small, no problem.
Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT
0.0000E+00	4624.0	-1.600E+04	3.4612	3.4611E+00	2

ERROR/WARNING ID: 341 6

DATE/TIME: 1970/ 1/22 17:15

RCHRES: 1

The volume of water in this reach/mixed reservoir is greater than the value
in the "volume" column of the last row of RCHTAB(). To continue the
simulation the table has been extrapolated, based on information contained
in the last two rows. This will usually result in some loss of accuracy.
If depth is being calculated it will also cause an error condition.
Relevant data are:

NROWS	V1	V2	VOL
92	3.3875E+03	3438.9	3586.9

ERROR/WARNING ID: 341 5

DATE/TIME: 1970/ 1/22 17:15

RCHRES: 1

Calculation of relative depth, using Newton's method of successive approximations, converged to an invalid value (not in range 0.0 to 1.0). Probably ftable was extrapolated. If extrapolation was small, no problem. Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT
0.0000E+00	4624.0	-1.794E+04	3.8796	3.8796E+00	2

ERROR/WARNING ID: 341 6

DATE/TIME: 1970/ 1/22 17:30

RCHRES: 1

The volume of water in this reach/mixed reservoir is greater than the value in the "volume" column of the last row of RCHTAB(). To continue the simulation the table has been extrapolated, based on information contained in the last two rows. This will usually result in some loss of accuracy. If depth is being calculated it will also cause an error condition. Relevant data are:

NROWS	V1	V2	VOL
92	3.3875E+03	3438.9	3469.4

ERROR/WARNING ID: 341 5

DATE/TIME: 1970/ 1/22 17:30

RCHRES: 1

Calculation of relative depth, using Newton's method of successive approximations, converged to an invalid value (not in range 0.0 to 1.0). Probably ftable was extrapolated. If extrapolation was small, no problem. Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT
0.0000E+00	4624.0	-7.362E+03	1.5922	1.5922E+00	2

ERROR/WARNING ID: 341 6

DATE/TIME: 1995/11/11 6:15

RCHRES: 1

The volume of water in this reach/mixed reservoir is greater than the value in the "volume" column of the last row of RCHTAB(). To continue the simulation the table has been extrapolated, based on information contained in the last two rows. This will usually result in some loss of accuracy. If depth is being calculated it will also cause an error condition. Relevant data are:

NROWS	V1	V2	VOL
92	3.3875E+03	3438.9	3511.1

ERROR/WARNING ID: 341 5

DATE/TIME: 1995/11/11 6:15

RCHRES: 1

Calculation of relative depth, using Newton's method of successive approximations, converged to an invalid value (not in range 0.0 to 1.0).

Probably ftable was extrapolated. If extrapolation was small, no problem.
Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT
0.0000E+00	4624.0	-1.112E+04	2.4041	2.4041	2

ERROR/WARNING ID: 341   6

DATE/TIME: 1995/11/11 6:30

RCHRES: 1

The volume of water in this reach/mixed reservoir is greater than the value
in the "volume" column of the last row of RCHTAB(). To continue the
simulation the table has been extrapolated, based on information contained
in the last two rows. This will usually result in some loss of accuracy.
If depth is being calculated it will also cause an error condition.
Relevant data are:

NROWS	V1	V2	VOL
92	3387.5	3438.9	3643.9

ERROR/WARNING ID: 341   5

DATE/TIME: 1995/11/11 6:30

RCHRES: 1

Calculation of relative depth, using Newton's method of successive
approximations, converged to an invalid value (not in range 0.0 to 1.0).
Probably ftable was extrapolated. If extrapolation was small, no problem.
Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT
0.0000E+00	4624.0	-2.307E+04	4.9884	4.9884E+00	2

ERROR/WARNING ID: 341   6

DATE/TIME: 1995/11/11 6:45

RCHRES: 1

The volume of water in this reach/mixed reservoir is greater than the value
in the "volume" column of the last row of RCHTAB(). To continue the
simulation the table has been extrapolated, based on information contained
in the last two rows. This will usually result in some loss of accuracy.
If depth is being calculated it will also cause an error condition.
Relevant data are:

NROWS	V1	V2	VOL
92	3.3875E+03	3438.9	3511.3

ERROR/WARNING ID: 341   5

DATE/TIME: 1995/11/11 6:45

RCHRES: 1

Calculation of relative depth, using Newton's method of successive
approximations, converged to an invalid value (not in range 0.0 to 1.0).
Probably ftable was extrapolated. If extrapolation was small, no problem.
Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT
0.0000E+00	4624.0	-1.113E+04	2.4071	2.4071E+00	2

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SEPARATOR SHEET

WWHM2012

PROJECT REPORT

General Model Information

Project Name:	13thPrelimTreatmentAnalysis
Site Name:	13th Gas Station
Site Address:	
City:	
Report Date:	8/22/2023
Gage:	Lacamas
Data Start:	1948/10/01
Data End:	2008/09/30
Timestep:	15 Minute
Precip Scale:	1.300
Version Date:	2018/10/10
Version:	4.2.16

POC Thresholds

Low Flow Threshold for POC1:	50 Percent of the 2 Year
High Flow Threshold for POC1:	50 Year

Landuse Basin Data

Predeveloped Land Use

TDA 2 Treatment

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Lawn, Flat	0.2916
Pervious Total	0.2916

Impervious Land Use	acre
ROADS FLAT	0.6565
ROOF TOPS FLAT	0.1781
SIDEWALKS FLAT	0.0572
Impervious Total	0.8918
Basin Total	1.1834

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

TDA 2 Treatment

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Lawn, Flat	0.2916
Pervious Total	0.2916

Impervious Land Use	acre
ROADS FLAT	0.6565
ROOF TOPS FLAT	0.1781
SIDEWALKS FLAT	0.0572
Impervious Total	0.8918
Basin Total	1.1834

Element Flows To:

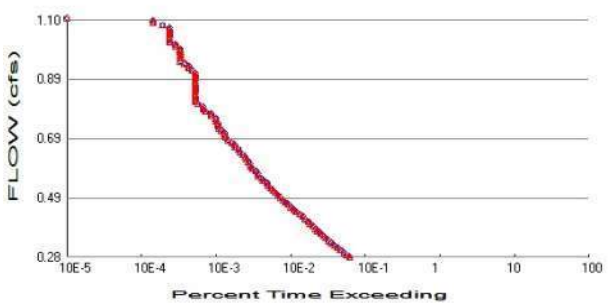
Surface	Interflow	Groundwater

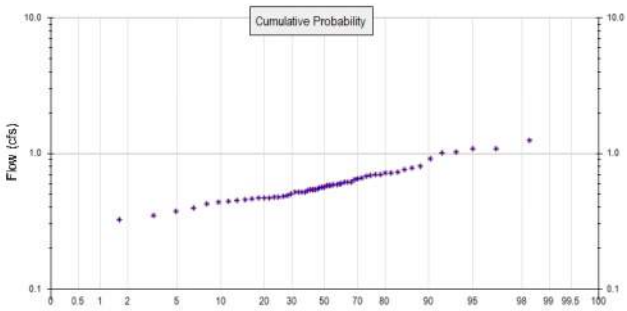
Routing Elements
Predeveloped Routing

Mitigated Routing

Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 0.2916
Total Impervious Area: 0.8918

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0.2916
Total Impervious Area: 0.8918

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	**Flow(cfs)**
2 year	0.568841
5 year	0.733272
10 year	0.844412
25 year	0.987932
50 year	1.097315
100 year	1.208959

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	0.568841
5 year	0.733272
10 year	0.844412
25 year	0.987932
50 year	1.097315
100 year	1.208959

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	**Predeveloped**	**Mitigated**
1949	0.762	0.762
1950	0.501	0.501
1951	0.537	0.537
1952	0.561	0.561
1953	0.520	0.520
1954	0.718	0.718
1955	0.437	0.437
1956	0.588	0.588
1957	0.612	0.612
1958	0.685	0.685

1959	0.460	0.460
1960	0.455	0.455
1961	0.560	0.560
1962	0.491	0.491
1963	0.592	0.592
1964	0.452	0.452
1965	0.467	0.467
1966	0.541	0.541
1967	0.558	0.558
1968	1.082	1.082
1969	0.918	0.918
1970	1.244	1.244
1971	0.483	0.483
1972	0.655	0.655
1973	0.534	0.534
1974	0.549	0.549
1975	0.395	0.395
1976	0.467	0.467
1977	0.289	0.289
1978	0.681	0.681
1979	0.779	0.779
1980	0.425	0.425
1981	0.644	0.644
1982	0.647	0.647
1983	0.724	0.724
1984	0.374	0.374
1985	0.470	0.470
1986	0.712	0.712
1987	0.444	0.444
1988	0.542	0.542
1989	0.611	0.611
1990	0.579	0.579
1991	0.610	0.610
1992	0.579	0.579
1993	0.693	0.693
1994	0.478	0.478
1995	0.589	0.589
1996	0.805	0.805
1997	1.019	1.019
1998	1.075	1.075
1999	0.477	0.477
2000	0.345	0.345
2001	0.323	0.323
2002	0.693	0.693
2003	0.518	0.518
2004	0.520	0.520
2005	0.596	0.596
2006	0.580	0.580
2007	0.514	0.514
2008	1.001	1.001

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	1.2439	1.2439
2	1.0816	1.0816
3	1.0749	1.0749
4	1.0186	1.0186

5	1.0011	1.0011
6	0.9178	0.9178
7	0.8045	0.8045
8	0.7793	0.7793
9	0.7619	0.7619
10	0.7241	0.7241
11	0.7179	0.7179
12	0.7124	0.7124
13	0.6935	0.6935
14	0.6927	0.6927
15	0.6851	0.6851
16	0.6812	0.6812
17	0.6545	0.6545
18	0.6466	0.6466
19	0.6442	0.6442
20	0.6123	0.6123
21	0.6111	0.6111
22	0.6101	0.6101
23	0.5959	0.5959
24	0.5924	0.5924
25	0.5892	0.5892
26	0.5876	0.5876
27	0.5797	0.5797
28	0.5787	0.5787
29	0.5786	0.5786
30	0.5607	0.5607
31	0.5604	0.5604
32	0.5581	0.5581
33	0.5492	0.5492
34	0.5415	0.5415
35	0.5414	0.5414
36	0.5374	0.5374
37	0.5337	0.5337
38	0.5201	0.5201
39	0.5200	0.5200
40	0.5184	0.5184
41	0.5144	0.5144
42	0.5005	0.5005
43	0.4907	0.4907
44	0.4833	0.4833
45	0.4781	0.4781
46	0.4771	0.4771
47	0.4696	0.4696
48	0.4669	0.4669
49	0.4667	0.4667
50	0.4597	0.4597
51	0.4553	0.4553
52	0.4517	0.4517
53	0.4439	0.4439
54	0.4367	0.4367
55	0.4251	0.4251
56	0.3951	0.3951
57	0.3742	0.3742
58	0.3454	0.3454
59	0.3232	0.3232
60	0.2887	0.2887

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.2844	1293	1293	100	Pass
0.2926	1194	1194	100	Pass
0.3008	1088	1088	100	Pass
0.3091	977	977	100	Pass
0.3173	891	891	100	Pass
0.3255	805	805	100	Pass
0.3337	738	738	100	Pass
0.3419	682	682	100	Pass
0.3501	612	612	100	Pass
0.3583	573	573	100	Pass
0.3665	528	528	100	Pass
0.3747	489	489	100	Pass
0.3830	456	456	100	Pass
0.3912	414	414	100	Pass
0.3994	379	379	100	Pass
0.4076	360	360	100	Pass
0.4158	330	330	100	Pass
0.4240	304	304	100	Pass
0.4322	276	276	100	Pass
0.4404	248	248	100	Pass
0.4486	231	231	100	Pass
0.4569	214	214	100	Pass
0.4651	193	193	100	Pass
0.4733	179	179	100	Pass
0.4815	165	165	100	Pass
0.4897	154	154	100	Pass
0.4979	143	143	100	Pass
0.5061	130	130	100	Pass
0.5143	121	121	100	Pass
0.5225	114	114	100	Pass
0.5308	106	106	100	Pass
0.5390	101	101	100	Pass
0.5472	90	90	100	Pass
0.5554	86	86	100	Pass
0.5636	77	77	100	Pass
0.5718	76	76	100	Pass
0.5800	71	71	100	Pass
0.5882	64	64	100	Pass
0.5964	61	61	100	Pass
0.6047	60	60	100	Pass
0.6129	57	57	100	Pass
0.6211	53	53	100	Pass
0.6293	51	51	100	Pass
0.6375	48	48	100	Pass
0.6457	44	44	100	Pass
0.6539	42	42	100	Pass
0.6621	38	38	100	Pass
0.6703	37	37	100	Pass
0.6786	34	34	100	Pass
0.6868	30	30	100	Pass
0.6950	28	28	100	Pass
0.7032	27	27	100	Pass
0.7114	27	27	100	Pass

0.7196	25	25	100	Pass
0.7278	23	23	100	Pass
0.7360	22	22	100	Pass
0.7442	22	22	100	Pass
0.7525	21	21	100	Pass
0.7607	21	21	100	Pass
0.7689	18	18	100	Pass
0.7771	18	18	100	Pass
0.7853	15	15	100	Pass
0.7935	14	14	100	Pass
0.8017	14	14	100	Pass
0.8099	12	12	100	Pass
0.8181	11	11	100	Pass
0.8264	11	11	100	Pass
0.8346	11	11	100	Pass
0.8428	11	11	100	Pass
0.8510	11	11	100	Pass
0.8592	11	11	100	Pass
0.8674	11	11	100	Pass
0.8756	11	11	100	Pass
0.8838	11	11	100	Pass
0.8920	11	11	100	Pass
0.9002	11	11	100	Pass
0.9085	11	11	100	Pass
0.9167	11	11	100	Pass
0.9249	10	10	100	Pass
0.9331	9	9	100	Pass
0.9413	9	9	100	Pass
0.9495	8	8	100	Pass
0.9577	7	7	100	Pass
0.9659	7	7	100	Pass
0.9741	7	7	100	Pass
0.9824	7	7	100	Pass
0.9906	7	7	100	Pass
0.9988	7	7	100	Pass
1.0070	6	6	100	Pass
1.0152	6	6	100	Pass
1.0234	5	5	100	Pass
1.0316	5	5	100	Pass
1.0398	5	5	100	Pass
1.0480	5	5	100	Pass
1.0563	5	5	100	Pass
1.0645	5	5	100	Pass
1.0727	5	5	100	Pass
1.0809	4	4	100	Pass
1.0891	3	3	100	Pass
1.0973	3	3	100	Pass

Water Quality

Water Quality BMP Flow and Volume for POC #1

On-line facility volume:	0.1553 acre-feet
On-line facility target flow:	0.2195 cfs.
Adjusted for 15 min:	0.2195 cfs.
Off-line facility target flow:	0.1213 cfs.
Adjusted for 15 min:	0.1213 cfs.

LID Report

LID Technique	Used for Treatment ?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Water Quality	Percent Water Quality Treated	Comment
Total Volume Infiltrated		0.00	0.00	0.00		0.00	0.00	0%	No Treat. Credit
Compliance with LID Standard 8% of 2-yr to 50% of 2-yr									Duration Analysis Result = Passed

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

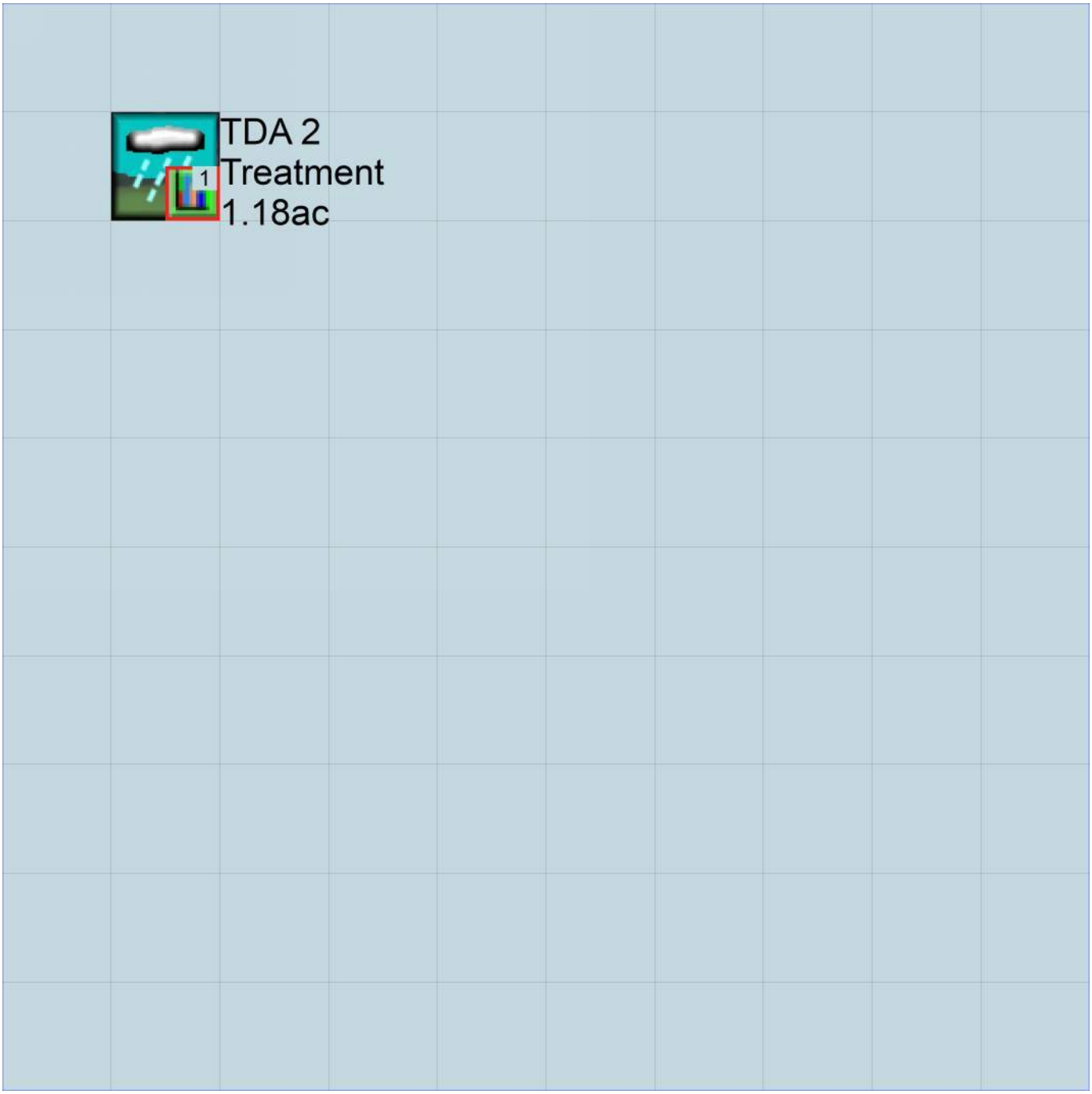
No PERLND changes have been made.

IMPLND Changes

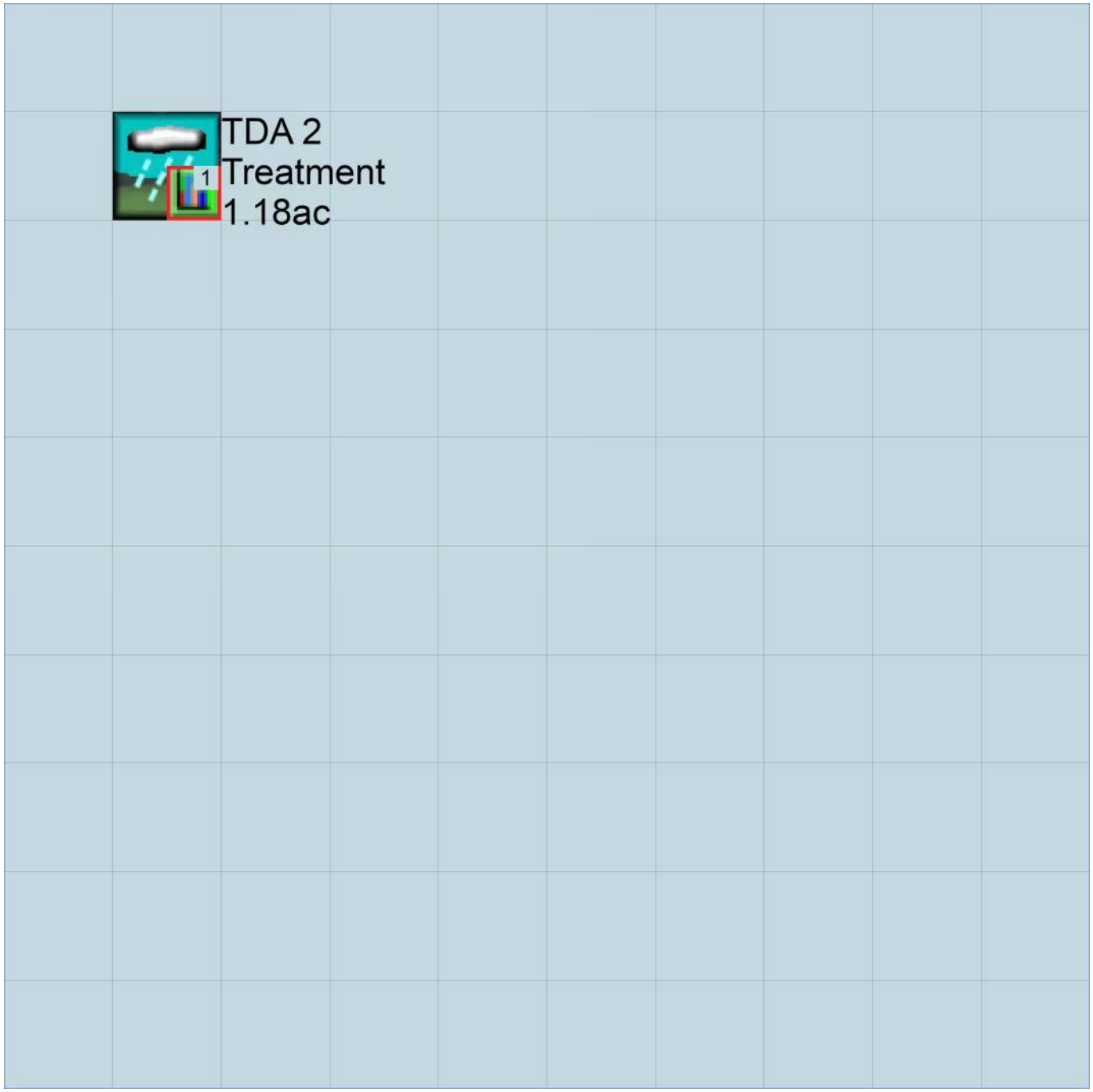
No IMPLND changes have been made.

Appendix

Predeveloped Schematic



Mitigated Schematic



Predeveloped UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2008 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   13thPrelimTreatmentAnalysis.wdm
MESSU       25   Pre13thPrelimTreatmentAnalysis.MES
            27   Pre13thPrelimTreatmentAnalysis.L61
            28   Pre13thPrelimTreatmentAnalysis.L62
            30   POC13thPrelimTreatmentAnalysis1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:15
      PERLND      34
      IMPLND       1
      IMPLND       4
      IMPLND       8
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        TDA 2 Treatment             MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                          in  out           ***
   34     SG4, Lawn, Flat         1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   34         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
```

```
   34         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   34         0    0    0    0    0    0    0    0    0    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   34              0         6      0.02       400      0.05         0      0.96
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   34              0         0         3         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   34           0.1       0.2      0.25         2       0.4      0.25
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
               ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   34              0         0         0         0       2.5         1         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                     in  out           ***
    1      ROADS/FLAT             1    1    1   27    0
    4      ROOF TOPS/FLAT         1    1    1   27    0
    8      SIDEWALKS/FLAT         1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************* Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
    4         0    0    1    0    0    0
    8         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    0    1    9
    4         0    0    4    0    0    0    1    9
    8         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    0
    4         0    0    0    0    0
    8         0    0    0    0    0
  END IWAT-PARM1
```

```
  IWAT-PARM2
    <PLS >       IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1            400      0.01       0.1       0.1
    4            400      0.01       0.1       0.1
    8            400      0.01       0.1       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >       IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
    4              0         0
    8              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
    4              0         0
    8              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
TDA 2 Treatment***
PERLND  34                      0.2916     COPY   501     12
PERLND  34                      0.2916     COPY   501     13
IMPLND   1                      0.6565     COPY   501     15
IMPLND   4                      0.1781     COPY   501     15
IMPLND   8                      0.0572     COPY   501     15

******Routing******
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG           ***
                                       in  out                              ***
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************* Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ******************* PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                  ***
```

```
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
             FG FG FG FG  possible  exit  *** possible  exit     possible  exit
              *  *  *  *    *  *  *  *  *       *  *  *  *  *        ***
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                          ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
           *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1.3            PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1.3            IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.8            PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.8            IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY   501 OUTPUT MEAN   1 1     48.4      WDM    501 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15


END MASS-LINK

END RUN
```

Mitigated UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2008 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   13thPrelimTreatmentAnalysis.wdm
MESSU       25   Mit13thPrelimTreatmentAnalysis.MES
            27   Mit13thPrelimTreatmentAnalysis.L61
            28   Mit13thPrelimTreatmentAnalysis.L62
            30   POC13thPrelimTreatmentAnalysis1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:15
      PERLND      34
      IMPLND       1
      IMPLND       4
      IMPLND       8
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title---------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        TDA 2 Treatment             MAX                   1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                      in  out           ***
   34     SG4, Lawn, Flat         1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   34         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
```

```
   34         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   34         0    0    0    0    0    0    0    0    0    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   34              0         6      0.02       400      0.05         0      0.96
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   34              0         0         3         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   34           0.1       0.2      0.25         2       0.4      0.25
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
             ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS       AGWS      GWVS
   34              0         0         0         0       2.5          1         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                     in  out           ***
    1      ROADS/FLAT             1    1    1   27    0
    4      ROOF TOPS/FLAT         1    1    1   27    0
    8      SIDEWALKS/FLAT         1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************* Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
    4         0    0    1    0    0    0
    8         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    0    1    9
    4         0    0    4    0    0    0    1    9
    8         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    0
    4         0    0    0    0    0
    8         0    0    0    0    0
  END IWAT-PARM1
```

```
  IWAT-PARM2
    <PLS >       IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1            400      0.01       0.1       0.1
    4            400      0.01       0.1       0.1
    8            400      0.01       0.1       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >       IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
    4              0         0
    8              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
    4              0         0
    8              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
TDA 2 Treatment***
PERLND  34                      0.2916     COPY   501     12
PERLND  34                      0.2916     COPY   501     13
IMPLND   1                      0.6565     COPY   501     15
IMPLND   4                      0.1781     COPY   501     15
IMPLND   8                      0.0572     COPY   501     15

******Routing******
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG           ***
                                       in  out                              ***
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************* Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ******************* PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                  ***
```

```
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
             FG FG FG FG  possible  exit  *** possible  exit      possible  exit
              *  *  *  *    *  *  *  *  *       *  *  *  *  *         ***
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                          ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
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WDM      2 PREC     ENGL    1.3            IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.8            PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.8            IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
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COPY   501 OUTPUT MEAN   1 1     48.4      WDM    801 FLOW     ENGL      REPL
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  MASS-LINK       13
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  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15


END MASS-LINK

END RUN
```

Predeveloped HSPF Message File

Mitigated HSPF Message File

Disclaimer

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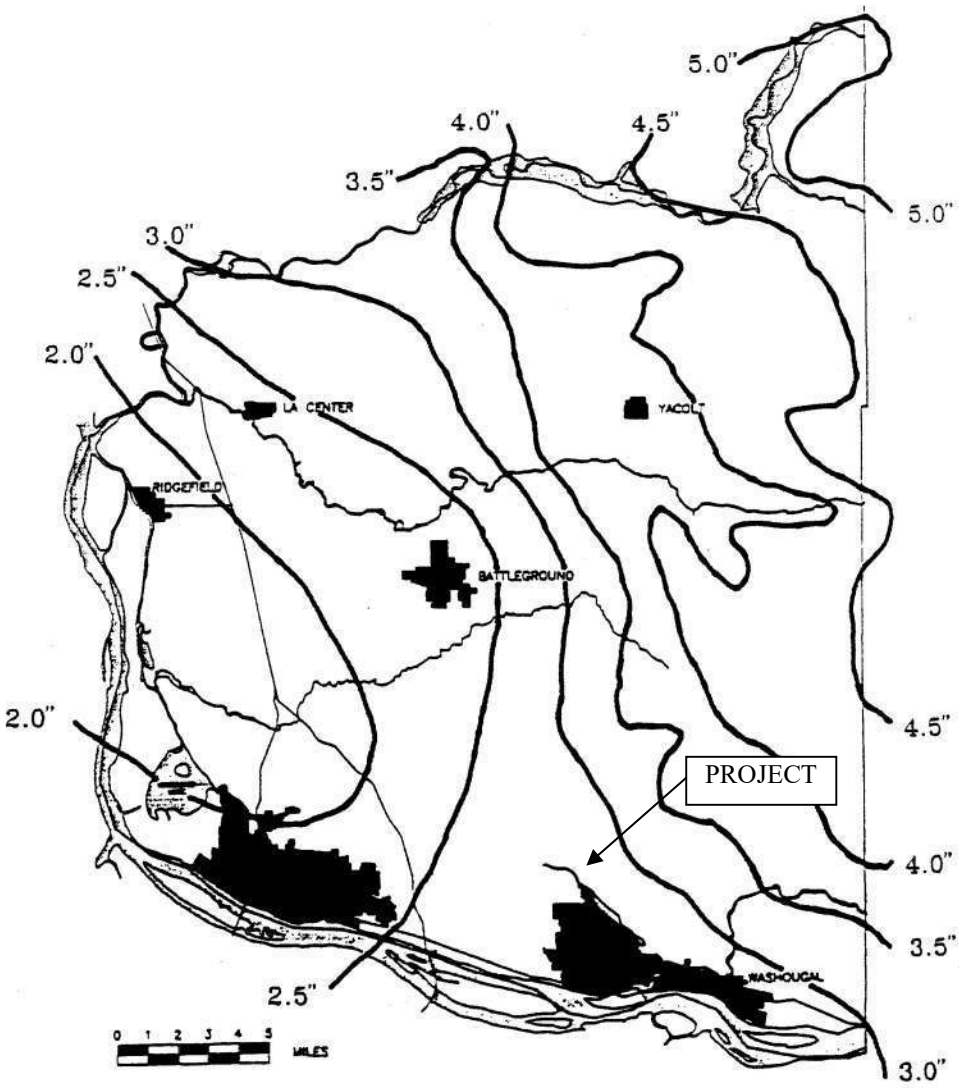
PLS ENGINEERING

Exhibit C
Isopluvial Maps for Design Storms in Clark County

2-Year, 24-Hour Isopluvials



Page 1

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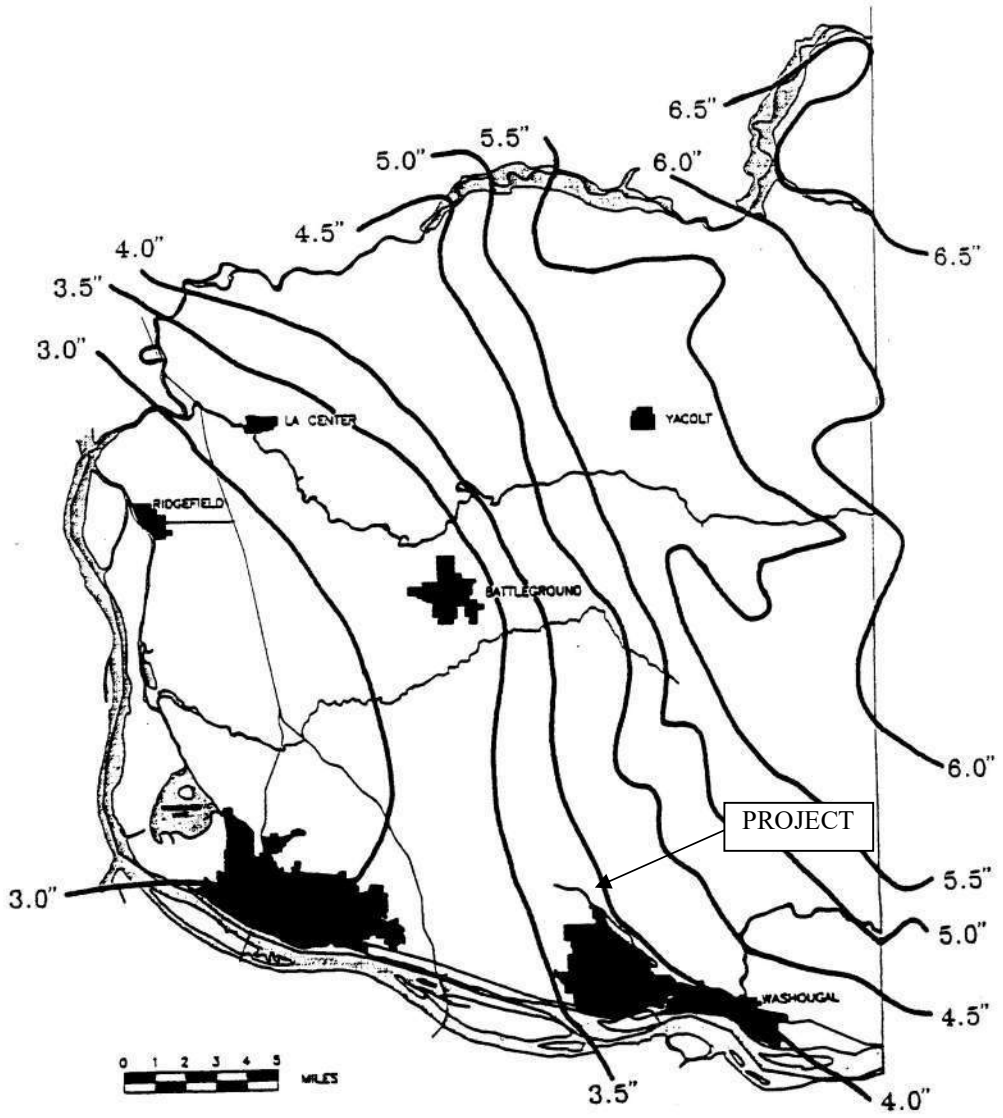
PLS ENGINEERING

Exhibit C
Isopluvial Maps for Design Storms in Clark County

10-Year, 24-Hour Isopluvials



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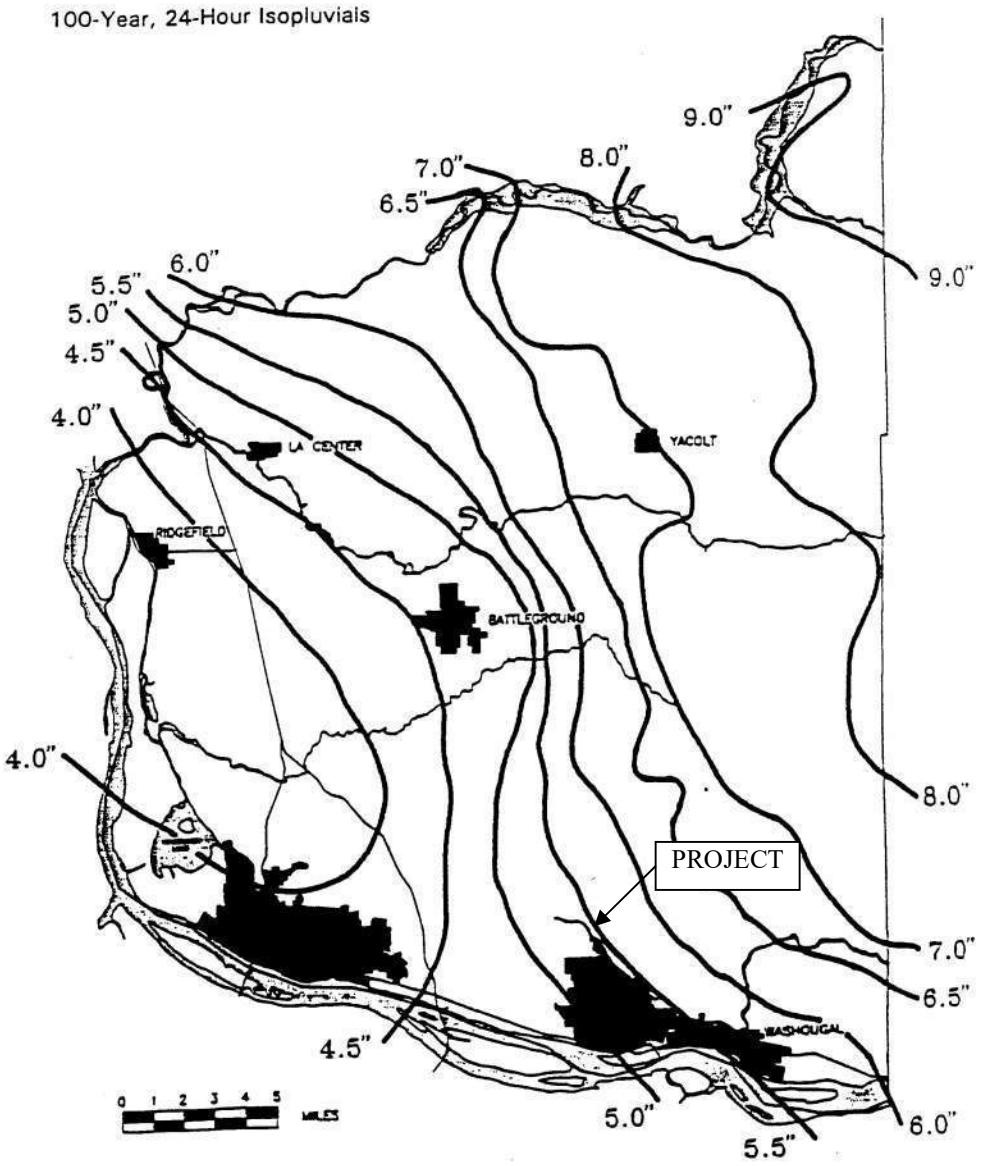
PLS ENGINEERING

Exhibit C
Isopluvial Maps for Design Storms in Clark County



Page 4

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SEPARATOR SHEET

WASHINGTON STATE DEPARTMENT OF ECOLOGY

April 2017

GENERAL USE LEVEL DESIGNATION FOR BASIC (TSS) TREATMENT

For

CONTECH Engineered Solutions
Stormwater Management StormFilter®
With ZPG Media at 1 gpm/sq ft media surface area

Ecology's Decision:

Based on the CONTECH Engineered Solutions' (CONTECH) application submissions, Ecology hereby issues a General Use Level Designation (GULD) for the Stormwater Management StormFilter® (StormFilter):

1. **As a basic stormwater treatment practice for total suspended solids (TSS) removal,**
   - **Using ZPG™ media (zeolite/perlite/granular activated carbon), with the size distribution described below,**
   - **Sized at a hydraulic loading rate of 1 gpm/ft^2 of media surface area, per Table 1, and**
   - **Internal bypassing needs to be consistent with the design guidelines in CONTECH's current product design manual.**

Table 1. StormFilter Design Flow Rates per Cartridge

Effective Cartridge Height (inches)	12	18	27
Cartridge Flow Rate (gpm/cartridge)	5	7.5	11.3

2. **Ecology approves StormFilter systems containing ZPG™ media for treatment at the hydraulic loading rates shown in Table 1, and sized based on the water quality design flow rate for an off-line system when using an external bypass vault or a treatment vault with an internal bypass. Contech designs their StormFilter systems to maintain treatment of the water quality design flow while routing excess flows around the treatment chamber during periods of peak bypass. The water quality design flow rates are calculated using the following procedures:**
   - **Western Washington: For treatment installed upstream of detention or retention, the water quality design flow rate is the peak 15-minute flow rate as calculated using the latest version of the Western Washington Hydrology Model or other Ecology-approved continuous runoff model.**

- **Eastern Washington: For treatment installed upstream of detention or retention, the water quality design flow rate is the peak 15-minute flow rate as calculated using one of the three methods described in Chapter 2.2.5 of the Stormwater Management Manual for Eastern Washington (SWMMEW) or local manual.**
- **Entire State: For treatment installed downstream of detention, the water quality design flow rate is the full 2-year release rate of the detention facility.**

3. This designation has no expiration date, but Ecology may amend or revoke it.

<u>Ecology's Conditions of Use</u>:

The StormFilter with ZPG media shall comply with the following conditions:

1. **Design, install, operate, and maintain the StormFilter with ZPG media in accordance with applicable Contech Engineered Solutions manuals, documents, and the Ecology Decision.**

2. **Install StormFilter systems to bypass flows exceeding the water quality treatment rate. Additionally, high flows will not re-suspend captured sediments. Design StormFilter systems in accordance with the performance goals in Ecology's most recent Stormwater Manual and CONTECH's *Product Design Manual Version 4.1 (April 2006)*, or most current version, unless otherwise specified.**

3. **Owners must follow the design, pretreatment, land use application, and maintenance criteria in CONTECH's Design Manual.**

4. **Pretreatment of TSS and oil and grease may be necessary, and designers shall provide pre-treatment in accordance with the most current versions of the CONTECH's *Product Design Manual (April 2006)* or the applicable Ecology Stormwater Manual. Design pre-treatment using the performance criteria and pretreatment practices provided on Ecology's "Evaluation of Emerging Stormwater Treatment Technologies" website.**

5. **Maintenance: The required maintenance interval for stormwater treatment devices is often dependent upon the degree of pollutant loading from a particular drainage basin. Therefore, Ecology does not endorse or recommend a "one size fits all" maintenance cycle for a particular model/size of manufactured filter treatment device.**

    - **Typically, CONTECH designs StormFilter systems for a target filter media replacement interval of 12 months. Maintenance includes removing accumulated sediment from the vault, and replacing spent cartridges with recharged cartridges.**

- **Indications of the need for maintenance include effluent flow decreasing to below the design flow rate, as indicated by the scumline above the shoulder of the cartridge.**
- **Owners/operators must inspect StormFilter with ZPG media for a minimum of twelve months from the start of post-construction operation to determine site-specific maintenance schedules and requirements. You must conduct inspections monthly during the wet season, and every other month during the dry season. (According to the SWMMWW, the wet season in western Washington is October 1 to April 30. According to SWMMEW, the wet season in eastern Washington is October 1 to June 30). After the first year of operation, owners/operators must conduct inspections based on the findings during the first year of inspections.**
- **Conduct inspections by qualified personnel, follow manufacturer's guidelines, and use methods capable of determining either a decrease in treated effluent flowrate and/or a decrease in pollutant removal ability.**
- **When inspections are performed, the following findings typically serve as maintenance triggers:**
    - **Accumulated vault sediment depths exceed an average of 2 inches, or**
    - **Accumulated sediment depths on the tops of the cartridges exceed an average of 0.5 inches, or**
    - **Standing water remains in the vault between rain events, or**
    - **Bypass occurs during storms smaller than the design storm.**
- **Note: If excessive floatables (trash and debris) are present, perform a minor maintenance consisting of gross solids removal, not cartridge replacement.**

6. **CONTECH shall maintain readily available reports listed under "Application Documents" (above) as public, as well as the documentation submitted with its previous conditional use designation application. CONTECH shall provide links to this information from its corporate website, and make this information available upon request, at no cost and in a timely manner.**

7. **ZPG™ media used shall conform with the following specifications:**

- **Each cartridge contains a total of approximately 2.6 cubic feet of media. The ZPG™ cartridge consists of an outer layer of perlite that is approximately 1.3 cubic feet in volume and an inner layer, consisting of a mixture of 90% zeolite and 10% granular activated carbon, which is approximately 1.3 cubic feet in volume.**
- **Perlite Media: Perlite media shall be made of natural siliceous volcanic rock free of any debris or foreign matter. The expanded perlite shall**

have a bulk density ranging from 6.5 to 8.5 lbs per cubic foot and particle sizes ranging from 0.09" (#8 mesh) to 0.38" (3/8" mesh).

- **Zeolite Media: Zeolite media shall be made of naturally occurring clinoptilolite. The zeolite media shall have a bulk density ranging from 44 to 50 lbs per cubic foot and particle sizes ranging from 0.13" (#6 mesh) to 0.19" (#4 mesh). Additionally, the cation exchange capacity (CEC) of zeolite shall range from approximately 1.0 to 2.2 meq/g.**

- **Granular Activated Carbon: Granular activated carbon (GAC) shall be made of lignite coal that has been steam-activated. The GAC media shall have a bulk density ranging from 28 to 31 lbs per cubic foot and particle sizes ranging from a 0.09" (#8 mesh) to 0.19" (#4 mesh).**

Approved Alternate Configurations

Peak Diversion StormFilter

1. The Peak Diversion StormFilter allows for off-line bypass within the StormFilter structure. Design capture flows and peak flows enter the inlet bay which contains an internal weir. The internal weir allows design flows to enter the cartridge bay through a transfer hole located at the bottom of the inlet bay while the unit routs higher flows around the cartridge bay.
2. To select the size of the Peak Diversion StormFilter unit, the designer must determine the number of cartridges required and size of the standard StormFilter using the site-specific water quality design flow and the **StormFilter Design Flow Rates per Cartridge** as described above.
3. New owners may not install the Peak Diversion StormFilter at an elevation or in a location where backwatering may occur.

Applicant: Contech Engineered Solutions

Applicant's Address: 11835 NE Glenn Widing Dr.
Portland, OR 97220

Application Documents:

The applicant's master report, titled, "The Stormwater Management StormFilter Basic Treatment Application for General Use Level Designation in Washington", Stormwater Management, Inc., November 1, 2004, includes the following reports:

- (Public) *Evaluation of the Stormwater Management StormFilter Treatment System: Data Validation Report and Summary of the Technical Evaluation Engineering Report (TEER) by Stormwater Management Inc.,* October 29, 2004
Ecology's technology assessment protocol requires the applicant to hire an independent consultant to complete the following work:

1. Complete the data validation report.
2. Prepare a TEER summary, including a testing summary and conclusions compared with the supplier's performance claims.
3. Provide a recommendation of the appropriate technology use level.
4. Work with Ecology to post recommend relevant information on Ecology's website.
5. Provide additional testing recommendations, if needed."
6. This report, authored by Dr. Gary Minton, Ph. D., P.E., Resource Planning Associates, satisfies the Ecology requirement.

- (Public) "Performance of the Stormwater Management StormFilter Relative to the Washington State Department of Ecology Performance Goals for Basic Treatment," is a summary of StormFilter performance that strictly adheres to the criteria listed in the Guidance for Evaluating Emerging Stormwater Treatment Technologies, Technology Assessment Protocol – Ecology (TAPE).
- "Heritage Marketplace Field Evaluation: Stormwater Management StormFilter with ZPG™ Media," is a report showing all of the information collected at Site A as stated in the SMI Quality Assurance Project Plan (QAPP). This document contains detailed information regarding each storm event collected at this site, and it provided a detailed overview of the data and project.
- "Lake Stevens Field Evaluation: Stormwater Management StormFilter with ZPG™ Media," is a report that corresponds to Site E as stated in the SMI QAPP. This document contains detailed information regarding each storm collected at this site, and includes a detailed overview of the data and project.
- (Public) "Evaluation of the Stormwater Management StormFilter for the removal of SIL-CO-SIL 106, a standardized silica product: ZPG™ at 7.5 GPM" is a report that describes laboratory testing at full design flow.
- "Factors Other Than Treatment Performance."
- "State of Washington Installations."
- "Peak Diversion StormFilter" is a technical document demonstrating the Peak Diversion StormFilter system complies with the Stormwater Management Manual for Western Washington Volume V Section 4.5.1.

Above-listed documents noted as "public" are available by contacting CONTECH.

Applicant's Use Level Request:

That Ecology grant a General Use Level Designation for Basic Treatment for the StormFilter using ZPG™ media (zeolite/perlite/granular activated carbon) at a hydraulic loading rate of 1 gpm/ft^2 of media surface area in accordance with Ecology's 2011 *Technical Guidance Manual for Evaluating Emerging Stormwater Treatment Technologies Technology Assessment Protocol – Ecology (TAPE).*

Applicant's Performance Claim:

The combined data from the two field sites reported in the TER (Heritage Marketplace and Lake Stevens) indicate that the performance of a StormFilter system configured for inline bypass with ZPG™ media and a hydraulic loading rate of 1 gpm/ft^2 of media surface area meets Ecology performance goals for Basic Treatment.

Ecology's Recommendations:

Based on the weight of the evidence and using its best professional judgment, Ecology finds that:

- StormFilter, using ZPG™ media and operating at a hydraulic loading rate of no more than 1 gpm/ft^2 of media surface area, is expected to provide effective stormwater treatment achieving Ecology's Basic Treatment (TSS removal) performance goals. Contech demonstrated this is through field and laboratory testing performed in accordance with the approved protocol. StormFilter is deemed satisfactory with respect to factors other than treatment performance (e.g., maintenance; see the protocol's Appendix B for complete list).

Findings of Fact:

- Influent TSS concentrations and particle size distributions were generally within the range of what Ecology considers "typical" for western Washington (silt-to-silt loam).
- Contech sampled thirty-two (32) storm events at two sites for storms from April 2003 to March 2004, of which Contech deemed twenty-two (22) as "qualified" and were therefore included in the data analysis set.
- Statistical analysis of these 22 storm events verifies the data set's adequacy.
- Analyzing all 22 qualifying events, the average influent and effluent concentrations and aggregate pollutant load reduction are 114 mg/L, 25 mg/L, and 82%, respectively.
- Analyzing all 22 qualifying events based on the *estimated average* flow rate during the event (versus the *measured peak* flow rate), and more heavily weighting those events near the design rate (versus events either far above or well below the design rate) does not significantly affect the reported results.
- For the 7 qualifying events with influent TSS concentrations greater than 100 mg/L, the average influent and effluent concentrations and aggregate pollutant load reduction are 241 mg/L, 34 mg/L, and 89%, respectively. If we exclude the 2 of 7 events that exceed the maximum 300 mg/L specified in Ecology's guidelines, the average influent and effluent concentrations and aggregate pollutant load reduction are 158 mg/L, 35 mg/L, and 78%, respectively.
- For the 15 qualifying events with influent TSS concentrations less than 100 mg/L, the average influent and effluent concentrations and aggregate pollutant load reduction are 55 mg/L, 20 mg/L, and 61%, respectively. If the 6 of 15 events that fall below the minimum 33 mg/L TSS specified in Ecology's guidelines are excluded, the average

influent and effluent concentrations and aggregate pollutant load reduction are 78 mg/L, 26 mg/L, and 67%, respectively.

- For the 8 qualifying events with peak discharge exceeding design flow (ranging from 120 to 257% of the design rate), results ranged from 52% to 96% TSS removal, with an average of 72%.
- Due to the characteristics of the hydrographs, the field results generally reflect flows below (ranging between 20 and 60 percent of) the tested facilities' design rate. During these sub-design flow rate periods, some of the cartridges operate at or near their *individual* full design flow rate (generally between 4 and 7.5 GPM for an 18" cartridge effective height) because their float valves have opened. Float valves remain closed on the remaining cartridges, which operate at their base "trickle" rate of 1 to 1.5 GPM.
- Laboratory testing using U.S. Silica's Sil-Co-Sil 106 fine silica product showed an average 87% TSS removal for testing at 7.5 GPM per cartridge (100% design flow rate).
- Other relevant testing at I-5 Lake Union, Greenville Yards (New Jersey), and Ski Run Marina (Lake Tahoe) facilities shows consistent TSS removals in the 75 to 85% range. *Note that the evaluators operated the I-5 Lake Union at 50%, 100%, and 125% of design flow*.
- SMI's application included a satisfactory "Factors other than treatment performance" discussion.

Note: Ecology's 80% TSS removal goal applies to 100 mg/l and greater influent TSS. Below 100 mg/L influent TSS, the goal is 20 mg/L effluent TSS.

Technology Description:

The Stormwater Management StormFilter® (StormFilter), a flow-through stormwater filtration system, improves the quality of stormwater runoff from the urban environment by removing pollutants. The StormFilter can treat runoff from a wide variety of sites including, but not limited to: retail and commercial development, residential streets, urban roadways, freeways, and industrial sites such as shipyards, foundries, etc.

Operation:

The StormFilter is typically comprised of a vault that houses rechargeable, media-filled, filter cartridges. Various media may be used, but this designation covers only the zeolite-perlite-granulated activated carbon (ZPG™) medium. Stormwater from storm drains percolates through these media-filled cartridges, which trap particulates and may remove pollutants such as dissolved metals, nutrients, and hydrocarbons. During the filtering process, the StormFilter system also removes surface scum and floating oil and grease. Once filtered through the media, the treated stormwater is directed to a collection pipe or discharged to an open channel drainage way.

This document includes a bypass schematic for flow rates exceeding the water quality design flow rate on page 8.

StormFilter Configurations:

Contech offers the StormFilter in multiple configurations: precast, high flow, catch basin, curb inlet, linear, volume, corrugated metal pipe, drywell, and CON/Span form. Most configurations use pre-manufactured units to ease the design and installation process. Systems may be either uncovered or covered underground units.

The typical precast StormFilter unit is composed of three sections: the energy dissipater, the filtration bay, and the outlet sump. As Stormwater enters the inlet of the StormFilter vault through the inlet pipe, piping directs stormwater through the energy dissipater into the filtration bay where treatment will take place. Once in the filtration bay, the stormwater ponds and percolates horizontally through the media contained in the StormFilter cartridges. After passing through the media, the treated water in each cartridge collects in the cartridge's center tube from where piping directs it into the outlet sump by a High Flow Conduit under-drain manifold. The treated water in the outlet sump discharges through the single outlet pipe to a collection pipe or to an open channel drainage way. In some applications where you anticipate heavy grit loads, pretreatment by settling may be necessary.

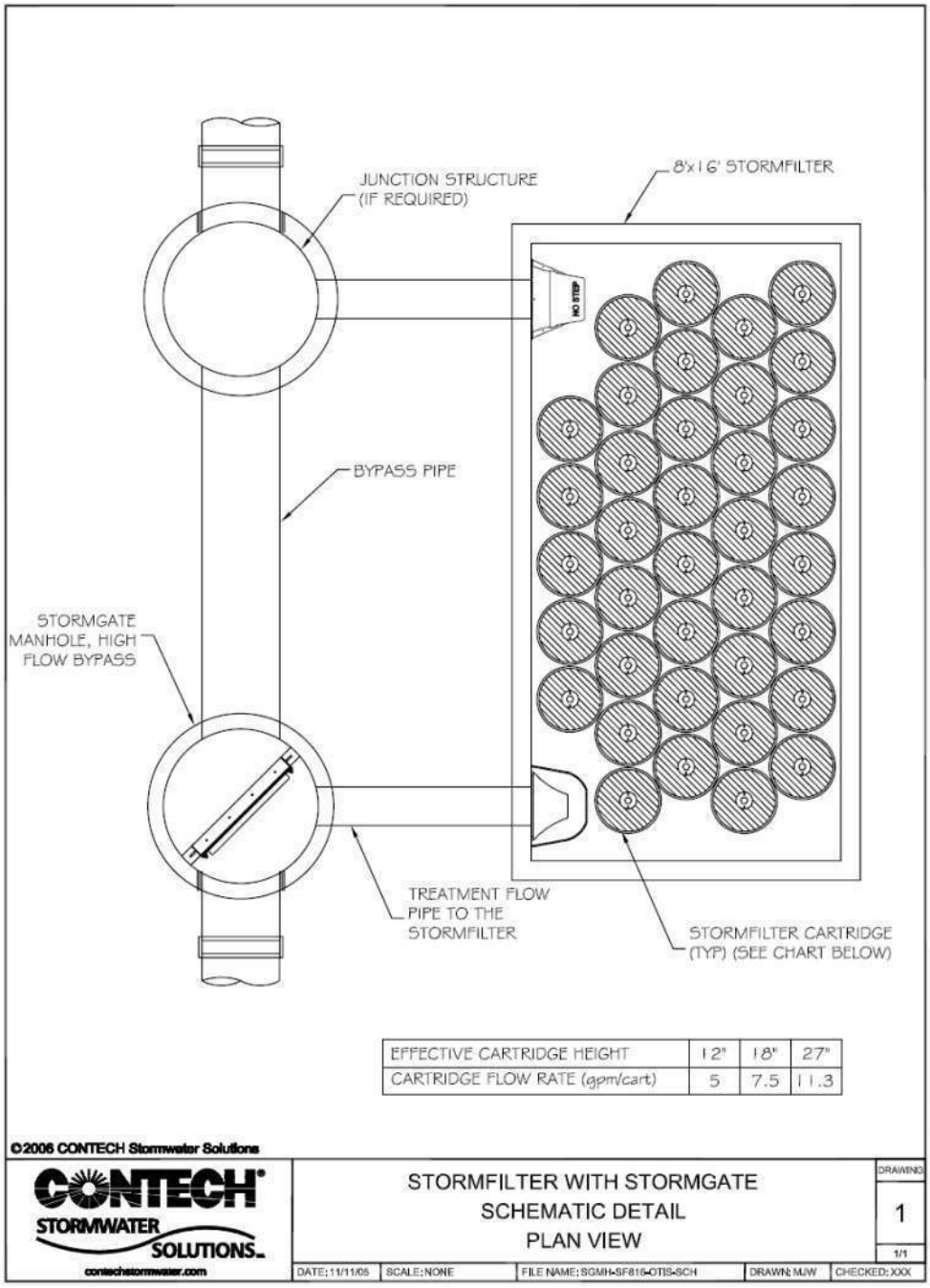

Figure 1. Stormwater Management StormFilter Configuration with Bypass

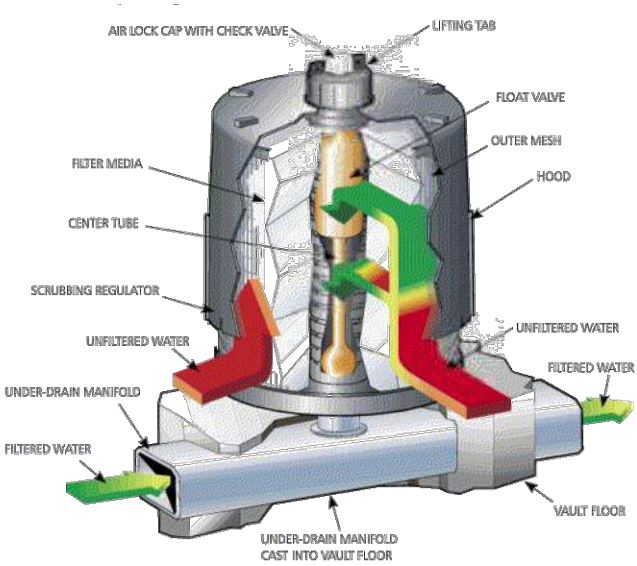

Figure 2. The StormFilter Cartridge

Cartridge Operation:

As the water level in the filtration bay begins to rise, stormwater enters the StormFilter cartridge. Stormwater in the cartridge percolates horizontally through the filter media and passes into the cartridge's center tube, where the float in the cartridge is in a closed (downward) position. As the water level in the filtration bay continues to rise, more water passes through the filter media and into the cartridge's center tube. Water displaces the air in the cartridge and it purges from beneath the filter hood through the one-way check valve located in the cap. Once water fills the center tube there is enough buoyant force on the float to open the float valve and allow the treated water to flow into the under-drain manifold. As the treated water drains, it tries to pull in air behind it. This causes the check valve to close, initiating a siphon that draws polluted water throughout the full surface area and volume of the filter. Thus, water filters through the entire filter cartridge throughout the duration of the storm, regardless of the water surface elevation in the filtration bay. This continues until the water surface elevation drops to the elevation of the scrubbing regulators. At this point, the siphon begins to break and air quickly flows beneath the hood through the scrubbing regulators, causing energetic bubbling between the inner surface of the hood and the outer surface of the filter. This bubbling agitates and cleans the surface of the filter, releasing accumulated sediments on the surface, flushing them from beneath the hood, and allowing them to settle to the vault floor.

Adjustable cartridge flow rate:

Inherent to the design of the StormFilter is the ability to control the individual cartridge flow rate with an orifice-control disc placed at the base of the cartridge. Depending on the treatment requirements and on the pollutant characteristics of the influent stream as

specified in the CONTECH *Product Design Manual*, operators may adjust the flow rate through the filter cartridges. By decreasing the flow rate through the filter cartridges, the influent contact time with the media is increased and the water velocity through the system is decreased, thus increasing both the level of treatment and the solids removal efficiencies of the filters, respectively (de Ridder, 2002).

Recommended research and development:

Ecology encourages CONTECH to pursue continuous improvements to the StormFilter. To that end, CONTECH recommends the following actions:

- Determine, through laboratory testing, the relationship between accumulated solids and flow rate through the cartridge containing the ZPG™ media. **Completed 11/05.**
- Determine the system's capabilities to meet Ecology's enhanced, phosphorus, and oil treatment goals.
- Develop easy-to-implement methods of determining that a StormFilter facility requires maintenance (cleaning and filter replacement).

Contact Information:

Applicant Contact: Jeremiah Lehman
Contech Engineered Solutions
11835 NE Glenn Widing Drive
Portland, OR, 97220
503-258-3136
jlehman@conteches.com

Applicant Web link http://www.conteches.com/

Ecology web link: http://www.ecy.wa.gov/programs/wq/stormwater/newtech/index.html

Ecology Contact: Douglas C. Howie, P.E.
Department of Ecology
Water Quality Program
(360) 407-6444
douglas.howie@ecy.wa.gov

Revision History

Date	**Revision**
Jan 2005	Original Use Level Designation
Dec 2007	Revision
May 2012	Maintenance requirements updated
November 2012	Design Storm and Maintenance requirements updated
January 2013	Updated format to match Ecology standard format
September 2014	Added Peak Diversion StormFilter Alternate Configuration
November 2016	Revised Contech contact information
April 2017	Revised sizing language to note sizing based on Off-line calculations

SEPARATOR SHEET

APPENDIX C

Geotechnical Report

GEOTECHNICAL ENGINEERING STUDY

13th Street Gas Station
NE 13th Street & NW Friberg-Strunk Street
Camas, Clark County, Washington
Tax Lot No. (176148000)

Prepared for:
Taz Khan
701 Columbia Street #109
Vancouver, WA 98660

Prepared By:

Donald J. Bruno, CEG
Engineering Geologist

9/31/23

State of Washington
Engineering Geologist
2177
Licensed Geologist
DONALD J. BRUNO

Project No. G26-0723

{August 2023}

Earth Engineering Inc.
PO Box 1512, Ridgefield, Washington 98642
(360) 600-6518

Earth Engineering, Inc.
Geotechnical & Environmental Consultants

Taz Khan
701 Columbia Street #109
Vancouver, Washington 98660

August 31st 2023
G26-0723

Subject: **Geotechnical Engineering Study**
13th Street Gas Station, C-Store & Car Wash
NE 13th Street & NW Friberg-Strunk Street
Camas, Clark County, Washington
(Tax Lot No. 176148000)

Hello Taz,

We are pleased to submit our engineering report for the subject property located in Camas, Washington. This report presents the results of our field exploration, selective laboratory tests, field testing and engineering analyses.

Based on the results of this study, it is our opinion that construction of the proposed commercial structures is feasible from a geotechnical standpoint, provided recommendations presented in this report are included in the project design.

We appreciate the opportunity to have been of service to you and look forward to working with you in the future. Should you have any questions about the content of this report, or if we can be of further assistance, please call.

Respectfully Submitted,
Earth Engineering Inc.,

Donald J. Bruno, CEG
Engineering Geologist

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{G26-0723}

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APPENDICES

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Exhibit 33 APPEAL24-1001

INTRODUCTION

General

This report presents the results of the geotechnical engineering study completed by Earth Engineering, Inc. for the proposed gas station, convenience store and drive thru car wash located in Camas, Washington. The general location of the site is shown on the *Vicinity Map, Figure 1.* At the time our study was performed, the site and our exploratory locations are approximately as shown on the *Site Plan, Figure 2.*

The purpose of this study was to explore subsurface conditions at the site and based on the conditions encountered provide geotechnical recommendations for the proposed construction. In addition this report includes infiltration testing for stormwater design and a seismic hazard evaluation.

Project Description

Based on the information that was provided to us by the project civil engineer (PLS), it is our understanding the site will be developed with a one story convenience store building that will provide four thousand one-hundred (4100) square feet of floor space, a one thousand one-hundred and eighty nine (1189) square foot drive thru car wash, a fuel pumping island, trash enclosure and an asphalt paved access driveway with vehicle parking spaces. Construction will also include the installation of a stormwater system and subsurface utilities.

Due to the relatively flat topography, it is anticipated that earthwork cuts and fills will be less than two feet to achieve the desired design grade. The convenience store and car wash structures will be constructed with a metal or wood frame and slab on grade floors.

Structural design loads were not available at the time this report was written. However, based on our experience with similar projects, we anticipate that wall and column loads will be approximately seven hundred and fifty (750) to one thousand five hundred (1500) pounds per lineal foot (maximum dead plus live loads). Slab on grade loads will most likely range from one hundred (100) to one hundred and fifty (150) pounds per square foot (psf).

If any of the above information is incorrect or changes, we should be consulted to review the recommendations contained in this report. In any case, it is recommended that Earth Engineering, Inc. perform a general review of the final design for the proposed construction.

SITE CONDITIONS

Surface

The rectangular shaped property encompasses approximately one acre. An existing single family residence was located at the central west area of the property. The adjacent properties to the south and west are moderately to heavily vegetated with single family homes on acreage.
NE 13th Street borders the north side and NW Friberg-Strunk Street.

Exhibit 33 APPEAL24-1001

The property is relatively level and slopes gently downward from the north to the south and southeast with an overall elevation change of approximately five feet and a gradient that is less than two percent (2%). The property has been landscaped with a manicured lawn as well as a variety of trees and flowering bushes.

Subsurface & Soil Classification

For this study, the site was explored by excavating two test pits at the approximate locations shown on the *Site Plan, Figure 2*. Infiltration testing was performed in both test pits. All soil was classified following the Unified Soil Classification System (USCS). A USCS Legend is included as Plate A1. A description of the field exploration methods is included in Appendix A.

In general, in our test pits we encountered very stiff to hard soil consisting of Silt (ML) and lean Clay (CL) to the maximum exploration depth of ten and one half (10.5) feet below the existing ground surface. Please refer to the test pit logs, Plates A-2 thru A-3, for a more detailed description of the conditions encountered.

Groundwater

During the time of our field exploration (August 2023) groundwater was not encountered in any of our test pits. It is important to note that groundwater conditions are not static; fluctuations may be expected in the level and seepage flow depending on the season, amount of, surface water runoff, and other factors. Generally, groundwater levels are higher and the seepage rate is greater in the wetter winter months (typically October through May).

General Regional Geology

General information about geologic conditions and soil in the vicinity of the site was obtained by reviewing the Geologic Map of Washington-Southwest Quadrant, Washington Division of Geology and Earth Resources, (Geologic Map GM-34, 1987). This map provides general information about geologic units in the Camas, Clark County, Washington area.

Our review of existing geological information indicates that soils in the vicinity of the subject site were formed from alluvial deposits during the Quaternary Period. Outburst flood deposits from glacial Lake Missoula deposited these sedimentary soils. The native material encountered in our test pits consists predominantly of Silt.

LABORATORY TESTING

Laboratory tests were conducted on representative soil samples to verify or modify the field soil classification of the units encountered, and to evaluate the general physical properties as well as the engineering characteristics of the soils encountered. The following provides information about the testing procedures performed on representative soil samples and the general condition of subsurface soil conditions encountered:

Exhibit 33 APPEAL24-1001

- *Moisture Content (ASTM-D2216-92)* tests were performed on representative samples. The native Silt has a moisture content that ranges from thirteen to forty three percent (13-43 %). The native lean clay has a moisture content of thirty eight percent (38%)

- In-Situ Soil Density (ASTM-D4564-93) utilizing the sleeve method was performed on representative samples to determine the wet and dry density of native soil. The in-situ density provides a relative indication of soil support characteristics. The average wet density of the native silt is one hundred and ten (110) pounds per cubic foot (pcf). The average dry density of this soil is ninety six (96) pcf.

Laboratory testing confirms that subsurface soil consists predominantly of Silt and lean Clay. These types of soil are sensitive to changes in moisture content. Moisture sensitive soils are discussed in more detail in the *Site Preparation and Grading* section of this report.

The results of laboratory tests performed on specific samples are provided at the appropriate sample depth on the individual test pit logs. However, it is important to note that some variation of subsurface conditions may exist. Our geotechnical recommendations are based on our interpretation of these test results.

SEISMIC HAZARD EVALUATION

The following provides a seismic hazard evaluation for the proposed commercial building and fuel island. Our evaluation is based on subsurface conditions encountered at the site during the time of our geotechnical study and a review of applicable geologic maps (Washington State Department of Natural Resources, Geologic Map of Washington-Southwest Quadrant, 1987) and the International Building Code (IBC-2018) guidelines.

In general, supportive soil at the subject site consists of very stiff to hard Silt. The geologic map indicates that no known active faults are located within one-mile of the subject site. Soils encountered at the site are classified as a type "D" soil in accordance with "Seismic Design Categories" (IBC 2018, Section 1803.5.12).

Liquefaction:

Structures are subject to damage from earthquakes due to direct and indirect action. Shaking represents direct action. Indirect action is represented by foundation failures and is typified by liquefaction. Liquefaction occurs when soil loses all shear strength for short periods of time during an earthquake. Ground shaking of sufficient duration results in the loss of grain to grain contact as well as a rapid increase in pore water pressure. This causes the soil to assume physical properties of a fluid.

To have potential for liquefaction a soil must be loose, cohesion-less (generally sands and silts), below the groundwater table, and must be subjected to sufficient magnitude and duration of ground shaking. The effects of liquefaction may be large total settlement and/or large differential settlement for structures with foundations in or above the liquefied soil. Based on the very stiff to hard soil conditions encountered and the absence of a near surface groundwater table, it is not likely that soil liquefaction would occur at the subject site during a seismic event.

Exhibit 33 APPEAL24-1001

DISCUSSION AND RECOMMENDATIONS

General

Based on the results of our study, it is our opinion the commercial project can be developed as planned provided the geotechnical recommendations contained in this report are incorporated into the final design. The proposed buildings (convenience store & car wash) as well as the fuel island canopy can be supported on conventional shallow spread footings bearing either entirely on competent native soil or compacted structural fill. Supporting the proposed buildings on homogeneous material will significantly decrease the potential for differential settlement across the foundation area.

This report has been prepared for specific application to this project only and in a manner consistent with that level of care and skill ordinarily exercised by other members of the profession currently practicing under similar conditions in this area for the exclusive use of Taz Khan and their representatives. This report, in its entirety, should be included in the project documents for information to the contractor. No warranty, expressed or implied, is made.

Site Preparation and Grading

The site shall be stripped and cleared of all vegetation, organic matter and any other deleterious material. Stripped material should not be mixed with any soils to be used as fill. Stripped soil could potentially be used for topsoil at landscape areas after removing vegetation and screening out organic matter.

Building and Driveway Areas:

After clearing and grading, the exposed sub-grade at building and pavement areas should be compacted to a dense non-yielding condition with suitable compaction equipment. This phase of earthwork compaction shall be performed prior to the placement of structural fill, at the bottom of all foundation excavations, interior and exterior concrete slabs, as well as the driveway-parking areas, before the placement of base rock.

Structural Fill:

Structural fill is defined as any soil placed under buildings or any other load bearing-areas. Structural fill placed under footings and slab on grade should be placed in thin horizontal lifts not exceeding eight inches and compacted to a minimum ninety-five percent (95%) of its maximum dry density (Modified Proctor ASTM D1557). The fill material should be placed within two to three percent of the optimum moisture content.

Fill under pavements should also be placed in lifts approximately eight inches in thickness, and compacted to a minimum of ninety percent (92%) of its maximum dry density (Modified Proctor ASTM D1598), except for the top twelve (12) inches which should be compacted to ninety-five percent (95%) of the maximum dry density.

Exhibit 33 APPEAL24-1001

We recommend that structural fill consist of a well graded granular material having a maximum size of two inches and no more than five percent (5%) fines passing the #200 sieve, based on the ¾ inch fraction. It is recommended that any structural fill planned for onsite use, be submitted for approval prior to import.

The placement and compaction of structural fill should be observed by a representative from our office to verify that fill has been placed and compacted in accordance with the approved project plans and specifications.

It should be noted that the depth of excavation to competent soil at foundation footings and floor slab areas could be greater or less than anticipated depending on conditions encountered. Our test pits provide general information about subsurface soil and groundwater conditions.

Wet Weather Construction & Moisture Sensitive Soils:

Field observations and laboratory testing indicates that soil encountered at the site consists of moisture sensitive Silt and lean Clay. As such in an exposed condition moisture sensitive soil can become disturbed during normal construction activity, especially when in a wet or saturated condition. Once disturbed, in a wet condition, these soils will be unsuitable for support of foundations, floor slabs and pavements.

Therefore, where soil is exposed and will support new construction, care must be taken not to disturb their condition. If disturbed soil conditions develop, the affected soil must be removed and replaced with structural fill. The depth of removal will be dependent on the depth of disturbance developed during construction. Covering the excavated area with plastic and refraining from excavation activities during rainfall will minimize the disturbance and decrease the potential degradation of supportive soils.

Earthwork grading and foundation construction will be difficult during the wet winter and spring seasons. Based on this condition we suggest that grading and foundation construction be completed during the drier summer and fall seasons.

Foundations

Based on the encountered subsurface soil conditions, preliminary building design criteria, and assuming compliance with the preceding *Site Preparation and Grading* section, the proposed building may be supported on conventional shallow spread footings bearing entirely on six inches of compacted granular structural fill.

Individual spread footings or continuous wall footings providing support for the proposed commercial building and pump island canopy may be designed for a maximum allowable bearing value of two -thousand (2000) pounds per square foot (psf).

Footings for a one level structure should be at least twelve (12) inches in width. Footings for a two-level structure should be a minimum of fifteen (15) inches in width. In either case, all footings should extend to a depth of at least eighteen (18) inches below the lowest adjacent finished sub grade for lateral support and frost heave considerations.

Exhibit 33 APPEAL24-1001

These basic allowable bearing values are for dead plus live loads and may be increased one-third for combined dead, live, wind, and seismic forces. It is estimated that total and differential footing settlements for the relatively light building will be approximately one-half and one-quarter inches, respectively.

Lateral loads can be resisted by friction between the foundation and the supporting sub grade or by passive earth pressure acting on the buried portions of the foundation. For the latter, the foundations must be poured "neat" against the existing soil or back filled with a compacted fill meeting the requirements of structural fill.

- Passive Pressure = 300 pcf equivalent fluid weight
- Coefficient of Friction = 0.40

We recommend that all footing excavations be observed by a representative of Earth Engineering, Inc. prior to placing forms or rebar, to verify that sub grade support conditions are as anticipated in this report, and/or provide modifications in the design as required.

Slab on Grade

The sub-grade for all concrete floor slab areas should be compacted to a dense non-yielding condition prior to the placement of base rock. It is important to note that the existing sub-grade soil may become too wet to re-compact due to weather conditions. If supportive soils become saturated it may be necessary to remove the unsuitable material and replace it with imported granular structural fill.

Interior floor slabs should be provided with a minimum of six inches of compacted granular structural fill after compacting the sub-grade. In areas where moisture is undesirable, a vapor barrier such as a 8-mil plastic membrane should be placed beneath the slab.

Temporary Excavations

The following information is provided solely as a service to our client. Under no circumstances should this information be interpreted to mean that Earth Engineering Inc. is assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

In no case should excavation slopes be greater than the limits specified in local, state and federal safety regulations. Based on the information obtained from our field exploration and laboratory testing, the site soils expected to be encountered in excavations, very stiff to hard Silt would be classified as a Type "A" soil by OSHA guidelines.

Therefore, temporary excavations and cuts greater than four feet in height, should be sloped at an inclination no steeper than 3/4H:1V (horizontal:vertical) for type "A" soils. If slopes of this inclination, or flatter, cannot be constructed or if excavations greater than ten feet in depth are required, temporary shoring will be necessary.

Exhibit 33 APPEAL24-1001

Infiltration Testing

During August of 2023, infiltration testing was performed at two locations at four and one half and six feet below the existing ground surface. The approximate location of the infiltration tests are shown on the *Site Plan, Figure 2.*

Infiltration testing was conducted in general accordance with standard engineering practices The Encased Falling Head Test consists of driving a fifteen (15) inch long, six-inch diameter pipe six inches into the exposed ground surface at the bottom of the test pit. The pipe is filled with water as the soil around the bottom and below the pipe is saturated for several hours. The pipe is filled again, and the amount of time required for the water to fall, per inch, for six inches, is recorded. This step is performed a minimum of three times. The test results are averaged and calculated in inches per hour.

Testing yielded infiltration rates that ranged from 0.1 to 0.25 inches per hour. Based on these infiltration rates and the very stiff to hard soil conditions encountered, it is our opinion on-site soil is not conducive to infiltration. Alternative methods will need to be employed for stormwater control.

Site Drainage

The site should be graded so that surface water is directed off the site. Water should not be allowed to stand in any area where buildings or slabs are to be constructed. Loose surfaces should be sealed at the end of each workday by compacting the surface to reduce the potential for moisture infiltration into the soils. Final site grades should allow for drainage away from the building foundation. The ground should be sloped at a gradient of three percent for a distance of at least ten feet away from the buildings.

We recommend that a footing drain be installed around the perimeter of the building just below the invert of the footing with a gradient sufficient to initiate flow. Under no circumstances should the roof down spouts be connected to the footing drain system. We suggest that clean outs be installed at several accessible locations to allow for the periodic maintenance of the footing drain system. Details for the footing drain have been included on *Figure 3, Typical Footing Drain Detail.*

Utility Support and Back Fill

Based on the conditions encountered, the soil to be exposed by utility trenches should provide adequate support for utilities. Utility trench backfill is a concern in reducing the potential for settlement along utility alignments, particularly in pavement areas. It is also important that each section of utility line be adequately supported in the bedding material. The back fill material should be hand tamped to ensure support is provided around the pipe haunches.

Fill should be carefully placed and hand tamped to about twelve inches above the crown of the pipe before any compaction equipment is used. The remainder of the trench back fill should be placed in lifts having a loose thickness of ten inches.

Exhibit 33 APPEAL24-1001

A typical trench backfill section and compaction requirements for load supporting and non-load supporting areas is presented on *Figure 4, Utility Trench Backfill Detail.* Trench back fill may consist of imported granular fill provided the material is approved, placed and compacted near the optimum moisture content.

Imported granular material or on-site soil to be used as backfill should be submitted to our laboratory at least one week prior to construction so that we can provide a laboratory proctor for field density testing. If native soil is planned for use as backfill, additional testing may be required to determine the suitability of the material.

Pavements

The durability of pavements is related in part to the condition of the underlying sub grade. To provide a properly prepared sub grade for pavements, we recommend the sub grade be treated and prepared as described in the *Site Preparation and Grading* section of this report.

It is possible that some localized areas of soft, wet or unstable sub grade may still exist after this process. Before placement of any base rock, the sub grade should be compacted with suitable compaction equipment. Yielding areas that are identified should be excavated to firm material and replaced with compacted one and one quarter inch-minus clean-crushed rock. The following pavement sections are recommended for the proposed pavement areas:

- Entrance Driveway & Truck Turnaround - Four inches of Asphalt Concrete (AC) over ten inches of compacted Crushed Rock Base (CRB), over a geo-grid consisting of Tensar BX 1200 or equivalent.

- Parking Stalls for Automobiles - Three inches of Asphalt Concrete (AC) over eight inches of compacted Crushed Rock Base (CRB) material.

The geo-grid should be placed directly on the sub grade surface of the driveway prior to placement of base rock. Appropriate geo-textiles have been designed to increase the strength of the sub grade and extend pavement life.

Asphaltic Cement (AC) and Crushed Rock Base (CRB) materials should conform to WSDOT specifications. All base rock should be compacted to at least ninety-five percent (95 %) of the ASTM D1557-91 laboratory test standard.

We recommend that a minimum of eight inches of compacted CRB be placed below all exterior slabs. Exterior concrete slabs that are subject to vehicle traffic loads should be at five inches in thickness. It is also suggested that nominal reinforcement such as "6x6-10/10" welded wire mesh be installed, near midpoint, in new exterior concrete slabs and paving.

Exhibit 33 APPEAL24-1001

Additional Services & Earthwork Monitoring

Earth Engineering, Inc. will be available to provide consultation services related to review of the final design to verify that the recommendations within our purview have been properly interpreted and implemented in the approved construction plans and specifications. A representative from our office will be available to attend a pre-construction meeting to discuss and/or clarify all geotechnical issues related to the proposed project.

In addition, it is suggested that our office be retained to provide geotechnical services during construction to observe compliance with the design concepts and project specifications and to allow design changes in the event subsurface conditions differ from those anticipated. Our construction services would include monitoring and documenting the following:

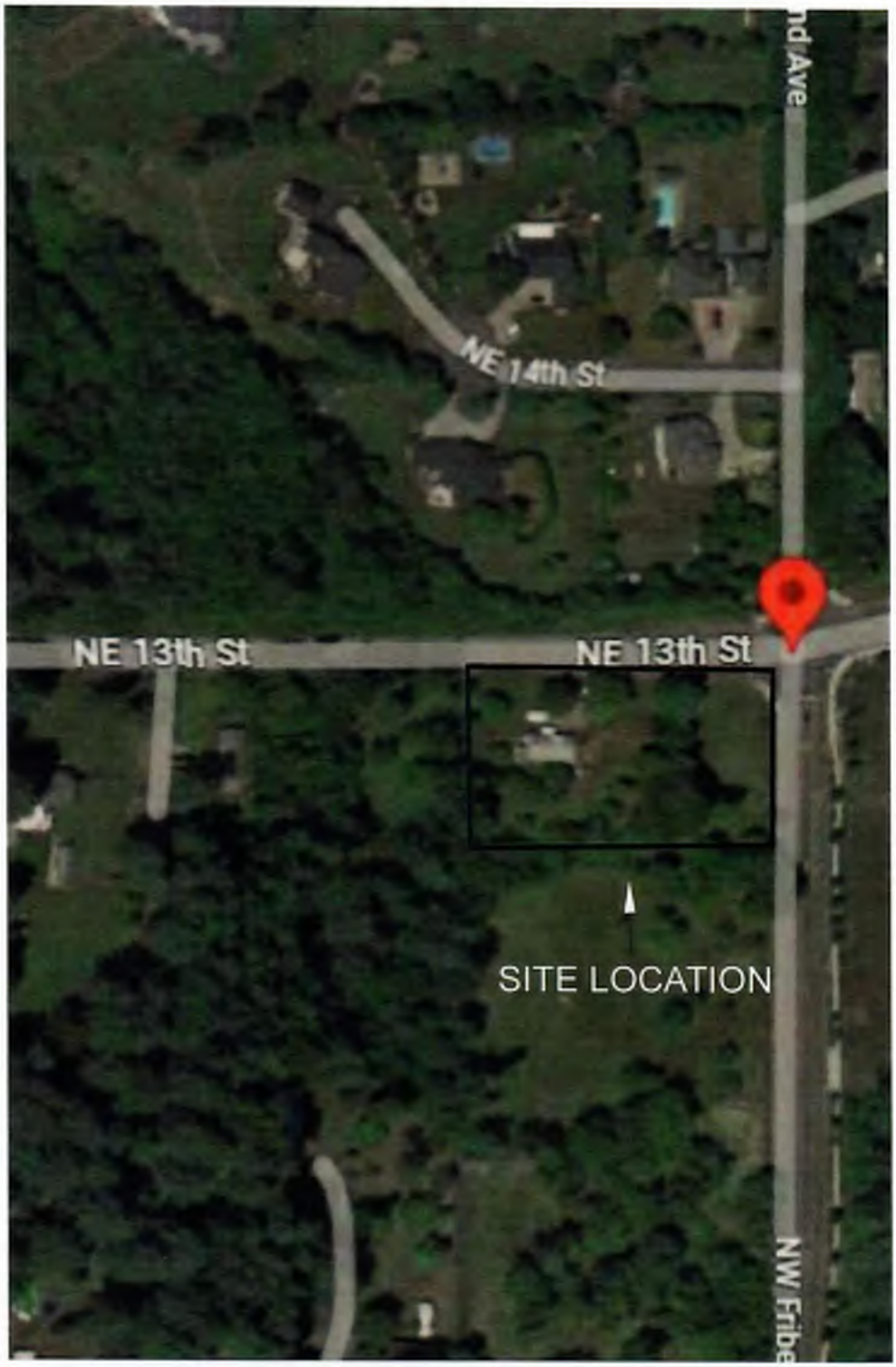
- Verify that site has been adequately stripped of organic materials.
- Observe the condition of exposed bearing soils at the building areas.
- Laboratory proctor tests for structural fill materials.
- Observe compaction and provide density testing of structural fill.
- Observe compaction and provide density testing of utility trench backfill.
- Provide footing inspection at the building & canopy footings to verify soil bearing capacity.
- Verify the installation of all building and site drainage elements.
- Provide density testing of the asphalt driveway and parking areas.

LIMITATIONS

Our recommendations and conclusions are based on the site materials observed, selective laboratory testing, engineering analyses, the design information provided to Earth Engineering, Inc. and our experience as well as engineering judgment. The conclusions and recommendations are professional opinions derived in a manner consistent with that level of care and skill ordinarily exercised by other members of the profession currently practicing under similar conditions in this area. No warranty is expressed or implied.

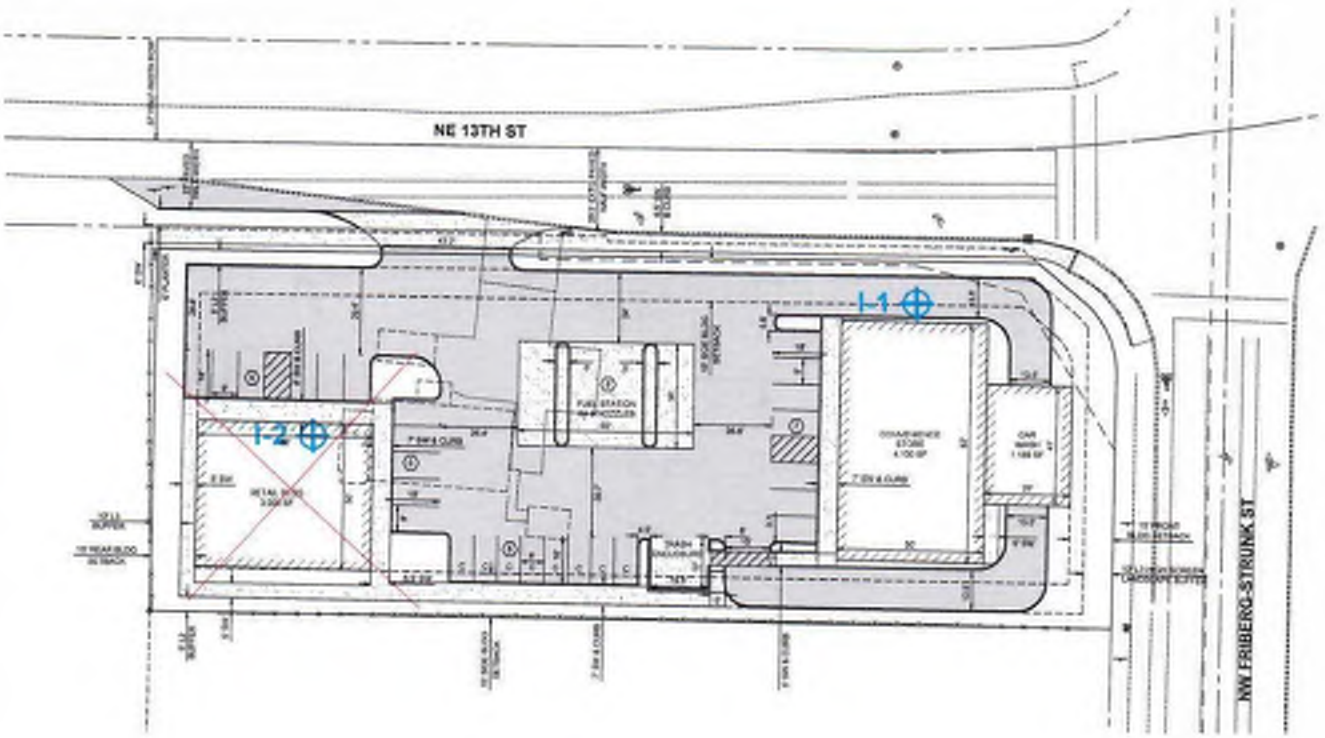
The recommendations submitted in this report are based upon the data obtained from the test pits. Soil and groundwater conditions may vary from those encountered. The nature and extent of variations may not become evident until construction. If variations do appear, Earth Engineering, Inc. should be requested to reevaluate the recommendations contained in this report and to modify or verify them in writing prior to proceeding with the proposed construction.

VICINITY MAP



Earth Engineering GEOTECHNICAL & ENVIRONMENTAL SERVICES	CLIENT: TAZ KHAN	DRAWN: EG
	PROJECT: 13TH STREET GAS STATION NE 13TH ST & NW FRIBERG-STRUNK ST CAMAS, WA	DATE: 09/2023
		FIGURE: 1
		PRO. #: G26-072

SITE PLAN

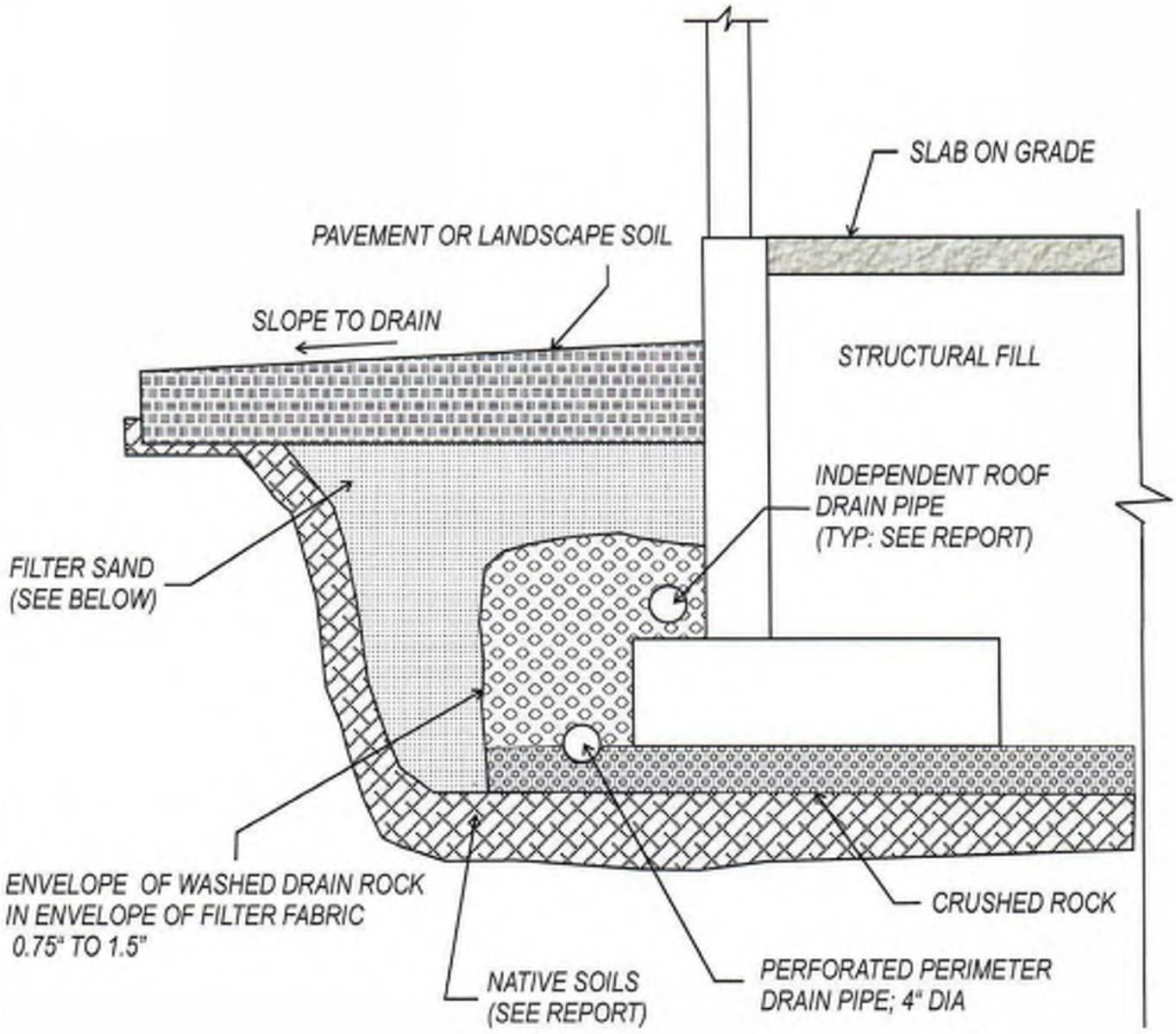


LEGEND

I-1 ⊕ Approximate Infiltration Test Location

NTS

Earth Engineering GEOTECHNICAL & ENVIRONMENTAL SERVICES	CLIENT: TAZ KHAN	DRAWN: EG
	PROJECT: 13TH STREET GAS STATION NE 13TH ST & NW FRIBERG -STRUNK ST CAMAS, WA	DATE: 09/2023
		FIGURE: 2
		PRO. #: G26-072



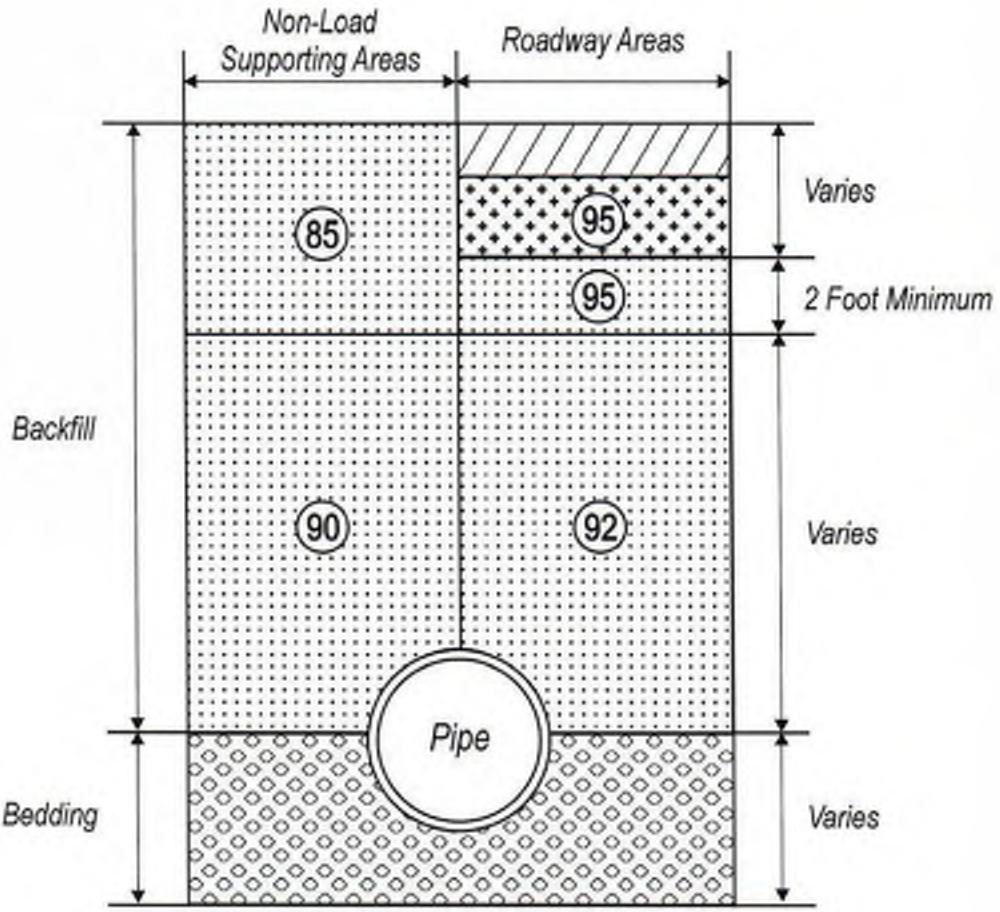
NOTES:

1. FILTER SAND - FINE AGGREGATE FOR PORTLAND CEMENT; SECTION 9=03.1(2)
2. PERFORATED OR SLOTTED RIGID PVC PIPE WITH A POSITIVE DRAINAGE GRADIENT
3. FILTER FABRIC OPTIONAL IF FILTER SAND USED

TYPICAL FOOTING DRAIN DETAIL

Not to Scale

Earth Engineering, Inc. GEOTECHNICAL & ENVIRONMENTAL SERVICES	CLIENT: 13TH STREET GAS STATION	DRAWN: DB
	PROJECT: COMMERCIAL BUILDING NE 13TH ST. & NW FRIBERG-STRUCK ST. VANCOUVER, WA	DATE: 07/2023
		FIGURE: 3
		PRO. #: G26-0723



LEGEND

Asphalt or Concrete Pavement

Roadway Base Material or Base Rock

Backfill: Compacted on-site soil or imported select fill material as described in the site preparation of the general Earthwork Section of the attached report text.

92 — Minimum percentage of maximum Laboratory Dry Density as determined by ASTM Test method D1557 (Modified Proctor),unless otherwise specified in the attached report text.

Bedding Material: Material type depends on type of pipe and laying conditions. Bedding should conform to the manufacturer's recommendations for the type of pipe selected.

UTILITY TRENCH BACKFILL DETAIL

Not to Scale

Earth Engineering, Inc. GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS	CLIENT: 13TH ST. GAS STATION	DRAWN: DB
	PROJECT: COMMERCIAL BUILDING NE 13TH ST. & NW FRIBERG-STRUNK CAMAS, WA	DATE: 07/2023
		FIGURE: 4
		PRO. #: G26-0723

APPENDIX A

(FIELD EXPLORATION)

FIELD EXPLORATION

Our field exploration was performed on August 4th 2023. Subsurface conditions at the site were explored by excavating two test pits. The test pits were excavated to a maximum depth of ten and one half (10.5) feet below the existing ground surface. The test pits were excavated using a track-hoe.

The test pits were located by pacing from property features. The locations are shown on the Site Plan, Figure 2. Field exploration was monitored by an Earth Engineering, Inc. representative, who classified the soils that we encountered and maintained a log of each test pit, obtained representative samples, and observed pertinent site features. Representative soil samples were placed in closed containers and returned to the laboratory for further examination and testing.

All samples were identified using the Standard Classification of Soils for Engineering Purposes (ASTM D2487-93) in accordance with the Unified Soil Classification System (USCS), which is presented on Plate A-1. The test pit log and boring logs are presented in Appendix A. The final log represents our interpretations of the field logs and the results of the laboratory tests on field samples.

UNIFIED SOIL CLASSIFICATION SYSTEM
LEGEND

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTION
Coarse Grained Soils	Gravel and Gravelly Soils More Than 50% Coarse Fraction Retained on No 4 Sieve	Clean Gravels (little or no fines)		GW gw	Well-Graded Gravels, Gravel-Sand Mixtures Little or no Fines
				GP gp	Poorly-Graded Gravels, Gravel-Sand Mixtures, Little or no Fines
		Gravels with Fines (appreciable amount of fines)		GM gm	Silty Gravels, Gravel-Sand-Silt Mixtures
				GC gc	Clayey Gravels, Gravel-Sand-Clay Mixtures
More Than 50% Material Larger Than No 200 Sieve Size	Sand and Sandy Soils More Than 50% Coarse Fraction Passing No 4 Sieve	Clean Sand (little or no fines)		SW sw	Well-graded Sands, Gravelly Sands Little or no Fines
				SP sp	Poorly-Graded Sands, Gravelly Sands Little or no Fines
		Sands with Fines (appreciable amount of fines)		SM sm	Silty Sands, Sand-Silt Mixtures
				SC sc	Clayey Sands, Sand-Clay Mixtures
Fine Grained Soils	Silts and Clays	Liquid Limit Less than 50		ML ml	Inorganic Silts and Very Fine Sands, Rock Flour, Silty-Clayey Fine Sands; Clayey Silts w/ slight Plasticity
				CL cl	Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean
				OL ol	Organic Silts and Organic Silty Clays of Low Plasticity
More Than 50% Material Smaller Than No 200 Sieve Size	Silts and Clays	Liquid Limit Greater than 50		MH mh	Inorganic Silts, Micaceous or Diatomaceous Fine Sand or Silty Soils
				CH ch	Inorganic Clays of High Plasticity, Fat Clays
				OH oh	Organic Clays of Medium to High Plasticity, Organic Silts
Highly Organic Soils				PT pt	Peat, Humus, Swamp Soils with High Organic Contents

Topsoil		Humus and Duff Layer
Fill		Highly Variable Constituents

Earth Engineering Inc.
GEOTECHNICAL & ENVIRONMENTAL SERVICES

CLIENT:	13TH STREET GAS STATION	DRAWN: DB
PROJECT:	COMMERCIAL BUILDING NE13TH ST. & NW FRIBERG-STRUNK ST. CAMAS, WA	DATE: 07/2023
		PLATE: A1
		PRO. #: G26-0723

LOG OF TEST PIT I-1

(Northeast)

ELEVATION: +/- 239 feet
EXPLORATORY EQUIPMENT: TRACK HOE
DATE: 08/04/2023

DEPTH IN FEET	SAMPLES	SOILS CLASSIFICATION	LITHOLOGY (USGS)	COLOR	MOISTURE	CONSISTENCY	MOISTURE CONTENT % OF DRY WEIGHT	PERCENT PASS NUMBER 200
1	•	6" Topsoil		Light Brown			14	-
2								
3								
4								
5	•	- Field infiltration rate of 0.25 inches per hour **Silt (ML)** **trace sand**			Damp to Wet	Very Stiff to Hard	18	-
6								
7								
8								
9				Grey Brown				
10	•	(Native)					26	-

Bottom of test pit at 10.5 feet below existing ground surface.
No groundwater encountered.

Earth Engineering, Inc.
GEOTECHNICAL & ENVIRONMENTAL SERVICES

CLIENT:	TAZ KHAN	DRAWN:	DB
PROJECT:	13TH ST GAS STATION NE 13TH ST & NW FRIBERG-STRUNK ST CAMAS, WA	DATE:	09/2023
		PLATE:	A-2
		PRO. #:	G26-0723

LOG OF TEST PIT I-2

(Central West)

ELEVATION: +/- 240 feet
EXPLORATORY EQUIPMENT: TRACK HOE
DATE: 08/04/2023

DEPTH IN FEET	SAMPLES	SOILS CLASSIFICATION	LITHOLOGY (USGS)	COLOR	MOISTURE	CONSISTENCY	MOISTURE CONTENT % OF DRY WEIGHT	PERCENT PASS NUMBER 200
1		8" Topsoil						
2	•						13	-
3		**Silt (ML)**		Light Brown to Dark Brown	Damp to Sat	Very Stiff to Hard		
4								
5								
6	•	- Field infiltration rate of 0.1 inches per hour					43	
7		(Native)						
8								
9		**lean Clay (CL)**		Light Brown Grey	Sat	Very Stiff to Hard		
10	•						38	-

Bottom of test pit at 10.0 feet below existing ground surface.
No groundwater encountered.

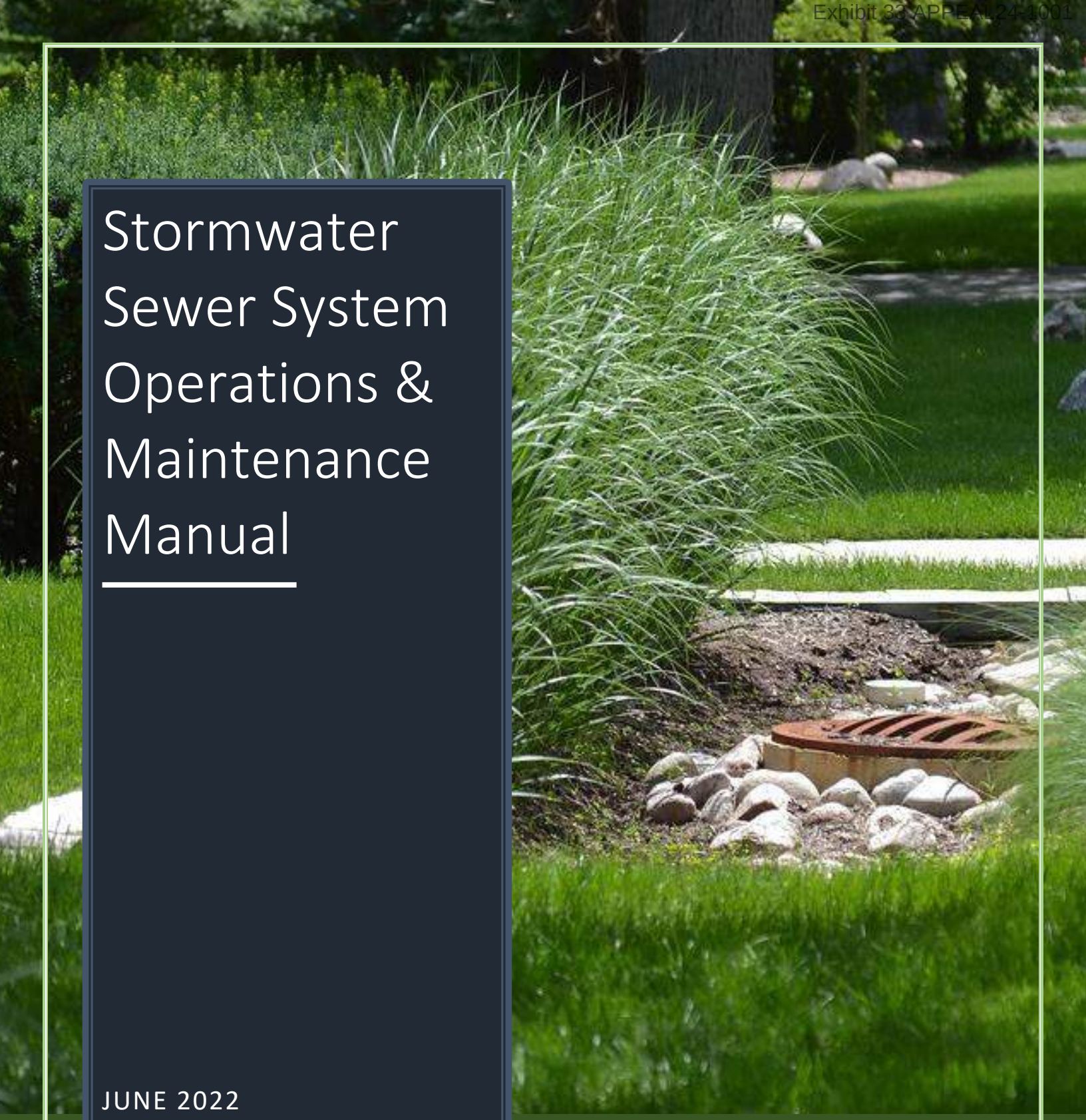
Earth Engineering, Inc.
GEOTECHNICAL & ENVIRONMENTAL SERVICES

CLIENT:	TAZ KHAN	DRAWN:	DB
PROJECT:	13TH ST GAS STATION NE 13TH ST & NW FRIBERG-STRUNK ST CAMAS, WA	DATE:	09/2023
		PLATE:	A-3
		PRO. #:	G26-0723

SEPARATOR SHEET

APPENDIX D

Operations and Maintenance Manual



Stormwater Sewer System Operations & Maintenance Manual

JUNE 2022

City of Camas
Stormwater Division | Public Works

City of Camas WASHINGTON

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Introduction

Background

All public and privately owned, roads, parking lots, residential developments, commercial or industrial developments, or school facilities have various components that make up a storm system. These components consist of conveyance pipes, catch basins, manholes, roadside ditches, stormwater facilities (such as bioswales, detention ponds, wet ponds, treatment filters, etc.), landscaping and any other structure that collects, conveys, controls, and/or treats stormwater. Regardless of the component, all storm systems eventually discharge into 'waters of the state' which are streams, rivers, lakes, and wetlands.

Under the Federal Clean Water Act (FCWA) and in compliance with the Department of Ecology's NPDES Phase II Permit, 'waters of the state' are to be protected from contamination. This in turn protects threatened and endangered species under the Federal Endangered Species Act (FESA).

One way to protect 'waters of the state' is to provide the proper maintenance of all storm system components. It is the responsibility of the City of Camas (City) to ensure that all components of the public storm system be properly maintained and operated. The City is responsible for those components that are located within the City's right-of-way, such as the conveyance pipes, manholes, catch basins, roadside ditches, and stormwater facilities. A large part of the stormwater facilities in the City are privately owned and maintained by the property owners. These property owners include, but are not limited to, Homeowners Associations (HOAs), school district, businesses, and commercial/industrial site owners.

Purpose

This manual is intended to help, both public and private stormwater facility maintenance operators, meet the requirements of City Municipal Code 14.02.090 for proper maintenance and operation of the various storm system components. Proper maintenance will help to assure that:

- Stormwater facilities operate as they were designed;
- Storm systems are cleaned of the pollutants that they trap, such as sediment and oils, so that storm systems are not overwhelmed and become pollutant sources;
- Pollutant sources are removed, or minimized, prior to entering the storm system.

Along with keeping a site from flooding, properly maintained storm system can help reduce surface water and groundwater pollution. Most sites have some type of stormwater control component designed to limit the environmental and flooding damage caused by stormwater runoff. These components require more labor intensive maintenance than a system of pipes and catch basins.

Manual Layout

This manual is broken out into various best management practice (BMP) maintenance components. For each BMP maintenance component, this manual will:

- Briefly describe the component type, e.g. facility or activity.
- Describes potential maintenance issues and/or problems.
- Describes conditions when maintenance is required.
- Minimum performance standards and suggested maintenance methods.

Additional information may be found in other manuals, such as the Washington Department of Ecology's *Stormwater Management Manual for Western Washington (SWMMWW), Vols. V*, and Ecology's LID manual.

Inspection of a stormwater facility will determine if conditions require a maintenance action. The maintenance standard is not the required condition at all times. Exceeding a condition, between inspections and/or maintenance, does not automatically constitute a violation of these standards. The inspection and maintenance schedules should be adjusted to minimize the length of time that a facility is in a condition that requires maintenance.

Emergent Treatment Technologies

Some stormwater treatment facilities are designed and installed with emerging technologies that are not standard at the time of their installation. If not found in this manual, a treatment facility may be an emerging technology approved by Washington Department of Ecology; the maintenance standards can be found at Emerging Stormwater Treatment Technologies.

Mosquito Control

Mosquitoes are annoying and sometimes pose a serious risk to public health. They can transmit diseases such as West Nile Virus and equine encephalitis. Above-ground stormwater facilities should be designed to allow water to flow through or infiltrate in less than 48 hours. Presence of mosquitos in a stormwater facility may indicate a clogged outlet, compromised infiltration capacity, or other defect that should trigger inspection and may require maintenance.

If mosquitos are identified during a stormwater facility maintenance or inspection and are a concern, a request to the Clark County Mosquito Control District for service or information regarding mosquito control can be made online at Mosquito Control District or at the 24-hour request line, 360-397-8430.

Material Disposal and Spills

The disposal of waste, e.g. sediment or standing water, from the maintenance of the stormwater facilities and storm system components shall be conducted in accordance with federal, state, and local regulations, including the Solid Waste Handling Standards chapter 173-350 WAC, Minimum Functional Standards for Solid

Waste Handling chapter 173-304 WAC and Appendix IV-B: Management of Street Waste Solids and Liquids of the SWMMWW. Dangerous waste must be handled following, Dangerous Waste Regulations chapter 173-303 WAC. Vegetation to be recycled and disposed of at local receptacle locations.

For major spills, coordinate removal/cleanup with the City at 360-817-1563 and notify Department of Ecology at 360-407-6300.

Vegetated Facilities

Biofiltration Swale

Biofiltration swales use grass or other dense vegetation to filter sediment and oily materials out of stormwater. Usually, they look like flat-bottomed channels with grass growing in them. As water passes through the vegetation, pollutants are removed through the effects of filtration, infiltration and settling.

See SWMMWW Appendix V-A, Table V-A.8 for biofiltration swale maintenance standards. If available, reference record drawings for seed mix and groundcover replacements, or see SWMMWW BMP T9.10, Tables V-7.3 and V-7.4. Presence of cattails is a sign that that there is water ponding and the facility is not functioning as design. Cattails will need to be removed and further investigation may be required.

Wet Biofiltration Swale

A wet biofiltration swale is a variation of basic biofiltration swale for use where the centerline slope is slight, groundwater table are high, or a continuous low base flow is likely to result in wet soil conditions for long periods of time. Where continuously wet soil exceeds about 2 weeks, typically grasses will die. Thus, vegetation specifically adapted to wet soil conditions is needed. Different vegetation requires modification of several of the design and maintenance requirements from the basic biofiltration swale.

See SWMMWW Appendix V-A, Table V-A.9 for wet biofiltration swale maintenance standards. If available, reference record drawings for seed mix and groundcover replacements, or see SWMMWW BMP T9.20, Table V-7.5. Removal of cattail is required when vegetation is crowded out by very dense clumps of cattails, prevents water flow, or alters the designed functionality.

Filter Strip

Filter strips are linear strips of grass that remove sediment and oils from stormwater by filtering it. Stormwater is treated as it sheet flows across the filter strip. Usually, filter strips are placed along the edge of linear paved areas, such as parking lots and roads. Where designed filter strips are installed; road shoulders should only be graded to maintain level flow off the road.

See SWMMWW Appendix V-A, Table V-A.10 for filter strip maintenance standards. If available, reference record drawings for seed mix replacement, or see SWMMWW BMP T9.10, Table V-7.3.

Detention Pond

Detention pond facilities are designed to hold and slowly release stormwater by use of a pond with a specially designed control structure. Styles vary greatly from well-manicured to natural appearing. Generally, native vegetation is preferred for reduced maintenance and enhance wildlife habitat. Some facilities are designed to appear as natural water bodies or are in a park-like setting.

See SWMMWW Appendix V-A, Table V-A.1 for detention pond maintenance standards. If available, reference record drawings for seed mix replacement, or see SWMMWW BMP D.1, Table V-12.3. Removal of cattail is required when vegetation is crowded out by very dense clumps of cattails, prevents water flow, or alters the designed functionality.

Wet Pond

A wet pond is an open basin that retains a permanent pool of water year-round or only during the wet season. The volume of the wet pond allows sediment and other pollutants to settle out of the runoff. Wetland vegetation is typically planted within the wet pond to provide additional treatment through nutrient removal. Detention quantity control can be provided with additional temporary storage volume above the permanent pool elevation.

See SWMMWW Appendix V-A, Table V-A.11 for wet pond maintenance standards. If available, reference record drawings for seed mix and plants replacement, or see SWMMWW BMP D.1, Table V-12.3 for seed mix and BMP T10.10, Table V-8.1 for plants. Removal of cattail is required when vegetation is crowded out by very dense clumps of cattails, prevents water flow, or alters the designed functionality.

Infiltration Facility

Infiltration facilities dispose of water by holding it in an area where it can soak into the ground. These are open facilities that may either drain rapidly and have grass bases or have perpetual ponds where water levels rise and fall with stormwater flows. Infiltration facilities may be designed to handle all of the runoff from an area or they may overflow and bypass larger storms.

Since the facility is designed to pass water into the ground, generally after passing through a sediment trap/manhole, anything that can cause the base to clog will reduce the performance and is a large concern. Generally, infiltration basins are managed like detention ponds, but with greater emphasis on maintaining the capacity to infiltrate stormwater.

See SWMMWW Appendix V-A, Table V-A.2 for infiltration facility maintenance standards. If available, reference record drawings for seed mix replacement, or see SWMMWW BMP D.1, Table V-12.3. Removal of cattail is required when vegetation is crowded out by very dense clumps of cattails, prevents water flow, or alters the designed functionality.

Rain Garden

Rain gardens are non-engineered, shallow, landscaped depressions with compost-amended soils and adapted plants. The depression temporarily stores stormwater runoff from adjacent areas. Some or all the influent stormwater passes through the amended soil profile and into the underlying native soil. Stormwater that exceeds the storage capacity is designed to overflow to an adjacent drainage system.

If available, reference record drawings for plant replacements, or see Rain Garden Handbook for Western Washington, Appendix A for recommendation on rain garden plants. Presence of cattails is a sign that that there is water ponding and the facility is not functioning as design. Cattails will need to be removed and further investigation may be required.

Rain Garden			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
General	Trash and Debris	Evidence of trash and debris	Remove trash and debris
Side slopes	Erosion	Persistent soil erosion on slopes	Replenish mulch areas throughout rain garden - on the sides and bottom of the rain garden and around the perimeter (and on berm if applicable).
Bottom area	Sediment	Visible sediment that reduces drainage rate	Remove sediment accumulation
		Sediment deposited from water entering the rain garden	Remove sediment, determine the source, and stabilize area
	Leaves	Matted accumulation of leaves reducing drainage rate	Remove leaves
Ponded water	Ponding	Ponded water remains for more than 3 days after the end of a storm	Remove sediment, leaf litter and/or debris accumulation
Pipe inlet/outlet	Pipe	Water is backing up in pipe	Clear pipes of sediment and debris with snake and/or flush with water
		Damaged or cracked drain pipes	Repair or seal cracks, or replace as needed
Inlet rock pad	Erosion	Rock or cobble is removed, missing and flow is eroding soil.	Replace rock and reestablish pad
Weeds	Weeds	Weeds are present	Remove weeds and apply mulch after weeding
Vegetation	Dying Vegetation	Dying, dead or unhealthy plants	Remove diseased plants or plant parts and dispose, then replace
	Sight Distance	Vegetation reduces sight distances and sidewalk	Keep sidewalks and sight distances on roadways clear
	Blockage	Vegetation is crowding inlets and outlets	Remove vegetation crowding inlets and outlets
	Poor Vegetation Growth	Yellowing, poor growth, poor flowering, spotting or curled leaves, weak roofs, or stems	Test soil to identify specific nutrient deficiencies.
			Do not use synthetic fertilizers
			Consider selecting different plant for soil conditions
Mulch	Bare Soil	Bare spots are present or mulch depth less than 2 inches	Supplement mulch with hand tools to a depth of 2 to 3 inches, keep mulch away from woody stems.

Bioretention

Bioretention facilities are engineered facilities that store and treat stormwater by filtering it through a specified soil profile. Water that enters the facility ponds in an earthen depression or other basin (e.g., concrete planter) before it infiltrates into the underlaying bioretention soil. Stormwater that exceeds the surface storage capacity overflow to an adjacent drainage system. Treated water is either infiltrated into the underlying native soil or collected by an underdrain and discharged. An underdrain system can be comprised of perforated or slotted pipe, wrapped in an aggregate blanket.

See SWMMWW Appendix V-A, Table V-A.21 for bioretention maintenance standards. If available, reference record drawings for plant replacements, or see LID Technical Guidance Manual for Puget Sound, Appendix 1 for plant recommendations. Presence of cattails is a sign that that there is water ponding and the facility is not functioning as design. Cattails will need to be removed and further investigation may be required.

Conveyance Ditch

Ditches are often manmade open-channels that convey stormwater runoff. These ditches are maintained to prevent localized flooding.

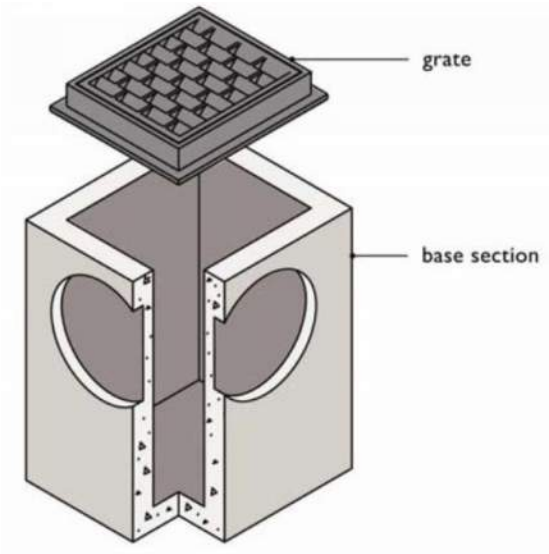
Conveyance Ditch			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
General	Sediment	Sediment exceeds 20% of ditch depth or affects the historic or designed hydraulic capacity.	Remove sediment deposits. When finished, ditch should be level from side to side and drain freely in intended direction.
	Standing Water	Excessive standing water in ditch between storms due to ditch not draining freely	If possible, repair cause of poor drainage. This may include but is not limited to the following activities: remove sediment or trash blockages, improve grade of ditch.
	Eroded or Unstable Side Slopes	When grass is sparse, bare or eroded, patches occur in more than 20% of the ditch	Determine why grass growth is poor and correct that condition. Replant with plugs of grass at eight-inch intervals or reseed. If cause is excessive moisture replace grass with wetland plantings.
	Vegetation	Grass is excessively tall (greater than 15 inches). Nuisance weeds and other vegetation start to take over ditch.	Mow vegetation and/or remove nuisance vegetation so that flow is not impeded. Grass should be mowed to a height of 3 to 4 inches.
	Bare Soil	Poor vegetation coverage.	Reseed poor vegetation areas. Reference "Low Grow" seed mix, see SWMMWW BMP C120 Table II-3.4
	Inlet/Outlet Pipes or Culverts	Inlet/outlet area clogged with sediment and/or debris	Remove material so that there is no clogging or blockage in the inlet and outlet area
	Trash and Debris	Any trash and debris which exceed 1 cubic feet per 1,000 square feet. In general, there should be no visual evidence of dumping.	Remove trash and debris from ditch.
	Erosion/Scouring	Eroded or scoured ditch bottom	Permanently stabilize ditch bottom

Stormwater Structures

Catch Basin

A catch basin is an underground concrete structure with a slotted grate that collects stormwater runoff and route it through the underground pipes. Catch basins typically provide a sump below the outlet pipe to allow sediment and debris to settle out of the stormwater runoff. Some catch basins are fitted with a spill control device such as an inverted elbow on the outlet pipe to control grease or oils. The most common tool for cleaning catch basins is a vactor truck which is used to remove sediment and debris from the sump. The sediment and oils if not removed from the catch basins have the potential to pollute downstream waterbodies. Unless you have Occupational Safety and Health Administration (OSHA) approved confined space training and equipment, never enter a catch basin. There is a considerable risk of poisonous gas and injury.

See SWMMWW Appendix V-A, Table V-A.5 for catch basin maintenance standards.



Field/Ditch Inlet

An inlet is a concrete, plastic or steel structure fitted with a slotted grate to collect stormwater runoff and route through underground pipes. A field inlet has a flat grate, and a ditch inlet has an angled grate. These inlets typically provide a sump below the outlet pipe to allow sediment and debris to settle out of the stormwater runoff. Some of these inlets are fitted with a spill control device such as an inverted elbow on the outlet pipe to control grease or oils. The most common tool for cleaning out the inlet is a vactor truck which is used to remove sediment and debris from the sump. The sediment and oils if not removed from the inlet has the potential to pollute downstream water bodies. Unless you have OSHA approved confined space training and equipment, never enter an inlet. There is a considerable risk of poisonous gas and injury.

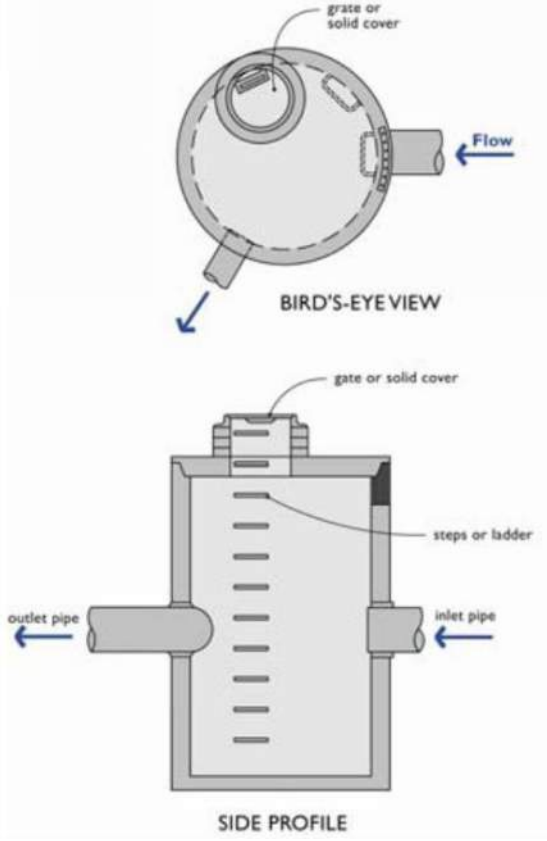
Field Inlet

Ditch Inlet

Field Inlet/Ditch Inlet			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
General	Trash & Debris	Trash or debris blocking inletting capacity by more than 10%.	Remove trash or debris blocking grate opening.
		Dead animals or vegetation that could generate odors that could cause complaints or dangerous gases (e.g., methane).	Remove dead animals or vegetation present within the field/ditch inlet.
	Sediment	Sediment has accumulated to within six inches of the invert of the lowest pipe	Remove sediment
	Structure Damage to Frame and/or Top Slab	Top slab has holes larger than 2 square inches or cracks wider than 1/4 inch.	Repair top slab to be free of holes and cracks.
		Frame not sitting flush on top slab, i.e., separation of more than 3/4 inch of the frame from the top slab. Frame not securely attached	Make adjustments so that frame is sitting flush on the riser rings or top slab and is firmly attached.
	Fractures or Cracks in Field Inlet Walls/Bottom	Grout fillet has separated or cracked wider than 1/2 inch and longer than 1 foot at the joint of any inlet/outlet pipe or any evidence of soil particles entering catch basin through cracks.	Regrout pipe and secure at field inlet wall.
	Settlement/ Misalignment	If failure of field inlet has created a safety, function, or design problem.	Replace or repair field inlet to design standards.
	Vegetation	Vegetation growing across and blocking more than 10% of the inlet opening.	Remove vegetation blockage from basin opening.
	Contamination and Pollution	Any evidence of oil, gasoline, contaminants, or other pollutants	Identify and remove source. Notify City at (360) 817-1567.
Metal Grates	Grate Not in Place	Grate is missing or only partially in place. Any open field inlet requires maintenance.	Replace missing grate, cover field inlet
	Grate opening Unsafe	Grate with opening wider than 7/8 inch.	Repair grate opening
	Damaged or Missing.	Grate missing or broken member(s) of the grate.	Replace missing grate or repair broken member(s)

Manhole

Manholes are large cylindrical underground structures usually set at storm sewer pipe connections. Manholes are used in storm sewer system at any change in direction, slope, pipe material or pipe size. Some manholes have sumps and fitted with stormwater flow control structures such as orifices or weirs. Unless you have OSHA approved confined space training and equipment, never enter a manhole. There is a considerable risk of poisonous gas and injury.

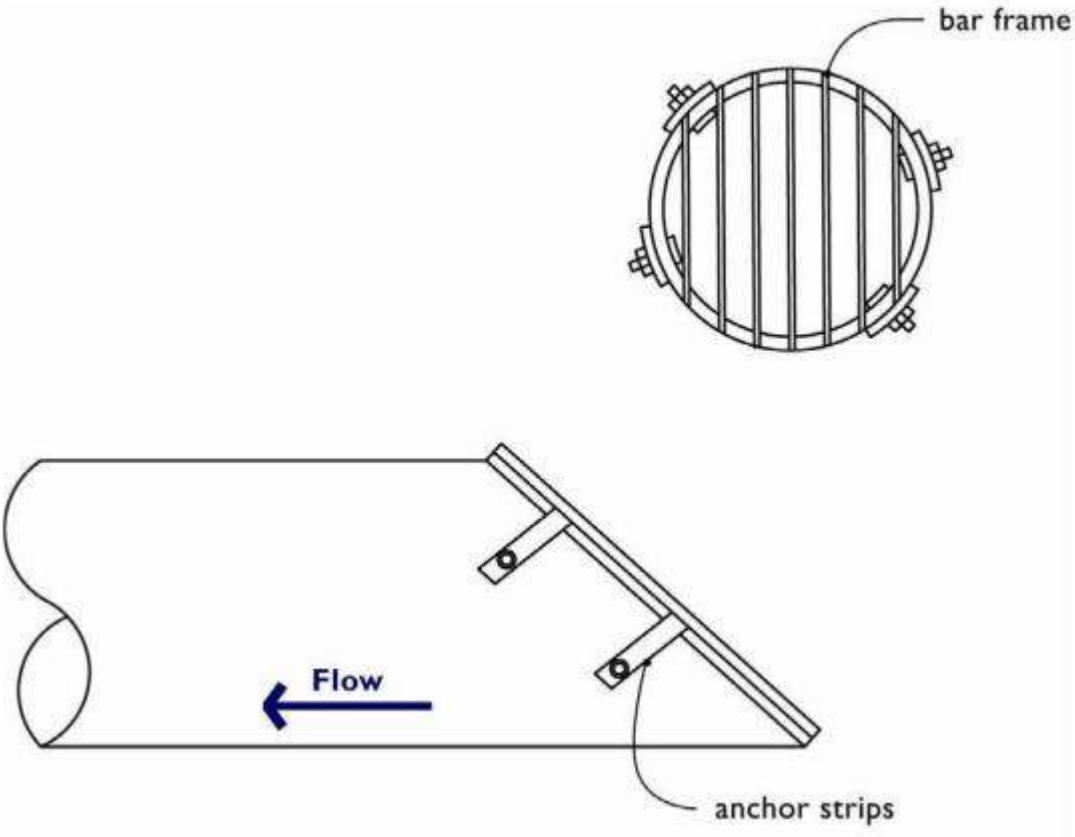


Manhole			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
General	Trash and Debris	Trash or debris has accumulated to within six inches of the invert of the lowest pipe.	Remove all trash or debris from manhole.
		Trash or debris in any inlet or outlet pipe blocking more than 1/3 of its height.	Remove trash or debris from inlet and outlet pipes.
	Sediment	Sediment has accumulated to within six inches of the invert of the lowest pipe.	Remove all sediment from manhole
	Structure Damage to Frame and/or Top Slab	Top slab has holes larger than 2 square inches or cracks wider than 1/4 inch.	Repair top slab to be free of holes and cracks.
		Frame not sitting flush on top slab, i.e., separation of more than 3/4 inch of the frame from the top slab. Frame not securely attached	Make adjustments so that frame is sitting flush on the riser rings or top slab and is firmly attached.
	Fractures or Cracks in Manhole Walls/Bottom	Grout fillet has separated or cracked wider than 1/2 inch and longer than 1 foot at the joint of any inlet/outlet pipe or any evidence of soil particles entering manhole through cracks.	Regrout pipe and secure at manhole wall.
	Settlement/ Misalignment	If failure of manhole has created a safety, function, or design problem.	Replace or repair manhole to design standards.
Cover	Cover Not in Place	Cover is missing or only partially in place. Any open manhole requires maintenance.	Replace missing cover, cover manhole.
	Locking Mechanism Not Working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than 1/2 inch of thread.	Repair opening mechanism
	Cover Difficult to Remove	One maintenance person cannot remove lid after applying normal lifting pressure.	Make adjustments so that one maintenance person can remove the manhole cover.
Ladder	Ladder Rungs Unsafe	Ladder is unsafe due to missing rungs, not securely attached to basin wall, misalignment, rust, cracks, or sharp edges.	Repair or replace ladder to meet design standards and allow maintenance person safe access.
Control Structure/Flow Restrictor	See Control Structure/Flow Restrictor		

Debris Barrier

Debris barriers and trash racks are barred covers to pipe openings. They prevent large objects from entering pipes and keeps pets and people out of the pipes as well.

See SWMMWW Appendix V-A, Table V-A.6 for debris barrier maintenance standards.



Profile View

Sediment Trap

A sediment trap is a concrete structure typically fitted with slotted grate or multiple slotted grates. The concrete structure provides a storage volume (sump) below the outlet pipe to allow sediment and debris to settle out of the stormwater runoff. A sediment trap can be a fully enclosed concrete structure (above or below ground) with a sump, inlet pipe(s) and outlet pipe.

Sediment Trap			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
General	Trash and Debris	Trash and debris which is located immediately in front of the sediment trap opening or is blocking the inlet capacity of the basin by more than 10%	Remove trash and debris
		Dead animals or vegetation that could generate odors that could cause complaints or dangerous gases (e.g., methane).	Remove dead animals or vegetation present within the sediment trap.
	Sediment (non-enclosed structure)	Sediment depth exceeds 2 inches.	Remove sediment
	Sediment (enclosed structure)	Sediment depth within 6 inches from lowest invert	Remove sediment
	Fractures or Cracks in Sediment Trap	Grout fillet has separated or cracked wider than 1/2 inch and longer than 1 foot at the joint of any inlet/outlet pipe or any evidence of soil particles entering sediment trap through cracks.	Regrout pipe and secure at sediment trap wall.
	Settlement/ Misalignment	If failure of sediment trap has created a safety, function, or design problem.	Replace or repair sediment trap to design standards.
	Vegetation	Vegetation growing across and blocking more than 10% of the sediment trap opening	Remove vegetation
	Contaminants and Pollution	Any evidence of oil, gasoline, contaminants, or other pollutants	Remove contaminants and/or pollutants. (Coordinate removal/cleanup with local water quality response agency)
Slotted Grate	Trash and Debris	Trash and debris that is blocking more than 20% of the grate surface inlet capacity	Remove trash and debris from grate
	Damaged or Missing Grate	Grate missing or broken member(s) of the grate	Replace or repair grate to design standards.
Cover (enclosed structure)	Cover Not in Place	Cover is missing or only partially in place.	Replace missing cover
	Cover Difficult to Remove	One maintenance person cannot remove lid after applying normal lifting pressure or latch broken	Make adjustments so that one maintenance person can remove the cover and/or repair broken latch.

Energy Dissipater

Energy dissipaters are critical for preventing erosion at storm drain outfalls. There are a variety of designs, including wire gabion baskets, rock splash pads, trenches, and specially designed pools or manholes. They are installed on or near the inlet or outlet to a closed pipe system to prevent erosion at these locations.

See SWMMWW Appendix V-A, Table V-A.7 for energy dissipater maintenance standards.

Discharge Point

Stormwater facility discharge points may convey drainage from the stormwater facility into open channels, ditches, ponds, wetlands, streams, or lakes. Stormwater facility discharge points need to be assessed to make sure stormwater is not causing any negative impacts to these drainage areas.

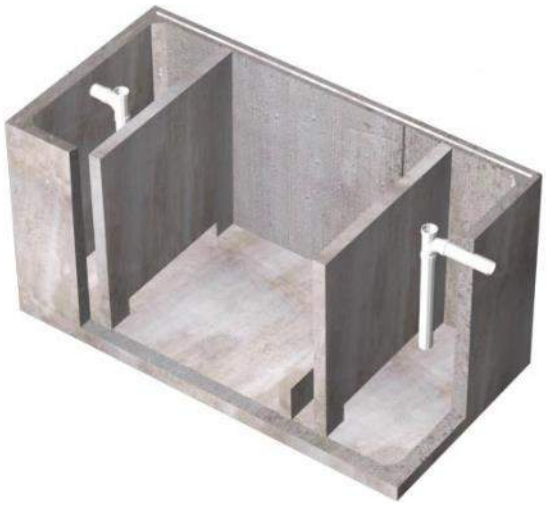
Discharge Point			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
Monitoring	Contaminants and Pollution	Any evidence of oil, gasoline, sewage, contaminants, or other pollutants	Identify and remove source. The effluent discharge should be clear and free of odor. Notify City at (360) 817-1567.
	Ditch or Stream Banks Eroding	Erosion, scouring, or head cuts in ditch or stream banks downstream of facility discharge point due to flow channelization or higher flows.	Stabilize ditch or stream banks. Report to City for engineer evaluation.
General	Missing or Moved Rock	Only one layer of rock exists above native soil in an area five square feet or larger, or any exposure of native soil	Replace or repair rock pad to design standards
	Erosion	Soil erosion in or adjacent to rock pad	Replace or repair rock pad to design standards
	Sediment	Sediment blocking 20% of the pipe diameter	Remove sediment
	Obstructions	Roots or debris enters pipe or deforms pipe, reducing flow	Remove roots from pipe by mechanical methods; do not use root-dissolving chemicals in storm sewer pipes. If necessary, remove vegetation over the line.
	Pipe Rusted or Deteriorated	Any part of the piping that is crushed or deformed excessively or any other failure to the piping	Repair or replace pipe
Energy Dissipater	See Energy Dissipater		

Oil/Water Separators

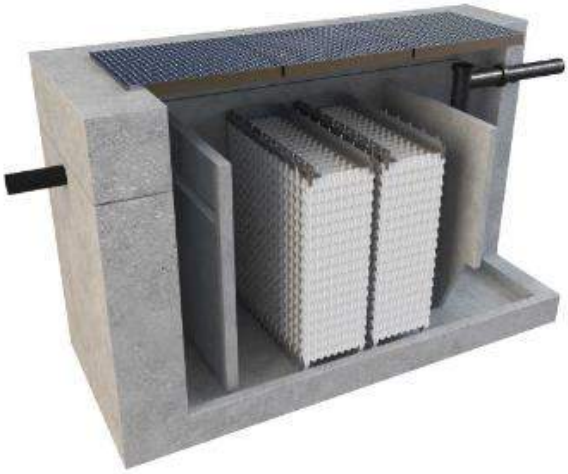
An oil/water separator is an underground vault that treats stormwater by mechanically separating oil from water. The oil rises to the surface and floats on the water and sediment settles to the bottom. Oil/water separators are typically utilized in locations where high oil concentrations in the stormwater runoff are anticipated (e.g., service and fuel stations). Oil/water separators are most commonly used as the first pretreatment facility in a series of stormwater management facilities.

These facilities have special problems for maintenance and should be serviced by contractors. The main issues are working in confined spaces and properly handling any sludge and oil cleaned from vaults or oil/water separators. Manufacturer's recommendations for maintenance should be followed at a minimum.

See SWMMWW Appendix V-A, Table V-A.16 for baffle oil/water separator maintenance standards and Table V-A.17 for coalescing plate oil/water separator maintenance standards.



Baffle Oil/Water Separator

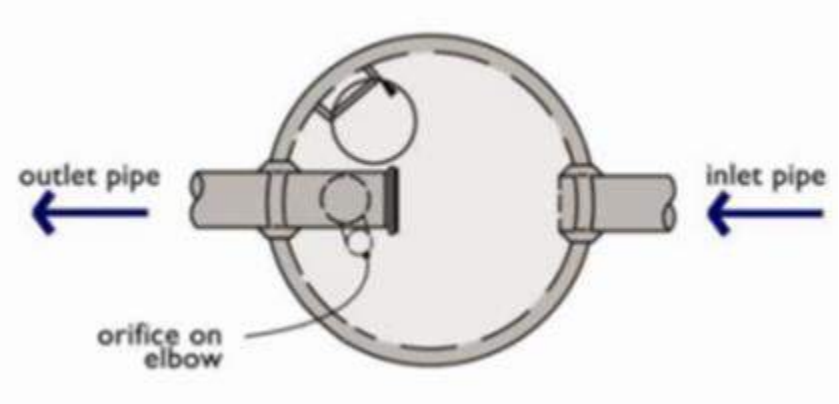


Coalescing Plate Oil/Water Separator

Flow Control Structures/Flow Restrictors

Flow control structures and flow restrictors direct or restrict flow in or out of facility components. Outflow controls on detention facilities are a common example where flow control structures slowly release stormwater at a specific rate. The flow is regulated by a combination of orifices (holes with specifically sized diameters) and weirs (plates with rectangular or 'V' shaped notch). Lack of maintenance of the control structure can result in the plugging of an orifice. If these flow controls are damaged, plugged, bypassed, or not working properly, the facility could overtop or release water too quickly.

See SWMMWW Appendix V-A, Table V-A.4 for control structure/flow restrictor maintenance standards.



Plan View

Storm Sewer Pipe

Storm sewer pipes convey stormwater. Storm pipes are constructed of many different types of materials and are sometimes perforated to allow groundwater to be collected by the storm system. Storm pipes are cleaned to remove sediment or blockages when problems are identified. Storm pipes must be clear of obstructions and breaks to prevent localized flooding.

Storm Sewer Pipe			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
General	Obstructions, Including Roots	Obstruction exists in pipe, reducing flow capacity	Remove obstruction. Use mechanical methods. Do not put root-dissolving chemicals in storm sewer pipes. If necessary, remove the vegetation over the line.
	Pipe Dented or Broken	Inlet/outlet pipe damaged or broken	Repair or replace pipe
	Pipe rusted or deteriorated	Any part of the piping that is crushed or deformed excessively or any other failure to the piping	Repair or replace pipe
	Sediment and Debris	Sediment or debris depth is greater than 15% of the pipe diameter	Clean pipe. Evaluate source of sediment upstream of the pipe and stabilize if possible.
	Broken Trash Screen	Trash screen is broken or missing parts	Repair or replace trash screen
	Contaminants and Pollution	Any evidence of oil, gasoline, contaminants, or other pollutants	Identify and remove source. Notify City at (360) 817-1567.

Closed Detention System

A closed detention system functions similarly to a detention pond but with the storage volume provided by an underground structure. The structure is typically constructed of large diameter pipe, plastic chamber structure or a concrete vault. These systems are typically utilized for sites that do not have space available for an above-ground system and are more commonly associated with commercial sites.

Underground detention systems are enclosed spaces where harmful chemicals and vapors can accumulate. Therefore, the maintenance of these facilities should be conducted by an individual trained and certified to work in hazardous confined spaces.

See SWMMWW Appendix V-A, Table V-A.3 for closed detention maintenance standards.

Drywell

Drywells are perforated, open-bottomed manholes used to infiltrate stormwater into the ground. While not the intended use, drywells trap sediment and some of the oil pollutants in stormwater runoff. Drywells are more likely to fill with oily sediment in areas that lack swales or other treatment facilities. Fine oil sediment can clog drywells and lead to localized street flooding. Also, pollutants discharged into drywells can migrate into groundwater. Drywells were often installed in closed topographic depressions, areas with will-drained soils, or areas having inadequate storm sewers. Often, drywells contain groundwater.

Drywell			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
General	Does not Dissipate Stormwater	Does not dissipate stormwater	Replace or repair
	Opening Clogged	Openings are clogged, reducing capacity	Clear openings or convert existing drywell to a sediment trap and install a new drywell or drainage trench. To convert to a sediment trap: grout holes, cover base with concrete, and add piping. Alterations to any storm facility cannot be done without approval from the City of Camas.
	Standing Water	Standing water indicates the drywell is into the groundwater table	Rebuild drywell to prevent stormwater from going directly into groundwater
	Trash and Debris	Trash or debris blocking any inlet or outlet pipe	Remove trash and debris
	Sediment	Sediment in drywell exceeds 60 percent of the depth below the lowest pipe	Remove sediment
	Structure Damage	Structure unsound	Replace or repair drywell to design standards.
	Contaminants and Pollution	Any evidence of oil, gasoline, contaminants, or other pollutants	Identify and remove source. Notify City at (360) 817-1567.
Cover	Cover Not in Place	Cover is missing or only partially in place.	Replace missing cover
	Cover Difficult to Remove	One maintenance person cannot remove cover after applying normal lifting pressure.	Make adjustments so that one maintenance person can remove the drywell cover.

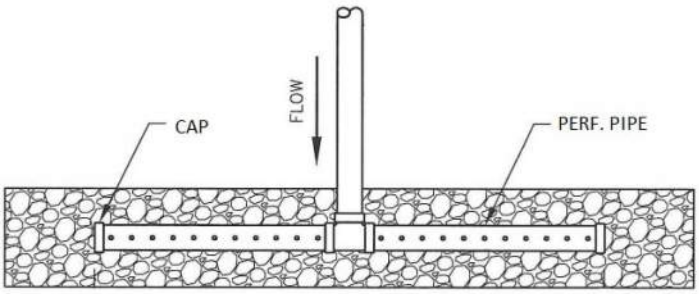
Pond Leveler System

The pond leveler system consists of an intake cage and outlet pipe. This system is used to bypass beaver dams. The pond leveler system creates a permanent leak through the beaver dam that the beavers cannot stop.

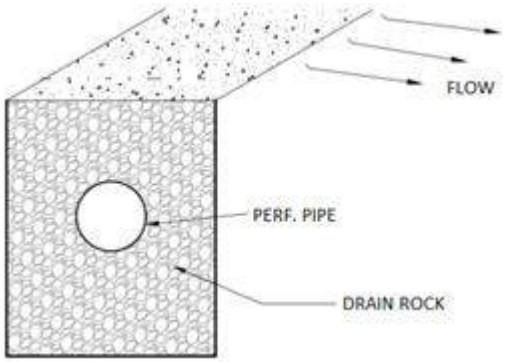
Pond Leveler			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
Intake Cage	Debris and sediment	Debris and sediment build up around cage	Remove debris and sediment build up around cage. Recommended tools: potato rake and a narrow, stiff shop broom.
	Structure	Broken cage, resulting in holes larger than 6" diameter.	Repair hole with similar cage material, attach with hog rings.
	Obstruction to inflow pipe	Debris obstructing pipe flow inside intake cage	Remove obstruction
Outflow Pipe	Obstruction	Debris obstructing outflow	Remove obstruction

Dispersion Trench

Dispersion trench are grave-filled trenches, which serve to spread runoff over vegetated pervious areas. This BMP reduce peak flows, provide some infiltration, and water quality benefits.



Plan View



Cross Section

Dispersion Trench			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
General	Trash and Debris	Any trash and debris which exceed 1 cubic feet per 1,000 square feet. In general, there should be no visual evidence of dumping.	Remove trash and debris from site.
	Poisonous Vegetation and noxious weeds	Any poisonous or nuisance vegetation which may constitute a hazard to maintenance personnel or the public. Any evidence of noxious weeds as defined by State or local regulations.	Remove noxious weeds. Compliance with State or local eradication policies required. Apply requirements of adopted IPM policies for the use of herbicides.
	Contaminants and Pollution	Any evidence of oil, gasoline, contaminants, or other pollutants	Identify and remove source. Notify City at (360) 817-1567.
	Rodent Holes	Any evidence of rodent holes.	Fill holes.
Perforated Pipe	Sediment and/or obstruction	Sediment and/or obstruction impeding the flow, causing backup	Remove sediment and/or obstruction

Special Facilities

Manufactured Media Filter

Manufacture media filters are passive, flow-through, stormwater treatment systems. They are comprised of manholes or vaults that house media-filled filter cartridges. Stormwater passes through a filtering medium, which traps particulates and/or absorb pollutants such as dissolved metals and hydrocarbons. Once filtered through the media, the treated stormwater is directed to a collection pipe or discharge to a pond or open channel drainage way.

The filter media can be housed in cartridge filters enclosed in concrete vaults or catch basins. Structures will have vault doors or manhole lids for maintenance access. Various types of filter media are available from different manufactures. Determine the type of filter media used and consult manufacturer for maintenance recommendations.

See SWMMWW Appendix V-A, Table V-A.15 for manufactured media filters maintenance standards.

Manufactured Media Filter – Additional Maintenance Standards			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
Below Ground Vault or Manhole	Sediment Accumulation in Vault (no first chamber)	Sediment depth exceeds 4-inches on vault floor.	Remove sediment from vault floor. May require replacing media cartridges, consult manufacturer.

Permeable Pavement

Permeable pavement is a paving system which allows rainfall to percolate through the surface into the underlying soil or an aggregate bed, where stormwater is stored and infiltrated to underlying subgrade, or removed by an overflow drainage system.

See SWMMWW Appendix V-A, Table V-A.22 for permeable pavement maintenance standards.

Modular Wetland

Modular wetlands linear is a biofiltration system that utilizes horizontal flow which allows for a smaller footprint, higher treatment capacity and design versatility. This system can be utilized downstream of storage for additional volume control and treatment. The modular wetland is contained in an underground vault that has different chambers containing media. Some modular wetlands can have plants growing out of it, but it is not required for the system to function. Once filtered through the media, the treated stormwater is directed to a collection pipe or discharge to a pond or open channel drainage way.

Modular Wetland			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
General	Missing or damaged components	Missing or damaged internal components or cartridges	Replace missing or repair damaged internal components or cartridges
Inlet or Outlet	Obstruction	Obstruction to inlet or outlet that impedes flow	Remove obstruction
Pretreatment Chamber	Floatables	Excessive accumulation of floatables, in which the length and width of the chamber is fully impacted more than 18"	Remove floatables
	Sediment	Excessive accumulation of sediment, more than 6"in depth	Remove sediment
Filter Cartridges	Sediment	Excessive accumulation of sediment on media, more than 85% clogged (blackish color)	Replace media
Vegetation (if applicable)	Overgrown	Overgrown vegetation	Trim/prune vegetation in accordance with landscaping and safety needs
Structure	Cracks in structure	Cracks wider than 1/2 inch or evidence of soil particles entering the structure through cracks	Repair cracks in vault

Tree Box Filter

Tree box filter is a stormwater treatment system incorporating high performance biofiltration media to remove pollutants from stormwater runoff.

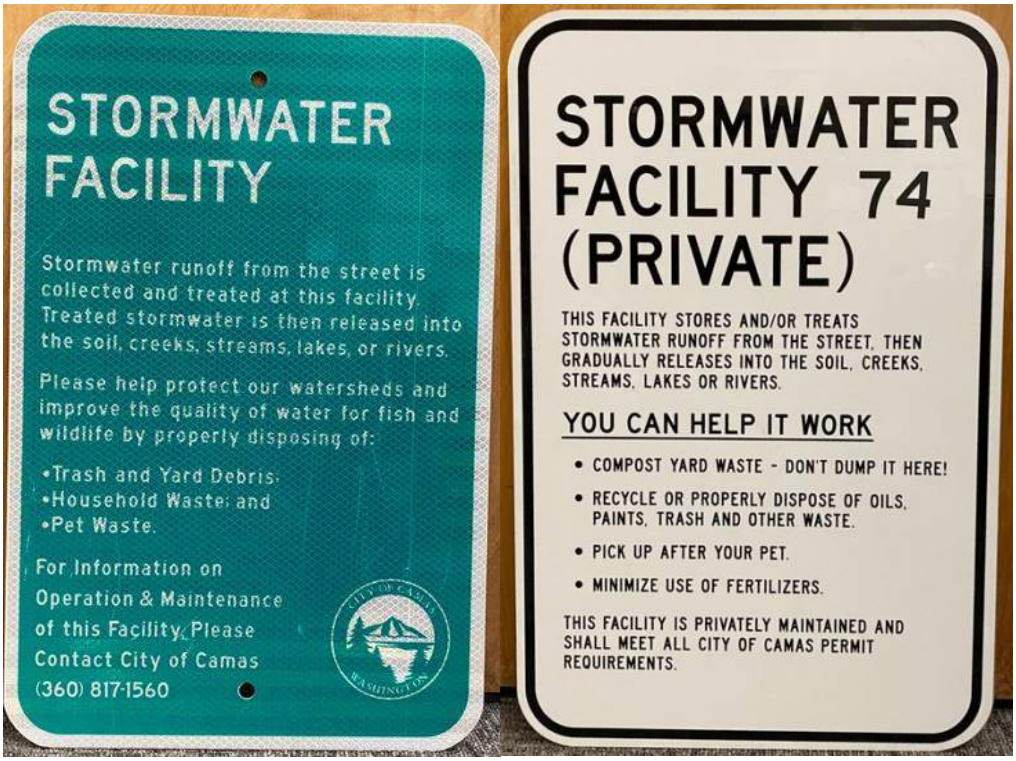
Tree Box Filter			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
Inlet	Excessive sediment or trash accumulation	Accumulated sediments or trash impair free flow of water into system	Remove sediment and/or trash
Mulch cover	Trash and debris	Excessive trash and/or debris accumulation	Remove trash and/or debris.
	Standing water	Ponding of water over mulch due to excessive fine sediment accumulation or spill of petroleum oils	Remove mulch and replace, contact manufacturer for advice
Vegetation	Plant not growing or in poor condition	Soil/mulch too wet, evidence of spill, incorrect plant selection, pest infestation, vandalism to plants	Plants should be healthy and pest free, contact manufacturer for advice
	Plant growth excessive	Plants should be appropriate to the species and location	Trim/prune plants in accordance with landscaping and safety needs
Structure	Cracks in structure	Cracks wider than 1/2 inch or evidence of soil particles entering the structure through cracks	Repair cracks in vault

Miscellaneous Items

Fences, Gates and Water Quality Signs

Fences are installed around the perimeter of stormwater facilities as a means of protecting the public, as they restrict entrance to the facility. Gates are installed to allow for maintenance access. Gates will be secured, typically with a double lock system (daisy chain) that allows access to the City and to the property owner's maintenance crew.

Water Quality Signs are installed on the fences, or on sign poles, within public view as a means of educating the public as to the presence of a stormwater facility. These signs also have a number located in the upper right hand corner that is cross referenced, at the City, to an address and maintenance responsibility. The publicly owned storm facility signs are green and the privately owned storm facility signs are white.



Public Storm Sign (Green) **Private Storm Sign (White)**

Fence, Gate and Water Quality Sign			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
General	Gate or Fence Allows Unauthorized Entry	Openings in fence, missing gate, openings beneath fence allowing unauthorized access	Repaired gate and/or fence to prevent unauthorized access
	Locking Mechanism	Mechanism cannot be opened by one maintenance person with proper tools	Repair/replace lock
		No lock on gate, allows unauthorized entry	Add lock
	Damaged Parts	Posts out of plumb more than six inches	Plumb post
		Top rails of plump more than six inches	Repair top rails so that it is free of bends greater than 1 inch
	Erosion	Erosion has resulted in an opening under a fence that allows entry by people or pets	Replace soil under fence so that no opening exceeds 4 inches in height
	Sign	Sign is leaning more than 8 inches off vertical	Reset sign to plumb
		Sign is missing or 20% of surface is unreadable	Replace sign

Access Roads and Easements

Many stormwater facilities have access roads to bring in heavy equipment for facility maintenance. These roads are typically gravel and should be maintained for inspection access and ease of equipment entry. All facilities should allow access for the inspection process. The easement area should be adequately or otherwise stabilized. Bare soil areas will generate higher levels of stormwater runoff and increase erosion and sedimentation in stormwater facilities.

Access Road and Easements			
Maintenance Component	**Defect or Problem**	**Conditions When Maintenance Is Needed**	**Minimum Maintenance Required**
General	Erosion	Soils are bare or eroded	Seed or use other stabilization BMP
	Road Surface	Conditions of road surface may lead to erosion of the facility or limit access	Repair road
	Erosion of Ground Surface	Noticeable rills are seen in landscaped areas	Identify causes of erosion and implement BMPs to slow down/spread out the water. Fill, contour, and seed eroded areas. If needed, re-grade affected areas.
	Trash and Debris	Any trash and debris which exceed 1 cubic feet per 1,000 square feet. In general, there should be no visual evidence of dumping.	Remove trash and debris from site.
	Poisonous Vegetation and Noxious Weeds	Any poisonous or nuisance vegetation which may constitute a hazard to maintenance personnel or the public. Any evidence of noxious weeds as defined by State or local regulations.	Remove noxious weeds. Compliance with State or local eradication policies required. Apply requirements of adopted IPM policies for the use of herbicides.
	Tree Growth and Hazard Trees	Tree growth does not allow maintenance access or interferes with maintenance activity (i.e., slope mowing, silt removal, vactoring, or equipment movements). If dead, diseased, or dying trees are identified.	Remove hazardous tree that impede with maintenance access and activities. Remove trees that are damaging the pipe system and/or blocking drain inlet. Remove dead, diseased, or dying trees. Harvested trees should be recycled into mulch or other beneficial uses (e.g., alders for firewood).
	Weeds (Non-poisonous)	Weeds growing in more than 20% of the landscaped area (tree and shrubs only).	Remove weeds
	Insects	When insects such as wasps and hornets interfere with maintenance activities.	Destroy or remove insects from site. Apply insecticides in compliance with adopted IPM policies.

Pavement Sweeping

Pavement sweeping is performed as a means of removing sand, dirt, and litter from streets and curb gutters. Sweeping also reduces dust during dry weather. Pavement sweeping plays a large part in stormwater maintenance because it limits the amount of sediment washed into the municipal storm sewer system. The water quality procedure for street sweeping focuses on sediment removal and disposal. Reducing the amount of sediment washed into catch basins, curb inlets, detention facilities, drywells, and other facilities can save money because sweeping is generally cheaper that removing sediment from facilities. Sweeping also helps protect facilities from clogging with sediment.

Typically, the City sweeps the downtown area once a week and the whole city about three times per year. Most of the downtown area does not have water quality treatment. Pavement sweeping is the main source for pollution control.

Repair/Replacement Activities

Minor Culvert Repair (Not in a Stream)

This activity is for the replacement or repair of culverts and inlets. It applies only to structures that are in ditches that are specifically for storm drainage. These are ditches that do not carry water during dry weather. If there is any question about whether the ditch is a storm drain or a stream, consult with the Washington Department of Fish and Wildlife and the City of Camas Public Works Department.

Major Culvert Repair (at a Stream Crossing)

This activity is the replacement or repair of culverts and inlets bridging a stream or ditch with flowing water during dry weather. If there is any question about whether the ditch is a storm drain or a stream, consult the Washington Department of Fish and Wildlife and the City of Camas Public Works Department.

These projects must meet all regulatory requirements such as State Environmental Policy Act (SEPA), Shoreline Permit, Hydraulic Project Approval (HPA) and Flood Plain.

Vegetation Management

The City recognizes the special importance of the rivers, streams, wetlands, ponds, and stormwater control and treatment facilities. The sensitive nature of such habitat, their plant and animal communities, and their direct link with other waterways require that we establish specific policies to ensure their health. All landscape management decisions for controlling unwanted vegetation, diseases, and pests should follow the Integrated Pest Management (IPM) principles and decision-making rationale.

Integrated Pest Management (IPM) Principles

1. Correctly identify the pest problem and understand their life cycle. Refer to online resources such as Washington State Noxious Weed Control Board and Washington Invasive Species Council.
2. Every landscape has a population of some pest insects, weeds, and diseases. Once the pest has been identified and studied, determine if low levels of the pest are tolerable. Small numbers of certain pests may not be harmful. If this is the case, simply continue to monitor the pest population.
3. If pest exceed tolerance thresholds, choose a safe and effective control method.
    a. Cultural methods of vegetation and pest control are preferred and are first employed. Cultural control changes the pest's environment: landscape fabric, mulch, soil amendments, altering the irrigation method of duration, crop rotation, crop covers, etc.
    b. Mechanical means of vegetation and pest control are next in line of preference and are utilized where feasible. Mechanical means consist of digging, hand-pulling, mowing, tilling, trapping, etc.
    c. Biological methods of vegetation and pest control are considered before chemical means, where they are feasible. Biological control uses natural enemies: beneficial insects, managed grazing, bird boxes and perches, etc.
    d. Chemical methods are used only when no other feasible methods exist. Chemical control is the use of pesticides to remove vegetation and pests.
4. Observe and record the results of the control treatment. Evaluate the effectiveness. If necessary, modify maintenance practices to support a healthy landscape and prevent recurrence of the pest.

A licensed pesticide applicator is required for performing any chemical application in stormwater facilities. Applicators must be licensed in Washington State with an aquatic endorsement (WAC 16-228-1545). Applicator must submit a copy of their license to the City prior to starting work. Aquatic pesticide products are recommended. No chemical application shall be applied directly in the water. Do not apply pesticide when it is raining. Check the weather and ensure there are multiple dry days before and after application. Do not apply pesticide on windy days to prevent drift movement of pesticide from target areas.

For vegetated areas outside of stormwater facilities, Washington State pesticide application laws and rules are followed, Chapter 17.21 RCW and Chapter 16-228 WAC.

Plants and Groundcover

Use plants that will thrive in the growing conditions of each facility. Growing conditions are affected by moisture, soil conditions, and light. Plants native to western Washington are preferred. Recommended plants, seed mixes and groundcover list for biofiltration swales, bioretention systems, rain gardens, and other facility types are given in the respective BMP maintenance sections. It is best to reference the stormwater facility record drawings for vegetation replacements, if available. Fertilization of vegetated stormwater facilities should be avoided.

The City has adopted a list of approved plants for use in development projects, and to assist homeowners in choosing appropriate plantings. The list also has prohibited undesirable plants. Only plants approved for use on the City of Camas Plant Materials are allowed within the City's right-of-way.

Mulches and other ground coverings are useful during the installation and restoration of landscapes as well as their ongoing maintenance. Mulches meet a variety of needs. They suppress weeds, help to retain moisture around plants, reduce possible erosion and provide visual enhancement. Possible risk impacts to consider when using mulch are inadvertent introduction of non-native plants or migration of mulch material into waterways.

Possible scenarios where trees should be removed and/or trimmed in a stormwater facility (always check if the stormwater facility has a liner before tree removal):

- Trees that pose a risk to a stormwater structure due to root growth should be removed.
- Trees that are growing on spillways that would impede drainage should be removed.
- Hazardous trees should be removed.
- Trees/shrubs that hinder accessibility to access roads should be trimmed or removed.

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SEPARATOR SHEET

APPENDIX E

Stormwater Pollution Prevention Plan

Stormwater Pollution Prevention Plan

For
NE 13th Street Site Plan

Prepared For
Taz Kahn
3993 NW Currawong Court
Camas, WA 98607

Owner	Developer	Operator/Contractor
Taz Kahn 3993 NW Currawong Court Camas, WA 98607	Same as Owner	Unknown

Project Site Location
20101 NE 13th Street
Camas, WA 98607
Parcel #176148-000

SWPPP Prepared By
PLS Engineering, Inc.
604 W Evergreen Blvd
Vancouver, WA 98660
(360) 944-6519

SWPPP Preparation Date
August 2023

Approximate Project Construction Dates
March 2024

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Appendix A Site plans

- Vicinity map (with all discharge points)
- Site plan with TESC measures

Appendix B Construction BMPs

- Possibly reference in BMPs, but likely it will be a consolidated list so that the applicant can photocopy from the list from the SWMMWW.

Appendix C Alternative Construction BMP list

- List of BMPs not selected, but can be referenced if needed in each of the 12 elements

Appendix D General Permit

Appendix E Site Log and Inspection Forms

Appendix F Engineering Calculations

Exhibit 33 APPEAL24-1001

1.0 Introduction

This Stormwater Pollution Prevention Plan (SWPPP) has been prepared for the Monte Verde construction project in Camas, Washington. The site is located on Parcel 173184000. Current address for the site is 22205 NE 28th Street, Camas, WA 98607 and the existing site is approximately 8.61 acres. Current proposed development associated with this SWPPP includes the construction of 34 single family lots along with the associated infrastructure. The stormwater plan associated with this project provides for stormwater management of all runoff from the site using two private infiltration trenches, and one stormwater detention facility. Stormwater runoff from the pollution generating surfaces will be treated by a ConTech media cartridge before being infiltrated.

Construction activities will include excavation, grading, construction of paving and sidewalk to serve the site, construction of an infiltration trench to mitigate for impacts to stormwater runoff from the new paving, and installation of utilities to serve the site including sanitary sewer, storm sewer, potable water, electrical, phone, and cable TV. The purpose of this SWPPP is to describe the proposed construction activities and all temporary and permanent erosion and sediment control (TESC) measures, pollution prevention measures, inspection/monitoring activities, and recordkeeping that will be implemented during the proposed construction project. The objectives of the SWPPP are to:

1. Implement Best Management Practices (BMPs) to prevent erosion and sedimentation, and to identify, reduce, eliminate or prevent stormwater contamination and water pollution from construction activity.

2. Prevent violations of surface water quality, ground water quality, or sediment management standards.

3. Prevent, during the construction phase, adverse water quality impacts including impacts on beneficial uses of the receiving water by controlling peak flow rates and volumes of stormwater runoff at the Permittee's outfalls and downstream of the outfalls.

This SWPPP was prepared using the Ecology SWPPP Template downloaded from the Ecology website. This SWPPP was prepared based on the requirements set forth in the Construction Stormwater General Permit and the *Stormwater Management Manual for Western Washington* (SWMMWW). The report is divided into seven main sections with several appendices that include stormwater related reference materials. The topics presented in the each of the main sections are:

- Section 1 – INTRODUCTION. This section provides a summary description of the project, and the organization of the SWPPP document.

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- Section 2 – SITE DESCRIPTION. This section provides a detailed description of the existing site conditions, proposed construction activities, and calculated stormwater flow rates for existing conditions and post–construction conditions.

- Section 3 – CONSTRUCTION BMPs. This section provides a detailed description of the BMPs to be implemented based on the 12 required elements of the SWPPP (SWMMEW 2004).

- Section 4 – CONSTRUCTION PHASING AND BMP IMPLEMENTATION. This section provides a description of the timing of the BMP implementation in relation to the project schedule.

- Section 5 – POLLUTION PREVENTION TEAM. This section identifies the appropriate contact names (emergency and non-emergency), monitoring personnel, and the onsite temporary erosion and sedimentation control inspector

- Section 6 – INSPECTION AND MONITORING. This section provides a description of the inspection and monitoring requirements such as the parameters of concern to be monitored, sample locations, sample frequencies, and sampling methods for all stormwater discharge locations from the site.

- Section 7 – RECORDKEEPING. This section describes the requirements for documentation of the BMP implementation, site inspections, monitoring results, and changes to the implementation of certain BMPs due to site factors experienced during construction.

Supporting documentation and standard forms are provided in the following Appendices:

Appendix A – Site plans
Appendix B – Construction BMPs
Appendix C – Alternative Construction BMP list
Appendix D – General Permit
Appendix E – Site Log and Inspection Forms
Appendix F – Engineering Calculations

2.0 Site Description

2.1 Existing Conditions

Current Addresses for the site is 20101 NE 13th Street, Camas, WA 98607. The site is approximately 0.97 acres. The property's topography is moderately sloped from a high point at the NW corner of the site to low areas along at the South boundary of the site. The site has an existing house will be removed. The remaining area consists of grass, and trees, and landscaping.

The soils are mapped by the NRCS as Wind River gravelly loam (WrB) for the majority of the site, and Cove silty clay loam (CwA) at the SW corner and Eastern edge of the site.

2.2 Proposed Construction Activities

The project proposes to develop a gas station with a mini-mart and car wash on a single lot. Construction activities will include excavation, grading, construction of paving and sidewalk to serve the site, construction of stormwater facilities to mitigate for impacts to stormwater runoff from the new paving, and installation of utilities to serve the site including sanitary sewer, storm sewer, potable water, electrical, phone, and cable TV.

Temporary erosion and sediment control facilities will be installed prior to site construction to handle construction-phase stormwater runoff. The schedule and phasing of BMPs during construction is provided in Section 4.0.

Stormwater runoff has been calculated using Western Washington Hydrology Model (WWHM). The stormwater facilities were designed to treat and detain the runoff generated by the site prior to discharge.

After the site has been graded and all new utilities are installed, the building construction will commence. Trees will also be planted in the landscape areas noted in the Landscape Plan. Temporary seeding will occur over the lots to establish vegetative cover until such time as individual buildings are developed and permanent landscaping occurs.

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3.0 Construction Stormwater BMPs

3.1 The 13 BMP Elements

3.1.1 Element #1 – Mark Clearing Limits

To protect adjacent properties and to reduce the area of soil exposed to construction, the limits of construction will be clearly marked before land-disturbing activities begin. Trees that are to be preserved, as well as all sensitive areas and their buffers, shall be clearly delineated, both in the field and on the plans. In general, natural vegetation and native topsoil shall be retained in an undisturbed state to the maximum extent possible. The BMPs relevant to marking the clearing limits that will be applied for this project include:

- Preserving Native Vegetation (BMP C101)
- Silt Fence (BMP C233)

Alternate BMPs for marking clearing limits are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Construction Stormwater permit (as provided in Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

3.1.2 Element #2 – Establish Construction Access

Construction access or activities occurring on unpaved areas shall be minimized, yet where necessary, access points shall be stabilized to minimize the tracking of sediment onto public roads, and wheel washing, street sweeping, and street cleaning shall be employed to prevent sediment from entering state waters. All wash wastewater shall be controlled on site. The specific BMPs related to establishing construction access that will be used on this project include:

- Stabilized Construction Entrance (BMP C105)

Alternate construction access BMPs are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Construction Stormwater permit (as provided in Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

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3.1.3 Element #3 – Control Flow Rates

In order to protect the properties and waterways downstream of the project site, stormwater discharges from the site will be controlled. The specific BMPs for flow control that shall be used on this project include:

- Downspout Full Infiltration - Infiltration Trenches (BMP T5.10B).
- Infiltration Trenches (BMP R5.11).

Alternate flow control BMPs are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Construction Stormwater permit (as provided in Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

The project site is located west of the Cascade Mountain Crest. As such, the project must comply with Minimum Requirement 7 (Ecology 2005).

In general, discharge rates of stormwater from the site will be controlled where increases in impervious area or soil compaction during construction could lead to downstream erosion, or where necessary to meet local agency stormwater discharge requirements (e.g. discharge to combined sewer systems).

3.1.4 Element #4 – Install Sediment Controls

All stormwater runoff from disturbed areas shall pass through an appropriate sediment removal BMP before leaving the construction site or prior to being discharged to an infiltration facility. The specific BMPs to be used for controlling sediment on this project include:

- Silt Fence (BMP C233)
- Storm Drain Inlet Protection (BMP C220)

Silt fencing and storm drain inlet protection will be adequate for sediment control during summer months. Alternate sediment control BMPs are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Construction Stormwater permit (as provided in Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

In addition, sediment will be removed from paved areas in and adjacent to construction work areas manually or using mechanical sweepers, as needed, to minimize tracking of sediments on vehicle tires away from the site and to minimize washoff of sediments from adjacent streets in runoff.

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Whenever possible, sediment laden water shall be discharged into onsite, relatively level, vegetated areas (BMP C240 paragraph 5, page 4-102).

In some cases, sediment discharge in concentrated runoff can be controlled using permanent stormwater BMPs (e.g., infiltration swales, ponds, trenches). Sediment loads can limit the effectiveness of some permanent stormwater BMPs, such as those used for infiltration or biofiltration; however, those BMPs designed to remove solids by settling (wet ponds or detention ponds) can be used during the construction phase. When permanent stormwater BMPs will be used to control sediment discharge during construction, the structure will be protected from excessive sedimentation with adequate erosion and sediment control BMPs. Any accumulated sediment shall be removed after construction is complete and the permanent stormwater BMP will be restabilized with vegetation per applicable design requirements once the remainder of the site has been stabilized.

The following BMPs will be implemented as end-of-pipe sediment controls as required to meet permitted turbidity limits in the site discharge(s). Prior to the implementation of these technologies, sediment sources and erosion control and soil stabilization BMP efforts will be maximized to reduce the need for end-of-pipe sedimentation controls.

- Construction Stormwater Filtration (BMP C251)
- Construction Stormwater Chemical Treatment (BMP C 250) (implemented only with prior written approval from Ecology).

3.1.5 Element #5 – Stabilize Soils

Exposed and unworked soils shall be stabilized with the application of effective BMPs to prevent erosion throughout the life of the project. The specific BMPs for soil stabilization that shall be used on this project include:

- Temporary and Permanent Seeding (BMP C120)
- Mulching (BMP C121)
- Nets and Blankets (BMP C122)
- Plastic Covering (BMP C123)
- Topsoiling (BMP C125)
- Surface Roughening (BMP C130)
- Dust Control (BMP C140)
- Early application of gravel base on areas to be paved

Alternate soil stabilization BMPs are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Construction Stormwater permit (as provided in Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

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The project site is located west of the Cascade Mountain Crest. As such, no soils shall remain exposed and unworked for more than 7 days during the dry season (May 1 to September 30) and 2 days during the wet season (October 1 to April 30). Regardless of the time of year, all soils shall be stabilized at the end of the shift before a holiday or weekend if needed based on weather forecasts.

In general, cut and fill slopes will be stabilized as soon as possible and soil stockpiles will be temporarily covered with plastic sheeting. All stockpiled soils shall be stabilized from erosion, protected with sediment trapping measures, and where possible, be located away from storm drain inlets, waterways, and drainage channels.

3.1.6 Element #6 – Protect Slopes

All cut and fill slopes will be designed, constructed, and protected in a manner that minimizes erosion. The following specific BMPs will be used to protect slopes for this project:

- Temporary and Permanent Seeding (BMP C120)

Alternate slope protection BMPs are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Construction Stormwater permit (as provided in Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

3.1.7 Element #7 – Protect Drain Inlets

All storm drain inlets and culverts made operable during construction or inlets near the site that could potentially receive surface runoff from the construction site shall be protected to prevent unfiltered or untreated water from entering the drainage conveyance system. However, the first priority is to keep all access roads clean of sediment and keep street wash water separate from entering storm drains until treatment can be provided. Storm Drain Inlet Protection (BMP C220) will be implemented for all drainage inlets and culverts that could potentially be impacted by sediment-laden runoff on and near the project site. The following inlet protection measures will be applied on this project:

Drop Inlet Protection

- Block and Gravel Drop Inlet Protection
- Gravel and Wire Drop Inlet Protection
- Catch Basin Filter

If the BMP options listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D), or if no BMPs are listed above but deemed necessary during construction, the Certified Erosion and Sediment Control Lead shall implement one or more of the alternative BMP inlet protection options listed in Appendix C.

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3.1.8 Element #8 – Stabilize Channels and Outlets

Where site runoff is to be conveyed in channels or discharged to a stream or some other natural drainage point, efforts will be taken to prevent downstream erosion. The specific BMPs for channel and outlet stabilization that shall be used on this project include:

- Outlet Protection (BMP C209)

Alternate channel and outlet stabilization BMPs are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Construction Stormwater permit (as provided in Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

The project site is located west of the Cascade Mountain Crest. As such, all temporary on-site conveyance channels shall be designed, constructed, and stabilized to prevent erosion from the expected peak 10-minute velocity of flow from a Type 1A, 10-year, 24-hour recurrence interval storm for the developed condition. Alternatively, the 10-year, 1-hour peak flow rate indicated by an approved continuous runoff simulation model, increased by a factor of 1.6, shall be used. Stabilization, including armoring material, adequate to prevent erosion of outlets, adjacent streambanks, slopes, and downstream reaches shall be provided at the outlets of all conveyance systems.

3.1.9 Element #9 – Control Pollutants

All pollutants, including waste materials and demolition debris, that occur onsite shall be handled and disposed of in a manner that does not cause contamination of stormwater. Good housekeeping and preventative measures will be taken to ensure that the site will be kept clean, well organized, and free of debris. If required, BMPs to be implemented to control specific sources of pollutants are discussed below.

Vehicles, construction equipment, and/or petroleum product storage/dispensing:

- All vehicles, equipment, and petroleum product storage/dispensing areas will be inspected regularly to detect any leaks or spills, and to identify maintenance needs to prevent leaks or spills.
- On-site fueling tanks and petroleum product storage containers shall include secondary containment.
- Spill prevention measures, such as drip pans, will be used when conducting maintenance and repair of vehicles or equipment.
- In order to perform emergency repairs on site, temporary plastic will be placed beneath and, if raining, over the vehicle.
- Contaminated surfaces shall be cleaned immediately following any discharge or spill incident.

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Chemical storage:

- Any chemicals stored in the construction areas will conform to the appropriate source control BMPs listed in Volume IV of the Ecology stormwater manual. In Western WA, all chemicals shall have cover, containment, and protection provided on site, per BMPC153 for Material Delivery, Storage and Containment in SWMMWW 2005
- Application of agricultural chemicals, including fertilizers and pesticides, shall be conducted in a manner and at application rates that will not result in loss of chemical to stormwater runoff. Manufacturers' recommendations for application procedures and rates shall be followed.

Excavation and tunneling spoils dewatering waste:

- Dewatering BMPs and BMPs specific to the excavation and tunneling (including handling of contaminated soils) are discussed under Element 10.

Demolition:

- Dust released from demolished sidewalks, buildings, or structures will be controlled using Dust Control measures (BMP C140).
- Storm drain inlets vulnerable to stormwater discharge carrying dust, soil, or debris will be protected using Storm Drain Inlet Protection (BMP C220 as described above for Element 7).
- Process water and slurry resulting from sawcutting and surfacing operations will be prevented from entering the waters of the State by implementing Sawcutting and Surfacing Pollution Prevention measures (BMP C152).

Concrete and grout:

- Process water and slurry resulting from concrete work will be prevented from entering the waters of the State by implementing Concrete Handling measures (BMP C151).

Sanitary wastewater:

- Portable sanitation facilities will be firmly secured, regularly maintained, and emptied when necessary.
- Wheel wash or tire bath wastewater shall be discharged to a separate on-site treatment system or to the sanitary sewer as part of Wheel Wash implementation (BMP C106).

Solid Waste:

- Solid waste will be stored in secure, clearly marked containers.

Other:

- Other BMPs will be administered as necessary to address any additional pollutant sources on site.

The facility does not require a Spill Prevention, Control, and Countermeasure (SPCC) Plan under the Federal regulations of the Clean Water Act (CWA).

3.1.10 Element #10 – Control Dewatering

3.1.13 Element #13 – Protect Low Impact Development BMPs

- Protect all bioretention and rain garden BMP's from sedimentation through installation and maintenance of erosion control BMP's on portions of the site that drain into them. Restore the BMP's to their fully functioning condition if they accumulate sediment during construction. Restoring the BMP must include removal of sediment and any sediment-laden bioretention/ rain garden soils, and replacing the removed soils with soils meeting the design specification.
- Prevent compacting bioretention and rain garden BMP's by excluding construction equipment and foot traffic. Protect completed lawn and landscaped areas from compaction by construction equipment.
- Control erosion and avoid introducing sediment from surrounding land uses onto permeable pavements. Do not allow muddy construction equipment on the base material or pavement. Do not allow sediment-laden runoff into permeable pavements or base materials.
- Pavements fouled with sediments or no longer passing an initial infiltration test must be cleaned using procedures from Book 4 of the manufacturer's procedures.
- Keep all heavy equipment off existing soils under LID facilities that have been excavated to final grade to retain the infiltration rate of the soils

3.2 Site Specific BMPs

Site specific BMPs are shown on the TESC Plan Sheets and Details in Appendix A. These site-specific plan sheets will be updated annually.

3.3 Additional Advanced BMPs

- The following BMPs are advanced and are only recommended if construction activities are complex enough to warrant them; or if the site has the potential for significant impacts to water quality. The following BMPs are directed at "end-of-pipe" treatment for sedimentation issues related to turbid runoff from construction sites. Effective BMPs are most often the simple BMPs and focus on the minimization of erosion before sedimentation is an issue. The following BMPs will most likely be implemented only after other BMP options are exhausted, or if the construction activity is large and off-site sedimentation or turbid runoff occurs or is inevitable.
- For BMP 250, written pre-approval, through Ecology is required (see SWMMWW 2005):
- BMP C250: Construction Stormwater Chemical Treatment
- BMP C251: Construction Stormwater Filtration.

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4.0 Construction Phasing and BMP Implementation

The BMP implementation schedule will be driven by the construction schedule. The following provides a sequential list of the proposed construction schedule milestones and the corresponding BMP implementation schedule. The list contains key milestones such as wet season construction.

The BMP implementation schedule listed below is keyed to proposed phases of the construction project and reflects differences in BMP installations and inspections that relate to wet season construction. The project site is located west of the Cascade Mountain Crest. As such, the dry season is considered to be from May 1 to September 30 and the wet season is considered to be from October 1 to April 30.

- Estimate of Construction start date: 3/01/24
- Estimate of Construction finish date: 9/30/27
- Mobilize equipment on site: 3/01/24
- Mobilize and store all ESC and soil stabilization products: 3/01/24
- Install ESC measures: 3/01/24
- Install stabilized construction entrance: 3/01/24
- Begin clearing and grubbing: 3/01/24
- Demolish existing structures: 3/01/24
- Begin site grading 3/01/24
- Site grading ends 3/30/24
- Excavate and install new utilities and services: 4/01/24
- Excavation for building foundations 3/06/24
- Begin building construction: 3/06/24
- Complete utility construction 3/06/24
- Begin implementing soil stabilization and sediment control BMPs throughout the site in preparation for wet season: 3/06/24
- Wet Season starts: 10/01/24
- Site inspections and monitoring conducted weekly and for applicable rain events as detailed in Section 6 of this SWPPP: 3/01/24
- Implement Element #12 BMPs and manage site to minimize soil disturbance during the wet season: 3/01/24
- Complete road paving 5/30/24
- Building construction complete: 9/06/25
- Dry Season starts: 5/01/24

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5.0 Pollution Prevention Team

5.1 Roles and Responsibilities

The pollution prevention team consists of personnel responsible for implementation of the SWPPP, including the following:

- Certified Erosion and Sediment Control Lead (CESCL) – primary contractor contact, responsible for site inspections (BMPs, visual monitoring, sampling, etc.); to be called upon in case of failure of any ESC measures.
- Resident Engineer – For projects with engineered structures only (sediment ponds/traps, sand filters, etc.): site representative for the owner that is the project's supervising engineer responsible for inspections and issuing instructions and drawings to the contractor's site supervisor or representative
- Emergency Ecology Contact – individual to be contacted at Ecology in case of emergency.
- Emergency Owner Contact – individual that is the site owner or representative of the site owner to be contacted in the case of an emergency.
- Non-Emergency Ecology Contact – individual that is the site owner or representative of the site owner than can be contacted if required.
- Monitoring Personnel – personnel responsible for conducting water quality monitoring; for most sites this person is also the Certified Erosion and Sediment Control Lead.

5.2 Team Members

Names and contact information for those identified as members of the pollution prevention team are provided in the following table.

Title	Name(s)	Phone Number
Certified Erosion and Sediment Control Lead (CESCL)	Unknown	
Resident Engineer	Travis Johnson	(360)944-6519
Emergency Ecology Contact	Unknown	
Emergency Owner Contact	Unknown	
Non-Emergency Ecology Contact	Unknown	
Monitoring Personnel	Unknown	

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6.0 Site Inspections and Monitoring

Monitoring includes visual inspection, monitoring for water quality parameters of concern, and documentation of the inspection and monitoring findings in a site log book. A site log book will be maintained for all on-site construction activities and will include:

- A record of the implementation of the SWPPP and other permit requirements;
- Site inspections; and,
- Stormwater quality monitoring.

For convenience, the inspection form and water quality monitoring forms included in this SWPPP include the required information for the site log book. This SWPPP may function as the site log book if desired, or the forms may be separated and included in a separate site log book. However, if separated, the site log book but must be maintained on-site or within reasonable access to the site and be made available upon request to Ecology or the local jurisdiction.

6.1 Site Inspection

All BMPs will be inspected, maintained, and repaired as needed to assure continued performance of their intended function. The inspector will be a Certified Erosion and Sediment Control Lead (CESCL) per BMP C160. The name and contact information for the CESCL is provided in Section 5 of this SWPPP.

Site inspection will occur in all areas disturbed by construction activities and at all stormwater discharge points. Stormwater will be examined for the presence of suspended sediment, turbidity, discoloration, and oily sheen. The site inspector will evaluate and document the effectiveness of the installed BMPs and determine if it is necessary to repair or replace any of the BMPs to improve the quality of stormwater discharges. All maintenance and repairs will be documented in the site log book or forms provided in this document. All new BMPs or design changes will be documented in the SWPPP as soon as possible.

6.1.1 Site Inspection Frequency

Site inspections will be conducted at least once a week and within 24 hours following any discharge from the site. For sites with temporary stabilization measures, the site inspection frequency can be reduced to once every month.

6.1.2 Site Inspection Documentation

The site inspector will record each site inspection using the site log inspection forms provided in Appendix E. The site inspection log forms may be separated from this SWPPP document, but will be maintained on-site or within reasonable access to the site and be made available upon request to Ecology or the local jurisdiction.

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6.2 Stormwater Quality Monitoring

The construction site will comply with the requirements set forth in the 2015 Construction Stormwater General Permit (revised 2017) seen in Appendix D. A Certified Erosion and Sediment Control Lead shall be on-site or on-call at all times.

The following text describes the monitoring for the proposed development.

6.2.1 Turbidity Sampling

The receiving water body, Lacamas Creek Watershed, is impaired for turbidity. Mandatory BMPs (Best Management Practices) and erosion control practices put in place by the permit will appropriately minimize the turbidity of the stormwater discharge. Monitoring requirements for the proposed project will include weekly turbidity sampling to monitor site discharges for water quality compliance as required by the NPDES Construction Stormwater General Permit, provided that site discharges occur. It should be noted that the site is designed such that all site runoff will be infiltrated so it is likely that discharges will be rare or may not occur at all. Sampling will be conducted at all discharge points at least once per calendar week.

Turbidity sampling during construction will be completed weekly in order to confirm that erosion control measures are meeting the water quality standards for turbidity (Where an applicable TMDL has not specified a waste load allocation for construction stormwater discharge, but has not excluded these discharges, compliance with special Conditions S4 (monitoring) and S9 (SWPPPs) will constitute compliance with the approved TMDL (S8.E.1.c)). Special Conditions S4 establishes that the key benchmark values that require action are 25 NTU for turbidity (equivalent to 32 cm transparency) and 250 NTU for turbidity (equivalent to 6 cm transparency). If the 25 NTU benchmark for turbidity (equivalent to 32 cm transparency) is exceeded, the following steps will be conducted:

1. Ensure all BMPs specified in this SWPPP are installed and functioning as intended.
2. Assess whether additional BMPs should be implemented, and document revisions to the SWPPP as necessary.
3. Sample discharge location daily until the analysis results are less than 25 NTU (turbidity) or greater than 32 cm (transparency).

If the turbidity is greater than 25 NTU (or transparency is less than 32 cm) but less than 250 NTU (transparency greater than 6 cm) for more than 3 days, additional treatment BMPs will be implemented within 24 hours of the third consecutive sample that exceeded the benchmark value. Additional treatment BMPs to be considered will include, but are not limited to, off-site treatment, infiltration, filtration and chemical treatment.

If the 250 NTU benchmark for turbidity (or less than 6 cm transparency) is exceeded at any time, the following steps will be conducted:

1. Notify Ecology by phone within 24 hours of analysis (see Section 5.0 of this SWPPP for contact information).
2. Continue daily sampling until the turbidity is less than 25 NTU (or transparency is greater than 32 cm).

3. Initiate additional treatment BMPs such as off-site treatment, infiltration, filtration and chemical treatment within 24 hours of the first 250 NTU exceedance.
4. Implement additional treatment BMPs as soon as possible, but within 7 days of the first 250 NTU exceedance.
5. Describe inspection results and remedial actions taken in the site log book and in monthly discharge monitoring reports as described in Section 7.0 of this SWPPP.

In the event that Turbidity results are greater than 25 NTUs, or the site is determined to be out of compliance with surface water quality standards for turbidity, the following BMPs should be established, re-established or implemented as determined necessary by the Certified Erosion and Sediment Control lead (CESCL) in order to bring the site back into compliance:

BMP C105: Stabilized Construction Entrance / Exit (repair construction entrance as necessary)

BMP C106: Wheel Wash (repair wheel wash as necessary)

BMP C120: Temporary and permanent Seeding

BMP C124: Sodding

BMP C140: Dust Control

BMP C209: Outlet Protection

BMP C220: Storm Drain Inlet Protection (add more inlet protection, as necessary

BMP C233: Silt Fence (add more silt fencing as necessary)

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7.0 Reporting and Recordkeeping

7.1 Recordkeeping

7.1.1 Site Log Book

A site log book will be maintained for all on-site construction activities and will include:

- A record of the implementation of the SWPPP and other permit requirements;
- Site inspections; and,
- Stormwater quality monitoring.

For convenience, the inspection form and water quality monitoring forms included in this SWPPP include the required information for the site log book.

7.1.2 Records Retention

Records of all monitoring information (site log book, inspection reports/checklists, etc.), this Stormwater Pollution Prevention Plan, and any other documentation of compliance with permit requirements will be retained during the life of the construction project and for a minimum of three years following the termination of permit coverage in accordance with permit condition S5.C.

7.1.3 Access to Plans and Records

The SWPPP, General Permit, Notice of Authorization letter, and Site Log Book will be retained on site or within reasonable access to the site and will be made immediately available upon request to Ecology or the local jurisdiction. A copy of this SWPPP will be provided to Ecology within 14 days of receipt of a written request for the SWPPP from Ecology. Any other information requested by Ecology will be submitted within a reasonable time. A copy of the SWPPP or access to the SWPPP will be provided to the public when requested in writing in accordance with permit condition S5.G.

7.1.4 Updating the SWPPP

In accordance with Conditions S3, S4.B, and S9.B.3 of the General Permit, this SWPPP will be modified if the SWPPP is ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the site or there has been a change in design, construction, operation, or maintenance at the site that has a significant effect on the discharge, or potential for discharge, of pollutants to the waters of the State. The SWPPP will be modified within seven days of determination based on inspection(s) that additional or modified BMPs are necessary to correct problems identified, and an updated timeline for BMP implementation will be prepared.

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7.2 Reporting

7.2.1 Discharge Monitoring Reports

Discharge Monitoring Reports (DMRs) will be submitted to Ecology monthly. If there was no discharge during a given monitoring period, the Permittee shall submit the form as required, with the words "No discharge" entered in the place of monitoring results. The DMR due date is 15 days following the end of each month.

Water quality sampling results will be submitted to Ecology monthly on Discharge Monitoring Report (DMR) forms in accordance with permit condition S5.B. If there was no discharge during a given monitoring period, the form will be submitted with the words "no discharge" entered in place of the monitoring results. If a benchmark was exceeded, a brief summary of inspection results and remedial actions taken will be included. If sampling could not be performed during a monitoring period, a DMR will be submitted with an explanation of why sampling could not be performed.

7.2.2 Notification of Noncompliance

If any of the terms and conditions of the permit are not met, and it causes a threat to human health or the environment, the following steps will be taken in accordance with permit section S5.F:

1. Ecology will be immediately notified of the failure to comply.
2. Immediate action will be taken to control the noncompliance issue and to correct the problem. If applicable, sampling and analysis of any noncompliance will be repeated immediately and the results submitted to Ecology within five (5) days of becoming aware of the violation.
3. A detailed written report describing the noncompliance will be submitted to Ecology within five (5) days, unless requested earlier by Ecology.

Any time turbidity sampling indicates turbidity is 250 nephelometric turbidity units (NTU) or greater or water transparency is 6 centimeters or less, the Ecology regional office will be notified by phone within 24 hours of analysis as required by permit condition S5.A (see Section 5.0 of this SWPPP for contact information).

In accordance with permit condition S2.A, a complete application form will be submitted to Ecology and the appropriate local jurisdiction (if applicable) to be covered by the General Permit.

Appendix A – Site Plans

See Plans.

Appendix B – Construction BMPs

Stabilized Construction Entrance (BMP C105)

Silt Fence (BMP C233)

Storm Drain Inlet Protection (BMP C220)

Infiltration Trench (BMP T7.20)

Temporary and Permanent Seeding (BMP C120)

Mulching (BMP C121)

Nets and Blankets (BMP C122)

Plastic Covering (BMP C123)

Topsoiling (BMP C125)

Dust Control (BMP C140)

Early application of gravel base on areas to be paved

Outlet Protection (BMP C209)

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Appendix C – Alternative BMPs

The following includes a list of possible alternative BMPs for each of the 12 elements not described in the main SWPPP text. This list can be referenced in the event a BMP for a specific element is not functioning as designed and an alternative BMP needs to be implemented.

Element #1 - Mark Clearing Limits
High Visibility Plastic or Metal Fence (BMP C103)
Stake and Wire Fence (BMP C104)
Element #2 - Establish Construction Access
Wheel Wash (BMP C106)
Water Bars (BMP C203)
Element #3 - Control Flow Rates
Wattles (BMP C235)

Element #4 - Install Sediment Controls
Straw Bale Barrier (BMP C230)
Gravel Filter Berm (BMP C232)
Straw Wattles (BMP C235)
Portable Water Storage Tanks (Baker Tanks)
Construction Stormwater Chemical Treatment (BMP C250)
Construction Stormwater Filtration (BMP C251)

Element #5 - Stabilize Soils
Polyacrylamide (BMP C126)

Element #6 - Protect Slopes
Straw Wattles (BMP C235)
Surface Roughening (BMP C240)

Element #8 - Stabilize Channels and Outlets
Level Spreader (BMP C206)
Check Dams (BMP C207)

Element #9 – Control Pollutants
Concrete Handling (BMP C151)
Construction Stormwater Chemical Treatment (BMP C250)
Construction Stormwater Filtration (BMP C251)

Element #10 - Control Dewatering
Vegetated Filtration (BMP C236)
Additional Advanced BMPs to Control Dewatering:

Appendix D – General Permit

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Appendix E – Site Inspection Forms (and Site Log)

The results of each inspection shall be summarized in an inspection report or checklist that is entered into or attached to the site log book. It is suggested that the inspection report or checklist be included in this appendix to keep monitoring and inspection information in one document, but this is optional. However, it is mandatory that this SWPPP and the site inspection forms be kept onsite at all times during construction, and that inspections be performed and documented as outlined below.

At a minimum, each inspection report or checklist shall include:

a. Inspection date/times

b. Weather information: general conditions during inspection, approximate amount of precipitation since the last inspection, and approximate amount of precipitation within the last 24 hours.

c. A summary or list of all BMPs that have been implemented, including observations of all erosion/sediment control structures or practices.

d. The following shall be noted:

   i. locations of BMPs inspected,

   ii. locations of BMPs that need maintenance,

   iii. the reason maintenance is needed,

   iv. locations of BMPs that failed to operate as designed or intended, and

   v. locations where additional or different BMPs are needed, and the reason(s) why

e. A description of stormwater discharged from the site. The presence of suspended sediment, turbid water, discoloration, and/or oil sheen shall be noted, as applicable.

f. A description of any water quality monitoring performed during inspection, and the results of that monitoring.

g. General comments and notes, including a brief description of any BMP repairs, maintenance or installations made as a result of the inspection.

h. A statement that, in the judgment of the person conducting the site inspection, the site is either in compliance or out of compliance with the terms and conditions of the SWPPP and the NPDES permit. If the site inspection indicates that the site is out of compliance, the inspection report shall include a summary of the remedial actions required to bring the site back into compliance, as well as a schedule of implementation.

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i. Name, title, and signature of person conducting the site inspection; and the following statement: "I certify under penalty of law that this report is true, accurate, and complete, to the best of my knowledge and belief".

When the site inspection indicates that the site is not in compliance with any terms and conditions of the NPDES permit, the Permittee shall take immediate action(s) to: stop, contain, and clean up the unauthorized discharges, or otherwise stop the noncompliance; correct the problem(s); implement appropriate Best Management Practices (BMPs), and/or conduct maintenance of existing BMPs; and achieve compliance with all applicable standards and permit conditions. In addition, if the noncompliance causes a threat to human health or the environment, the Permittee shall comply with the Noncompliance Notification requirements in Special Condition S5.F of the permit.

Site Inspection Form

General Information			
Project Name:			
Inspector Name:		**Title:** **CESCL # :**	
Date:		**Time:**	
Inspection Type:	□ After a rain event □ Weekly □ Turbidity/transparency benchmark exceedance □ Other		
Weather			
Precipitation	Since last inspection	In last 24 hours	
Description of General Site Conditions:			

Inspection of BMPs							
Element 1: Mark Clearing Limits							
BMP:							
Location	Inspected			Functioning			Problem/Corrective Action
	Y	N		Y	N	NIP	
BMP:							
Location	Inspected			Functioning			Problem/Corrective Action
	Y	N		Y	N	NIP	
Element 2: Establish Construction Access							
BMP:							
Location	Inspected			Functioning			Problem/Corrective Action
	Y	N		Y	N	NIP	
BMP:							
Location	Inspected			Functioning			Problem/Corrective Action
	Y	N		Y	N	NIP	

Element 3: Control Flow Rates							
BMP:							
Location	Inspected		Functioning			Problem/Corrective Action	
	Y	N		Y	N	NIP	
BMP:							
Location	Inspected		Functioning			Problem/Corrective Action	
	Y	N		Y	N	NIP	
Element 4: Install Sediment Controls							
BMP:							
Location	Inspected		Functioning			Problem/Corrective Action	
	Y	N		Y	N	NIP	
BMP:							
Location	Inspected		Functioning			Problem/Corrective Action	
	Y	N		Y	N	NIP	
BMP:							
Location	Inspected		Functioning			Problem/Corrective Action	
	Y	N		Y	N	NIP	
BMP:							
Location	Inspected		Functioning			Problem/Corrective Action	
	Y	N		Y	N	NIP	
BMP:							
Location	Inspected		Functioning			Problem/Corrective Action	
	Y	N		Y	N	NIP	

Element 5: Stabilize Soils

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

Element 6: Protect Slopes

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

Element 7: Protect Drain Inlets

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

Element 8: Stabilize Channels and Outlets

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

BMP:

Location	Inspected Y	Inspected N	Functioning Y	Functioning N	Functioning NIP	Problem/Corrective Action

Exhibit 33 APPEAL24-1001

Element 9: Control Pollutants							
BMP:							
Location	Inspected		Functioning			Problem/Corrective Action	
	Y	N	Y	N	NIP		
BMP:							
Location	Inspected		Functioning			Problem/Corrective Action	
	Y	N	Y	N	NIP		
Element 10: Control Dewatering							
BMP:							
Location	Inspected		Functioning			Problem/Corrective Action	
	Y	N	Y	N	NIP		
BMP:							
Location	Inspected		Functioning			Problem/Corrective Action	
	Y	N	Y	N	NIP		
BMP:							
Location	Inspected		Functioning			Problem/Corrective Action	
	Y	N	Y	N	NIP		

Stormwater Discharges From the Site		
	Observed?	Problem/Corrective Action

	Y	N
Location		
Turbidity		
Discoloration		
Sheen		
Location		
Turbidity		
Discoloration		
Sheen		

Water Quality Monitoring
Was any water quality monitoring conducted? □ Yes □ No
If water quality monitoring was conducted, record results here:
If water quality monitoring indicated turbidity 250 NTU or greater; or transparency 6 cm or less, was Ecology notified by phone within 24 hrs? □ Yes □ No
If Ecology was notified, indicate the date, time, contact name and phone number below:
Date:
Time:
Contact Name:
Phone #:
General Comments and Notes
Include BMP repairs, maintenance, or installations made as a result of the inspection.
Were Photos Taken? □ Yes □ No
If photos taken, describe photos below:

SEPARATOR SHEET

APPENDIX F

Environmental Documentation

CRITICAL AREAS REPORT

October 2, 2023

13th Street Gas Station
Camas, WA

Prepared for

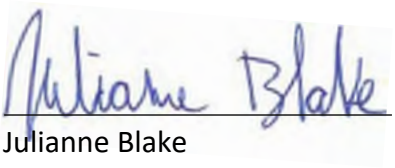
PAK USA Camas, LLC
c/o Taz Khan
3993 NW Currawong Court
Camas, WA 98607
(512) 779-4999

Prepared by

Ecological Land Services
1157 3rd Avenue, Suite 220A • Longview, WA 98632
(360) 578-1371 • Project Number 3934.01

SIGNATURE PAGE

The information in this report was compiled and prepared under the supervision and direction of the undersigned.



Julianne Blake
Biologist III

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METHODOLOGY **1**
VEGETATION **2**
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CRITICAL AREA INVENTORIES **3**
NATIONAL WETLANDS INVENTORY 3
CLARK COUNTY CRITICAL AREA INVENTORY 3
WASHINGTON DEPARTMENT OF NATURAL RESOURCES STREAM TYPE 3
PRIORITY HABITATS AND SPECIES 3
CRITICAL AREAS SUMMARY **4**
PRIORITY HABITATS 4
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Figure 3 NRCS Soil Survey
Figure 4 USFWS National Wetlands Inventory
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APPENDICES

Appendix A – Routine Determination Method and Plant Indicator Rating Definitions
Appendix B – Wetland Determination Data Form
Appendix C – Precipitation Information

INTRODUCTION

Ecological Land Services, Inc. (ELS) was contracted by PAK USA Camas, LLC to complete a critical areas assessment for wetlands and fish and wildlife habitat conservation areas, for the purpose of future development. The site is approximately 0.97 acres and consists of Clark County Tax Parcel 176148000 located at 20101 NE 13th Street within the NW ¼ of Section 29, Township 2 North, and Range 3 East of the Willamette Meridian in Camas, Washington (Figure 1). Field work was conducted on August 29, 2023. This report summarizes the findings of the site visit in accordance with *Camas Municipal Code (CMC) Title 16 Environment* (2023).

SITE DESCRIPTION

The 0.97-acre site consists of Clark County Tax Parcel 176148000 and is accessed by a paved driveway off NE 13th Street. The site is zoned as Business Park (BP) and currently contains a single-family mobile home, shed, carport, and paved driveway. The site is bordered to the north by NE 13th Street, to the east by NW Friberg-Strunk Street, to the south by undeveloped land and commercial development in progress, and to the west by undeveloped land and a single-family residence (Figure 2).

Vegetation onsite consists primarily of regularly mowed grasses, ornamental shrubs, and coniferous and deciduous trees. Topography onsite is generally flat with NE 13th Street and NW Friberg-Strunk Street roughly two feet higher in elevation than the site. One Oregon white oak (*Quercus garryana,* FACU) was identified onsite along the southern property boundary.

METHODOLOGY

The property was evaluated for the presence of wetlands using the Routine Determination Method according to the U.S. Army Corps of Engineers' 1987 *Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers' Wetland Delineation Manual* (Environmental Laboratory 1987)*; Western Mountains, Valleys, and Coast Region (Version 2.0)* (Corps 2010). The Routine Determination Method and defining wetland criteria are discussed further in Appendix A. Wetlands are regulated as "Waters of the United States" by the U.S. Army Corps of Engineers (Corps) and as "Waters of the State" by the Washington Department of Ecology (Ecology), and locally by The City of Camas (City).

ELS biologists evaluated the property on August 29, 2023, to determine the presence or absence of critical areas including streams, wetlands, and priority habitats. One Oregon white oak (oak) was identified onsite, and no wetlands, streams, or other priority habitats were identified. Vegetation, soil, and hydrology data were collected from one test plot (TP) to determine whether wetlands were present onsite. No wetlands were present onsite. TP-1 was taken in the southwest corner of the site in an area with mapped hydric soils. The oak dripline and test plot location were mapped using a hand-held Global Positioning System (GPS) unit capable of sub-meter accuracy under ideal conditions.

VEGETATION

General vegetation consists primarily of regularly mowed grass and ornamental trees and shrubs (Photoplates 1 and 2). One Oregon white oak was observed along the southern site boundary. The plant indicator status following the plant scientific name is defined by the *National Wetland Plant List Indicator Rating Definitions* (Corps 2012) and can be found in Appendix A.

Dominant vegetation consisted of domestic apple trees (*Malus* spp.*,* assumed FAC), Japanese maple (*Acer palmatum*, UPL), rhododendron (*Rhododendron* spp., assumed FACU), Oregon white oak, osoberry (*Oemleria cerasiformis*, FACU), mowed English hawthorn saplings (*Crataegus monogyna*, FAC), swordfern (*Polystichum munitum*, FACU), and fescue grass (*Festuca* spp.*,* assumed FAC). The wetland determination data form contains vegetation information at TP-1 and is in Appendix B.

SOILS

The Natural Resources Conservation Service (NRCS) designates soils onsite as cove silty clay loam, thin solum, 0 to 3 percent slopes (CwA), and Wind River gravelly loam, 0 to 8 percent slopes (WrB) (Figure 3, NRCS 2023B). Of the two soil types found onsite, cove silty clay loam, thin solum, 0 to 3 percent slopes is designated as hydric.

According to soil profile descriptions developed by NRCS, cove silty clay loam, thin solum, is characterized as a poorly drained soil, forming on floodplains, with a depth to water table of 0 to 12 inches below ground surface (BGS). A typical soil profile includes silty clay loam from 0 to 14 inches, clay from 14-21 inches, and silt loam from 21 to 60 inches BGS. Wind River gravelly loam is categorized as a somewhat excessively drained soil with a typical soil profile of gravelly loam from 0 to 4 inches, coarse sandy loam from 4 to 24 inches, and loamy coarse sand from 24 to 60 inches BGS. Wind River gravelly loam forms on floodplains from alluvium parent material and has an average depth to water table of more than 80 inches.

Evaluated soils were characterized as loamy with a value of 4, and a chroma of 3, with no observations of redoximorphic concentrations and meeting no hydric soil indicators. Mapped hydric soils do not necessarily mean that an area is or is not a wetland—hydrology, hydrophytic wetland vegetation, and hydric soils must all be present to classify an area as a wetland. The test plot data form is in Appendix B.

HYDROLOGY

No evidence of wetland hydrology was observed at TP-1 or onsite.

PRECIPITATION

Precipitation data was gathered from the NOAA Regional Climate Centers *Clark County, Washington, WETS Station: Battle Ground*, which is located closest to the site. No rainfall occurred the day of the site visit or in the two weeks prior. Rainfall in June, July, and August was below exceedance levels and approximately 94 percent of August rainfall occurred prior to the site visit. Furthermore, review of the USACE Antecedent Precipitation Tool (APT) indicates rainfall

in the two months preceding the August 29th site visit was drier than normal with a score of 6. A copy of the APT data is provided in Appendix C. Table 1 summarizes the precipitation data.

Table 1. Precipitation Summary

Precipitation (inches)								
Date of Visit	Two Weeks Prior	3 Months Prior		30%	70%	DAREM[1]		
		30 Days Ending	Observed			Value	Weight	Total
8/29/23	8/15/23 – 8/28/23	8/29/23	0.05	0.25	0.99	1	3	3
		7/30/23	0.0	0.24	0.82	1	2	2
0.0	0.0	6/30/23	0.83	1.48	2.80	1	1	1
Rainfall 3 months prior was: **drier than normal** (sum 6-9), normal (sum 10-14), wetter than normal (sum 15-18).[1]								6
Year to Date Average Rainfall[2,3]: 50.06								
Year to Date Actual Rainfall[3]: 45.32								

[1] *Direct Antecedent Rainfall Evaluation Methods (Sumner et al 2009)*
[2] *Includes 94% of August Rainfall*
[3] *Based on a water year, October 2022 – August 2023*

Critical Area Inventories

National Wetlands Inventory

The National Wetlands Inventory (NWI) map does not indicate any wetlands onsite (Figure 4, USFWS 1988). ELS agrees with the NWI mapping, as no wetlands were identified onsite.

Clark County Critical Area Inventory

The Clark County Critical Area Inventory (CCCAI) map does not indicate any wetlands onsite but does indicate potential wetlands presence on the property to the south. Hydric soils are mapped along the eastern site boundary and the southwestern corner, and a habitat area is mapped over the majority of the eastern portion of the site (Figure 5). ELS partially agrees with the CCAI as no wetlands were identified onsite and one oak was observed in the vicinity of the mapped habitat area. The potential wetlands mapped to the south of the site are located in the footprint of a commercial development that has received permit approval. However, ELS does not agree with the extent of the mapped habitat area as only one oak was identified onsite and no other critical habitats were identified.

Washington Department of Natural Resources Stream Type

The Washington Department of Natural Resources (WDNR) Stream Type Map does not depict any streams onsite (Figure 6, WDNR 2023). ELS agrees with the WDNR mapping as no streams were observed onsite.

Priority Habitats and Species

The Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) maps indicate oak woodland and caves or cave-rich areas on the southern boundary of the site

and within 300 feet of the site to the southwest (Figure 7, WDFW 2023). ELS confirmed the presence of a single oak along the southern site boundary, but no oak woodlands or caves were observed onsite.

Critical area inventory maps are typically used to gather general information about a region and due to the large scale necessary for regional mapping, are limited in accuracy for localized analyses.

Critical Areas Summary

Priority Habitats

Oregon White Oak

Oregon white oaks are considered a priority habitat and are regulated by the Washington Department of Fish and Wildlife (WDFW) and locally by the City of Camas. According to WDFW's Management Recommendations for Washington's priority habitats: Oregon white oak woodlands (Larsen and Morgan, 1998), in urban or urbanizing areas west of the Cascades, priority oak habitat is defined as single oaks, stands of pure oak, or oak/conifer associations, one acre or greater in size. WDFW may also consider individual Oregon white oak trees a priority habitat when found to be particularly valuable to wildlife [i.e., contains many cavities, has a large diameter at breast height (DBH), is used by priority species, or has a large canopy]. The site is within the City of Camas. WDFW recommendation is that in urban and urbanizing areas, single trees should be maintained if they are deemed important to species highly associated with Oregon white oak. Oaks and their associated floras comprise distinct woodland ecosystems with various plant communities providing valuable habitat that contributes to wildlife diversity; oak woodlands provide a mix of feeding, resting, and breeding habitat for many wildlife species (Larsen and Morgan 1998).

The WDFW Priority Habitats and Species online mapping tool depicts oak woodlands within the vicinity of the observed oak along the southern site boundary. One oak tree measuring approximately 52 inches DBH was mapped along the southern site boundary during site reconnaissance (Figure 2). The oak has several live and dead branches, cavities, and has canopy connectivity with other trees in the vicinity but is not connected with other oaks. The oak location was mapped using a GPS system capable of submeter accuracy in ideal conditions. According to *CMC 16.61.010(3)(a)*, individual Oregon white oak trees with a twenty-inch DBH are considered a priority habitat.

Table 2: Oak Summary

Canopy Area	Diameter at Breast Height	Number of Trunks	Noteworthy Habitat Features
0.08 acres	52 inches	1	• Canopy is interconnected with adjacent trees, but not other oaks • Two large cavities

LIMITATIONS

ELS bases this report's determinations on standard scientific methodology and best professional judgment. In our opinion, local, state, and federal regulatory agencies should agree with our determinations. However, the information contained in this report should be considered preliminary and used at your own risk until it has been approved in writing by the appropriate regulatory agencies. ELS is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this report.

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FIGURES AND PHOTOPLATES

WASHINGTON

SITE

45.6321° Latitude
-122.4664° Longitude

LOCATION MAP

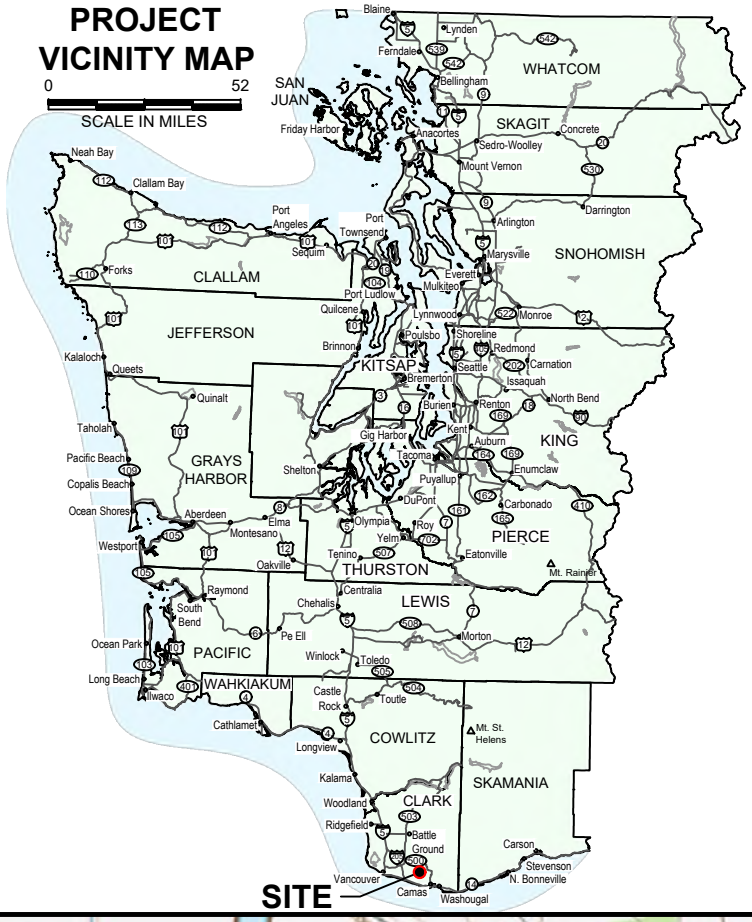
R 3 E

6					1
	29				
31					36

T 2 N

PROJECT VICINITY MAP

0 52
SCALE IN MILES



NOTE:
Quadrangle topographic map from USGS.

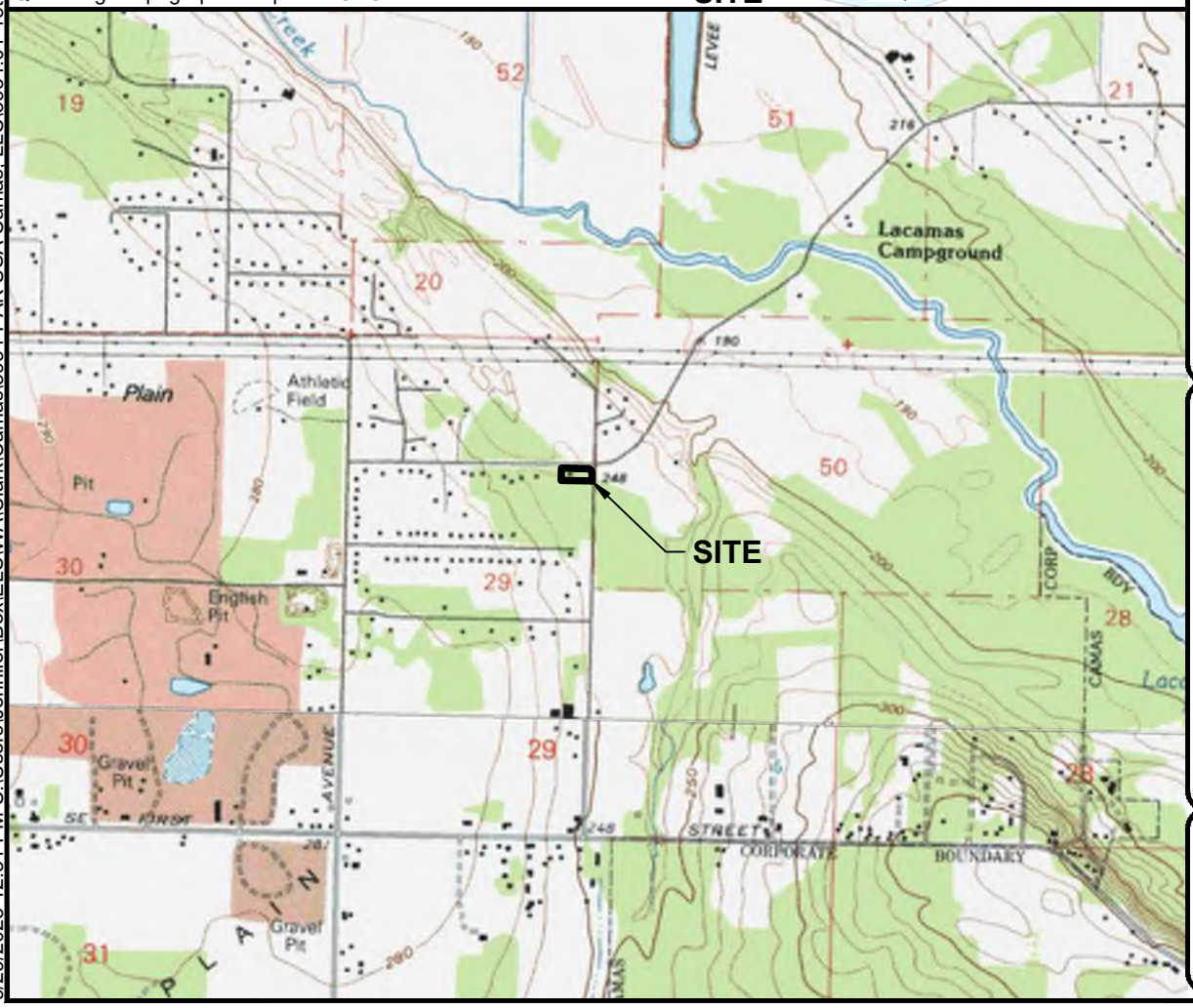


Figure 1
VICINITY MAP
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com
Ecological Land Services

SCALE IN FEET
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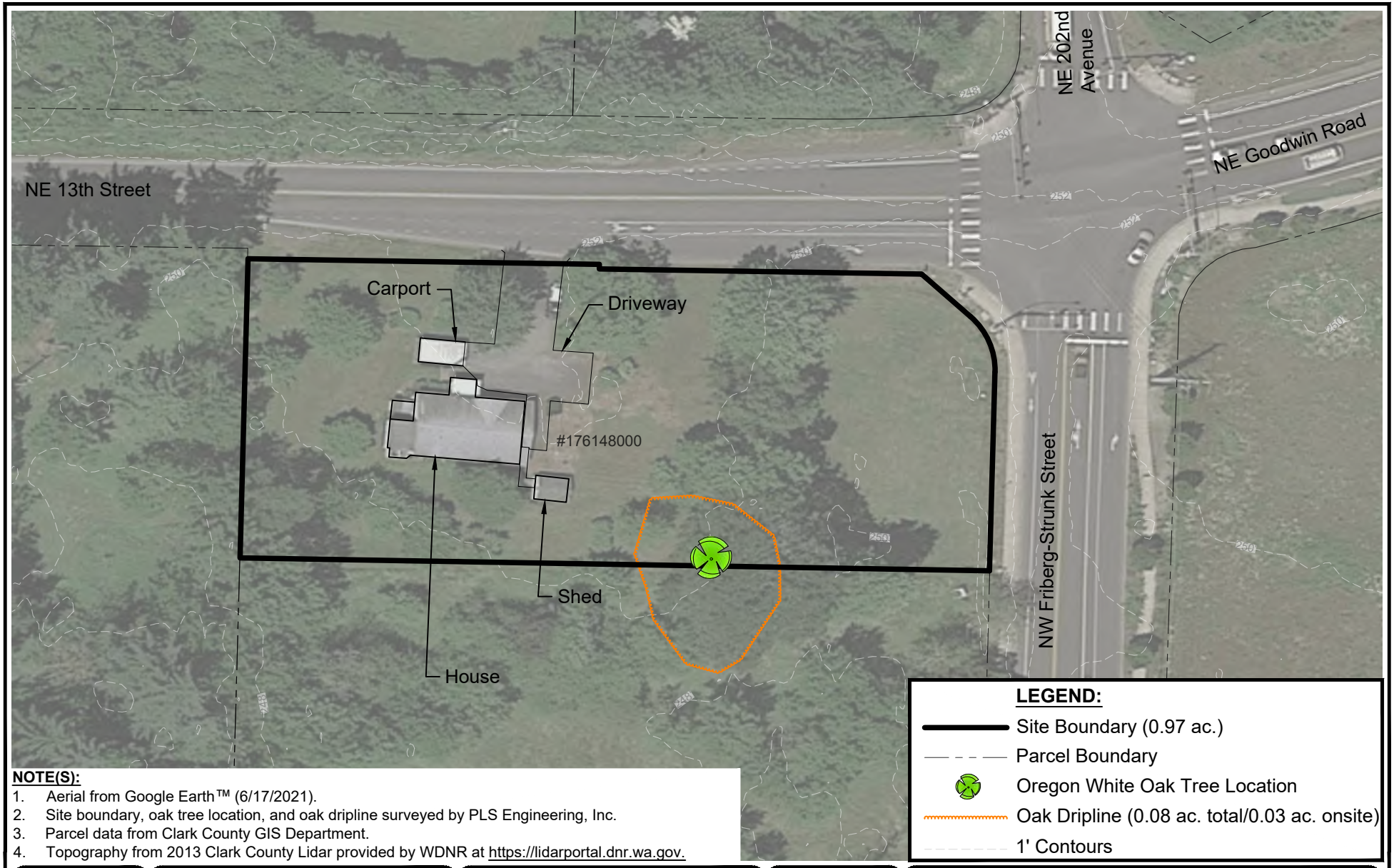

NOTE(S):

1. Aerial from Google Earth™ (6/17/2021).
2. Site boundary, oak tree location, and oak dripline surveyed by PLS Engineering, Inc.
3. Parcel data from Clark County GIS Department.
4. Topography from 2013 Clark County Lidar provided by WDNR at https://lidarportal.dnr.wa.gov.

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SCALE IN FEET

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DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

Figure 2
EXISTING CONDITIONS
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

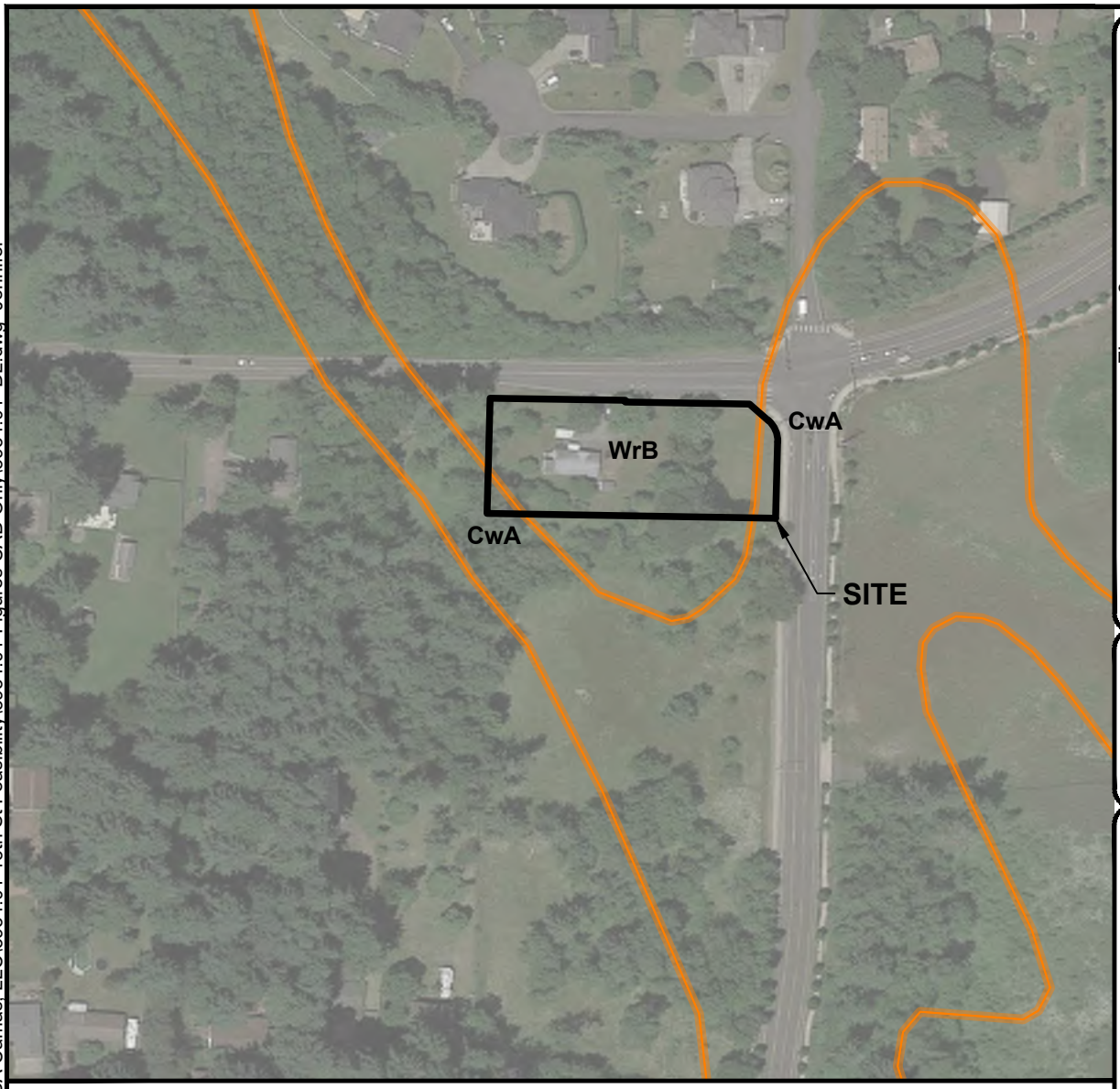

Figure 3
NRCS SOIL SURVEY
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

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LEGEND:

Site Boundary
NRCS Soil Boundary
CwA Cove silty clay loam, thin solum, 0 to 3 percent slopes. **Hydric.**
WrB Wind River gravelly loam, 0 to 8 percent slopes. Not hydric.

NOTE(S):
1. Map provided on-line by NRCS at web address: *http://websoilsurvey.nrcs.usda.gov/app/*

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No mapped wetlands indicated onsite by US Fish & Wildlife Service.

LEGEND:

Site Boundary

Wetlands

Riverine

NOTE(S):

1. Map provided on-line by US Fish & Wildlife Service at web address: *https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper*

Figure 4
USFWS NATIONAL WETLANDS INVENTORY
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

1157 3rd Ave., Suite 220A
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Ecological Land Services

0 200 400
SCALE IN FEET

N W E S

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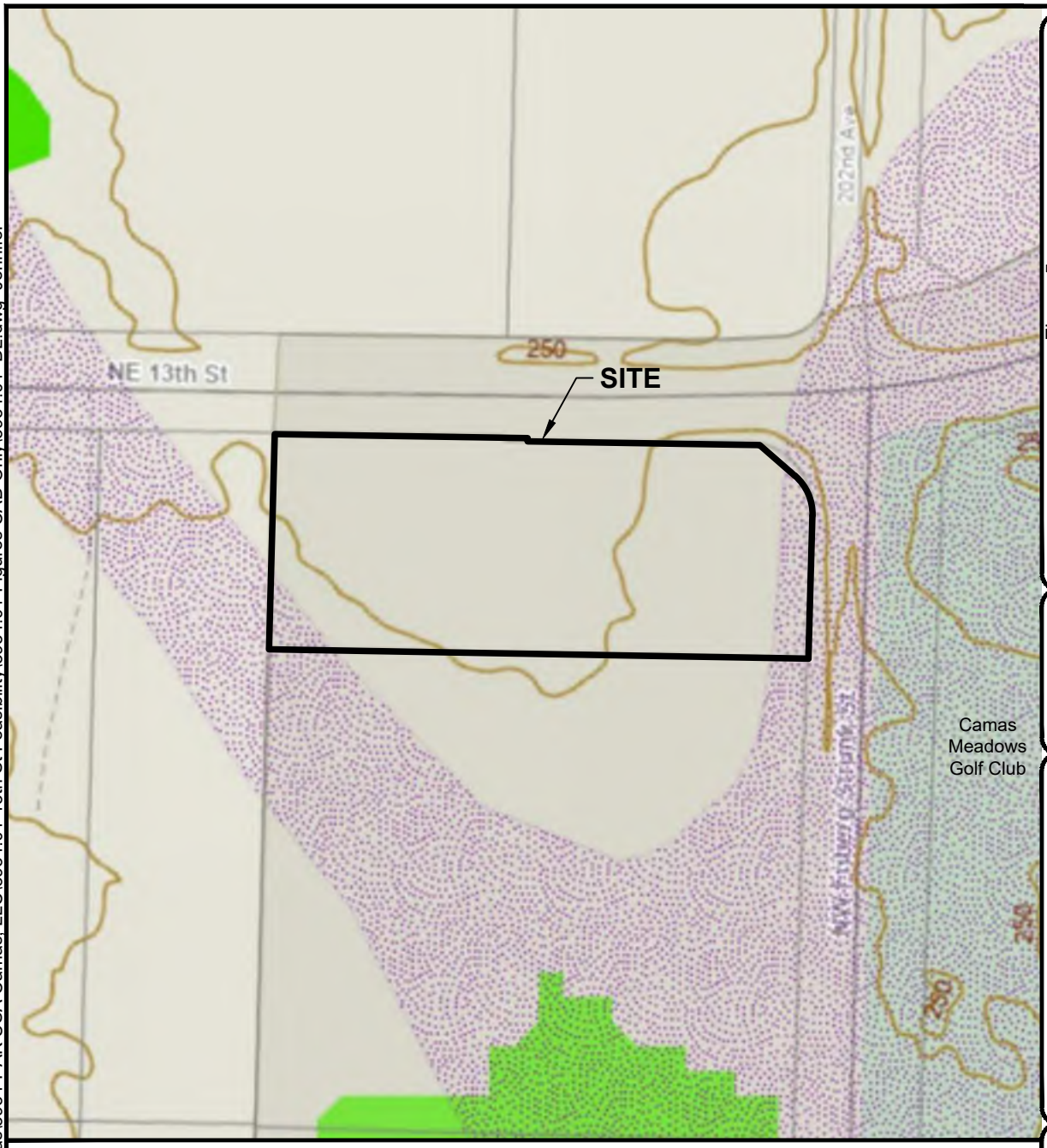

Figure 5
CLARK COUNTY CRITICAL AREAS
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

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Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
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Ecological Land Services

LEGEND:

Site Boundary

Slopes and Geologic Hazards Group Contour Lines
Contour Lines - 10 ft

Soils and Wetlands Inventory
Hydric Soils
Potential Wetlands Presence
Permitted Wetland

0 100 200 SCALE IN FEET

N W E S

NOTE(S):
1. Map provided on-line by Clark County at web address: *https://gis.clark.wa.gov/mapsonline/index.cfm?site=Environmental*

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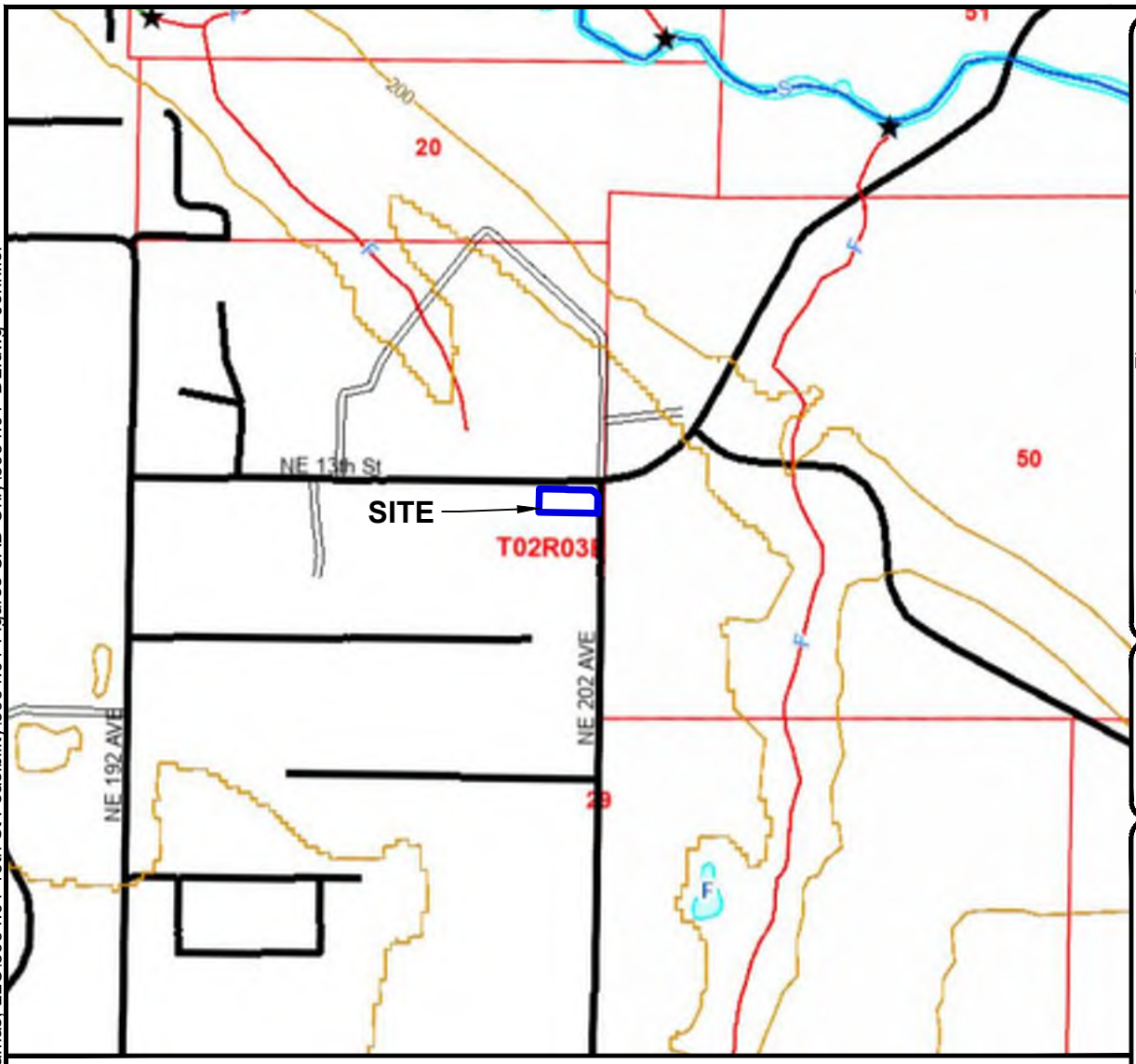

No mapped streams indicated onsite by the Washington State Department of Natural Resources (DNR).

LEGEND:

- Site Boundary

40-foot Contours
- 40 ft. Contours

Water Courses (FP)
- Type S
- Type F
- Type N, Np, Ns
- U, unknown
- X, non-typed per WAC 222-16

WRIA Boundaries
- WRIA Boundaries

DNR Roads
- Paved Road
- Unpaved Road/Surface Unknown

Unpaved Road/Surface Unknown
- Water Type Breaks (FP)

NOTE: Map provided on-line by Washington State Department of Natural Resources at web address: *http://fortress.wa.gov/dnr/app1/Fpars/viewer.htm*

Figure 6
WDNR STREAM TYPE MAP
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com

Ecological Land Services

0 1000 2000 SCALE IN FEET

N W E S

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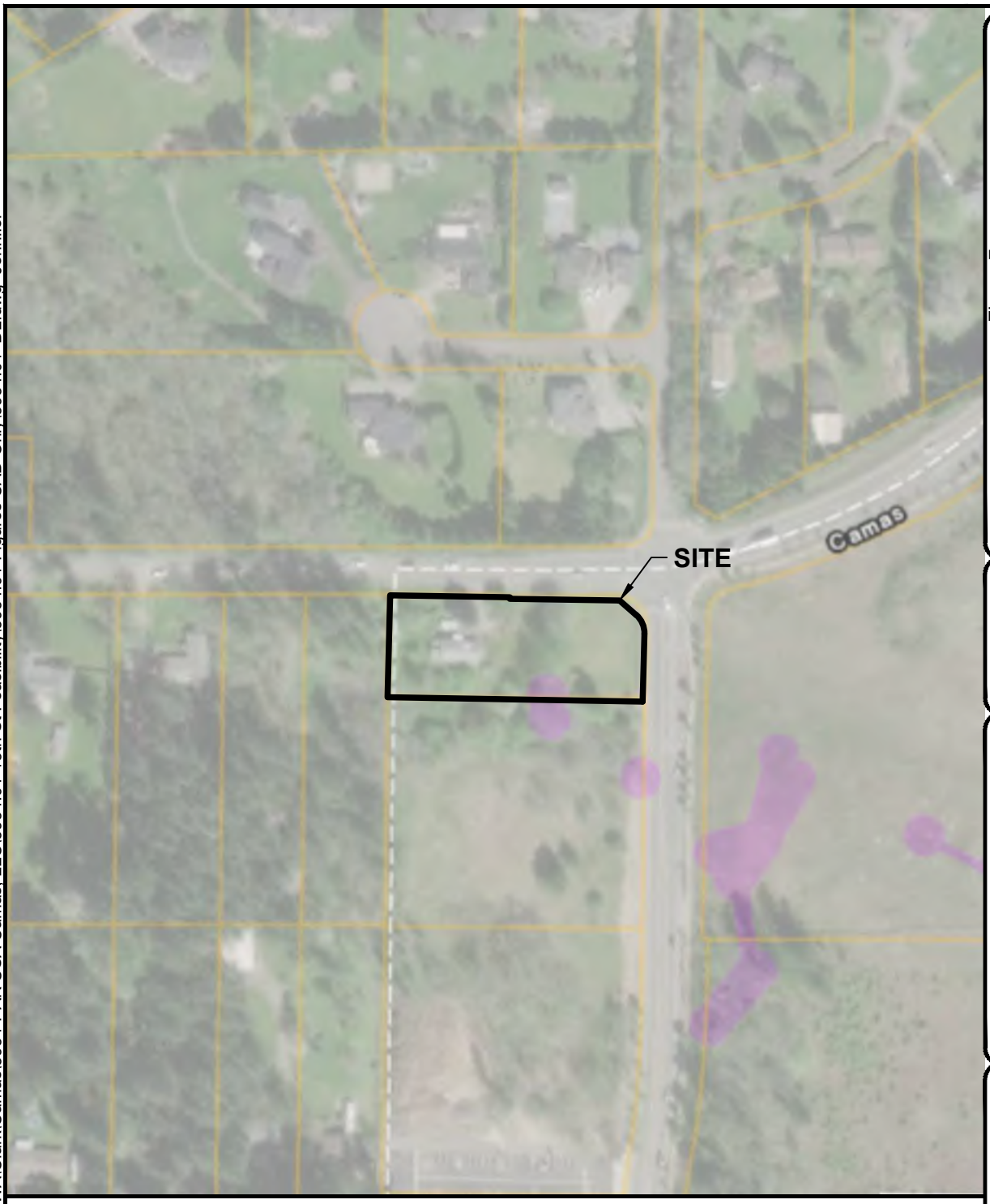

Figure 7
WDFW PRIORITY HABITAT AND SPECIES
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

1157 3rd Ave., Suite 220A
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Ecological Land Services

0 200 400
SCALE IN FEET

N W E S

LEGEND:

- Site Boundary
- Parcel Boundary
- Oak Woodland - Habitat Feature

By Township
Caves or Cave-rich Areas

NOTE: Map provided on-line by Washington State Department of Fish & Wildlife at web address: *http://apps.wdfw.wa.gov/phsontheweb/*

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Photo 1 was taken facing east and shows general conditions onsite.

Photo 2 was taken facing west and shows general conditions onsite. The oak is visible on the left.

Photo 3 shows the onsite Oregon white oak.

Ecological Land Services

1157 3rd Ave., Suite 220A
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Phone: (360) 578-1371
Fax: (360) 414-9305

DATE: 08.29.2023
DWN: JB
PRJ. MGR: JB
PROJ.#: 3934.01

Photoplate 1
13th Street Gas Station
Camas, WA
Section 29, Township 2N, Range 3E, W.M.

Photo 4 was taken facing north at TP-1 and shows general conditions onsite.

Photo 5 was taken facing west.

Photo 6 was taken facing west at TP-1.

Photo 7 was taken facing east at TP-1 and shows general conditions onsite.

Ecological Land Services

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305

DATE: 08.29.2023
DWN: JB
PRJ. MGR: JB
PROJ.#: 3934.01

Photoplate 2
13th Street Gas Station
Camas, WA
Section 29, Township 2N, Range 3E, W.M.

APPENDIX A

ROUTINE DETERMINATION METHOD AND PLANT INDICATOR RATING DEFINITIONS

Routine Determination Method

The Routine Determination Method is defined according to the U.S. Army Corps of Engineers' 1987 *Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers' Wetland Delineation Manual* (Environmental Laboratory 1987)*; Western Mountains, Valleys, and Coast Region (Version 2.0)* (Corps 2010). The Routine Determination Method examines three parameters – vegetation, soils, and hydrology – to determine if wetlands exist in a given area. Hydrology is critical in determining what is a wetland, but if often difficult to assess because hydrologic conditions can change periodically (hourly, daily, or seasonally). Consequently, it is necessary to determine if hydrophytic vegetation and hydric soils are present, which would indicate that water is present for a long enough duration to support a wetland plant community. By definition, wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Vegetation Indicator Status

The indicator status, following the scientific names of plant species, indicates the likelihood of the species to be found in wetlands according to the *National Wetland Plant List Indicator Rating Definitions* (Corps 2012). Listed from most likely to least likely to be found in wetlands, the indicator status categories are:

- **OBL** (obligate wetland) - occur almost always under natural conditions in wetlands.
- **FACW** (facultative wetland) - usually occur in wetlands, but occasionally found in non-wetlands.
- **FAC** (facultative) - equally likely to occur in wetlands or non-wetlands.
- **FACU** (facultative upland) - usually occur in non-wetlands, but occasionally found in wetlands.
- **UPL** (obligate upland) - occur almost always under natural conditions in non-wetlands.
- **NI** (no indicator) - insufficient data to assign to an indicator category.

APPENDIX B

WETLAND DETERMINATION DATA FORM

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: 13th Street Gas Station City/County: Camas/Clark Sampling Date: 08/29/2023
Applicant/Owner: PAK USA Camas, LLC State: WA Sampling Point: TP-1
Investigator(s): J. Blake Section, Township, Range: S29, T2N, R3E
Landform (hillslope, terrace, etc.): Floodplains Local relief: (concave, convex, none): Convex Slope (%): 0-3%
Subregion (LRR): LRRA MLRA2 Lat: 45.6318544 Long: -122.4669931 Datum: NAD83
Soil Map Unit Name: Cove silty clay loam, thin solum, 0 to 3 percent slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☐ No☒ (If no, explain Remarks.)
Are Vegetation☐, Soil☐, or Hydrology☐ significantly disturbed? Are "Normal Circumstances" present? Yes☒ No☐
Are Vegetation☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?** **Yes☐ No☒**
Hydric Soils Present?	Yes ☐	No ☒	
Wetland Hydrology Present?	Yes ☐	No ☒	

Remarks: TP-1 is located in the southwest corner of the site in an area with mapped hydric soils. TP-1 does not meet all three wetland indicators and is therefore in uplands. Hydrologic conditions were not typical for this time of year, as antecedent rainfall was determined to be drier than normal for the two months prior to the site visit.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Malus* spp.*	20%	yes	FAC
2. *Fraxinus latifolia*	20%	yes	FACW
3. *Robinia pseudoacacia*	20%	yes	FACU
4. *Crataegus monogyna*	15%	yes	FAC
50% = 38 20% = 15	75%	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
50% = ___ 20% = ___	%	=Total Cover	
Herb Stratum (Plot size: 5 ft radius)			
1. *Festuca* spp*	93%	yes	FAC
2. *Iris* spp.*	5%	no	FACW
3. *Rubus ursinus*	2%	no	FACU
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
11.	%		
50% = 50 20% = 20	100%	=Total Cover	
Woody Vine Stratum (Plot size: 15 ft radius)			
1. *Rubus armeniacus*	5%	yes	FAC
2.	%		
50% = 3 20% = 1	5%	=Total Cover	

% Bare Ground in Herb Stratum 0%

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC 83 (A/B)

Prevalence Index worksheet

Total % Cover of:		Multiply by:	
OBL species		x 1=	
FACW species		x 2=	
FAC species		x 3=	
FACU species		x 4=	
UPL species		x 5=	
Column Totals:	(A)		(B)

Prevalence Index = B/A=

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 – Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes☒ No☐**

Remarks: *Festuca* spp.* and *Malus* spp.* indicator statuses assumed FAC. *Iris* spp.* indicator status assumed FACW.

SOIL

Sampling Point: TP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/3	100%		%			Loam	
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosal (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Minerals (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and Wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: Hardpan
Depth (inches):6

Hydric Soil Present? **Yes☐ No☒**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (min. of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (Inches): _____
Water Table Present?	Yes ☐	No ☒	Depth (Inches): _____
Saturation Present? (Includes Capillary fringe)	Yes ☐	No ☒	Depth (Inches): _____

Wetland Hydrology Present? **Yes ☐ No ☒**

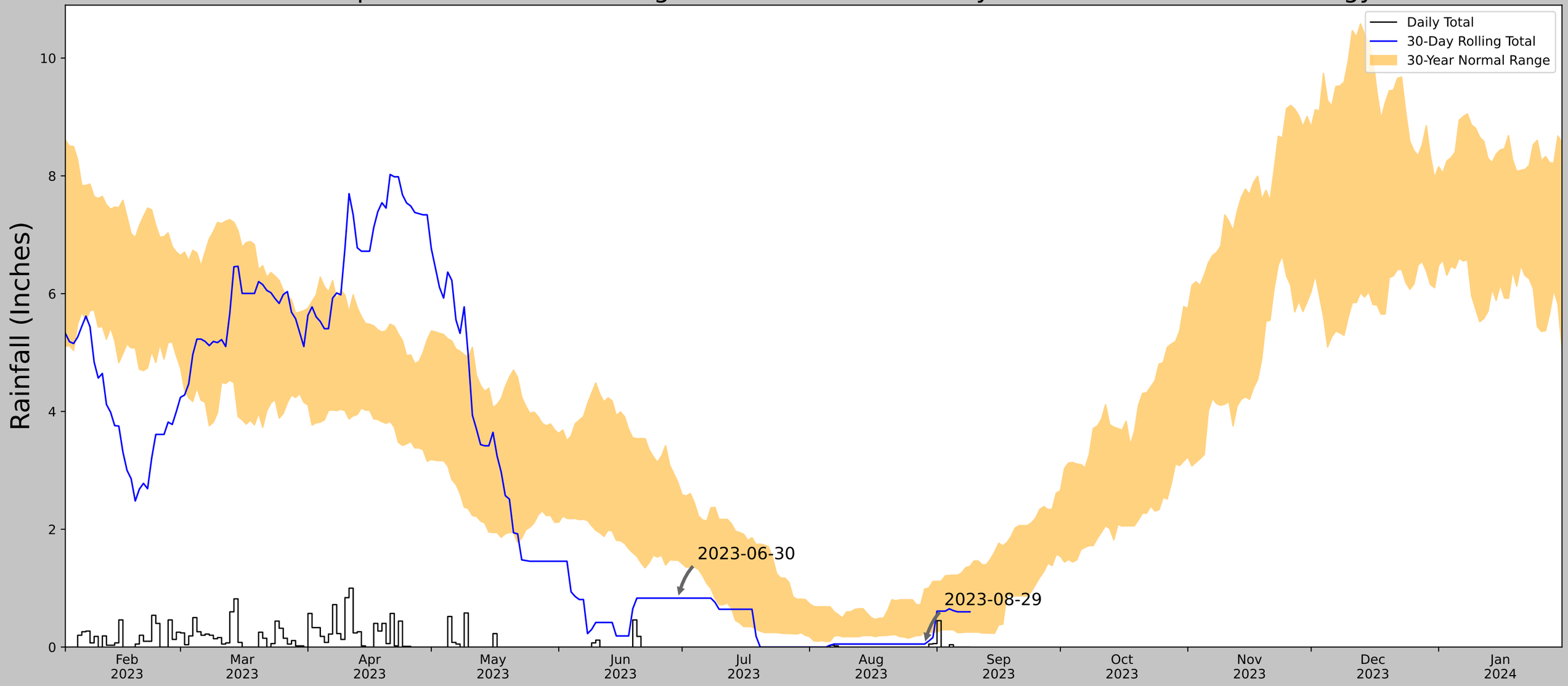
Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrologic conditions were not typical for this time of year, as antecedent rainfall was determined to be drier than normal for the two months prior to the site visit.

APPENDIX C

PRECIPITATION INFORMATION

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	45.632018, -122.467297
Observation Date	2023-08-29
Elevation (ft)	253.44
Drought Index (PDSI)	Severe drought
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-08-29	0.253543	0.986221	0.051181	Dry	1	3	3
2023-07-30	0.24252	0.814961	0.0	Dry	1	2	2
2023-06-30	1.475197	2.795276	0.830709	Dry	1	1	1
Result							Drier than Normal - 6

US Army Corps of Engineers.

ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
BATTLE GROUND	45.7717, -122.5286	284.121	10.094	30.681	4.852	11318	69
BATTLE GROUND 0.8 N	45.794, -122.5443	316.929	1.716	32.808	0.828	0	1
BATTLE GROUND 1.2 NE	45.7958, -122.5275	361.877	1.666	77.756	0.879	0	20
VANCOUVER 4 NNE	45.6775, -122.6514	220.144	8.8	63.977	4.523	4	0
MERWIN DAM	45.955, -122.5625	224.081	12.769	60.04	6.513	31	0

SEPARATOR SHEET

OAK BANK USE PLAN

October 2, 2023

13th Street Gas Station
Camas, WA

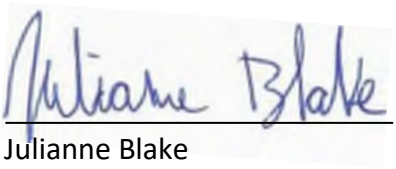
Prepared for

PAK USA Camas, LLC
c/o Taz Khan
3993 NW Currawong Court
Camas, WA 98607
(512) 779-4999

Prepared by
Ecological Land Services
1157 3rd Avenue, Suite 220A • Longview, WA 98632
(360) 578-1371 • Project Number 3934.01

SIGNATURE PAGE

The information in this report was compiled and prepared under the supervision and direction of the undersigned.



Julianne Blake
Biologist III

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Figure 2 Existing Conditions
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Figure 4 Terrace Oak Bank Service Area
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INTRODUCTION

Ecological Land Services, Inc. (ELS) was contracted by PAK USA Camas, LLC to prepare this Oak Bank Use Plan to address Oregon white oak (oak) impacts resulting from the construction of a fuel station, convenience store, and associated parking lot. The site is approximately 0.97 acres and consists of Clark County Tax Parcel 176148000 located at 20101 NE 13th Street within the NW ¼ of Section 29, Township 2 North, and Range 3 East of the Willamette Meridian in Camas, Washington (Figure 1). Field work was conducted on August 29, 2023. The project will remove one existing oak (*Quercus garryana*) and impact 0.08 acres (3,456 square feet) of oak canopy. Canopy impacts will be offset by purchasing 0.238 credits from Terrace Oak Bank (Bank). This Bank Use Plan was prepared according to the *Camas Municipal Code (CMC) Title 16 Environment* (2023) and Washington Department of Fish and Wildlife's (WDFW) *Management recommendations for Washington's priority habitats: Oregon white oak woodlands (1998)*.

RESPONSIBLE PARTIES

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PROJECT DESCRIPTION

The project area is approximately 0.97 acres and consists of Clark County Tax Parcel 176148000 located at 20101 NE 13th Street within the NW ¼ of Section 29, Township 2 North, and Range 3 East of the Willamette Meridian in Camas, Washington (Figure 1). The project consists of constructing a fuel station, convenience store, and associated parking lot. The parking lot will contain electric vehicle charging stations and vacuum pumps as well as pedestrian crossing areas (Figure 3). The existing oak will be removed as part of the project, removing 0.08 acres (3,546 square feet) of oak canopy. Canopy impacts will be mitigated by purchasing 0.238 credits from Terrace Oak Bank. Construction is anticipated to start upon receipt of all necessary permits.

Best management practices (BMPs) that will be completed prior to construction include designating staging and stockpile areas outside of critical areas and associated buffers, establishing a standard construction entrance, and installing silt fencing to prevent sedimentation. When site preparation is complete, construction will occur. A water truck will be available to prevent dust blowing during construction, if needed. Equipment used may include haul trucks, bulldozers, excavators, pavers, and hand tools. Upon completion of construction activities, disturbed areas that will not be paved will be seeded with a native grass seed mix.

EXISTING CONDITIONS

EXISTING AND SURROUNDING LAND USES

The 0.97-acre site consists of Clark County Tax Parcel 176148000 and is accessed by a paved driveway off NE 13th Street. The site is zoned as Business Park (BP) and currently contains a single-family mobile home, shed, carport, and paved driveway. The site is bordered to the north by NE 13th Street, to the east by NW Friberg-Strunk Street, to the south by undeveloped land and commercial development in progress, and to the west by undeveloped land and a single-family residence (Figure 2).

EXISTING CRITICAL AREAS

A site visit was completed by ELS in August 2023 following the appropriate technical manuals: *The Routine Determination Method according to the Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (U.S. Army Corps of Engineers 2010). During the field visit, no wetlands were identified onsite (ELS 2023).

The WDFW Priority Habitats and Species online mapping tool depicts oak woodlands within the vicinity of the observed oak along the southern site boundary. One oak measuring approximately 52 inches diameter at breast height (DBH) was mapped along the southern site boundary during site reconnaissance (Figure 2). The oak has several live and dead branches, cavities, and has canopy connectivity with other trees in the vicinity but is not connected with other oaks. The oak location was mapped using a GPS system capable of submeter accuracy in ideal conditions. According to *CMC 16.61.010(3)(a)*, individual Oregon white oak trees with a twenty-inch DBH are considered a priority habitat.

Table 1. Oak Summary

Total Canopy Area	DBH	Number of Trunks	Noteworthy Habitat Features
0.08 acres 3,456 square feet	52 inches	1	• Canopy is interconnected with adjacent trees, but not other oaks • Two large cavities

Avoidance and Minimization

The preferred mitigation sequencing of first avoidance, then minimization, and finally compensation for unavoidable impacts was taken into consideration during the design process of this project; however, due to the single oak tree being located in an area of the site needed for a required driveway, avoiding Oregon white oak impacts altogether is not feasible. The Oregon white oak proposed for removal is the only oak tree onsite.

Unavoidable Oregon White Oak Impacts

Removal of the oak will result in the loss of 0.08 acres (3,456 square feet) of Oregon white oak priority habitat as measured by the oak canopy coverage (drip line). The following table summarizes proposed oak impacts.

Table 2. Oak Impact Summary

Identifier	DBH	Canopy Coverage	Total Impact
Oregon White Oak (Single Mature Tree)	52 inches	0.08 acres 3,456 square feet	0.08 acres 3,456 square feet

Impacted Priority Habitat Functions

ELS assessed the functions provided by the oak during a site visit on August 29, 2023. The functional assessment is based on Washington Department of Fish and Wildlife's (WDFW) *Management Recommendations for Washington's Priority Habitats, Oregon White Oak Woodlands* (Guidance) (Larsen and Morgan 1998).

Habitat Functions

Oak woodlands are considered "priority habitat and species" by WDFW and are protected locally by the City of Camas Municipal Code (*CMC*). According to *CMC 16.61.010(3)(a)*, individual Oregon white oak trees with a twenty-inch DBH are considered a priority habitat.

In urban or urbanizing areas west of the Cascades, WDFW defines priority oak habitat as single oaks, or stands of pure oak, or oak/conifer associations, 1 acre or greater in size. WDFW may also consider individual Oregon white oak trees a priority habitat when found to be particularly valuable to wildlife (i.e., contains many cavities, has a large DBH, is used by priority species, or has a large canopy) (Larsen and Morgan 1998). The project site is within the City of Camas (City). WDFW recommendation is that in urban and urbanizing areas, single trees should be maintained

if they are deemed important to species highly associated with Oregon white oak. Oaks and their associated flora comprise distinct woodland ecosystems with various plant communities providing valuable habitat that contributes to wildlife diversity. Oak woodlands provide a mix of feeding, resting, and breeding habitat for many wildlife species (Larsen and Morgan 1998).

The oak proposed for removal has several live and dead branches, cavities, and has canopy connectivity with other trees in the vicinity but is not connected with other oaks. Due to the placement of the oak within the City boundaries and lack of habitat connectivity, larger animals or those not adapted to urban conditions are not likely to be present. Therefore, removing the oak would likely result in habitat loss and a food source only for birds and small mammals that are well adapted to urban conditions.

OREGON WHITE OAK MITIGATION SELECTION RATIONALE

The Oregon white oak proposed for removal is located in the service area for the Terrace Oak Bank (Bank). The oak tree is approximately 4 miles southeast of the Bank, in the Lacamas Creek Watershed which is in the southeastern portion of the service area (Figure 4). The proposed oak removal will be mitigated by purchasing credits from the Bank at ratios specified in the Terrace Oak Bank's Mitigation Banking Instrument (MBI).

Rationale for selecting this mitigation bank is as follows:

- The oak onsite does not provide habitat for other priority species that should be replaced onsite. Habitat functions will be impacted for species common to urban areas, which can be fully replaced at the Bank.

- The habitat functions lost from the proposed oak removal correspond directly with the habitat creation purpose, goals, and objectives at the Bank which identifies 13.93 acres of existing Oregon white oak woodland WDFW Priority Habitat that will be restored to pre-agricultural conditions through creation, enhancement, and preservation. Creation and enhancement will be accomplished through planting oak saplings and/or native understory plantings, removing of Douglas-fir, and establishing a conservation easement over the entire 13.93 acres.

The 2008 *Compensatory Mitigation for Losses of Aquatic Resources, Final Rule* (Corps) recommends purchasing mitigation bank credits for ecological considerations (lower risk of failure and lower temporal loss of resources and services) and to avoid the maintenance and contingency issues and outright failures that often accompany permittee-responsible mitigation sites. Use of the Terrace Oak Bank substantially lowers the risk of failure and temporal loss of resource functions and services over newly established, permittee-responsible mitigation sites and offsite mitigation is anticipated to be more meaningful and beneficial to the watershed's habitat functions.

Functions Provided at Oak Bank

The general goal of the Bank is to restore the approximately 13.93 acres to a state similar to its pre-agricultural condition through creation, enhancement, and preservation of an existing Oregon white oak woodland. All functions related to oak habitat are expected to increase as a result of design implementation. The primary ecological goals of the Bank are as follows:

- Removal of all existing impervious surfaces, including buildings, large equipment, gravel and paved areas, and debris, followed by replanting oak saplings and native understory species.
- Removal of invasive species in creation, enhancement, and preservation areas, primarily English ivy (*Hedera helix*) and Himalayan blackberry (*Rubus armeniacus*).
- Removal of Douglas-fir (*Pseudotsuga menziesii*) overstory as recommended by WDFW to reduce competition and further degradation of the Oregon white oak woodland from shading.
- Replanting of both creation and enhancement areas with oak saplings and and native understory species to augment and expand existing Oregon white oak habitat.
- Preserve the Bank through a conservation easement.

Wildlife Habitat

The proposed development site plan will provide diverse habitat for a variety of large and small mammals, songbirds, waterfowl, amphibians, and insects by improving the condition of the existing Oregon White Oak habitat through creation and enhancement that includes replanting of oaks and native understory, removing invasive species, non-native debris, and impervious surfaces, and eliminating Douglas-fir encroachment.

Anticipated Functional Lift

The creation, enhancement, and Douglas-fir stand release activities proposed in the Bank will provide a variety of benefits lifting overall habitat functions. Invasive species eradication and installing oak trees and native understory in open areas will increase the site's potential to provide habitat by providing improved and increased diversity of plant species, structure, and interspersion of habitat. Removing Douglas-fir competition will allow the existing oaks to increase branching and smaller oak trees to become better established. The changes will increase acorn production, provide additional food for wildlife, and support a greater diversity of wildlife species as will removing impervious surfaces and debris. All functions impacted by removing an oak tree at the project site will be fully mitigated at the Bank.

Proposed Mitigation Credits

As stated in the MBI (October 28th, 2020), the local jurisdiction with regulatory authority will determine both how impacts are measured[1] and the mitigation ratios required. The mitigation

[1] i.e., square foot of canopy area/root zone, DBH, etc.

credits required for impacts to Oregon white oak will be determined by using the local jurisdiction's mitigation ratio (6:1) and multiplying this ratio by a "risk reduction factor" of 0.5. Impacts to high functioning Oregon White Oak Priority Habitat stands will be determined by the regulatory agencies on a case-by-case basis. Table 3 summarizes the impact type, mitigation ratio, and total credits proposed for compensation.

Table 3. Credits for Oak Impacts at Terrace Oak Bank

Impact Type	Impact Amount	Mitigation Ratio	Risk Reduction Multiplier	Mitigation Area Required	Proposed Credit Purchase
Canopy loss	0.08 acres (3,456 sq. ft.)	6:1	0.5	0.238 acres (10,368 sq. ft.)	0.238 credits

Credit Purchase or Transfer Timing

Following permit issuance, PAK USA Camas, LLC, as the applicant, will enter into a Buy/Sell Agreement with Terrace Oak Bank, for purchase of mitigation credits (in the quantity specified in Table 3) that would appropriately mitigate for the proposed project impacts. The actual purchase of credits will occur upon permit issuance. Prior to impacting the project oak, the applicant will submit proof of transfer of mitigation credits to project managers for the City of Camas. Proof of the mitigation transfer will be provided in the form of a notification letter to the approving agencies. Upon service of this notification, the mitigation requirement to purchase 0.238 mitigation credits will be fully satisfied.

Confirmation of Mitigation Credit Availability

Proof of the current number of available mitigation credits at the Terrace Oak Bank site will be confirmed by the approving agency, City of Camas and through the advising members of the Oak Bank Review Team.

Chair:
Brent Davis, Wetland and Habitat Review Program Manager
Clark County Community Development
P.O. Box 9810
Vancouver, WA 98666-9810
(360) 397-2375 ext. 4152
brent.davis@clark.wa.gov

Advisory Members:
Dave Howe, Area Habitat Biologist
Washington Department of Fish and Wildlife
5525 S 11th Street
Ridgefield, WA 98642
(360) 906-6729
david.howe@dfw.wa.gov

Carlo Abbruzzese, Pacific Cascade Region Natural Areas Manager
Washington Department of Natural Resources
2508 NW 126th Circle
Vancouver, WA 98685
(360) 577-2025
carlo.abbruzzese@dnr.wa.gov

LIMITATIONS

ELS bases this report's determinations on standard scientific methodology and best professional judgment. In our opinion, local, state, and federal regulatory agencies should agree with our determinations. However, the information contained in this report should be considered preliminary and used at your own risk until it has been approved in writing by the appropriate regulatory agencies. ELS is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this report.

REFERENCES

City of Camas. 2023. *Camas Municipal Code (CMC) Title 16 Environment.* Camas, Washington. July 31, 2023.

Ecological Land Services, Inc. (ELS). 2023. *Critical Areas Report for 13th Street Gas Station, Camas, Washington*. September 26, 2023.

Ecological Land Services, Inc. (ELS). 2020. *Mitigation Banking Instrument for the Terrace Oak Bank, Clark County, Washington*. October 2020.

Larsen, E. M., and J. T. Morgan. 1998. *Management recommendations for Washington's priority habitats: Oregon white oak woodlands*. Washington Department of Fish and Wildlife, Olympia. 37pp.

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*, Technical Report Y-87-1. U.S. Army Corps of Engineer Waterways Experiment Station. Vicksburg, Mississippi.

Interagency Review Team for Washington State. February 19, 2009. *Using Credits from Wetland Mitigation Banks: Guidance to Applicants on Submittal Contents for Bank Use Plans*. Online http://www.ecy.wa.gov/programs/sea/wetlands/mitigation/banking/pdf/mitig_plan_guidance.pdf. Accessed August 2023.

U.S. Army Corps of Engineers (Corps). 2008. *Compensatory Mitigation for Losses of Aquatic Resources, Final Rule.* 33 C.F.R. §332, Federal Register, April 30, 2008.

U.S. Army Corps of Engineers (Corps). 2010. *Final Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0), ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-13. Vicksburg, Mississippi: U.S. Army Engineer Research and Development Center.

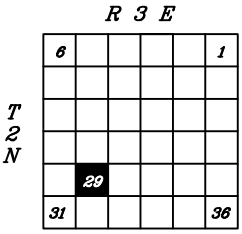
FIGURES

WASHINGTON

SITE

45.6321° Latitude
-122.4664° Longitude

LOCATION MAP



PROJECT VICINITY MAP

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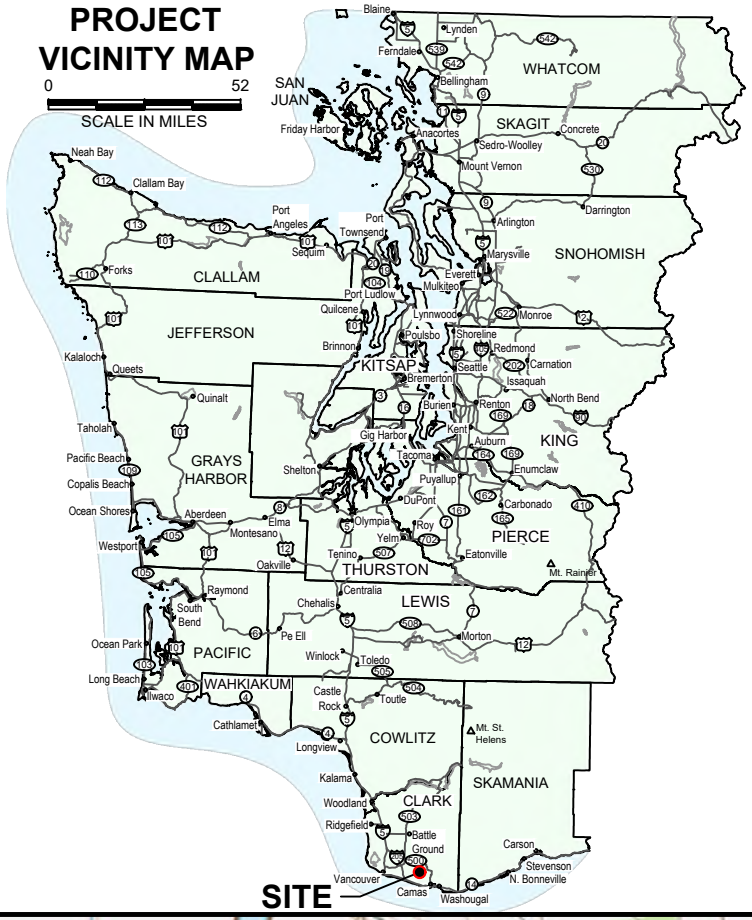

NOTE:
Quadrangle topographic map from USGS.

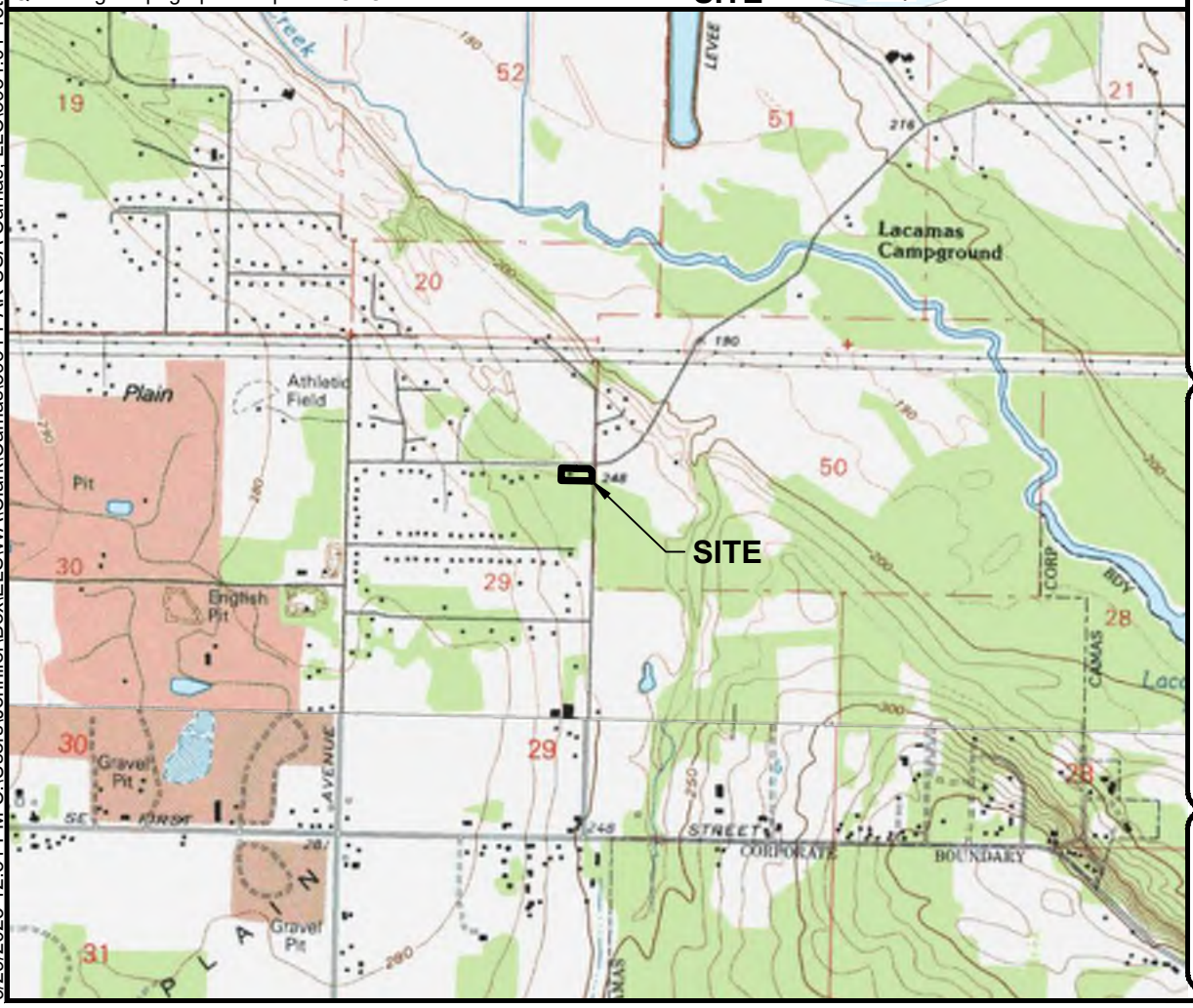

Figure 1
VICINITY MAP
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com
Ecological Land Services

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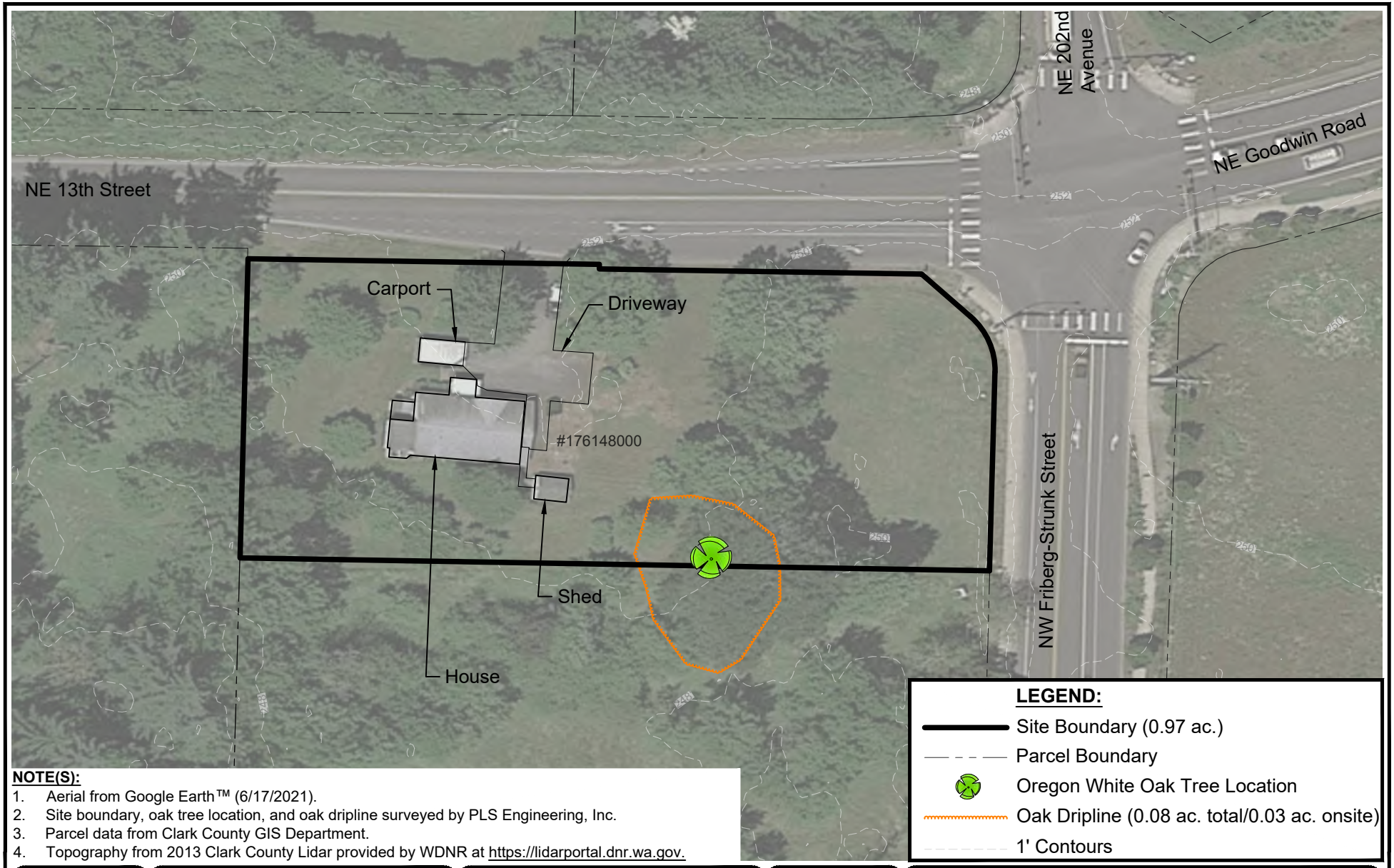

NOTE(S):

1. Aerial from Google Earth™ (6/17/2021).
2. Site boundary, oak tree location, and oak dripline surveyed by PLS Engineering, Inc.
3. Parcel data from Clark County GIS Department.
4. Topography from 2013 Clark County Lidar provided by WDNR at https://lidarportal.dnr.wa.gov.

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Ecological Land Services
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DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

Figure 2
EXISTING CONDITIONS
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

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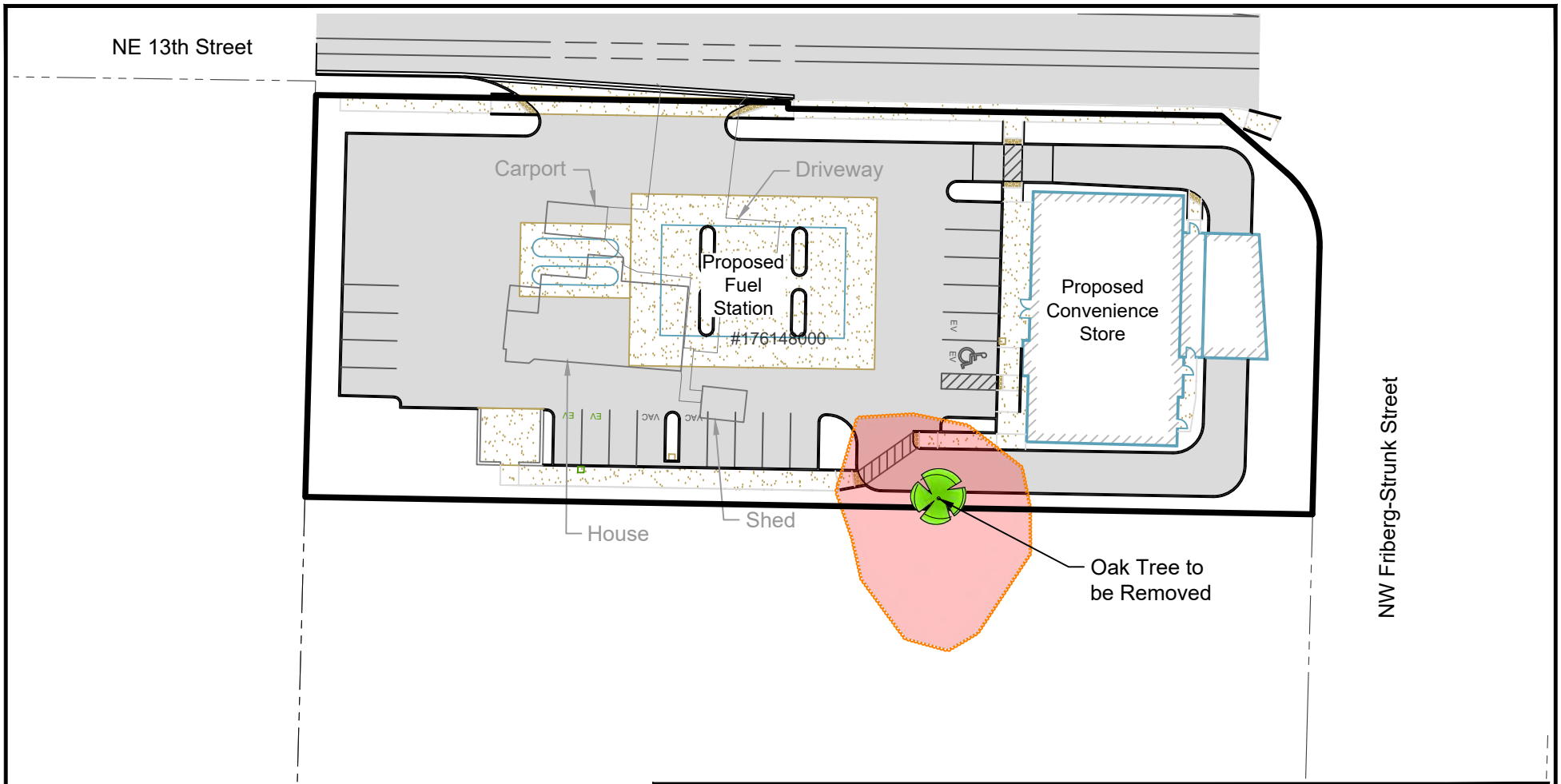

NOTE(S):

1. Site boundary, oak tree location, and oak dripline surveyed by PLS Engineering, Inc.
2. Parcel, ditch, and culvert data from Clark County GIS Department.
3. Site plan by PLS Engineering.

LEGEND:

- Site Boundary (0.97 ac.)
- Parcel Boundary
- Oregon White Oak Tree Location
- Oak Dripline (0.08 ac. total/0.03 ac. onsite)

LEGEND:

- Proposed Asphalt
- Proposed Concrete
- Oak Dripline Impact (3,546 sq. ft./0.08 ac.)

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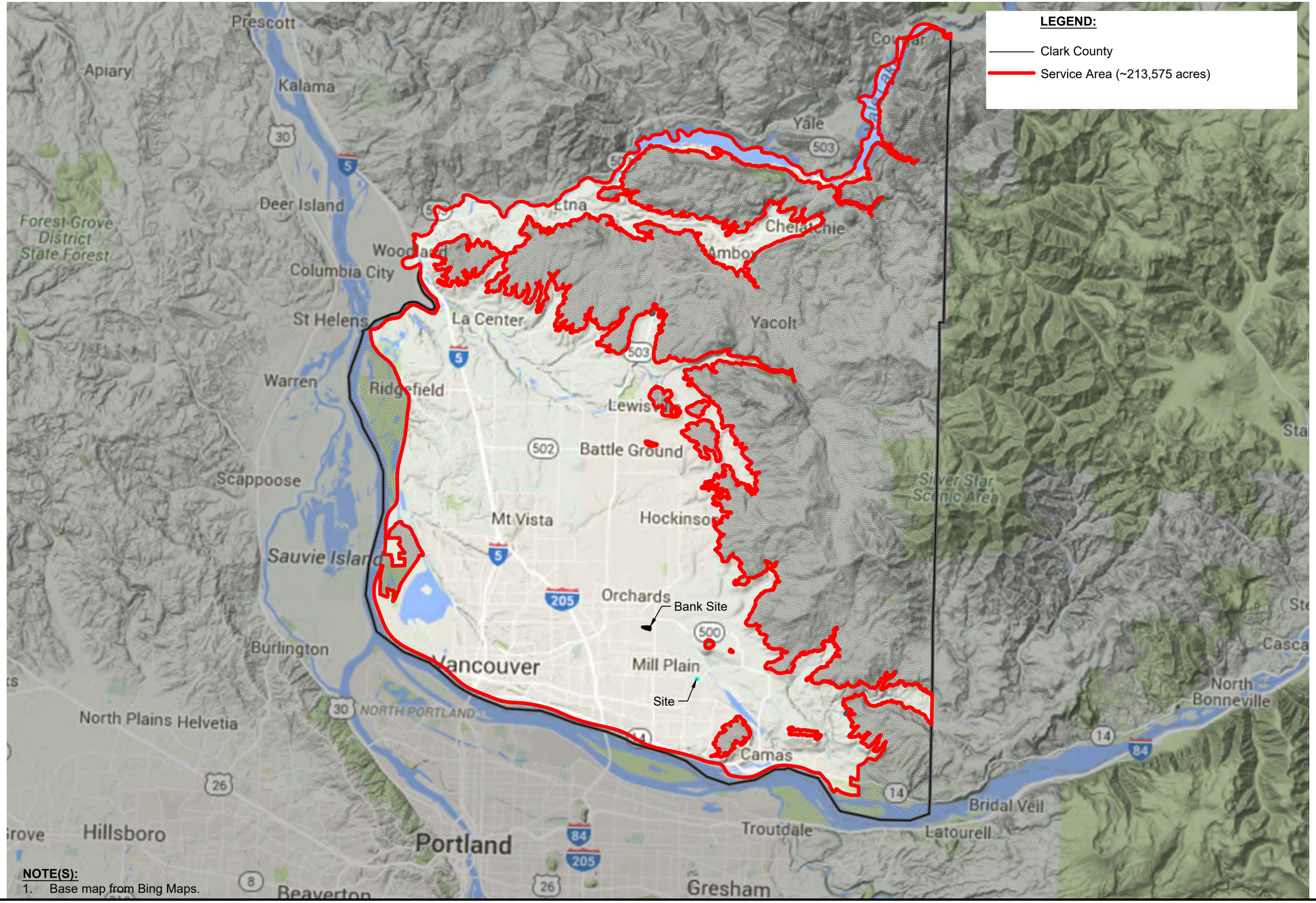
DATE: 9/29/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

Figure 3
PROPOSED CONDITIONS
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.



NOTE(S):
1. Base map from Bing Maps.

Figure 4
TERRACE OAK BANK SERVICE AREA
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/26/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

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Longview, WA 98632
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Ecological Land Services

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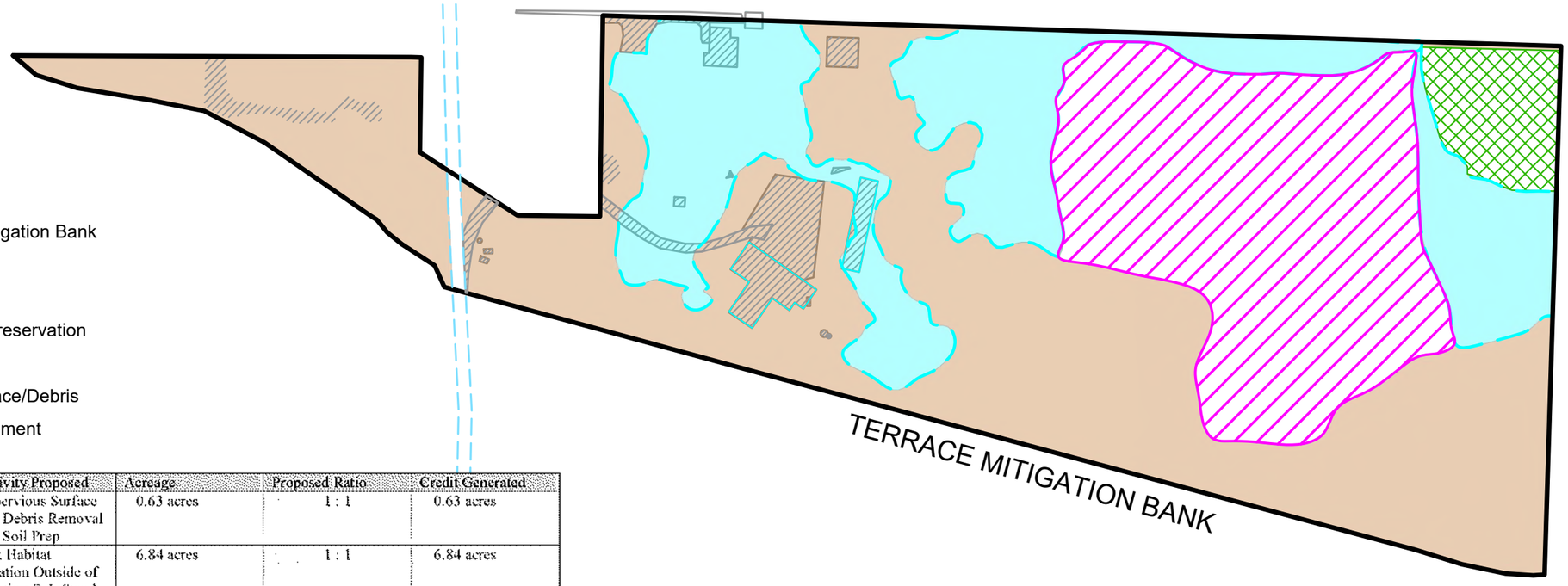

Activity Proposed	Acreage	Proposed Ratio	Credit Generated
Impervious Surface and Debris Removal and Soil Prep	0.63 acres	1 : 1	0.63 acres
Oak Habitat Creation Outside of Existing Oak Stand	6.84 acres	1 : 1	6.84 acres
Douglas Fir Stand Release	3.34 acres	0.4 : 1	8.35 acres
Enhancement of Existing Oak Stand	3.20 acres	0.4 : 1	8.00 acres
Upland Forest Preservation	0.50 acres	0.5 : 1	1.00 acres
Totals	14.51 acres[1]		24.82 acres

[1] Total acreage includes areas of activity overlap and does not include 0.05 acres of water line easement, so is not reflective of the 13.93 acres represented in the legal survey of Oak Bank area.

Table 2. Oak Mitigation Bank Activity Descriptions.

Activity Proposed	Type of Activity/Area
Impervious Surface and Debris Removal and Soil Prep	• Includes: • Buildings, driveways, gravel pads or any other impervious area to be removed (regardless of whether oak tree canopy already covers the area) • Removal of debris piles throughout the site • Loosening of soils following impervious/debris removal
Oak Habitat Creation Outside of Existing Oak Stand	• Includes open areas of all types not currently covered by oak canopy • Areas to be replanted with oak saplings and native understory
Douglas Fir Stand Release	• Includes area of dense fir canopy within existing oak stand • Douglas fir over-story to be removed through harvest or tree girdling/snag creation
Enhancement of Existing Oak Stand	• Includes areas of existing oak canopy • Enhancement areas will have non-natives removed and understory planted with native shrubs typically associated with oak woodlands
Upland Forest Preservation	• Includes areas of deciduous forest adjacent to oak canopy, providing upland forest habitat • Area will be preserved through administration of a conservation easement

Figure 5
TERRACE OAK BANK SITE DESIGN
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 9/26/23
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
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PROJECT NO: 3934.01

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COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.cityofcamas.us

December 19, 2023

Travis Johnson
pm@plsengineering.com
Taz Khan
tkhanusa@gmail.com

RE: Completness Review for 20101 NE 13th Street – Planning Cases SPRV23-06, ARCH23-07, CA23-08, DR23-09 and SEPA23-12

Dear Travis,

Thank you for your recent resubmittal. Upon review of the additional information received on December 4, 2023, your project can be deemed **technically complete**. However, comments from Engineering include items that will need to be addressed during the review process. Please see below for more information.

CMC 18.18.040.E:

- A circulation plan was submitted on December 1, 2023.
    - However, the circulation plan should include circulation for the fuel delivery trucks and deliveries through the site, e.g., from the entrance through to the east or west and around to the south and exiting the site.
- The TIA traffic impact analysis has been sent to City of Vancouver (COV) for review and comments.
    - Staff will provide comments from COV when comments are received.
    - Staff will provide comments after a thorough review is completed.

CMC 18.18.040.F:

- The PTIR was resubmitted with the correction to the narrative on December 1, 2023.
    - Staff will provide any additional comments after a thorough review is completed.
- The preliminary stormwater plans were submitted on December 1, 2023.

Staff will begin reviewing the complete application and will contact you if we have comments and/or questions. A final decision should be issued within 120 -days, provided that all comments from Engineering noted above have been addressed and satisfied.

If you have any questions related to this project, please feel free to contact me by email: YSennewald@cityofcamas.us or by phone: (360) 817-7269.

Respectfully,

Yvette Sennewald, Senior Planner

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

Date Published: February 22, 2024

To Whom It May Concern:

Please find enclosed a Determination of Non-Significance (DNS) for the **13th Street Gas Station (SEPA23-12)** that was issued pursuant to the State Environmental Policy Act (SEPA) Rules, Chapter 197-11, Washington Administrative Code. The enclosed review comments reflect evaluation of the environmental checklist by the lead agency as required by WAC 197-11-330(1)(a)(i).

The following materials were submitted with the initial application:

- Application Form and Fees
- Applicant's narrative
- Archaeological Predetermination*
- Critical Areas Report
- Geotechnical Study
- Project Plans
- Public Health Review Letter
- SEPA checklist
- Stormwater Drainage Report

All application materials are available for review upon request from the Community Development Department. *Archaeological information is exempt from public disclosure, consistent with RCW 42.56.300.

Written comments may be submitted on this determination within fourteen (14) days of its issuance, after which the DNS will be reconsidered in light of the comments received.

Please address all correspondence to:

City of Camas, SEPA Official
Community Development Department
616 NE Fourth Avenue
Camas, Washington 98607
communitydevelopment@cityofcamas.us

Distribution:

Applicant
Bureau of Indian Affairs
C-Tran
Camas School District
Camas Building Official, Bob Cunningham
Camas Communications Director, Bryan Rachal
Camas Community Development Director, Phil Bourquin
Camas Engineering Department Managers and Staff
Camas Fire Department, Randy Miller
Camas Finance Director, Cathy Huber Nickerson
Camas Interim Mayor and City Council Members
Camas Parks and Recreation, Trang Lam
Camas Planning Manager and Staff
Camas Police Chief, Mitch Lackey
Camas Public Works Director, Steve Wall
Camas Public Library, Connie Urquhart
Camas-Washougal Post Record
Chinook Indian Nation
Cultural Resource Program, Cowlitz Indian Tribe
Cultural Resource Program, Yakama Indian Nation
Clark County Department of Environmental Services
Clark County Department of Transportation
Clark County Natural Resources Council
Clark Public Utilities
Department of Ecology
Department of Fish and Wildlife, Region 5
Department of Natural Resources, SEPA Center
Southwest Clean Air Agency
US Army Corps of Engineers
Vancouver- Clark Parks & Recreation
Washington Office of Archaeology & Historic Preservation
Washington State Department of Transportation
Washington State Parks and Recreation Commission, Environmental Program
Property Owners within 300 feet *(mailed the SEPA Determination & map)*

State Environmental Policy Act
Determination of Non-Significance

CASE NO: SEPA23-12 13th Street Gas Station

APPLICANT: PLS Engineering, Travis Johnson
604 W Evergreen Boulevard
Vancouver, WA 98660

REQUEST: To construct a gas station, car wash, and convenience store on the subject 0.97-acre site currently developed with a single-family residence, in the BP – Business Park Zone.

LOCATION: 20101 NE 13TH STREET, CAMAS, WA 98607
PARCEL NUMBER 176148000

LEGAL DESCRIPTION: THE PROJECT IS LOCATED IN THE CITY OF CAMAS IN THE NW ¼ OF SECTION 29, TOWNSHIP 2 NORTH, RANGE 3 EAST OF THE WILLAMETTE MERIDIAN

SEPA DETERMINATION: DETERMINATION OF NON-SIGNIFICANCE (DNS)

COMMENT DEADLINE: **MARCH 7, 2024, AT 5:00 P.M.**

As lead agency under the State Environmental Policy Act (SEPA) Rules [Chapter 197-11, Washington Administrative Code (WAC)], the City of Camas must determine if there are possible significant adverse environmental impacts associated with this proposal. The options include the following:

- DS = Determination of Significance (The impacts cannot be mitigated through conditions of approval and, therefore, requiring the preparation of an Environmental Impact Statement (EIS).
- MDNS = Mitigated Determination of Non-Significance (The impacts can be addressed through conditions of approval), or;
- DNS = Determination of Non-Significance (The impacts can be addressed by applying the Camas Municipal Code).

Published in the Post Record on February 22, 2024 Legal Publication #886200
Mailed to property owners within 300-feet on February 21, 2024
Posted on bulletin boards at Camas City Hall, Camas Library and the City of Camas website at: http://www.cityofcamas.us

Determination:

Determination of Non-Significance (DNS). The City of Camas, as lead agency for review of this proposal, has determined that this proposal does not have a probable significant adverse impact on the environment. An Environmental Impact Statement (EIS) is not required under RCW 43.21C.030(2)(e). This decision was made after review of a completed environmental checklist, and other information on file with the City of Camas.

Date of Publication & Comment Period:

Publication date of this DNS is **February 22, 2024,** and is issued under WAC 197-11-340. The lead agency will not act on this proposal until the close of the 14-day comment period which ends on **March 7, 2024**. Comments may be sent by email to communitydevelopment@cityofcamas.us or regular mail to:

City of Camas SEPA Official
Community Development Department
616 NE Fourth Avenue
Camas, Washington 98607

Responsible Official: Robert Maul (360) 817-1568

Robert Maul, Planning Manager and Responsible Official

February 22, 2024
Date of publication

N

Community Development
616 NE Fourth Avenue • Camas, WA 98607
(360) 817-1568
http://www.cityofcamas.us

SEPA ENVIRONMENTAL CHECKLIST

UPDATED 2016

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

***Instructions for applicants*:**

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals: [help]

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background [help]

1. Name of proposed project, if applicable: [help]

13th Street Site Plan

2. Name of applicant: [help]

Taz Khan

3. Address and phone number of applicant and contact person: [help]

3993 NW Currawong Court
Camas, WA 98607

4. Date checklist prepared: [help]

August 23, 2023

5. Agency requesting checklist: [help]

City of Camas

6. Proposed timing or schedule (including phasing, if applicable): [help]

Development is expected to start at the time of final construction drawing approval, likely in early 2024. No phasing is proposed.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. [help]

No, not at this time.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. [help]

SEPA Checklist, Archaeological Predetermination, Geotechnical Report, Critical Areas Report

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. [help]

No, there are no known government approvals pending related to this property.

10. List any government approvals or permits that will be needed for your proposal, if known.

- *Preliminary Type II Site Plan*
- *Public notification and staff report publications*
- *Final engineering plan review and approval*
- *Final Site Plan Approval*
- *SEPA*
- *SWWPPP*

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.) [help]

The applicant proposes to construct a 4,100 sf convenience store with gas pumps and a drive through car wash. The site is zoned BP, Business Park, and is 0.97 acres in size.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist. [help]

The site is located at 20101 NE 13th Street, Camas, WA 98607, in the NW ¼ of Section 29, Township 2 North, Range 3 East of the Willamette Meridian. The site is comprised of tax lot 176148000. See the proposed development plans for a preliminary site plan, grading plan, vicinity map and topographical data.

B. ENVIRONMENTAL ELEMENTS [help]

1. Earth [help]

a. General description of the site: [help]

(circle one) (Flat), rolling, hilly, steep slopes, mountainous, other _____

b. What is the steepest slope on the site (approximate percent slope)?

5% per Clark County GIS data

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils. [help]

This site has the following soils onsite per Clark County GIS data:

WrB – Wind River Gravelly Loam, 0-8% slopes
CvA – Cove Silty Loam, 0-3% slopes

It is unknown if these soils are classified as agricultural or if the site contains prime farmland.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe. [help]

There are no known surface indications or history of unstable soils in the immediate area.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill. [help]

There will be grading for the construction of drive aisles, the installation of utilities, and the preparation of the site for the future convenience store, car wash and gas pumps. Surplus material may be required to be hauled from the site to an approved dump site or offsite fill may be required. Quantities and source are unknown at this time.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe. [help]

Standard erosion control measures will be followed during grading construction on the site. A final erosion control plan will be reviewed and approved by City of Camas.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? [help]

Approximately 80%

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any: [help]

Proposed measures to reduce and control erosion include providing an erosion control plan for review and approval prior to starting construction on the site and following the conditions of the approved grading and erosion control plan during all phases of construction.

2. Air [help]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known. [help]

Construction equipment emissions and dust on the short term. Long-term emissions will be produced by automobile traffic and normal commercial/retail uses as well as possible vapor from the gas tanks.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe. [help]

There are no known off-site sources of emissions or odor that may affect the proposal.

c. Proposed measures to reduce or control emissions or other impacts to air, if any: [help]

Dust from construction can be mitigated by sprinkling the site with water during construction as needed. Stage 2 vapor recovery systems will be included in the gas storage tanks and delivery systems.

3. Water [help]

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into. [help]

There is a wetland to the south of the site that has permits to be filled for the proposed

Lacamas Tech Business Park. There are no other surface water bodies or wetlands within the immediate vicinity of the site.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans. [help]

No, there is no work that will take place within 200' of any water bodies.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material. [help]

Not applicable – there are no wetlands onsite.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known. [help]

The proposal will not require surface water withdrawals or diversions.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan. [help]

No, the site does not lie within a 100-year floodplain.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge. [help]

No, there will be no discharge of waste material to surface waters.

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known. [help]

No ground water will be withdrawn with this proposal. Stormwater from pollution generating surfaces will be treated prior to being routed to an existing roadside ditch.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve. [help]

No waste material is proposed to be discharged into the ground.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe. [help]

The main source of runoff is from stormwater. There will be runoff from impervious roof area, drive aisles, parking areas, and landscaped areas. Onsite catch basins will connect

to a pipe network that leads to an underground detention facility that will discharge to an existing roadside ditch.

2) Could waste materials enter ground or surface waters? If so, generally describe. [help]

Yes, if waste materials were somehow released or dumped into surface runoff flows, substances associated with the source material could enter ground or other surface waters. There is no proposal to release waste material to the ground or to surface waters.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe. [help]

Not anticipated.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any: [help]

Use of approved erosion control measures during all phases of development.

4. Plants [help]

a. Check the types of vegetation found on the site: [help]

x deciduous tree: alder, **maple**, aspen, **other: Oregon white oak, ash, cottonwood, cherry**
x evergreen tree: **fir**, cedar, pine, other
x shrubs
x grass
____ pasture
____ crop or grain
____ Orchards, vineyards or other permanent crops.
____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____ water plants: water lily, eelgrass, milfoil, other
x other types of vegetation: **blackberry**

b. What kind and amount of vegetation will be removed or altered? [help]

Site vegetation will be stripped for site preparation. Trees beyond the property line are proposed to be retained.

c. List threatened and endangered species known to be on or near the site. [help]

There is 1 priority habitat Oregon white oak onsite.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any: [help]

Landscaping will be provided onsite in accordance with City of Camas requirements. One Oregon white oak will be removed and mitigated at a 6:1 ratio.

e. List all noxious weeds and invasive species known to be on or near the site. [help]

None known.

5. Animals [help]

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. [help]

Examples include:
birds: hawk, heron, eagle, **songbirds, other:** mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

Small mammals, such as mice, voles, and rabbits are located on and near the site. This site is also in an area where larger mammals, such as raccoons, opossum, and mammals indigenous to the Clark County area are sometimes located.

b. List any threatened and endangered species known to be on or near the site. [help]

There are no known threatened or endangered species on or near the site.

c. Is the site part of a migration route? If so, explain. help]

This site is part of the Pacific Flyway for migratory waterfowl.

d. Proposed measures to preserve or enhance wildlife, if any: [help]

The site will provide landscaped buffers and street trees.

e. List any invasive animal species known to be on or near the site. [help]

None known

6. Energy and Natural Resources [help]

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc. [help]

The site will be served primarily by electricity.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe. [help]

No.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any: [help]

The convenience store and car wash will have energy efficient windows and will comply with state building codes which includes conservation measures.

7. Environmental Health [help]

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk

of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe. [help]

The gas station will store and dispense gasoline and diesel, which are flammable and could spill.

1) Describe any known or possible contamination at the site from present or past uses. [help]

Utilizing the "What's in My Neighborhood" section of DOE's database shows that there are no cleanup sites or known hazards within 0.5 miles of the site.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity. [help]

There are no known existing hazardous chemicals/conditions that may affect the development.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project. [help]

The site proposes a gas station; gas and diesel will be stored and used on the site after development.

4) Describe special emergency services that might be required. [help]

No special emergency services outside those normally expected in a commercial/business area are anticipated to be required in association with this proposal.

5) Proposed measures to reduce or control environmental health hazards, if any: [help]

Emergency shut-off switches will be located inside of the convenience store and outside at the gas pumps. Underground storage and pipes will be double-containment construction with rupture protection. Underground tanks also include monitoring of the inner walls for leaks. Overfill protection, gravity return of undispensed product, breakaway valves and stage 2 vapor recovery systems are also included in the storage tanks and delivery systems.

b. Noise [help]

1) What types of noise exist in the area which may affect your project (for example:traffic, equipment, operation, other)? [help]

Light traffic noise from surrounding areas/roads along with typical home and business use noises. None of these will affect the proposal.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indi- cate what hours noise would come from the site. [help]

Short term noises would include construction noises which would occur during approved hours as mandated by City of Camas and Washington State. Long term noises could include slight increase in traffic noise and vehicle noise at the site.

3) Proposed measures to reduce or control noise impacts, if any: [help]

Construction on the site will take place during normal working hours as allowed by the City.

8. Land and Shoreline Use [help]

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe. [help]

The proposed site has an existing single-family residence and two outbuildings. To the south is a developing business park. West of the site is a single family residence. To the east of the site across NW Friberg-Strunk Street is land owned by Camas Meadows Golf Club. To the north across NE 13th Street are single family homes.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use? [help]

It is unknown whether the site has been used as working farmlands or forest lands. There are not currently any agricultural or forest uses associated with the site.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how: [help]

No, the proposal will not be affected by, nor will it affect, any surrounding working farm or forest land business.

c. Describe any structures on the site. [help]

Single family residences and two outbuildings.

d. Will any structures be demolished? If so, what? [help]

All structures will be demolished.

e. What is the current zoning classification of the site? [help]

BP – Business Park

f. What is the current comprehensive plan designation of the site? [help]

IND - Industrial

g. If applicable, what is the current shoreline master program designation of the site? [help]

The site does not lie within the shoreline master program.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify. [help]

There is an Oregon white oak on site.

i. Approximately how many people would reside or work in the completed project? [help]

It is currently planned that approximately 2 people will work at this site at the time of full buildout.

j. Approximately how many people would the completed project displace? [help]

The removal of one single-family residence has the potential to displace up to 3 people.

k. Proposed measures to avoid or reduce displacement impacts, if any: [help]

There are no measures proposed to avoid or reduce displacement impacts.

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any: [help]

By complying with the zoning designation, the comprehensive plan, and the City of Camas Development Code, the proposal will be compatible with the existing and projected land uses.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any: [help]

No impacts are expected to agricultural or forest lands, therefore no measures are proposed.

9. Housing [help]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. [help]

Not applicable, no homes are proposed.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. [help]

One existing residence will be eliminated. The income level housing type is unknown.

c. Proposed measures to reduce or control housing impacts, if any: [help]

The applicant will pay all impact fees associated with the development at the time of building permit.

10. Aesthetics [help]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? [help]

All new construction will meet City of Camas building codes for commercial/business development. Exterior building materials will include composite wood siding, fiber cement panels, CMU, metal roofing and accents, and veneer stone. The tallest structure will not exceed 28'.

b. What views in the immediate vicinity would be altered or obstructed? [help]

The site will change from a large-lot single family residence to a commercial/retail development with a convenience store, gas station and drive-through car wash.

c. Proposed measures to reduce or control aesthetic impacts, if any: [help]

The site will be landscaped as required by the City of Camas. The main roadway frontages will be landscaped with trees per the City of Camas roadway standards.

11. Light and Glare [help]

a. What type of light or glare will the proposal produce? What time of day would it mainly occur? [help]

When the site is built out external illumination will be provided for the canopy/fueling area and for perimeter lot lighting and parking areas.

b. Could light or glare from the finished project be a safety hazard or interfere with views? [help]

No, light or glare from the finished project will not be a safety hazard or interfere with views.

c. What existing off-site sources of light or glare may affect your proposal? [help]

There are existing off-site sources of light from adjacent homes and roads, but they will not affect the proposal.

d. Proposed measures to reduce or control light and glare impacts, if any: [help]

Shielding of lights and streetlights will reduce light and glare impacts offsite.

12. Recreation [help]

a. What designated and informal recreational opportunities are in the immediate vicinity? [help]

Camas Meadows Golf Club is adjacent to the east. The Harmony Sports Complex is approximately ½ mile to the west.

b. Would the proposed project displace any existing recreational uses? If so, describe. [help]

There will be no recreational uses displaced with this proposal.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any: [help]

No impacts are proposed, therefore no measures to reduce or control impacts on recreation are proposed.

13. Historic and cultural preservation [help]

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers ? If so, specifically describe. [help]

There are no structures recommended for listing in national, state or local preservation registers per the Archaeological Predetermination.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources. [help]

Archaeological Services, LLC (ASCC) performed an onsite field investigation on August 17, 2023. No mention of landmarks, features or other evidence of Indian use or occupation are mentioned. Several artifacts were found including pink glass fragments suspected to be Depression Glass, a coin bank dated to 1926-1930, and a metal bolt. Based on these items, along with the former structures that appear on site in historic photos, ASCC is recording the debris scatter as a historic-area archaeological site and recommends a Cultural Resource Survey Report prior to any ground disturbing activity.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc. [help]

The report utilized surface surveys and excavation of test pits, as well as reviewing historical maps and records on file at the Washington State Department of Archaeology and Historic Preservation.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required. [help]

Based on the findings of the Archaeological Predetermination, a Cultural Resources Study is recommended prior to ground disturbing activity. If during the course of construction any artifacts are discovered, all work will cease, and proper notification shall be given to City of Camas and DAHP.

14. Transportation [help]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any. [help]

NE 13th Street and NW Friberg-Strunk Street abut the site to the north and west. A new driveway off of NE 13th Street will provide access to the site.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop? [help]

C-tran does not operate in close proximity to the site. The nearest stop is 1.6 miles SE of the site along SE 192nd Avenue at Mill Plain Blvd.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate? [help]

20 parking spaces, plus 8 gas fill-up spaces, will be provided with this development. The project will eliminate approximately 2-4 parking spaces with the removal of the existing home.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). [help]

Frontage improvements are proposed to bring NE 13th Street up to half-width roadway standards. NW Friberg-Strunk Street is currently built out to standard.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe. [help].

No

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates? [help]

It is anticipated that 2,281 new trips per day would be generated by the project. It is expected that 60 trips will occur in the AM peak hour (7:00 – 9:00 AM) and 81 trips will occur in the PM peak hour (4:00 – 6:00).

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe. [help]

Not anticipated

h. Proposed measures to reduce or control transportation impacts, if any: [help]

The applicant will pay transportation impact fees.

15. Public Services [help]

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe. [help]

Yes. The completion of this development will increase the need for public services in the area.

b. Proposed measures to reduce or control direct impacts on public services, if any. [help]

This project will pay impact fees for traffic at the time of building permit.

16. Utilities [help]

a. Circle utilities currently available at the site: [help]
electricity, natural gas, water, refuse service, telephone, sanitary sewer

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed. [help]

- *Electricity: Clark Public Utilities*
- *Water: City of Camas*
- *Telephone: Century Link, Comcast*
- *Sanitary Sewer: City of Camas*
- *Natural Gas: NW Natural*

C. Signature [help]

Under the penalty of perjury, the above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: DocuSigned by: FF97DED7F6DB4EF...

Name of signee Faz Khan

Position and Agency/Organization Managing Member Pak USA Camas, LLC

Date Submitted: 10/9/2023

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Southwest Region Office
PO Box 47775, Olympia, WA 98504-7775 • 360-407-6300

March 6, 2024

Robert Maul, Planning Manager
City of Camas
Community Development Department
616 Northeast Fourth Avenue
Camas, WA 98607

Dear Robert Maul:

Thank you for the opportunity to comment on the determination of nonsignificance for the 13th Street Gas Station Project (SEPA23-12) 20101 Northeast 13th Street as proposed by Travis Johnson. The Department of Ecology (Ecology) reviewed the environmental checklist and has the following comment(s):

HAZARDOUS WASTE & TOXICS REDUCTION: Garret Peck (564) 669-0836

The applicant proposes to demolish an existing structure(s). In addition to any required asbestos abatement procedures, the applicant should ensure that any other potentially dangerous or hazardous materials present, such as PCB-containing lamp ballasts, fluorescent lamps, and wall thermostats containing mercury, are removed prior to demolition. It is important that these materials and wastes are removed and appropriately managed prior to demolition. It is equally important that demolition debris is also safely managed, especially if it contains painted wood or concrete, treated wood, or other possibly dangerous materials.

Please review the "Dangerous Waste Rules for Demolition, Construction, and Renovation Wastes," posted at Ecology's website, https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Dangerous-waste-guidance/Common-dangerous-waste/Construction-and-demolition . The applicant may also contact Rob Rieck of Ecology's Hazardous Waste and Toxics Reduction Program at (360) 407-6751 for more information about safely handling dangerous wastes and demolition debris.

SHORELANDS & ENVIRONMENTAL ASSISTANCE: Meghan Tait, (360) 210-2783

Thank you for providing the Department of Ecology the opportunity to review and comment on the proposed 13th Street Gas Station.
The wetland delineation was conducted in August, typically a dry time of the year for the region. Per the Corps of Engineers WMVC regional supplement to the wetland delineation manual, additional field investigation is necessary to determine whether a wetland is present. One or more site visits should be scheduled to coincide with the normal wet portion of the growing season, the period of the year when the presence or absence of wetland hydrology indicators is most likely to reflect the true wetland/non-wetland status of the site.

The City of Camas Critical Areas Ordinance states that all wetlands and recommended buffer zones within 300 feet of the project area shall be addressed in the critical area report (16.53.030(B)(2)). Wetlands and buffers on surrounding parcels have not been evaluated and included in the Critical Areas Report dated October 2, 2023 prepared by Ecological Land Services for this project. There are mapped wetlands and hydric soils on the parcel to the west and south of the project area.

For technical assistance or questions, please contact Wetland Specialist, Meghan Tait, at meghan.tait@ecy.wa.gov or 360-210-2783.

Ecology's comments are based upon information provided by the lead agency. As such, they may not constitute an exhaustive list of the various authorizations that must be obtained or legal requirements that must be fulfilled in order to carry out the proposed action.

If you have any questions or would like to respond to these comments, please contact the appropriate reviewing staff listed above.

Department of Ecology
Southwest Regional Office

(JKT:2024000789)

cc: Garret Peck, HWTR
Meghan Tait, SEA

SWCAA
Southwest Clean Air Agency

11815 NE 99th Street, Suite 1294
Vancouver, WA 98682
(360) 574-3058
www.swcleanair.gov

March 4, 2024

City of Camas, SEPA Official
Community Development Department
616 NE Fourth Ave
Camas WA 98607

RE: 13th Street Gas Station; SEPA23-12; SEPA 202400789

Dear SEPA Official:

The Southwest Clean Air Agency (SWCAA) has learned that your agency has issued/will issue a SEPA Determination for the above project. Please be advised that SWCAA administers/enforces a number of regulations that may apply to the proposed project. The applicability of these regulations depends on the exact nature of the project in question. The following sections provide brief summaries of the requirements for the general types of activity that may be affected by this project.

Demolition / Asbestos [SWCAA 476]:

- Prior to **demolition or renovation** of a structure, a thorough asbestos inspection must be conducted by an AHERA-certified inspector in order to determine the presence of asbestos containing material (ACM) in all affected structure(s) or area(s).
  A copy of the AHERA asbestos inspection report must be posted for viewing at the project site.

Asbestos Containing Material PRESENT	Asbestos Containing Material NOT PRESENT
If the asbestos inspection reveals ACM to be present in the affected structure(s) or area(s) – *Required documents/reports:* (for each structure) • **Notification of Demolition** • **Notice of Intent to Remove Asbestos** • **AHERA asbestos inspection report** There is a 10-calendar day waiting period from the time the notices are submitted before asbestos removal or structure demolition may begin. All asbestos must be completely removed from the affected structure(s) or area(s) prior to structure demolition taking place. ACM must be removed by certified personnel in full accordance with the Southwest Clean Air Agency's Regulations SWCAA 476 (Standards for Asbestos Control) and with 40 CFR Part 61 Subpart M (National Emission Standards for Asbestos).	**If the asbestos inspection does not reveal ACM to be present in the affected structure(s) or area(s)…** **…and the structure is to be demolished –** *Required documents/reports:* • **Notification of Demolition** • **AHERA asbestos inspection report** There is a 10-calendar day waiting period from the time the notification is submitted before the demolition may begin. **…and the project involves only renovation and that renovation does not involve the removal of load bearing walls –** *Required documents/reports:* none

Construction Dust [SWCAA 400: General Regulations for Air Pollution Sources]:

- Construction and earthmoving activities have the potential to generate excessive dust emissions if reasonable control measures are not implemented. SWCAA Regulation 400-040(2) requires that "no person shall cause or permit the emission of particulate matter from any stationary source to be deposited beyond the property under direct control of the owner or operator of the stationary source in sufficient quantity to interfere unreasonably with the use and enjoyment of the property upon which the material is deposited". Furthermore,

SWCAA Regulation 400-040(8)(a) requires that "the owner or operator of any source of fugitive dust shall take reasonable precautions to prevent fugitive dust from becoming airborne and shall maintain and operate the source to minimize emissions".

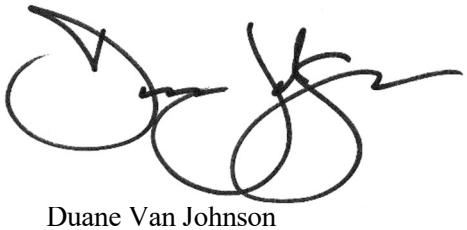
- Common control measures to mitigate the emission of dust from construction and earthmoving activities include: application of water before and during earthmoving operations, application of water to disturbed surface areas (including access roads and staging areas) after earthmoving operations, application of chemical dust control products and/or surfactants, limiting access to open/disturbed areas, reducing equipment/vehicle speeds, establishing vegetative cover on inactive areas and ceasing operations altogether during high wind events.
- Violations of SWCAA Regulation 400-040 may result in civil penalties being assessed against the project operator and/or property owner.

Registration, Notification and Permitting of Air Pollution Sources [SWCAA 400-072, 100, 109, 110]

- SWCAA's General Regulations regulate the installation and/or modification of any building, structure, or facility that emits or may emit an air contaminant. An air contaminant is defined as "…dust, fume, mist, smoke, other particulate matter, vapor, gas, odorous substance, or any combination thereof". Project proponents for any proposed installation or modification that creates a new or increased source of air contaminants may be required to register with the agency and submit a notification or permit application in accordance with SWCAA Regulations 400-072, 100 and 109. If an Air Discharge Permit (ADP) or Small Unit Notification (SUN) is required, the application must be approved and an ADP/SUN issued before commencing construction, in accordance with SWCAA 400-110. If the proposed project includes any new or modified air pollutant sources, the proponent should consult with SWCAA to determine if these requirements are applicable.
- The proposed project (a new gasoline dispensing facility) will likely require an ADP from this Agency. Contact an Agency permitting engineer at 360-574-3058 to discuss your project, equipment requirements and the likely need to obtain an ADP before dispensing gasoline in the Agency's jurisdiction.

The proponent of this project may contact SWCAA at 360-574-3058 for more information regarding the agency's requirements. Notification forms, permit applications, air quality regulations and other information are available on the internet at **http://www.swcleanair.gov**.

Sincerely,



Duane Van Johnson
Air Quality Specialist II

Outlook

RE: SEPA23-12: Proposed 13th Street Gas Station

From Smith, Amaia A (DFW) <Amaia.Smith@dfw.wa.gov>
Date Wed 2/28/2024 4:43 PM
To Yvette Sennewald <YSennewald@cityofcamas.us>

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you recognize the sender as a city employee and you see this message this email is a phishing email. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

Hi Yvette,

WDFW recently published a guidance document, Best management practices for mitigating impacts to Oregon white oak priority habitat, that describes the significance of Oregon white oaks and identifies best management practices (BMPs) for avoiding, minimizing, and mitigating impacts to this important habitat and is considered best available science. The actions identified in this guidance document can be implemented under the existing critical areas ordinance is the new standard for evaluating projects that involve Oregon white oak.

This SEPA notice identifies a priority Oregon white oak on site and states it will be removed for this project. WDFW wants to ensure that the project proponent explored design alternatives that avoid and minimize impacts to the Oregon white oak, as required by CMC 16.51.170 – Mitigation sequencing. If impacts to the Oregon white oak cannot be avoided and is subsequently removed for this project, WDFW recommends updating the mitigation to align with our newly published guidance document. A 6:1 mitigation ratio, as proposed, will result is a net-loss of ecological function due to the life history of Oregon white oaks. Furthermore, we recommend that the proponent explores on-site and off-site options prior to purchasing oak credits from a mitigation bank.

Please reach out if there are any questions about our updated guidance document. Additionally, the project proponent can contact me directly if there are questions about our new guidance document.

Thank you,
Amaia

Amaia Smith
(she/her)
Assistant Regional Habitat Program Manager
WDFW - Region 5

5525 S 11th St Ridgefield, WA 98642
amaia.smith@dfw.wa.gov
360-839-3508

From: Yvette Sennewald <YSennewald@cityofcamas.us>
Sent: Wednesday, February 28, 2024 3:30 PM
To: Smith, Amaia A (DFW) <Amaia.Smith@dfw.wa.gov>
Subject: SEPA23-12: Proposed 13th Street Gas Station

External Email

Hi Amaia,

Just wanted to let you know that I received your phone message regarding the updates for the Oregon White Oak mitigation plan. I look forward to receiving your email with comments and mitigation plan updates.

Thank you,
Yvette

Yvette Sennewald, Senior Planner
Community Development – Planning
Office: (360) 817-1568
Direct: (360) 817-7269
www.cityofcamas.us | ysennewald@cityofcamas.us

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Outlook

_RE: City of Camas preparing to permit gas station on high risk land (SPRV23-06)

From Brent Davis <Brent.Davis@clark.wa.gov>
Date Tue 2/20/2024 7:56 AM
To Karin Nosrati, DC <bforback@gmail.com>
Cc Tait, Meghan (ECY) <mtai461@ECY.WA.GOV>; Community Development Email <communitydevelopment@cityofcamas.us>

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Karin,

Clark County has no jurisdiction over critical areas or land use for projects within the City of Camas. Our critical areas ordinance does regulate "indirect" impacts to wetlands that could theoretically occur from development on adjacent properties, however our wetland buffers and the related standards do not apply outside our jurisdiction (e.g. the unincorporated portions of the County). Furthermore, a review of our wetland inventory mapping and aerial photography do not suggest that there are wetland indicators on the properties immediately to the west of the proposed development.

I have copied Meghan Tait, who is the Wetland and Shoreline Specialist at Ecology assigned to our area. Ecology is an "Agency with Expertise" in matters pertaining to wetlands and water quality under the State Environmental Policy Act (SEPA). If Camas has initiated the SEPA process on this project Meghan and/or her colleagues have likely reviewed the plans and technical documents and are providing comments to the City.

Sincerely,

Brent Davis
Land Use, Wetland, and Habitat Review Manager
Shoreline Administrator
COMMUNITY DEVELOPMENT

ePlan – saving trees and parking fees! Visit clark.wa.gov/ePlan to learn more.

From: Karin Nosrati, DC <bforback@gmail.com>
Sent: Sunday, February 18, 2024 6:51 PM
To: Brent Davis <Brent.Davis@clark.wa.gov>; david.howe@dfw.wa.gov; carlo.abbruzzese@dnr.wa.gov
Cc: Barbara Wegner <oakbarb@lmi.net>; Randy Nosrati <randynos1@gmail.com>
Subject: City of Camas preparing to permit gas station on high risk land

EXTERNAL: This email originated from outside of Clark County. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Sirs:

The City of Camas is preparing to permit the construction of a gas station, convenience store and car wash at 20101 NE 13th Street, near our residential neighborhoods.

We are a group of neighbors who live just north of the signal light on the north-end of Friberg/Strunk Road and NE 13th Street, in Clark County, outside the Camas city limits. This project also affects the neighbors along NE 13th Street. The developer is Kevin Deford and PAK USA CAMAS, LLC. (The original owner, Mr. Warren Townsend, who has lived here for many decades currently still lives there.) The permit might receive approval as early as the middle of April 2024.

The developer commissioned a Critical Areas report in the summer of 2023, which is attached to this email. We are concerned that the wetlands in the area immediately adjacent to the property were not taken into consideration. We also suspect that the report is skewed as the data was collected during a hot summer. Hydric soils are present per the GIS maps, but negated in the Wetland Determination Data Form. The pollutants would run-off to these wetlands.

Secondly, all the homes to the west of the proposed development draw their drinking water through wells which draw from an aquifer below. The pollutants will jeopardize drinking water supply.

This location is truly on the outer margin of where the City of Camas abuts Clark County, and this proposal is not taking the community into consideration.

Could you please read the reports and weigh in on the concerns that this is a high risk land? We appreciate any opinions, resources or contacts you could provide. Lastly, could you help identify one of the trees in the picture, to make certain that there is only one oak tree at risk?

Thank you,

Karin Nosrati
20107 NE 14th Street
Camas, WA 98607
360-254-1585

Outlook

Re: Proposed Development on 13th street

From Carlo Abbruzzese <puffbird10@gmail.com>
Date Fri 3/8/2024 2:22 PM
To Robert Maul <RMaul@cityofcamas.us>
Cc Community Development Email <communitydevelopment@cityofcamas.us>; Yvette Sennewald <YSennewald@cityofcamas.us>

1 attachments (3 KB)
image002.jpg;

You are welcome. Wish I had oregon time to look into it and write a more detailed letter.
This is a comment letter from me. DNR doesn't usually comment on projects like this.

Carlo

On Thu, Mar 7, 2024, 11:21 AM Robert Maul <RMaul@cityofcamas.us> wrote:

> Thank you for your comment, Carlo.
>
> To clarify for the record, is this an official comment from DNR, or your personal comment? Thanks.
>
> Regards,
>
> Robert
>
> City of Camas
> Robert Maul
> Planning Manager
>
> Desk 360-817-7255
>
> www.cityofcamas.us rmaul@cityofcamas.us

From: Community Development Email <communitydevelopment@cityofcamas.us>
Sent: Thursday, March 7, 2024 10:55 AM
To: Yvette Sennewald <YSennewald@cityofcamas.us>
Cc: Robert Maul <RMaul@cityofcamas.us>
Subject: FW: Proposed Development on 13th street

Carey Certo

Administrative Support Assistant

Community Development

Office: 360-817-1568

www.cityofcamas.us | ccerto@cityofcamas.us

The permit center is closed daily 12-1pm

From: Carlo Abbruzzese <puffbird10@gmail.com>
Sent: Thursday, March 7, 2024 10:05 AM
To: Community Development Email <communitydevelopment@cityofcamas.us>
Subject: Proposed Development on 13th street

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Carlo Abbruzzese

Washington Department of Natural Resources

901 Bond Road

Castle Rock, WA 98611

Attn: City of Camas, SEPA Official

Community Development Department

616 NE Fourth Avenue

Camas, Washington 98607

Please confirm receipt.

To whom it may concern,

I manage the Lacamas Prairie Natural Area which lies about a ½ mile to the NE of the proposed gas station, car wash and convenience store proposed to be located at the corner of 13th street and Friberg-Strunk street. Lacamas Prairie Natural Area protects the only example of Willamette Valley Prairie in the state and habitat for 8 rare plant species, one rare animal species (slender-billed nuthatch) and rare Oregon white oak/ Oregon ash forest . It is also provides critical winter waterfowl habitat.

I have serious concerns about this proposal due to the potential of fuel tank leaks, fuel spills, and toxic runoff from the carwash leaving the site and harming the sensitive and rare wetland and oak forest downslope. Lacamas Lake, where people fish and swim could also be permanently harmed by this development.

I would hope the City of Camas would want to protect this site, which contains one of the best and biggest populations of camas lily in Clark County, by requiring the developer to choosing a more environmentally friendly development.

In summary, I do not believe the SEPA document adequately considers the risk this development poses to the preserve. There rare habitats and species are irreplaceable resources.

Sincerely,

Carlo Abbruzzese

Natural Areas Manager

Washington Department of Natural Resources

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To: Camas City Council members

Regarding : Proposed Project at Friberg and 13th Street in Camas.

March 6th, 2024

Respectfully submitted,

My name is Brittany Bozarth, I live at 19821 NE 13th St, Camas WA for the last 11 years and am located .1 miles from the proposed gas station.

I have many concerns in regards to the SEPA report and the approval of this project that have not fully been considered and vetted against the city and state codes you have committed to enforce.

Traffic Study

- The traffic study was not conducted during peak hours for this road. You conducted this study in the middle of summer when school was not in session. You also only indicated traffic from the high school, many of us on this road have students at the elementary school and travel down 13th to access 192nd. The elementary should be included in the traffic numbers, you can only right turn out of Illahee elementary on 1st St. Forcing you to Friberg to then access 13th St, up to 192nd. The high school and local elementary school release and start at almost the same time. The high school and elementary school start at 8:40 and 8:35, and end at 3:18 pm respectively. The peak hours in the PM are NOT 4-6 PM, these hours are 2:45-4:00PM when in which parents and teens are departing school. The traffic backs up from the light at 192nd and NE 13th St. to Friberg daily, making it impossible to even leave my driveway.

Sidewalk

- There is no safe way to access this proposed development. The separation from lane of travel is less than six inches. You are now going to have more pedestrians walking this road (I see teenagers *daily* walking this road already to access the school). Adding a convenience store gives them more reason to take this route where there is **NO** safe access. Will you put a sidewalk in when a pedestrian is killed?
- The county and the city share this strip of road, both should be held accountable and liable to provide safe access and the business should be required to assist in that development.
- They should be required to pay a hefty TIF to facilitate the improvements of the road.

Driveway

- My driveway has immediate access to 13th St. I was denied the ability to provide safe exit and entrance to my home by generating a u-shaped driveway and now there will be even more traffic. You are asking for an accident.
- It is difficult for me to exit my driveway now due to traffic, an increase in trips daily will only exacerbate the issue.

Buses/Kids

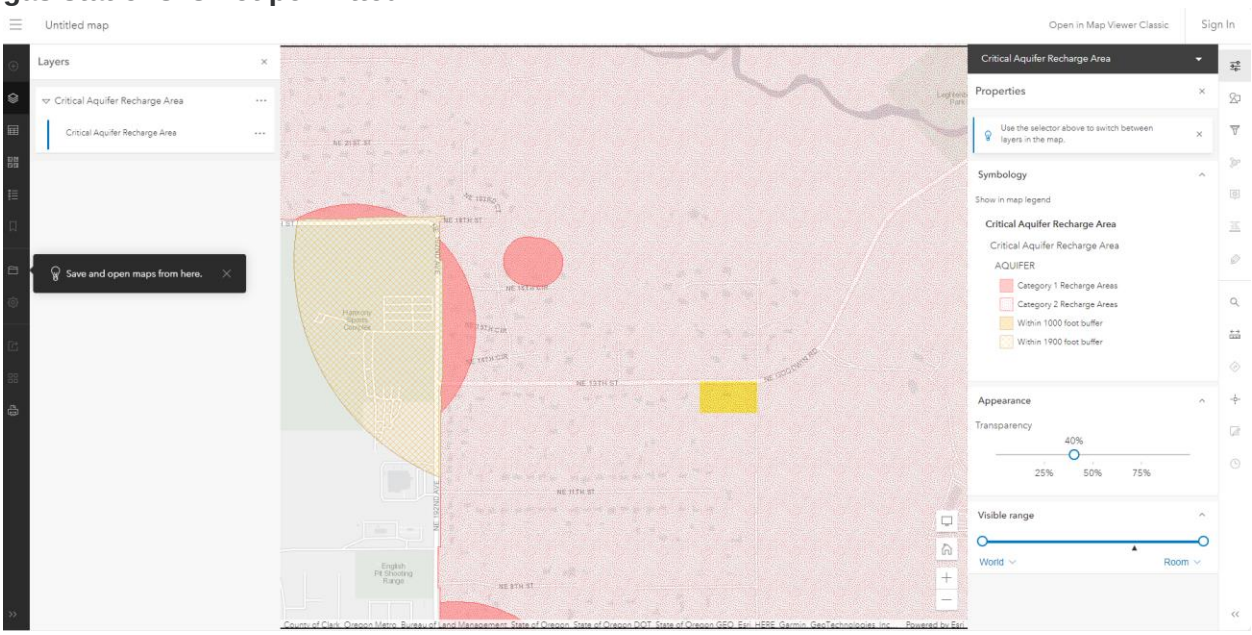
- The buses for the schools travel this route daily to pick up students. There are many school bus stops on 13th St. alone. This is a safety issue, you have young elementary school children waiting to get on a bus, and now you are going to encourage further traffic down the road.
- I have had two cars in my ditch, right where my children have to wait for a bus. The lane of travel is too small to have large (or small) tanker trucks traveling this route. You are risking the lives of our youth.
- The cars traveling west on 13th come off a 45mph road and do not slow down. They blow through the school bus stop sign weekly, ignoring the safety of our students.

Accidents and Lane of Travel

- My mailbox resides on 13th St., exactly where my children are required to wait for a bus. This mailbox has been hit and demolished four times in the last six years. June 20 2018, July 8th 2020, March 31, 2021 and July 6th 2021.
- There is no shoulder, and when you send these large tanker trucks down the road, there is zero room for error and they have been known to cross the white line and damage property.
- The garbage service requires our cans are set at the end of our driveway. My driveway has a steep slope from 13th St and they have to be placed right at the white line to avoid them running back down the driveway. They get knocked over and spilled just from the speed of travel and wind gust created from these large vehicles traveling by.
- To reiterate the accidents unreported on the road typically involve cars in the ditch and are not reported due to single party involvement and they want to avoid a ticket. The one car was abandoned, and I reported it to police on or around Sept 14th, 2020.

Well Water/Run Off

- All the homes on NE 13th St rely on the stability and safety of our well water. The code states that petroleum storage areas must be one hundred feet from the well. The property immediately next to the proposed gas station (20005 NE 13th St) is closer than 100ft to the storage tanks.
- Additionally this area is a CARA (Critical aquifer recharge areas) and the code states in **16.55.080 - Uses prohibited from critical aquifer recharge areas. That a fuel and/or gas stations is not permitted.**



- The run off from spills and other accidents will lead to the stormwater that feeds Lacamas Creek. The very lake your voters are trying to save.

Site Challenges and Risk Assessments

- The developer should not be given *any* exceptions to the code. If an entrance/exit cannot be within 250 yards of an intersection, this property cannot accommodate this gas station. This will create an unsafe road and intersection at NE 13th St. and Friberg being so close to the traffic light.
- The site plan does not accommodate the code for corner lot vison clearance 18.17.030 - Corner lot vision clearance area.
- Those travelling west on 13th St. when proceeding through the intersection at Friberg will not have the appropriate sight distance to see the fuel trucks entering the *oncoming* lane of traffic and will cause collisions. A car verses a tanker truck, we know who wins that war. These cars are traveling at a rate of speed of 45mph and will be expect to stop on a dime. WSDOT sight distance regulations

Thank you for your careful consideration,

Brittany Bozarth

Outlook

Case Number SEP23-12 13th street gas station

From stacy brickert <pinkangel6968@gmail.com>
Date Wed 2/28/2024 12:59 PM
To Community Development Email <communitydevelopment@cityofcamas.us>; Lance Thomas Brickert <lancethomasbrickert@gmail.com>

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Hello. I am writing to express my concerns and objections to the convenience store and car wash proposal at 20101 NE 13th Street in Camas.

We currently have a multitude of unresolved environmental issues surrounding the adjacent wetlands and Lacamas Lake itself. This is a single-family residential area. We are not looking for a change in zoning to allow commercial business in our neighborhood. 13th street is not designed to handle the current amount of traffic that flows on a daily basis. As Green Mountain continues to grow the traffic is becoming a bigger and bigger problem for those of us that live on 13th street. Getting out of my own driveway can be nearly impossible. Having strangers using my driveway as a turnaround. inviting unwanted crime via vandalism and theft is already a problem. Opening up a full-blown gas station will invite more activity and homeless individuals to the area and continue to degrade the quality of life that we moved to Camas to enjoy. Please consider an area that is already zoned commercial and is away from our natural resources and beautiful wetlands. We support small local business but in the proper place. A single family neighborhood is not a good fit.

Thank you for your consideration,

Stacy Brickert
19809 NE 13th St Camas Washington 98607
503-314-6816

Outlook

Rethink Gas Station on NE 13th St

From collinsclark@gmail.com <collinsclark@gmail.com>
Date Tue 3/5/2024 9:52 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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To the City of Camas Community Development Department,

I am aware of the proposal to build a gas station and convenience store at the intersection of NE 13th Street and Friberg/Strunk Road. I live nearby and am very familiar with the intersection. I also have reviewed many of the publicly available documents relating to the proposal. I urge you to reconsider the proposal.

Although the lot in question is zoned for business uses, a gas station is not good fit for that particular lot.

- It is too small to accommodate a gas station and comply with applicable environmental and building laws.
- It is too close to an already busy and dangerous intersection.
- The residential areas surrounding the gas station do not have sidewalks, and pedestrians walking to the convenience store will be at significant risk.
- The gas station presents significant environmental risks to neighboring wetlands.

The gas storage tanks are proposed to be less than 100 feet from the private drinking water well on the property immediately to the west. This is contrary to state law. Furthermore, the property owners with wells within ¼ of a mile of the gas station will all be required to pay for independent inspections of their wells as part of the appraisal process when selling their homes. (*FHA Single Housing Policy Handbook for Appraiser and Property Requirements*.) It is not right to impose these increased costs on the existing residential homeowners.

The environmental review looking for evidence was flawed in that the key issue is the impact on and presence of wetlands, but the review in question involved taking a single soil sample in August, the peak of a record dry summer. The lot in question frequently has standing water, but not in August.

Further, the environmental study ignores wetland areas in very close proximity. The lot immediately to the west has standing water much of the year, immediately along the proposed gas station. To lots immediately to the north (across NE 13th) have wetland areas as well. These wetland areas are all much closer than what is permitted for a gas station under applicable law.

In addition, the very sensitive Lacamas Creek and Heritage Trail area is less than ¾ of a mile to east of the lot, downhill. That is also home to the largest camas lily field in Camas. Leaks, accidents, airborne particulates, runoff, and ground water seepage are all potentially significant dangers. The city of Camas should not sacrifice one of the last natural vestiges of its name-sake for a gas station.

The proposed plans depend on the city granting variances or deviations from the city's standard building and zoning laws. These deviations or variances should not be granted. The single planned entrance and exit is half the distance to a busy and dangerous intersection than permitted by law. The parking spaces do not comply with the 50 foot setback requirement imposed by law. There is no good reason or the city

to grant exceptions (deviations) from its law to permit the gas station to be built as proposed. The lot is simply too small for all that is planned.

The gas station plans do not provide enough room for large vehicles, including gasoline refueling trucks, to safely access the station to refill the tanks. The circulation plans will require these large trucks to block all of NE 13th Street when entering and exiting the property. This will be especially dangerous for westbound traffic on NE14th Street, which has significantly limited visibility when approaching the intersection, given the curve and slope of the street there.

Only one entrance and exit from the gas station is going to increase congestion at an already strained intersection, which is only going to get much worse with the increased development in Fern Prairie, and the very large industrial warehouse being built immediately across the street from the proposed gas station. Eastbound traffic on 13th Street will interfere with and block the entrance and exit to the gas station. Westbound traffic on 13th Street will be blocked by anyone waiting to turn left into the gas station, which will then interfere with the entire intersection.

The intersection in question is high traffic, and less than ¾ of a mile from the high school. It is extremely busy, especially during peak hours when school is in session. The traffic study, however, was conducted when school was not in session. It makes a mockery of the traffic study.

The intersection in question, and all of NE 13th Street is far more dangerous than the city must realize. Many accidents occur there, not all of which are reported. Those that are reported are split between jurisdictions (the city of Camas and the county). All of this is expected to be worse with the continuously increasing traffic due to development in Fern Prairie and the new warehouse across the street from the gas station.

NE 13th Street does not have sidewalks or bike lanes. If the convenience store goes in, it will attract pedestrian traffic from the many residences along NE 13th Street. Children in particular will ride their bikes and walk to the convenience store, as nothing similar is within walking distance. This is a very dangerous recipe. No businesses attracting pedestrian or bicycle traffic should be built on NE 13th Street unless the proper access infrastructure is also built.

Gas stations and convenience stores have long hours and are brightly lit. The bright lights will cause light pollution for the surrounding residential neighborhood.

The gas station and convenience store, especially with the addition of a car wash and self service vacuum will be very loud. It will disrupt, late into the night, the residential neighbors. The self-service vacuum is planned to be less than 100 feet from the closest residence.

Gas stations are known to be centers of crime. A recent article published by the convenience store industry notes that “c-stores and gas stations combined were the site of 13.8% of robberies [in 2022]. According to the FBI, 4.5% of all reported violent crime in 2022 took place at a gas station or convenience store.” Convenience Store Operators Grapple with Rising Crime, Danielle Romano, Feb. 12, 2024 (available at: https://csnews.com/convenience-store-operators-grapple-rising-crime). This should not be placed in a residential area, or in a business are directly bordering residential neighborhoods.

Given all of these concerns and additional concerns that others are likely to raise, the city should not approve the proposed permits. Instead, the city should either decline the application or carefully work through all of these various issues.

The property in question could be the location of many different and profitable businesses, but it simply is not the right location for a gas station, convenience store, and car wash. It is too much to fit on that lot, and the traffic, environmental, and safety implications will be negative.

Sincerely,
Collins Clark
20001 NE 16th St
Camas, WA 98607

Outlook

Comments: THE PROPOSED 13TH STREET/FRIBERG-STRUNK GAS STATION

From SHANNON CONNELL <gsconnell@comcast.net>
Date Thu 3/7/2024 9:17 AM
To Community Development Email <communitydevelopment@cityofcamas.us>

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Camas Community Development

I am writing in opposition to the proposed 13th St./Friberg-Strunk Gas Station. Reviewing the proposal revealed several significant concerns that will result in long term issues for this location.

1.) Wetland impact: The wetland evaluation was performed in August. On was most likely the driest day of the year. This does not reflect the remainder of the year. My property is several hundred feet north of the proposed site. Between my neighbor and myself we collectively have 4 acres of wetlands that spend a majority of the year with standing water on them. These wetlands drain directly into Lacamas creek and lake. I highly doubt this type of establishment will not effect this watershed in a neutral way. Once built it will effectively injure surrounding wetlands. The analysis only looked at the exact lot in the proposal. This is shortsighted and not reflective of the environmental impact this site will have. It calls into question the evaluation process used here.

2.) Traffic congestion: 13th is turning into the main artery for all the development The City of Camas has approved over the last couple of years. It is the primary conduit to the retail core of 192nd. Not even considering school traffic the increase of traffic going west bound on 13th will become a congestion point as customers attempt to turn left into the gas station. There was a divergence from standards to allow the driveway entrance to be with in 500 ft of the intersection. This will cause back up of traffic into the intersection on a regular basis. This will become a significant hazard as drivers come westbound at a high speed up a hill with a curve. Visibility is poor already and this intersection has had numerous accidents (including my daughter totaling her car a few years ago when traffic was much less). Adding a business with a single entrance (also a variance) is a set up for a failed intersection in the future. This is especially true if the growth forecasted north of the lake occurs. There currently is no other route to the major retail core of 192nd Ave. This is a complete and avoidable setup for future issues. The area is zoned business park and that is what belongs in this parcel not a retail store with a requirement for high traffic to be successful.

I feel this project is being forced on this property. It is not designed well and ignores its serious flaws. At a minimum the environmental evaluation should be done during the primary weather this area experiences (like now). I do not have a well but know of several wells in the area that could be affected. Capping off a well doesn't keep the well a hundred feet away safe. The traffic congestion will 100% be an issue for safety. It is already a dangerous intersection and the road under developed with no proposed upgrade in the future planned. The City of Camas

does not control this road but is considering a project that will impact it significantly. The City of Camas has annexed and approved thousands of homes that will use this road daily and will create a failed intersection with no way to fix it. This is all avoidable by rejecting this proposal and approve for appropriate use.

Respectfully,

Greg & Shannon Connell
20002 NE 14th St.
Camas, WA

360-281-6952
gsconnell@comcast.net

Outlook

Request from the Community Development Dashboard for Information on the Oak Tree Station Project & 13th St Gas Station Project

From Nicole M Daltoso <Nicole.Daltoso@evergreenps.org>
Date Tue 2/20/2024 2:03 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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Good Afternoon,

I have some questions regarding the aforementioned projects.

Oak Tree Station Project – I see that a decision was issued on the project, but am not entirely sure how to review the decision. Who can I discuss the status of the project and how can I review the design plans? I started with Evergreen almost a year ago and this particular project has been a topic of discussion, but also just have no clue the overall progress of it.

13th St. Gas Station Project – This one just came into my purview following a couple of community members reaching out to the school district with their concerns. Their concerns are related to the environment, increased traffic, and effect it'll have on students (i.e. cross country runners who will have to traverse a busy driveway, and access to alcohol). I know that their concerns are all addressed by various laws and regulations. However, I'm curious if they've voiced their concerns with the City of Camas yet.

I'm happy to receive information via email or if a phone call would be easier, please contact me at the number in the signature.

Thank you,

Nicole Daltoso, MPH, ASP
Sr. Director of Capital Facilities
P: (360) 604-4081
Evergreen Public Schools

Outlook

Gas station at the corner of ne 13th st and Freiburg rd...

From Susan Davis <susanmachelledavis@gmail.com>
Date Wed 3/6/2024 4:06 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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Council committee members...

I have lived at 19705 ne 13th st since the age of 13...I am now 60...I can appreciate some growth in our community but not this. Please don't bring this into a residential neighborhood. There are many places to get gas and wash your car within a 2 mile radius...I feel this is catering to all of the union high school students who will enevitably spend a large fortune there...how convient for them, but what about us? The car traffic, foot traffic, and crime will only increase...let's keep this residential area just that...for residents...

All of us have wells and septic systems in this area...I am very concerned about the possibility of ground contamination coming from this project... especially from the gasoline....Would you want that in your back yard? A small leak from underground, not detected for years could be disastrous...

Thank you for your time!

Outlook

Strong Objection to the proposed gas station at the corner of NE 13th and Friberg Road

From Jeff Goertzen <jeffkgoertzen@gmail.com>
Date Thu 3/7/2024 7:47 AM
To Community Development Email <communitydevelopment@cityofcamas.us>

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To whom it may concern,

I am writing to express my strong objection to the proposed gas station at the corner of NE 13th and Friberg-Strunk Road. My wife and I live on just under 3.5 acres directly acrossed the street to the North of the proposed gas station at 20009 NE 14th Street. Almost 1/2 of our property is classified by the county as wetlands. It is harmful to place a gas station in this close proximity to a wetlands. I take exception to the placement of a gas station this close to the wetlands and to the fact that these wetlands were not mentioned or acknowledged in the approved SEPA report. The approved SEPA report is erroneous via omission.

I also take exception to the omission in the SEPA report of the mention of deer. There are numerous deer that can be found grazing on occasion on the proposed gas station property and they also utilize that property as part a route between the Camas Meadows area and the extensive wetlands to the North of 13th, including the wetlands on our property and vast habitat beyond to the North.

I take a general exception to this location being used for a gas station because it doesn't make sense for the local community for the following reasons:

Ours and our neighbors homes on 14th street are closer than the recommended buffer distance between existing residential homes and new gas stations. Locating a gas station this close to a residence has been documented to have negative impacts on the health and property values of existing neighbors within the buffer zone.

Generally speaking, gas stations as a business model are in decline and that trend will continue with legislations requiring further adoption of electric vehicles. When this business fails, what is left is a blight in the community that requires extensive environmental remediation costs to restore the property to some useful purpose. These remediation costs will result in decreased property values or inordinate remediation costs preventing the redevelopment of this property for a suitable use.

This intersection at 13th and Friberg-Strunk cannot safely handle the traffic consequences of the hundreds of additional trips generated by instances of pulling in and out of this establishment onto 13th street so near the intersection that will occur every day. This intersection already faces challenges with limited sight distance and reduced speed transition from traffic coming up Goodwin

from the east, along with challenges stemming from new and inexperienced drivers heading to nearby Union High School. The existing signalization is inadequate with the level of competence of teen drivers who are often confused with who has the right of way on left hand turns requiring yielding to oncoming traffic and not yielding to pedestrians on right hand turns. Additionally, there are sporadic deer crossings. This will just add to the existing problems.

Additionally, 13th Street does not have a turn lane to accommodate people pulling out and turning left out of the proposed gas station. How would this be dealt with safely? Will the exit be right turn only? Otherwise, people get impatient waiting for a break in both directions of traffic to make a left hand turn and take chances….and cause wrecks. Especially new and inexperienced drivers. How would a fuel truck ever pull out without totally disrupting traffic in this already sensitive area of inexperienced drivers, low sight distance, and speed zone transition? A gas station is a bad fit for this location.

Thank you for considering these facts.

Regards,

Jeff Goertzen, PE

Outlook

Gas station on 13th St

From KELI GOERTZEN <jkgoertzen@comcast.net>
Date Mon 3/4/2024 6:47 AM
To Community Development Email <communitydevelopment@cityofcamas.us>

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Dear City of Camas Council Members,

We have lived at 20009 NE 14th St, directly across from the proposed gas station, since 2012. During this time traffic has increased, pedestrian crossing at that corner has become extremely hazardous. We were surprised by the enormous warehouse that is going up. We understood the development of the business park. We can not understand putting a gas station and convenience store at this intersection. Our property contains wetlands backing up to 13th St. We have not ever had the option of building near this part of our own property, why can the applicant build so close to these vulnerable wetlands and all the wildlife they contain? We have deer in our yard almost every day, we regularly see a coyote, an owl and all kinds of birds, frogs, snakes, rabbits and squirrels. The fumes from the gas station, the noise and the runoff that will inevitably end up here will change the habitat these animals have come to rely on. Trying to cross from our property back to the open space on Friberg will mean the deer have to walk through the gas station or through the hazardous intersection. High school students (and all drivers) will be at increased risk of hitting one of these deer.

In addition to these concerns I can't understand the need for another gas station in 2024. The world is increasingly moving towards using electric vehicles. We already have plenty of options for gas nearby. Eventually this will just be an empty eyesore sitting on the edge of this residential area. It will have changed the landscape irreversibly. No one else will want to redevelop it as it will require removing the gas tanks. The wildlife and residents world's will have been changed for no good reason.

Please do not permit this unnecessary gas station, car wash and convenience store.

Sincerely,
Keli Goertzen

Outlook

13th Street Gas Station/Convenience Store/Car Wash

From Pamela Goldfain <gopammyanne@gmail.com>
Date Thu 2/29/2024 9:25 AM
To Community Development Email <communitydevelopment@cityofcamas.us>

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I live on Livingston Mountain and regularly travel through 13th Street and 202nd/Friberg-Strunk intersection. I am writing to protest the development of a gas station complex at that location.

1) Traffic congestion: With the addition of Union High School and housing at the former Green Meadows site, the traffic volume at this intersection is very high. Adding a gas station complex will make traffic control even worse. Just traveling this road at the times Union High School starts and stops, as well as when "rush hour" occurs, will show this intersection, as well as 192nd and 13th, is already severely burdened. Backups can occur all the way to Ingel Road, as well as Costco. Roadway modification at 13th/192nd will not eliminate this problem.

2) Wildlife impact: With development under construction at that intersection, coupled with additional proposed construction impact, the wildlife area will be severely impacted. Wetlands nearby, as well as Lacamas Trailhead on Goodwin Road and Camas Meadows, host many birds and water animals. Light pollution from added development will impact their health. Recent alarming research regarding light pollution harm to wildlife is imperative to consider. Light and noise pollution will adversely impact single family homes in this area.The walls of the warehouse under construction opposite this proposed site will bounce light and noise right back on those homes, compounding the issue.

3) Camas city awards: Recent coverage of Camas city's near win of a national award is evidence of careful planning thus far. Camas is more than its downtown. Protect rural areas from sprawl, noise, and light pollution by denying this request for development.

Pamela Goldfain
28304 NE 66th Street
Camas, WA 98607
360-433--7744

Outlook

Proposed 13th street/Friberg-Strunk Gas Station Convenience Store Carwash

From Norma Harrison <retiredbabe@msn.com>
Date Thu 3/7/2024 3:13 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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I just became aware of this proposed development last night from my neighbors on 13th street. We live on 20002 N.E. 11 Street which would make this station almost behind our house. I am really concerned that we did not receive any notice about this proposal since it will affect us and our property.

We have several concerns:

We have a well that is our drinking water source and all water uses.

Lighting is another concern. If the lights are on all night, they will have our backyard lit up.
Will there be a wall to reduce the noise and block the lights?

Additional noise and lots of traffic is a real issue.

We are especially concerned about the effect it will have on our property values.

I hope these concerns will be considered before it is approved.

Thanks,
Norma Harrison

Outlook

13th St. Gas Station

From Cyndy Harvey <claharvey@aol.com>
Date Mon 3/4/2024 3:44 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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Re: Case # SEPA23-12
WAC 197-11 340

I would like to add my opposition to the development of a gas station/store on 13th Street.
I don't have new reasons but I'm agreeing with many of the reasons already put forward:

The project is too near wetlands with the possibility of pollution to the air and water.
We need to protect the beautiful open spaces that are still left in Camas.
The additional traffic and already busy intersection are a safety issue for car and student travelers.

Thank you for your consideration,

Cyndy Harvey
9641 N. Alder St.
Camas, WA

Outlook

Gas station

From Jen Haslam <jenhaslam7@gmail.com>
Date Sat 3/2/2024 8:17 AM
To Community Development Email <communitydevelopment@cityofcamas.us>

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As if it wasn't enough that the city of Camas approved the hideous monstrosities going up on the corner of 13th and Goodwin, now a gas station/car wash as well?
I beg the city of Camas to reconsider due to multiple factors including the traffic and environmental considerations. All water in that area leads to the Lacamas watershed which already had issues resulting in water quality in the lake.
And why can't new developments have deeper set backs with landscape design to not only make them more visually appealing but environmentally friendly as well?

Jen Haslam

Outlook

Public Comment - 19503 NE 14th Cir.

From Emily <emilysnhubbard@gmail.com>
Date Sun 3/3/2024 9:02 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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March
3, 2024

Community
Development
616
NE 4th Avenue
Camas,
WA 98607

To
Whom it May Concern,

My
name is Emilys Hubbard and my family and I reside at the residential address of 19503 NE 14th Cir. Camas WA 98607. I am writing to express my concerns for the proposed development of a gas station, carwash, and convenience store on 13th Street/Friberg-Strunk.
My property line boarders 13th street and the new addition to the area will directly impact the quality of my residence.

Our
family's biggest concern is the amount of increased traffic on 13th street. The intersection between 13th and 192nd is a highly congested intersection during rush hour. The addition of a gas station, car wash, and convenient store will increase the flow of
traffic to an already overburdened street. I have had to wait an additional 10-15 mins trying to turn onto 13th street from 192nd due to games being held at harmony sports complex. The left hand turn lane onto 13th street from 192nd regularly gets backed up
from the hours of 5-6pm. We should be solving these issues first before added additional traffic to 13th street.

I have been constantly fighting off liter since we've moved to this residence. There is a constant flow of trash from 13th street that ends up on my property. We will be building a fence to prevent the influx of trash to continue but the volume will only increase with the introduction of a convent store.

There is already a gas station at Costco on 192nd about a mile away from the proposed area. We do not need two gas stations surrounding a residential area and so close to protected wetlands. The noise level and fumes will not be healthy for the local wild life in the area.

Thank you for your time,
Emilys Hubbard

Resident of
19503 NE 14th Cir.
Camas WA 98607

Outlook

Proposed gas station - 13th Street

From Terry Jones <tljones54@gmail.com>
Date Fri 3/1/2024 2:31 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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Please accept my comment that I support the proposed new gas station on the SWC of 13th Street and Frieberg Strunk. I live at 2 Creeks Condominiums on 75th Ave in Camas approximately 1 mile to the northeast of the subject site. Currently the Costco gas station on 192nd is the ONLY gas station within 4 miles of my house, and all the other many new houses on the Goodwin Rd corridor heading north. Those concerned with pollution coming from this location haven't considered the cost and pollution that comes from hundreds of cars each week that currently have to drive the many extra mileage to get gas. I support a new gas station at this location.
Terry L. Jones
4022 NW 75thAve
Camas,WA

Outlook

THE PROPOSED 13Th street/FRIBERG-STRUNK GAS STATION~CONVENIENCE STORE~CARWASH

From Nicole Long <longswayhome@gmail.com>
Date Wed 3/6/2024 12:46 PM
To Community Development Email <communitydevelopment@cityofcamas.us>
Cc Karin Nosrati, DC <bforback@gmail.com>

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Dear Sir or Madam,
I am writing to you in regard to the SEPA report submitted by the developers of the above referenced property. As a very concerned citizen and long term homeowner (27 years) on NE 13Th ST., and most certainly a party to be potentially negatively impacted, I would like to request your consideration in halting this proposed development.
I have numerous concerns regarding probable significant adverse impacts, the most critical ones that have a high likelihood of negative impact and eventual harm to our family as well as our property value include but are not limited to the following:

+**AIR POLLUTION**
Hazardous chemicals including benzene, ethyl benzene can pose a toxic risk to the environment as well as neighbors per the Community and Environmental Defense Services. Any gas station with diesel and gas storage tanks should be required to have installed tank vent pipes emission control.
+**WATER POLLUTION**
The proposed gas station and car wash will present risk of hazardous and toxic chemicals entering our neighborhood private wells. Our wells are used for our family drinking as well as home gardens to feed our children. The response by the developers on the SEPA Checklist to install storage tanks in line with our wells all the way down 13th ST is very scary. I submit that these safety measures can and do fail. Simply noting that the underground tanks will be safe is just not enough when it's your own family's drinking water that you are discussing.
+**HISTORIC and CULTURAL PRESERVATION**
Per the SEPA report, the archeological services recommend a CULTURAL RESOURCE SURVEY REPORT. As a neighbor and community member, I would ask that the questions left unanswered be given more weight at this time.

I very much appreciate your time and attention to my concerns and would ask that you consider them as those of your fellow neighbors.

Nicole Long

Outlook

-gas station

From ERNEST LUCIER <lucier1796@comcast.net>
Date Wed 2/28/2024 7:25 AM
To Community Development Email <communitydevelopment@cityofcamas.us>

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Good Morning

Putting a service station on Mr. Townsend's former property is liken to placing a horse killing operation down town Camas. 20005 NE 13th Street. Land Owner

Camas governing bodies continue to do stupid things.

Outlook

Gas station near Union HS

From Jodie <jodielmarion@gmail.com>
Date Wed 2/28/2024 12:47 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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Hello.

I am writing to make comment about the plan to put a gas station near the wetland near Union High School.

My comment is “please don’t” for the following reasons:

1. If not a wetland, it is pretty darn close to one. Why take the chance?

2. This area is populated with lots of inexperienced drivers (Union)—why invite more and more complex traffic nearby?

3. There’s plenty of gas nearby—Costco and THREE of them on 1st and 164th. And, we should be working towards less fossil fuel consumption, not encourage more of it.

The decision to put a gas station there flies in the face of the ethos that Washington—the Evergreen state—embodies. Would you please add my comment to the public body of comment? Hopefully the de ion-makers in Camas will listen.

Thank you for your time.

Jodie Marion

Outlook

Proposed Gas Station/Convenience Store at 13 and Friberg/Strunk

From Daniel Moffat <dmoffat@accessvalueservices.com>
Date Wed 3/6/2024 4:52 PM
To Community Development Email <communitydevelopment@cityofcamas.us>
Cc Tim Hein <THein@cityofcamas.us>; Jane Moffat <janemoffat90@hotmail.com>

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City of Camas,

We currently live in a house in Fern Prairie one mile outside the city limits of Camas. We cannot vote in Camas elections but we pay assessments for Camas schools and we also own a house in Lacamas Shores. We moved to Camas in 1991 and our three kids are all proud Papermakers.

We have seen many changes in Camas over the years. Most of these changes have been well handled by the City of Camas and Camas is the better for it.

We oppose the addition of a gas station/convenience store on the corner of 13th and Friberg-Strunk. This neighborhood area is semi-rural in character and it is close to Camas Meadows and the termination of the Lacamas Lake Heritage trail. Less than ¼ mile away are the beautiful Camas flower meadows. This area is also less than one mile from Green Mountain park.

This neighborhood is part of the Lacamas Creek water shed and chemical residue from development here will flow into sensitive Lacamas Creek at a time when we are trying to clean up Lacamas Lake.

The proposed location is also close to Union HS. Such commercial developments sometimes attract unsavory characters. It will surely worsen an

already bad traffic situation at this corner with the addition of more pedestrians.

There is no practical need for yet another gas station/convenience store here. There is a Costco gas station 5 minutes away as part of the existing large commercial area on 192cd avenue and Mill Plain. There is an existing gas station and convenience store at the Fern Prairie Market 6 minutes up SR 500.

We do not need this development except as another example of suburban sprawl can blight Camas. There will be plenty of commercial development in the Camas North Shore expansion.

Thank you for listening,

Dan and Jane Moffat
831-334-6912

Outlook

NE13th gas station SEPA response

From Jeannette Murphy <jenspearin@hotmail.com>
Date Thu 3/7/2024 4:02 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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City of Camas community development team,

I am concerned with the SEPA report for the proposed gas station on NE 13th and Friberg/Strunk. I feel the report is not accurate with concerns to traffic, noise and wetlands.

It seems like there needs to be improvements on 13th street to handle the traffic for this. The proposed entrance and exit to the gas station is too close to the busy intersection. With Green Mountain building even more homes, it will even become more dangerous. This growth has changed since the traffic report was done. The school traffic is so heavy right before and after school and I'm not sure this was taken into account in the report.

I am concerned with the noise from the car wash and outdoor vacuums. The report claims there is no significant noise concerns but I feel that needs to be proven.

I believe there are wetlands on that property that were not mentioned in the report.

I did not realize that a high traffic convenience store could be built in a business park zoning so close to a neighborhood and school. It seems like a stretch in zoning. I am concerned with alcohol and tobacco sales close to my home and schools.

Thank you,
Jeannette Murphy
Morning Meadow Estates home owners

20007 NE 16th St
Camas, WA
360-608-7751
Jenspearin@hotmail.com

Get Outlook for iOS

Outlook

New Proposed Camas Gas Station

From Jessica Niles <jniles325@gmail.com>
Date Sun 3/3/2024 5:04 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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Hello,

I am a concerned citizen whose values and opinions align with those expressed by Ms. Wagner. We have moved beyond a time when there is any justification for new gas stations. Our world is no longer approaching a critical juncture on climate change; we're there. Concerns have been expressed quite vehemently by generations from the current Gen Alpha all the way back to before my group of Millennials were young people. We can not continue to act as if nothing is wrong. We must take actions aligned with science.

If a "fuel station" of some kind is unavoidable, it should be focused on fast, efficient, electric vehicle charging. There is no justification that can warrant continued interaction with fossil fuels.

Do the right thing.

Best regards,
Jessica Niles

Outlook

Personal Concerns Regarding Proposed Gas Station Development

From Arianna Nosrati <ariannanos13@gmail.com>
Date Thu 3/7/2024 4:49 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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To Whom It May Concern,

My name is Arianna Nosrati, and I am a senior undergraduate student at Washington State University pursuing a major in Biological Sciences and a minor in Chemistry. My family and I have resided in unincorporated Clark County for twenty years, with our property standing on the northwest corner of Friberg-Strunk street and Goodwin road.

It has come to my attention over the last several weeks that a deal has been made to convert the plot of land on the southwest side of this intersection into a gas station, convenience store, and car wash. This news was very alarming to hear, as I am very familiar with the environmental impacts gas station vapors and occasional spills have on the surrounding land. The intersection is at the top of a hilly road which slopes down on Goodwin road east towards Ingle road. Drivers familiar with Goodwin road can recall the large untouched wetlands and grasses that can be seen on the left and right side, which connect towards the northern end of Lacamas Lake's trailhead. Lacamas Lake is a prehistoric remain of the well-known Columbia River, which has suffered over-enrichment over the past several years due to fertilizer pollution runoff from nearby homes. This land requires protection and isolation from harmful toxicity which gas stations are incapable of fully preventing, especially due to the topography of the land. Lacamas lake and surrounding bodies of water require protection from additional feasible harmful toxicity. According to the U.S. Fish and Wildlife Service, this region is home to over 300 species of birds, coyotes, the black bear, various fish, deer, and numerous plant species. Over time, this area has seen an increase in deforestation and noise/light pollution, however there hasn't been any major toxicity exposure to the soils and water reserves. We are educating our students in elementary science courses to identify constraints such as this one to make children more aware of the environment through field trips and experiments. The allowance of this project contradicts the information we are educating. What is a situation like this one showing our future generations? I believe that introducing a likely source of chemicals, such as petroleum, to this environment would drastically impact the environmental structure the land currently holds which in the long term could result in species extinction.

As mentioned above, my residence is directly on the northwest corner of this intersection. My bedroom and dining room both face the south direction, and I have a great concern with an increase in noise pollution on the road due to the placement of these facilities. Being a full time student and part-time

900

employee, home is the place I seek rest and comfort on my longest days. I would hate to have a hard time falling asleep at night because of the traffic which these facilities would experience. In addition, the intersection already experiences a high volume of drivers due to Union High School less than a half a mile south on Friberg-Strunk street. A gas station and convenience store would attract an additional cohort of drivers to the area, causing an unimaginable amount of congestion right by a neighborhood of families with young children, students, and hard-working citizens.

The environment and the residents who were here first as tax payers require their voices to be heard. The development of a gas station, convenience store, and car wash are unacceptable in this region of the city boundaries, and should be relocated to an area where these concerns wouldn't exist. It is our right as individuals in the beautiful Pacific Northwest to proudly represent and preserve our untouched environments to maintain what we call our home.

Thank you for your consideration,
Arianna Nosrati
360-954-6750

Outlook

Walking to School Past Gas Station

From Mar Nos <mformar2@gmail.com>
Date Thu 3/7/2024 3:08 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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Hi,

I am a student at Union High School. Because our home is so close to Union there is no school bus. Students from our neighborhood often walk to and from school. If you allow a gas station to be built, we will have to walk past a gas station on the way to school.

My sister used to work at the Nothing Bundt Place on 164th Avenue, next to the 7-11 gas station and convenience store. It is so bad with the type of people who hang out there, that it takes 2 people to go together to take out the trash, because it is not safe.

How can the kids from my neighborhood get to school safely once this gas station is built?

Marlise Nosrati

Outlook

NE 13th St Gas Station - Traffic Analysis Report

From Randy Nosrati <randynos1@gmail.com>
Date Tue 3/5/2024 2:53 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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Dear Sir / Madam,

The traffic study presented by Mr Charbenou presents the following questions and serious concerns.
- Study did not actually account for traffic during the school year rather a simulation based on number of students
- Report identifies at least 2 left turn into the proposed development during AM & PM rush hours but negates the need for a left turn lane
- Report refers to posted speed limit (35 m/h) rather than actual traffic speed throughout the day (majority of the traffic is > 40 m/h and many at >50 m'/h traveling westbound on 13th)
- Report claims 500 feet of visibility to the intersection from both directions, the westbound road curves almost 90 degrees, how was the visibility for westbound traffic determined?
- Report claims 0.6 accidents per year based on staff from WSDOT, what is classified as an accident? We live here and have seen and experienced more accidents than 0.6 / year. There are multiple car accidents per year just from the Union high drivers, not including others.
- Report acknowledges traffic increase of at least 2% per year and continuing to increase and the necessity to widen the 13th st road by 2035. How is the city of Camas planning to widen the road? Where is the real state / land coming from? Once the area is incorporated, it must accommodate for pedestrian sidewalk and wider road?

Lastly and most importantly, we have experienced traffic increase year over year and don't need reports to confirm it. We know for the fact that the majority of the vehicles drive faster than speed limit, in some instances 55-60 m/h. We have observed, helped victims of accidents in the intersection more than 2 times per year, we had one car drive through the fence into our backyard.

We are seriously concerned about higher risk of traffic accidents introduced due to attracting vehicles to the gas station, dangerous left turn into the gas station, unprepared left turns into the gas station, stopping at left turn for oncoming traffic to move into the gas station, while vehicles are driving up the hill westbound coming around the corner at above speed limit endangering safety of our family. I don't want to have a vehicle to drive through my backyard over my children when we are enjoying an afternoon outdoors or simply doing a bit of yard work. Aside from risk of damage to our property, our life and safety is at risk.

We are requesting the City of Camas to take the increased traffic accidents, people's safety and our family's safety into serious consideration. There is no price for the safety and health of children and residents in our neighborhood.

Thank you,

Randy Nosrati
(360) 954-6757

Outlook

SEP A23-12 13th Street Gas Station

From Lisa Ogden <lisaogden.11@gmail.com>
Date Wed 3/6/2024 7:03 PM
To Community Development Email <communitydevelopment@cityofcamas.us>
Cc Mike Ogden <mogden@westernconstruction.com>; Karin Nosrati <bforback@gmail.com>

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To whom it may concern,

I am a resident of Morning Meadows neighborhood directly across from this proposed development. My address is 19916 NE 16th St.. Please review my comments regarding the SEPA report for this project.

In response to question:

2.a Additional air pollution is of concern to the families living adjacent to this proposed use. We will already see a huge increase in diesel truck traffic from the warehouse on the SE corner of this intersection. Approving this proposed use will greatly exacerbate the problem.

7.b.2:
Long term traffic noise being described as “slight increase” is NOT an accurate assessment given the anticipated addition of 2281 vehicles per day, per applicants response to question 14. Not to mention the after hours refueling semi trucks with back up alarms and air brakes. This is being proposed directly adjacent to and across the street from long established private residences.

11.d.
Applicants addresses light shields to minimize impacts offsite. We have residences adjacent to the property on 2 sides and would expect the jurisdiction to reject monument signage and any form of projected or neon signage. Back light signage would be far less obtrusive to the adjacent homes.

Business hours should also be restricted to neighborhood standards, 6 am til 10 pm.

14.
The distance from the one proposed entry/exit to the intersection of 13th/Friberg/Strunk is LESS than the arterial required 300’. This entrance location with no left turn lane will cause traffic to back up into the intersection creating additional traffic hazards at an already dangerous location. Patrons attempting to exit westbound on 13th would also create hazards this close to the intersection. The responsible solution would be to require a second entry/exit on Friburg/Strunk and require both to be right turn in and right turn out ONLY.

The validity of the current traffic study is questionable as it was done with no consideration for the new warehouse traffic at the SE corner of this intersection and was done off school hours, failing to account for Union HS traffic located less than 1 mile south of this site.

The current proposal does nothing to mitigate noise/light/air pollution nor does it address the complete lack of pedestrian sidewalks along 13th street. If allowed to proceed, this business will draw pedestrian traffic on 13th, an arterial with little shoulder and steep ditches. At a minimum, for public safety, the City and County should require ADA sidewalks be added to both sides of 13th street from Freiburg/Struck to 192nd Ave.

The applicants own fuel delivery plan requires 18 wheel vehicles to enter the oncoming traffic lane in order to both enter and exit the site. Per applicants plan these trucks will be in the head on lane, while exiting, to within 50’ of the

intersection creating an intolerable risk to public safety. The speed of vehicles traveling west on Goodwin/13th approaching this intersection of often far in excess of posted speed limits.

The SEPA report consists of findings taken late August at the end of one of the driest summers on record. Were samples taken at this time of year, the result would be far different as August is historically the only month where this site does not contain standing water and saturated soils.

The residence location directly north of this proposed use has an existing water well. The underground fuel storage tanks proposes for this use are closer to this existing well than code would allow a new well to be permitted adjacent to existing fuel tanks, how can this be allowed without severe impact and potential contamination to a pre existing well/home?

Sincerely,

Lisa Ogden

Outlook

Fwd: SEP A23-12 13th Street Gas Station

From Mike Ogden <mogden@westernconstruction.com>
Date Thu 3/7/2024 6:32 AM
To Community Development Email <communitydevelopment@cityofcamas.us>

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>
> To whom it may concern,
>
> I am a resident of Morning Meadows neighborhood directly across from this proposed development. My address is 19916 NE 16th St.. Please review my comments regarding the SEPA report for this project.
>
> In response to question:
>
> 2.a Additional air pollution is of concern to the families living adjacent to this proposed use. We will already see a huge increase in diesel truck traffic from the warehouse on the SE corner of this intersection. Approving this proposed use will greatly exacerbate the problem.
>
> 7.b.2:
> Long term traffic noise being described as “slight increase” is NOT an accurate assessment given the anticipated addition of 2281 vehicles per day, per applicants response to question 14. Not to mention the after hours refueling semi trucks with back up alarms and air brakes. This is being proposed directly adjacent to and across the street from long established private residences.
>
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> Applicants addresses light shields to minimize impacts offsite. We have residences adjacent to the property on 2 sides and would expect the jurisdiction to reject monument signage and any form of projected or neon signage. Back light signage would be far less obtrusive to the adjacent homes.
>
> Business hours should also be restricted to neighborhood standards, 6 am til 10 pm.
>
> 14.
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>
> The validity of the current traffic study is questionable as it was done with no consideration for the new warehouse traffic at the SE corner of this intersection and was done off school hours, failing to account for Union HS traffic located less than 1 mile south of this site.
>
> The current proposal does nothing to mitigate noise/light/air pollution nor does it address the complete lack of pedestrian sidewalks along 13th street. If allowed to proceed, this business will draw pedestrian traffic on 13th, an arterial with little shoulder and steep ditches. At a minimum, for public safety, the City and County should require ADA sidewalks be added to both sides of 13th street from Freiburg/Struck to 192nd Ave.
>
> The applicants own fuel delivery plan requires 18 wheel vehicles to enter the oncoming traffic lane in order to both enter and exit the site. Per applicants plan these trucks will be in the head on lane, while exiting, to within 50’ of the intersection creating an intolerable risk to public safety. The speed of vehicles traveling west on Goodwin/13th approaching this intersection of often far in excess of posted speed limits.

>
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>
> The residence location directly north of this proposed use has an existing water well. The underground fuel storage tanks proposes for this use are closer to this existing well than code would allow a new well to be permitted adjacent to existing fuel tanks, how can this be allowed without severe impact and potential contamination to a pre existing well/home?
>
>
> Sincerely,
>
>

Mike Ogden
Project Manager
Mogden@westernconstruction.com
Cell: 360.798.4713

Sent from my iPhone
>
>
>
>

[Western]
Western Construction Services, Inc.<http://www.westernconstruction.com>
2300 East 3rd Loop, Suite 110
Vancouver, WA 98661
Office: 360-699-5317
Fax: 360-694-7818
WA LIC WESTECS 162R8 OR CCB 63717 AK LIC 28375

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Outlook

Two Issues

From gail and oz pawellek-osmun <gailandoz@hotmail.com>
Date Thu 2/29/2024 1:36 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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I am opposed to locating a car oriented facility at 13th St.

Can someone explain why a new cell tower is needed . The equipment on top of the Theater generates income for the city and has a higher elevation than the proposed new tower.

Richard Osmun

Outlook

Proposed Gas Station/Car Wash at corner of 13th & Friberg-Strunk - Public Comments on SEPA

From heidihparker@gmail.com <heidihparker@gmail.com>
Date Thu 3/7/2024 1:40 PM
To Community Development Email <communitydevelopment@cityofcamas.us>
Cc eric.hahn@cityofvancouver.us <eric.hahn@cityofvancouver.us>

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Dear City of Camas & Mr. Hahn –

I have reviewed the SEPA checklist submitted for the captioned gas station and have the following concerns about #14 Transportation:

1. The applicant should conduct a traffic study when Union High School is in session instead of relying on models. The intersection at 13th & Friberg-Strunk is packed with high school student drivers and buses twice a day nine months out of the year. Whatever model Charbonneau used isn't accurate. I've lived in the Morning Meadows subdivision since 2008 and I've almost been hit countless times by teens in that intersection. And now we have a warehouse at that corner, which will add large truck traffic to an already dangerous intersection. I trust that truck traffic wasn't factored into Charbonneau's study.

2. The report concludes that a westbound turn lane on NE 13th isn't warranted. For me, that one statement calls into question the credibility of the entire report. First, no one driving west on 13th is going 35 mph unless they had to stop at the 13th/Friberg-Strunk light. Second, when high schoolers are streaming through that intersection after school more than one car will want to stop at the convenience store for a Red Bull. There will likely be several cars of kids who want to stop and they will back up the entire intersection because the proposed entrance to the convenience store is going to be just 200 feet from the intersection, which leads to my 3rd concern.

3. Why would the City of Camas be so willing to approve a commercial entrance that doesn't even come close to the 600 foot minimum? What are the requirements for obtaining a deviation? Why is the City prioritizing access for gas tanker trucks over the safety of hundreds of high school kids who drive through that intersection 9 months a year? Is the City legally obligated to grant a major deviation?

I understand that the character of this area is evolving. I know how hard it is to strike a balance between emerging commercial zones that abut residential zones. But the balance is possible.

I was once a zoning attorney in Virginia and mostly represented developers. I know there's an art to downplaying the impact of a development on nearby residential areas. That's why I'm not terribly convinced by the traffic report. I also know that it's hard to stop developers. But I grew to respect and admire the planning departments and governing boards that made my clients either propose a better project or jump through expensive hoops to preserve the beauty and safety of adjacent areas. I hope both Camas and Vancouver will do the same with this developer.

Respectfully,
Heidi Parker

20103 NE 16th Street
360-907-8963

Outlook

Comments re SEPA for facility at the intersection of 13th Street & Friberg Road

From Kristin Price <19813mkp@gmail.com>
Date Thu 3/7/2024 7:03 AM
To Community Development Email <communitydevelopment@cityofcamas.us>

1 attachments (55 KB)
cross-walkpdf.pdf;

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Comments are included bothin text and in an attached pdf file.

Thank you for receiving comments regarding the SEPA document for a proposed construction of a gas station / carwash / convenience store at the intersection of 13th Street and Friberg Road. Review of the SEPA document raises multiple concerns. I strongly urge additional time for review of this proposal within the community, including additional studies and further consideration of environmental impacts.

What is the demonstrated need for this facility in the community?
How does construction of a new gas station fit in with statewide environmental initiatives in terms of encouraging clean energy? (Washington State Department of Ecology, Climate Commitment Act) Do any benefits outweigh the risks associated with the construction of a gas station adjacent to a residential area and a high school with outdoor recreation facilities?

Have environmental impacts been adequately addressed?
EARTH - Clarification of soil content is needed to address the impact on the drainage field. Note that this land would currently support extension of a green space use, wetland habitat area, park use or agricultural use (nursery). Erosion control measures are not detailed, it appears that the project would interfere with existing drainage systems.

There is existing vegetation on the property, now landscaped for residential use. There is a beautiful Priority I Oregon White Oak tree on-site. This tree and other landscaping should be incorporated into the design of any commercial space on the property.

AIR
The proposal acknowledges: "Long-term emissions will be produced by automobile traffic and normal commercial/retail uses as well as possible vapor from the gas tanks."
The proposal does not provide adequate solutions to reduce or control these impacts.

Research indicates that Stage 2 vapor recovery systems in the gas storage tanks and delivery systems are not sufficient to mitigate the impact of air pollution from a facility. Wind patterns (high E/NE winds) will result in noxious vapors being carried to residential areas immediately north and west of the proposed facility.

There is a risk for igniting a wildfire - a particular concern given the recent history of local wildfires during hot, dry summer periods and nearby wooded areas. The proposed project would add to hazardous levels of AQI noted in the last two years in our community. Accordingly, health consequences are present for residents living nearby, including children and elderly residents.

The dispersion of toxic materials would threaten the viability of small organic agricultural plots (home gardens) in this area.

WATER
The proposal acknowledges: "Yes, if waste materials were somehow released or dumped into surface runoff flows, substances associated with the source material could enter ground or other surface waters."

Note the need for critical review of SWWPPP (Stormwater Pollution Protection Plan)
The proposed project threatens water supplies for nearby residences that have existing well systems.
The proposed project would impact the supply of groundwater, with the potential of increasing pollution to Lacamas Lake, downhill from the proposed facility.
The project should include steps for decommissioning of the underground fuel storage tanks and restoration of the property after use.

The proposed project creates a dangerous intersection. This project would impact residents of the area, families of Union High School, and drivers traveling on 13th Street, 1st Street, 192nd Street and Friberg Road. Winter months and ice accumulations on 13th Street have contributed to multiple vehicle crashes along this route. The proposal does not address concerns related to maintaining road safety, including obstruction of line of sight for drivers and management of known seasonal hazards. The project would inevitably result in an increased number of crashes at or near this intersection.

Modifications to roadway and the intersection will be necessitated by the facility. The proposed project suggests entry that is unacceptably close to an active intersection. There is no provision for safe egress from the facility in the event of an emergency. The proposed traffic flow does not provide safe exit from the facility for traffic heading west on 13th Street. The proposed project would disrupt both east-bound and west-bound traffic on13th Street and Friberg Road.

There is a critical need for an updated transportation study. The current study is inadequate and contains inaccurate estimates. The transportation study does not address traffic volume during late afternoon (school dismissal) hours. The proposed project does not adequately plan for traffic flow, including the delivery of fuel. Plans do not address queuing of vehicles within the property, particularly during refueling operations.

There are markedly increased safety risks for both drivers and pedestrians. The operation would interfere with school bus arrival and departure, as well as special event traffic. The project interferes with safe recreational use for bicyclists and runners. This is a route that has been established for safe transit on a well-known bicycle route. The project proposal does not provide for safe transit for pedestrians (students walking to school). Upgrading sidewalk access around the facility and across

13th Street should be required.

Hours of operation for the service station/convenience store should be limited to 9:00 pm due to the proximity to adjacent residential areas. A retaining wall is needed at the rear to limit intrusions to adjacent residential areas, given the risk of increased crime.

Outlook

Proposed Gas Station at NE 13th Street/NW Friberg-Strunk Street

From Elisabeth Rickard <elisabeth.rickard@gmail.com>
Date Thu 3/7/2024 10:21 AM
To Community Development Email <communitydevelopment@cityofcamas.us>
Cc Administration Email <administration@cityofcamas.us>

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Dear City of Camas Community Development Team,

I would like to strongly disagree with the assessment that a new gas station/convenience store/car wash on the corner of NE 13th Street and NW Friberg-Strunk Street will not have a significant negative impact on the surrounding area/residents. Below are my concerns.

According to the CARA map published on the City of Camas website, this proposed location is within one mile of two different Critical Aquifer Recharge Areas; the first is located at approximately NE 197th and NE 16th Street, the second Critical Aquifer Recharge Areas is approximately at NE Goodwin and NW Alexander Lane (at LaCamas Creek) is just downhill from the proposed site.

What assurance do we have that the catch basins for this business will be able to hold, process and filter spilt gasoline, dripping oil from idling engines, runoff car wash chemicals and stormwater effectively before being released into an open ditch that is up hill from, and will feed into the CARA located at NE Goodwin and NW Alexander Lane? What ongoing independent or state testing of groundwater will be done to ensure this business is properly disposing of its runoff water?

There are numerous hazardous vapor compounds released from fueling and underground gasoline storage tank vents. One of which is Benzene. According to the World Health Organization Guidelines for Indoor Air Quality, "there is no safe level of Benzene." According to a 2019 ScienceDirect study, emissions from gasoline storage tanks constitute a health risk up to 524 ft away, in all directions. The risk of cancer linked to Benzene has caused the California Air Resource Board to recommend that schools, daycares and other sensitive land uses (i.e. homes) should not be within 300 ft of gasoline storage tanks. What measures have been outlined to protect neighbors within 300 ft? And do these measures meet the highest industry standards of reducing air born pollutants from reaching homes nearby?

The additional chemicals from the car wash make this site even more hazardous. According to a recent University of Washington study, car washes that use cleaning agents containing hydrofluoric acid should train staff in proper handling. The study sites over 48 Labor & Industry claims, and even one death due to exposure. The study also states that even in small amounts, hydrofluoric acid is "insidiously toxic". What measures will be taken to protect workers and the public at large from chemical exposure at this car wash by the business and by the City of Camas?

There is also a risk of having a car wash next to a gas station. The risk of gasoline and other chemicals accidentally mixing should be considered. If the ethanol from gasoline were to mix with the hydrofluoric acid from commercial car wash mixtures, it would result in ethyl chloride. According to the National Institute for Occupational Safety and Health (NIOSH), ethyl chloride has an Immediately Dangerous to Life or Health air concentration value (IDLH) of 3.8%. Ethyl chloride is also extremely flammable in both liquid and gas form and is considered a federal air pollutant. What measures will be taken to prevent the accidental mixing of gasoline and other chemicals? How will the business, the Vancouver and Camas Fire Departments, and the City of Camas, respond when HazMat accidents and spills do happen?

A gas station on NE 13th St and NW Friberg-Strunk, will put extreme and permanent undue financial burdens on homeowners nearby. Homes directly in this area are on well water. When a home with a well is going up for sale, and that home that is located within one-quarter mile of a gas station, the homeowner must obtain an independent inspection of the well system as part of the appraisal process (as stated in the FHA Single Housing Policy Handbook for Appraiser and Property Requirements). Moreover, according to the property development and data research company, Locate Alpha, homes located near gas stations sell for 30-50% less than homes located one mile or more away. So, in addition to needing special inspections of well water systems, this gas station will directly affect property values. What measures will be taken to offset these financial burdens for nearby neighbors by the business, and by the City of Camas?

As stated in the SEPA Checklist for this proposed gas station, it is estimated to generate 2,281 new vehicular trips per day. What market research has been done to support these numbers? If this site does not get the daily business on the high end of these estimates, what assurance do we have this building won't be boarded up and a blight on the neighborhood in a few years?

If this business does generate the very high estimate of over 2,000 trips per day, what measures have been outlined by the business and by the City of Camas, that the 13th Street and NW Friberg-Strunk intersection and roads can support that much traffic? Has the business proposed additional traffic signals to handle the numerous left turns that drivers will seek to make onto 13th Street? Or does the business propose that over 2,000 drivers make a right hand turn and use NW Friberg-Strunk instead? And if so, has the business reached out to, and gotten the approval of the Evergreen School District? Union High School will be at a higher risk of traffic incidents with over 2,000 more vehicles driving past each day. Has the business expressed to the Camas Police Department that everyday there will be delivery trucks using multiple lanes of traffic (gas tankers, general merchandise, food, alcohol, cleaning supplies, LTL freight, etc.)? How does the business intend to keep trucks entering, and backing up from oncoming traffic not an interference with a very busy intersection, a blind uphill curve from west-bound traffic on Goodwin Road, and the normal traffic of new high school aged drivers?

Busy convenience stores come with many risks. According to FBI 2020 Crime Data, convenience stores account for 3% of all violent crime in the US. Additionally, convenience stores make up 10% of robbery locations, while gas stations make up 5%. What measures is the business taking to curb the threat of crime at this location? Will the business employ armed security guards? Does the business intend to use cameras inside and outside of the building? Does this business have a crime prevention plan involving the Camas Police Department and the Vancouver Police Department?

As stated in the SEPA Checklist for this proposed gas station, this site is part of the Pacific Flyway for migratory waterfowl. Light pollution affects millions of birds every year. With a new tall commercial warehouse next door, the light pollution from the lights of this gas station could attract and confuse waterfowl. As waterfowl migration happens primarily at night, what measures will the business take to ensure canopy lights and outdoor building lights will be off after sunset? Has the business sought the help and consultation of the Department of Wildlife? With fewer and fewer areas for birds to safely land, how will the gas station balance building on 80% of the land and the needs of the birds on the Pacific Flyway?

Thank you for taking my questions about this proposed gas station/convenience store/car wash on the corner of NE 13th Street and NW Friberg-Strunk Street. I look forward to your timely responses.

Lastly, as a resident of Camas for most of my life, I will end this email with my opinion; Camas needs more green spaces, not gas stations. This land should be protected and used for good, not for the profit of big oil at the cost of our neighborhood and the environment. I grew up here. My bus stop was at this intersection, and it pains me to see the development that has happened here already. It's certainly not lost to me that businesses and cities must grow, and that land has been getting repurposed for generations, but what are you planning to leave untouched for my generation? For the generations below me? Let's keep Camas greener than its neighbors, let's keep our wildlife safe and let's protect the water we all rely on.

Sincerely,

Elisabeth R. Rickard

Outlook

SEPA23-12 Comments

From joanier@comcast.net <joanier@comcast.net>
Date Thu 3/7/2024 4:43 PM
To Community Development Email <communitydevelopment@cityofcamas.us>
Cc JOAN RICKARD <joanier@comcast.net>; rickdr@comcast.net <rickdr@comcast.net>

1 attachments (22 KB)
SEPA23-12_letter_030724.docx;

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Richard and Joan Rickard
1417 NE 202nd Ave.
Camas, WA 98607

March 7, 2024

Robert Maul,
City Of Camas SEPA Official
Community Development Department
616 NE 4th Ave.
Camas, WA 68607

Re: SEPA23-12 13th Street Gas Station

Dear Robert Maul,

We are responding to the City of Camas February 22, 2024, letter concerning SEPA23-12 Determination of Non-Significance. We strongly disagree with the Camas Community Development Department recommendation of the **SEPA23-12 13th Street Gas Station Determination of Non-Significance**. We believe that this project will have a negative effect on the environment and our neighborhood. We live in Katie's Hill just north of 13th St, our property is less than 200' of the proposed gas station. We have lived here since 1990.

If this proposed project goes forward the air quality will be affected by the gas vapors escaping from the underground storage tanks when they are being filled and vapor leaks from the underground storage tanks venting systems, and gas vapor leaks from the pumps when customers fill their cars gas tank. These vapor compounds which include benzene, toluene, ethyl benzene, and xylene are a serious health risk and can travel more than 500' in all directions. Benzene is one of the more

hazardous vapor compounds. Adverse health effects of benzene include nausea, cancer, anemia, increased susceptibility to infections, and low birth weight. According to the World Health Organization Guidelines for Indoor Air Quality there is no safe level for benzene. The California Air Resource Board recommends that schools, daycares, and other sensitive land uses should not be within 300' of gasoline storage tanks. Also, affecting the air quality will be the exhaust fumes from the increase in traffic and the cars and trucks waiting, idling at the gas station.

The water quality will be affected by this project. The aquifer and wetlands need to be protected. Several homes on both sides of 13th St. rely on private household drinking water wells. Some of these wells are less than 500' from the proposed gas storage tanks. The FHA single Housing Policy Handbook for Appraisers and Property Requirements states that if you have a drinking water well that is within ¼ mile of a gas station, when you sell your home, you will need to obtain an independent inspection of your well as part of the appraisal process.

The SEPA Checklist, b. Water Runoff states that "Stormwater from pollution generating surfaces will be treated prior to being routed to an existing roadside ditch."

How well will the catch basin filter system work on all the everyday surface runoff of gas, oil spills, car wash detergent (Hydrofluoric acid, waxes/petroleum products), and grimy wastewater? And most important, can the catch basin filter system handle any major spills or the increased volume when it rains heavily? How clean will this supposedly "treated runoff" be before its diverted to the roadside ditch that flows down the hill to Lacamas Creek and into Lacamas Lake.

The gas station will create loud noises from many sources such as the car wash and vacuums, customers' loud music and voices, idling cars, motorcycles, trucks, horns, the backup warning beeps from the delivery trucks and the fuel tanker trucks. The surrounding area is a quiet residential neighborhood. The gas station will disturb and interfere with the peace and comfort of those living in the neighborhood.

The lighting from the monument sign would create light pollution outside of the perimeter of the project. The LED bright lighting of the interior of the convenience store will project onto the concrete surfaces and reflect to neighboring properties and the LED lighting from the gas pump overhangs will reflect off the concrete surfaces. Vehicles entering and exiting the gas station would shine their headlights into neighboring homes, this will especially be worse in winter with the prolonged daytime darkness. The area is immersed in darkness, except at the intersection. Light pollution can negatively affect many parts of our environment, including migratory birds, pollinators, plants, animals, and people. As stated in the SEPA Checklist for this proposed gas station, this site is part of the Pacific Flyway for migratory waterfowl. Light pollution disrupts the migrations of birds, especially waterfowl that migrate primarily at night. This project would significantly change the night sky.

Traffic safety is a major concern. The 13th St. /Strunk-Friberg intersection is already dangerous with school buses and scores of inexperienced high school drivers passing though it twice a day during the school year. The soon-to-be-completed warehouse east of the proposed gas station will introduce large truck traffic to the intersection.

The proposed gas station will have only one entrance / exit fronting 13th St. and that entrance is only a couple hundred feet from the intersection of 13th St and Friberg-Strunk.

During the morning most of the traffic is headed eastbound on 13th St. and then turns right at Friberg-Strunk to go to Union High. The right-hand turn lane is in front of the gas station entrance, the cars turning right onto Friberg will block the entrance to the gas station. Customers entering or leaving the gas station will have to wait for a break in traffic, likely causing congestion. In the afternoon when school is out most of the northbound Friberg/Strunk traffic turns left onto 13th Street. Westbound traffic on 13th St. will be blocked while cars wait to turn into the gas station, and that will cause congestion. The westbound vehicles on Goodwin Rd / 13th St. come up the hill and around the curve at a speed of 40+ mph. When the traffic signal is green (or yellow) those vehicles generally do not slow down before the 13th St/Friberg intersection, so there may not be enough time to stop if there is a vehicle stopped in the travel lane waiting to turn left into the gas station. Large tanker trucks and delivery trucks will stop traffic as they attempt to maneuver into and out of the gas station.
The traffic situation is already bad with all the current traffic from the surrounding area, the high school, and the large trucks from the soon to be warehouse and then to add another 2200 vehicle trips per day to the 13th St. gas station would just compound the problem.
For the entrance/exit of the gas station to be safer for both vehicles and pedestrians, 13th St should be widened to add a left turn lane. Sidewalks should be installed on both sides of 13th St. from Friberg-Strunk down to 192nd Ave.

In summary we think this project is incompatible with our neighborhood community. The proposed gas station does not consider that it is surrounded by quiet residences and would project its collective problems onto the neighborhood.

Due to the environmental concerns and the traffic issues this is not the best location for a gas station, car wash and convenience store. A gas station is not needed at this location. Within 3 miles there are at least 6 gas stations / convenience stores and car washes, most are open 24 hours. Gas consumption is declining. The high school students are within easy walking distance to a convenience store near their school.

We ask you to carefully consider the environmental, traffic safety, and quality of life issues for the neighborhood and not approve this project. Thank you.

Sincerely,

Richard and Joan Rickard

Outlook

Gas Station Convenience Stire Goodwin/13th St

From karenrigley021@gmail.com <karenrigley021@gmail.com>
Date Thu 3/7/2024 4:13 AM
To Community Development Email <communitydevelopment@cityofcamas.us>

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I grew up in this area. It has always felt very safe. I walk frequently and with the traffic flow in the last couple of years it has become very dangerous to cross from 202nd and Goodwin. I always have to cautiously walk WHEN THE SIGNAL indicates WALK. I always have to point at the walk sign when drivers are turning onto 13th from Goodwin, well this day I pointed and the person came to a screeching stop, which he should have stopped in the first place, as he made his abrupt stop the guy behind him rear ended him. I am sure this won't be the last incident. I am fearful someone is going to get hit! They need to reduce building in this area it is NOT SAFE and is not good for the community! Save our area so we can be safe!
Karen Rigley/Schnell
Sent from my iPhone

Outlook

Gas station / Car wash / Convenience Store Corner @ NE 13th St and Friberg-Strunk St.

From markgayles@aol.com <markgayles@aol.com>
Date Wed 3/6/2024 5:20 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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Good Afternoon,

We would like to voice our comments and concerns about the proposed gas station/convenience store/carwash development going in on the corner of NE 13 St and NW Friberg-Strunk St.

We live on NE 197th Ave, which is a short cul-de-sac about .2 of a mile from the proposed development. We have concerns about the traffic and noise that this development will cause. From the corner of where this proposed development is going there are no continuous sidewalks going west on NE 13th St to NE 192nd Ave. I've twice reached out to the city of Camas and Clark Co voicing my concern about the increased traffic and the many large trucks, and the problems they pose to people/students walking or riding a bike on NE 13th St. There is now a very large warehouse being built on the east side of the proposed intersection that is going to only draw more traffic and large trucks.

Looking at the traffic study done for the proposed development it does not seem to take into account for any increase in traffic due the already under construction new commercial warehouse and the two new commercial buildings on NW Friberg-Strunk St. NE 13th St doesn't have a center turn lane, and a long section of it, approaching from the west of the intersection where the proposed gas station is, doesn't have a shoulder on either side of it. Twice a day, nine months of the year there are hundreds of students driving to and from Union high school which many are using that intersection and heading west on NE 13th St. Reading through the SEPA study it doesn't seem to take into account any realistic numbers of the fore mentioned traffic. Looking at the proposal it looks like its going to only have one entrance/exit off NE 13th St. Is that entrance far enough from the intersection of NE 13th Street and NW Friberg-Strunk St? With no center turn lane to turn into the gas station from the east it won't take very many cars to back up to, and into, the intersection? We've lived here for 25 years and have seen a number of accidents at that intersection and on NE 13th St and can't imagine the increase with the proposed development.

All the houses on our street are on wells. We are also concerned about what a gas station and it's runoff will do to the local ground water. All the homeowners on our street, and I believe that most the homes in our area, including the ones next to the gas station are on wells. We find it troubling that the city can allow a gas station that close to where we are getting our drinking water. I know car washes do their best to recycle the wash water but having been through car

washes myself I know that the cars do not come out completely dry and that water does end up outside and on the surrounding area. I'm not opposed to gas stations or car washes, I just think that next to and over an area's aquifer is not the right place. Here is some information that I found :

As the environmental risks associated with gas stations—particularly the risk of gasoline leaked from underground storage tank (UST) systems—have become increasingly clear, vast improvements have been made in the design, construction, and operation of UST systems. Unfortunately, federal and state regulators and UST system designers and installers have ***not*** *succeeded in engineering all of the groundwater contamination risk out of these systems. A study by the U.S. Geological Survey, which randomly sampled 225 water supply wells in Rockingham County in 2003, detected the gasoline additive MtBE in 40 percent of public wells, and found a correlation between MtBE concentration and proximity to USTs.*

There are designated wetlands that run behind all the houses on our street, NE 197th Ave, and up to NE 13th street from the north and then again is designated wetlands across NE 13th St on the south side, and it looks there are some designated wetlands on or near the proposed gas station lot now. What does the developer have to take into account for those? If I'm reading it right it looks like the SEPA checklist was done in August. The ground in this area is considerably different from October to June with all the rain we get. I would think that any soil sampling or ground testing ought to be done during this time, when there's a more realist representation that would yield more realist results.

The only noises they mentioned in the SEPA report are increased traffic and vehicle noise, it looks like they are proposing outdoor vacuums as part of the car wash. These vacuums are very strong and noisy and would think that they should be listed and considered in the report also.

Why is there not going to be an Environmental Impact study done? And why is the City of Camas allowing the gas station parking spot spacing and setback deviations from its own CDSM?

We love the this area and have seen tremendous change over the past 25 years. We are not against commercial development and people should be able to use their property as they see fit. But we don't think that the applicant has meet the requirements that the City, County, State and Fed's have in place to protect the surrounding landowners property, our drinking water, the environment or the safety of it's citizens.

We appreciate you listening and look forward to hearing more later, thanks.

Mark and Gayle Scott
1415 NE 197th Ave
Camas, WA 98607
360-600-2792

Outlook

13th St/202nd Ave. GasStation

From WILLIAM SMALL <rgwtsmall@comcast.net>
Date Tue 3/5/2024 12:20 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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The corner of 13th St and 202nd (Friberg-Strunk) is not the place for a gas station. There is gas available "right around the corner" at Costco. 13th and F/S are both only two lane roads (13th is very narrow).

When a car waits to turn left into the station, it will back up traffic into and beyond the intersection, possibly blocking emergency vehicles in and out of our neighborhood which is on the north side of 13th and accessed east and west from 202nd, an extension of F/S.

Traffic at this intersection has increased significantly even since the SEPA report was generated, due to development to the east (i.e. Green Mountain and as far as Livingston Mountain).

There will be big trucks coming and going from the huge warehouse on the SE corner of the intersection probably all night long. Personal cars (teens) and buses to and from the nearby high school as well as the elementary and middle schools use this intersection.

There are at least six water wells along 13th , very close to the proposed station. If an accidental spill or leakage occurs causing contamination, could the City of Camas and the person or persons approving the station be liable in a law suit? Since eighty per cent of the gas station area is hard surface, where is the assurance that our water and the wetlands down the hill will not be contaminated?

The noise and lighting created by the station will not be appreciated by neighbors and wildlife alike! Statistics show that an operation like this will attract crime and surely a lot of litter.

Joe Turner said of the Prune Hill gas station that environmental and traffic concerns were "unfortunate and frightening". But, the gas station was approved. What kind of a city do you want? Surely, NOT one of the "Best Small Cities" !!!

Ruth Small
20217 N.E. 16th St.
Camas, WA 98607

Outlook

proposed gas station at 13th St. and Friberg/Strunk (F/S)

From WILLIAM SMALL <rgwtsmall@comcast.net>
Date Thu 3/7/2024 3:09 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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I see many mistakes and omissions in the SEPA report for the proposed gas station, store, and car wash project.The report claims the property to the east (across F/S) belongs to Camas Meadows Golf course. There is currently a GIANT warehouse under construction.

The air pollution, noise, and traffic congestion from the warehouse semi trucks at this already very busy intersection will cause major problems when adding the gas station.

The single entrance/exit to the station is so close to the intersection, traffic will be backed up blocking the intersection.

The fuel holding tanks are very close to the adjacent neighbor's well. There are wells along the north side of 13th and Goodwin Road that would be contaminated by a spill or leakage.

The SEPA wetlands test took place in August and was 6" deep. Obviously, that should have been done at a wetter time of year. The whole area has spongy lawns after rains. There are scattered wetlands around and through the neighborhood.

NEIGHBORHOOD. This is NOT the proper project for this small lot.

William T. Small
20217 N.E. 16th St.
Camas, Wa 98607

Outlook

Purposed Gas Station on 13th & Friberg-Strunk ATT: Carey Secto

From Ken Waltos <ken.waltos@outlook.com>
Date Mon 3/4/2024 11:33 AM
To Community Development Email <communitydevelopment@cityofcamas.us>

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Hi Carey

we are homeowners very close to the purposed gas station on 13th & Friberg-Strunk.

20106 NE 14th Street, Camas Wa.

We are opposed to this station being located there for the following reasons.

1. Our son in law is a Vancouver police officer and noted that gas station/convivence stores have a higher rate of crime then other types of businesses.
2. we have bedrooms on the second floor of my house, and we believe that the station will adversely create light pollution, impacting sleep.
3. We believe that the SEPA report does not reflect an accurate assessment of the water report due to several factors. A) it was done in August, when the water table is lower. in the winter months there are wetlands and surface water adjacent to the purposed sight. B) There was no mention of the Clark county storm water facility across the street. C)There are also privately owned drinking wells located adjacent and nearby the purposed sight.
4. We have a concern that the additional noise from the carwash and the vacuums will be a constant nuisance and may exceed what is allowed in a residential setting.
5. We believe the purposed entrance is too close to the intersection and will cause an already busy intersection to back up more especially during peak times, when school is starting or ending. The purposed gas tanker truck delivery route will add an additional back up.
6. When school is in session that intersection is used by many inexperienced drivers which has led to many near misses. The SEPA that was filled states that only 60-80 added trips would be added during peak hours out of 2,281 for the day. I do not believe that would be accurate. I believe many of the additional trips will be generated during the already congested school starting time and or during sports-related events.
7. The noise from that intersection has been magnified from the addition of the large warehouse that was built right on the adjacent corner. The addition of the gas station will only make that worse as opposed to some other types of business.

Thank you for considering my concerns and objection to the purposed gas station.

Ken and Lisa Waltos.

Outlook

Fwd: SEPA Comments- Gas Station (SEPA23-12)

From Russell Wegner <russwegner@mac.com>
Date Wed 3/6/2024 5:49 PM
To Community Development Email <communitydevelopment@cityofcamas.us>
Cc CARLO (DNR) ABBRUZZESE <puffbird10@gmail.com>

1 attachments (12 MB)
Wetland.2.pdf;

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Russell & Barbara Wegner

19910 NE 16th St.

Camas, WA 98607

Attn: City of Camas, SEPA Official

Community Development Department

616 NE Fourth Avenue

Camas, Washington 98607

Please confirm receipt.

SEPA Comments: We feel the SEPA is flawed and the project should not move forward

Please see the following:

The SEPA does not address many important issues:

1. **Water Flow and Runoff** (including storm water as well as the method of collection and disposal This is not mentioned in the SEPA) Where will this water flow?
2. **Project Violaton of Camas Municipal Code 16.55.080** - States "Uses prohibited from critical acquifer recharge areas Item F, Fuel and/ or Gas Stations."

Surface spills during the rainy season will mix with storm water which would then be discharged with drainage leads to Lacamas Creek/Lacamas Lake, and Lacamas Prairie as well as towards the west and it's wetland/standing water and aquifers.

Approximately 18 wells are adjacent to this gas station project. Wetlands and aquifer adjacent to property which are 17 feet from project property line are also affected

(see photos 2/11/24).

The SEPA does not address the protection and impact on the acquifers, Lacamas Creek, Lacamas Lake, Lacamas Prairie, Wetlands (17 ft from property line, see attached photo) and the wells. Clearly 14.04 of Municipal Code has not been addressed as part of the SEPA. Mitigation issues of developer neighboring projects is also not cited.

14.04.020 Applicability The SEPA and overall project needs to be reviewed with Camas 14.04 in mind

The provisions of this chapter shall apply to all new and existing development, public and private. The provisions of this chapter shall also apply to the maintenance responsibility of existing stormwater facilities.

1. Meeting the requirements of this chapter is the joint and severable responsibility of the owner(s) of the site and the person(s) responsible for maintenance on both new and existing facilities.
2. The responsible city official is authorized to enforce the provisions of this chapter.
3. The city recognizes that the implementation of successful pollution control practices is most likely through a pollution prevention education effort for institution sites, commercial sites, industrial sites and the general public. The city will endeavor to provide education and technical assistance within the constraints of available resources to show individuals how to implement pollution control practices.

For the purpose of this chapter the following shall apply:

"AKART" — All known, available, and reasonable methods of prevention, control, and Treatment. See also the State Water Pollution Control Act, sections 90.48.010 RCW and 90.48.520 RCW.

"Best management practices (BMPs)" — Those physical, structural and managerial practices, and prohibitions of practices, that, when used singly or in combination, control stormwater runoff peak flow rates and volumes and prevent or reduce pollution of surface water or groundwater.

Special Note: Carwashes commonly use hydrofluoric acid and this has not been addressed. The review of 14.04 needs to occur by City of Camas.

14.04.060 Prohibited discharges.

No person shall throw, drain, or otherwise discharge, cause or allow others under its control to throw, drain, or otherwise discharge into the municipal storm drain system and/or surface and ground waters, and materials other than stormwater.

A. Examples of prohibited discharges include, but are not limited to, the following:

1. Trash or debris.
2. Construction materials.
3. Petroleum products, including but not limited to, oil, gasoline, grease, fuel oil, and heating oil.
4. Antifreeze and other automotive products.
5. Metals in either particulate or dissolved form.
6. Flammable or explosive materials.
7. Radioactive material.
8. Batteries.
9. **Acids,** alkalis, or bases.
10. Paints, stains, resins, lacquers, or varnishes.
11. **Degreasers and/or solvents.**
12. Drain cleaners.
13. Pesticides, herbicides, or fertilizers.
14. **Steam cleaning wastes.**
15. **Soaps, detergents, or ammonia.**
16. Swimming pool or spa filter backwash.

17. **Chlorine, bromine, or other disinfectants.**
18. **Heated water.**
19. Domestic animal wastes.
20. Sewage.
21. Recreational vehicle waste.
22. Animal carcasses.
23. Food wastes.
24. Bark and other fibrous materials.
25. Lawn clippings, leaves, or branches.
26. Silt, sediment, concrete, cement or gravel.
27. Dyes.
28. **Chemicals not normally found in uncontaminated water.**
29. **Any other process-associated discharge except as otherwise allowed in this section.**
30. **Any hazardous material or waste not listed above.**

- Posting of a maintenance assurance pursuant to subsection J of this section.

4. Duration. Wetland permit preliminary approval shall be valid for a period of three years from the date of issuance or termination of administrative appeals or court challenges, whichever occurs later, unless:
   a. A longer period is specified in the permit; or
   b. The applicant demonstrates good cause to the responsible official's satisfaction for an extension not to exceed an additional one year.

I. Wetland Permit—Final Approval.

1. Issuance. The responsible official shall issue final approval of the wetland permit authorizing commencement of the activity permitted thereby upon:
   a. Submittal and approval of a final mitigation plan pursuant to subsection (E)(3) of this section;
   b. Installation and approval of field markings as required by Section 16.53.040(C)(2);
   c. The recording of a conservation covenant as required by Section 16.53.040(C)(3) and included on the plat, short plat, or site plan as required by Section 16.53.040(C)(4);

d. The posting of a performance assurance as required by subsection (H)(3) of this section.

Property owner at 20005 NE 13th Street experienced new sewage and drainage problems - A recent sewage backup from new Camas Sewers created a pollution issue in front of residence home on 202nd and 14th. Camas took no action to protect the pollutants into the storm water pond. Camas needs to be proactive in planning process to prevent future problems as required by involved and work with county and Dept of Ecology on this, yet it was ignored. Camas must take proactive and active with SEPA as defined in 14.4.

In order to meet the Federal Clean Water Act and DOE's requirements to protect the environment, the city has adopted regulations for identifying what is allowed and what is prohibited for discharging into waters of the state. Camas needs to ensure this is followed.

The Geotechnical Study is inaccurate. Multiple tests at multiple dates/ seasons would provide the required information to understand the soil, water, and site issues. Adjacent Wetlands are not identified. Aquifers and nearby wells on 13th street (multiple) are also not sited in the report. The aquifer and wetlands are approximately 17 feet away from the property line. Please see attached photos.

The elevation that the gas station would be is such that any runoff and drainage from the pollutants from the property would directly impact the following: Wells, Acquifers,Wetlands, Lacamas Prairie, Lacamas Creek and Lacamas Lake.

Air Quality

Regarding air quality, the SEPA does not address

a. The proposal will affect current land uses on nearby or adjacent properties.

Other Camas Code Issues that need to be addressed with SEPA

- Surrounded by quiet residential properties
- It will disturb and interfere with the peace, comfort and repose of owners or possessors of neighboring and nearby real property

- Section 18.01.020 of the Camas Municipal code A. (attachment F) states
- The purposes of this title are: to implement the comprehensive plan for the city; to encourage the most appropriate use of land; to conserve and stabilize the value of property; to aid in rendering of fire and police protection; to provide adequate open space for light and air; to lessen the congestion on streets; to give an orderly growth to the city; to prevent undue concentration of population; to improve the city's appearance; to facilitate adequate provisions for community utilities and facilities such as water, sewerage, and electrical distribution system, transportation, schools, parks, and other public requirements; and in general to promote public health, safety and general welfare.
- Since the public health, safety and general welfare is superior to the interests and pecuniary gains of the individual, this title may limit the use of property and prevent its most profitable gain. If some reasonable use of property is allowed by this title and the effect is not confiscatory, the city is exercising a proper use of police power.
- (Ord. 2515 § 1 (Exh. A (part)), 2008: Ord. 2443 § 3 (Exh. A (part)), 2006)
- The externalities from this project will destabilize property values of all neighbors, which **Per Camas Municipal code 9.20.020 - Public consumption.** Except as permitted by RCW Chapter 66, no person shall open the package containing liquor or consume liquor in a public place within the limits of the city. This is problematic because the customers of the development may then move to our neighborhoods located across the street in Clark County to consume their purchases, here.
- The FHA Single Family Housing Policy Handbook for Appraiser and Property Requirements for Title II Forward and Reverse Mortgages states …that properties within one quarter mile of a gas station will need to conduct an independent inspection of their wells ('for the appraisal'). This requirement is an additional burden as result of a gas station next to all the homes on NE 13th Street and in Morning Meadows Estates and Katie's Hill neighborhoods with drinking water wells (more than 27 homes).

Air Issues

a. Emissions

- **Vacuums from car wash operation/customers vacuuming releasing particles.**
- **Vapor leaks of gasoline during customer filling and tanker truck filling of underground storage tank (UST)**
- **Exhaust fumes from cars waiting, idling, from trucks idling, even more from diesel powered engines on cars and trucks, exhaust fumes from tanker trucks**
- **Exhaust fumes and odors from 100's of additional trips of cars and trucks to the site**

Traffic Impact

The Traffic Impact study and does not reflect environmental impacts and does not address seasonal issues, school traffic issues, sidewalks, as well as other construction modifications and environmental impacts for necessary infrastructure modifications and impacts. For example, Traffic Impact Study did not capture Union High School release times which is a high traffic time and dangerous time due to bumper to bumper congestion and inexperienced drivers. The impacts of vendor services to and from the gas station and car wash are also not addressed in the Traffic Impact Study, particularly fuel trucks.

The impact of this type of development and special requirements from Dept of Ecology and City of Camas are also not identified.

Environmental Noise Issues

- Horns if there is congestion, which is likely given how the entry/exit is designed
- Tanker truck delivery process
- Customers' loud voices
- Regarding, Section 9.32.050 Public disturbance noises. of the Camas Municipal Code, 4. The creation of frequent, repetitive or continuous

sounds in connection with the starting, operation, repair, rebuilding or testing of any motor vehicle, motorcycle, off-road vehicle, or internal combustion engine so as to unreasonably disturb or interfere with the peace, comfort and repose of owners or possessors of neighboring or nearby real property, provided, however, that this subsection shall not apply to the operation of lawn mowers, garden tools, chain saws or other power equipment used for building repair or grounds maintenance between the hours of 7 a.m. and 10 p.m.

I see these problems coming from this project:

- car wash: swooshing, blowing, loud noises
- customers: music, especially in warmer months
- idling cars
- motor cycle and diesel truck engine noises
- starting of motor vehicles
- braking noise from motor vehicles

Animals observed on site- not addressed in SEPA

The project would disrupt the habitat for the following:

Deer

Eagles

Owls

Squirrels

Hawks

Coyotes

Raccoons

Lacamas Prairie Issues

The gas station project will impact this sacred area which includes the largest Camas Lily Field in the County (Camas is named for) Please see below from DNR.

Department of Natural Resources Lacamas Prairie NAP/NRCA

Natural Areas Category Evaluation Criteria Responses RCO
Project #20-1334

Introduction: This project aims to protect priority wet prairie and Oregon white oak plant communities that contain Bradshaw's lomatium, listed as Endangered under the federal Endangered Species Act, seven other rare plants and one bird of conservation concern. Funding for this project is vital to prevent development of these private parcels, which are located just east of Vancouver, in Clark County, one of the most rapidly developing counties in the state.

1. Ecological and Biological Characteristics

Bigger Picture- Located within the Puget Trough/Willamette Valley ecoregion, **this site represents the best and only known remnant of the Willamette Valley wet prairie ecosystem in Washington, including one of only 20 remaining sites and the largest of four known population centers for Bradshaw's lomatium, a globally rare and federally endangered plant species. The prairie remnant occurs in a native valley landscape mosaic with Oregon white oak woodland and Oregon ash wetland forest. Conservation targets at the site include the following elements that have been identified as priorities for protection in The State of Washington Natural Heritage Plan (2018)**:

Oregon white oak/Oregon ash / snowberry forest--Priority 1
Priority 2 Willamette Valley wetprairie--Priority 1
Bradshaw's lomatium--Priority 1
Slender-billed Nuthatch--Priority 1
Tall beardtongue—Priority 1
Hall's aster--Priority 2
Oregon coyote-thistle--
Dense sedge--Priority 3
Nuttall's quillwort--Priority 3
Small-flowered trillium--Priority 3
Calif. compass plant--Priority 3

This site was approved by the Commissioner of Public Lands in 2007 as a combined natural area preserve (NAP) and natural resources conservation area (NRCA). The sensitive prairie, rare plants and oak forest will be protected within a core NAP, while important watershed lands, waterfowl habitat, and oak/ash forest remnants are found within the NRCA portion.

The prairie and oak communities on this site have been identified by Partners in Flight and the American Bird Conservancy as a priority Bird Conservation Area (BCA). This site is also supported by the Draft Lacamas Meadows Site Conservation Plan written by the Washington Field Office of The Nature Conservancy in 1999. Restoration and management of this site are recognized as an important component of the U.S. Fish and Wildlife Service Bradshaw's lomatium *(Lomatium bradshawii)* Recovery Plan and the U.S. Fish and WildlifeService Willamette Basin Recovery Plan. The Natural Heritage Advisory Council has approved the site as a Natural Area in 2006.

Uniqueness and Significance- This occurrence of Willamette Valley wet prairie is the last remaining example of its size and quality in Washington. Formerly extending over more than 1 million acres in the Willamette and Columbia Valleys, this native prairie type is now extremely rare, with less than 1% (2000 acres) remaining in fewer than 20 locations. Most of this lowland oak forest and prairie was lost in the early 1900s to agriculture and land development.

This site is part of a larger native landscape of lowland wet prairie, oak forest and ash riparian forest. Other protected lands within this lowland landscape include: Oregon ash riparian forest in Camp Curry (protected by a conservation easement held by the Columbia Land Trust), Lacamas Lake County Park, and a native prairie remnant on the Camas Meadows Conservation Agreement tracts. Adjacent private lands also have examples of the wet prairie and oak forest.

Species or Communities- The Oregon white oak – Oregon ash / snowberry forest at Lacamas Prairie is one of six high-quality examples out of less than 20 occurrences in the state. Most other sites are either smaller, more fragmented, or infested with exotic plants.

The population of Bradshaw's lomatium is the only known occurrence of this species in Washington and is believed to be the largest population of this species in the world. There are only 12 other known populations of this species throughout its range. It also is the only occurrence of the species within Recovery Area 5, as described in the USFWS Recovery Plan (1993) and Plan Amendment (1999) for Bradshaw's lomatium.

In 2014 a population of tall beardtongue was discovered at the site. This species was first recorded in 1934 and had not been seen since until it was rediscovered in Oregon in 2008. In Washington, this species is only known from Lacamas Prairie NA which has the largest known population in the world. There are only four other extant populations which are found southeast of Portland.

Thank you for your attention to this very important matter.

Sincerely,

Russell and Barbara Wegner

Russell Wegner
19910 NE 16th St.
Camas, WA 98607

360-314-4500 Land
415-716-4373 mobile

russwegner@mac.com

Outlook

SEPA23-12 13TH Street Gas Station

From Judy Wilson <uno-gram@msn.com>
Date Thu 3/7/2024 3:52 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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Dear Robert Maul,

I purchased my home @ 20008 NE 11 Street Camas WA 98607 50 years ago .
My Home is on the property line for the proposed Gas Station, and the current Business Park zoned, Tech Center on Strunk RD..

The Proposed Gas Station SEPA23-12 13TH Street would have a huge negative impact on our environment in which we live .

I have already witnessed the large impact of the "Business Park Zoned construction that is next to proposed Gas Station.
It's awful. The Owls, Deer, Bal Eagles and more are being pushed out of their habitat. We have increased traffic, pollution, crime, loss privacy.

In my opinion ,The Gas Station could have a negative effect on the value of our homes, the quality of our water, and the wildlife that inhabits surrounding area.

If we sell our home, we have to have a special inspection because of Gas Station . What about our well water and landscaping ?
What about Privacy Wall ???

This is in our back yard. Would you like to build a "business Park zoned anything in your back yard? Really, the current building next-door is ridiculous .
Trucks in and out, horns honking, reverse beepers beeping , loaders banging ,diesel fumes all day.
I walk in my back yard and look directly at it every day .We need a Privacy wall please.

No Gas Station Please!

Thank You, Judith Ann Wilson and family.

Outlook

Proposed 13thSt/Friberg-Strunk Gas station and Car Wash

From Tim Woodring <timjwoodring@gmail.com>
Date Thu 3/7/2024 3:47 AM
To Community Development Email <communitydevelopment@cityofcamas.us>

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To Whom it may Concern,

As a concerned citizen of Unincorporated Clark County I am concerned about this proposal in that I live within 1/4 mile of the proposed development. I am a resident of 11th st and my property will be affected by this business in that I have a well that supplies my home with water, and one other concern.
Besides those two issues I am concerned that the first I am hearing of this proposed development was by a flyer placed at my front door (March 6th). Until then I have heard nothing about this matter. In that it impacts my property both legally and subjectively, I wonder why I have not heard of this.Understanding I have not investigated the matter fully, in that I have not had the time to do so. First and foremost I consider my family's health (later explained) and secondly I am led to believe I am monetarily impacted by this development in that when I sell my property I am subject to a mandatory, by law, a water well inspection prior to sale. I am currently preparing to sell my property within the next two years. I feel this will impact me in two ways, first in that the inspection will cost me money, and secondly that this inspection, and probably by legal land sale disclosure, will reveal to a potential buyer that they are well within a "pollution zone" that will affect the sale price of the home now and in the future.
The "flyer" placed on my door also referenced a State Environmental Policy Act (SEPA) study that may not have been conducted properly. Again I apologize given the time frame I have not been able to validate these claims, The flyer claims the study was done during the dry season and may not be accurate. I give cause to this belief in that my neighbor and I have an easement together on our properties, My half of the easement is projected to be a traffic through way, and theirs is for stormwater run-off. Currently my part of the eastment has not been "claimed" by Clark County, however my neighbors has, and is currently a stormwater drainage ditch.
That being said, not being an expert, it does give me cause to think a lot of water is exchanged within the 1/4 mile area surrounding the proposed gas station/car wash that I live within. I am foremost concerned with the health of my family, and secondly with the impacts of the value of my property now and in the future.
My Second concern is noise. When I moved here long ago we loved it for the silence as one of the benefits of the area, There was no Walmart, no Costco or any of the other businesses or schools along 192nd Ave, I accept development happening, part of the world turning. I also believe in reason. The potential noise from the car wash, and its vacuums may be unreasonable, understanding the property is surrounded by residential properties on the majority of sides. At the very least I would have wanted

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somebody from the City of Camas to make a 1/4 mile circle on a GIS or Google map to find out those affected and notify them. At the very least I would have been happy with a guy showing up at my door asking if he could hear a shop-vac from 900 ft away.
Concluding, As an affected resident, I would like more time to hear more about any proposed mitigations. Whether they be environmental or financial this, if approved, will affect me either way. I am sure you can confirm my location via Clark County GIS.
I may be reached at this email for any questions.

Thank you

Tim Woodring

Outlook

Gas station near 13th

From Steven Zimmerman <szimmer753@icloud.com>
Date Thu 2/29/2024 4:24 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you recognize the sender as a city employee and you see this message this email is a phishing email. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

As a resident of Camas for over 60 years I am totally in favor of a small business gas station near Union High School.
The negative impact pointed out by the newspaper is largely in “theory “ stage—not facts that have empirical evidence proving any long term negative impact.
Steve Zimmerman
360 921-1177
Sent from my iPhone

PROJECT NARRATIVE
For

13TH SITE PLAN

A PRELIMINARY TYPE II APPLICATION

Submitted to
CITY OF CAMAS

FOR
TAZ KHAN
3993 NW Currawong Court
Camas, WA 98607

October 2023
Revised August 2024

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General Information

Applicant/Owner:

Taz Khan
3993 NW Currawong Court
Camas, WA 98607
512-779-4999
tkhanusa@gmail.com

Owner:

Pak USA Camas LLC
20101 NE 13th Street
Camas, WA 98607

***Project Contacts*:**

PLS Engineering
Travis Johnson, PE
604 W Evergreen Boulevard
Vancouver, WA 98660
(360) 944-6519
pm@plsengineering.com

Location:	NW ¼ of Section 29, T2N, R3E, WM
Address:	20101 NE 13th Street, Camas, WA 98607
Project Size:	0.97 acres/42,257 SF
Zoning:	BP – Business Park
Overlay:	None
Comprehensive Plan:	IND
Current Use:	Vacant
Parcel Number:	176148000
School District:	Evergreen
Water District:	Camas
Sewer District:	Camas
Fire District:	Camas
Park District:	N/A
Clark County Reference:	PA22-32
Transportation Impact Fee:	Camas

Project Description

The 13th Street Site Plan project proposes to construct a 4,100 sf convenience store with drive-thru car wash and gas pumps on parcel 176148000. The convenience store will have small general retail sales including food items, cold beverages and potentially some on-site prepared foods.

The site is located on the southwest corner of the intersection at NE 13th Street and NW Friberg-Strunk Street. A single-family home is currently on site that will be removed. Parcels to the north across NE 13th Street, as well as directly to the west, are single-family residential uses under Clark County jurisdiction. South of the site is a developing business park approved as Lacamas Tech Business Park. East of the site across NW Friberg-Strunk Street is Camas Meadows Golf Club.

The site is relatively flat with vegetation consisting primarily of grass with scattered trees.

Transportation and Utilities:
NE 13th Street is an existing Minor Arterial that abuts the site to the north and provides access to the site. Frontage improvements are proposed to bring the street up to half-width standards including a 37' half-width ROW and 23' half-width paved section with 6' planter strip and 6' detached sidewalks.

NW Friberg-Strunk Street is a fully improved 3 lane arterial that does not require frontage improvements per the Pre-Application Conference Report.

There are no transit routes or stops within 1/4 mile of the development site.

A traffic study has been provided that shows the projected trip generations for the development. No offsite mitigation is required based on the study.

Stormwater will be collected and treated onsite before being routed to an onsite underground stormwater detention facility. From there it will be discharged to an existing conveyance system. A stormwater report has been provided to show compliance with the City stormwater regulations.

The site will be served by public water and sewer services.

Critical Areas:
Ecological Land Services (ELS) assessed the site for critical areas and has provided a Critical Areas Report. ELS concludes that there is one Oregon white oak on the south portion of the property, but no oak woodlands or caves as mapped by WDFW. There is a wetland to the south of the site that has permits to be filled for the proposed Lacamas Tech Business Park. There is an offsite wetland that has been identified to the west on adjacent property with buffers that extend onto the subject site.

The parcel is within a high and moderate - high archaeological predictive area, therefore an Archaeological Predetermination has been prepared for the site and submitted with this application.

Proposal & Code Compliance Discussion

Title 16 – Environment

16.01 - SEPA

The State Environmental Policy Act (SEPA) procedures require documentation of critical areas as well as discussion on earth, air, water, plants and animals, energy and natural resources, environmental health, noise, land and shoreline uses, aesthetics, recreation, historic and cultural preservation, transportation, and public services and utilities. A SEPA application is required and has been included with this application. A revised SEPA was submitted on July 15, 2024 that included revised environmental data further discussed below.

16.31 – Archaeological Resource Preservation

The site is located in an area of high probability for the presence of archaeological artifacts. An Archaeological Predetermination Survey Report is required for this project. Archaeological Services, LLC (ASCC) performed an onsite field investigation on August 17, 2023. Several artifacts were found including pink glass fragments suspected to be Depression Glass, a coin bank dated to 1926-1930, and a metal bolt. Based on these items, along with the former structures that appear on site in historic photos, ASCC is recording the debris scatter as a historic-area archaeological site and recommends a Cultural Resource Survey Report prior to any ground disturbing activity.

16.51 – Critical Areas - 16.53 Wetlands - 16.61 Fish and Wildlife Habitat

WDFW has mapped the site as having oak woodland and being within a cave rich area. No wetlands are mapped onsite however potential wetlands are mapped by Clark County GIS on the property to the south. A Critical Areas Report has been prepared by Ecological Land Services (ELS) for the the site and concludes that there is one Oregon white oak on the south portion of the property, but no oak woodlands or caves as mapped by WDFW. The potential wetland to the south is located within the footprint of a proposed building and that application has received permits to fill the wetland.

A revised Critical Areas Report (CAR) prepared by ELS and dated May 2, 2024 was submitted to the City of Camas along with other supporting documents that address comments received during the 1st Notice of Application. The revised CAR includes findings from an April 2024 site visit that include a wetland to the southwest of the site with a buffer that extends on to the subject parcel.

Along with a revised CAR, ELS issued a revised Oak Mitigation Plan (dated May 17, 2024) as well as a Wetland Buffer Mitigation Plan (dated May 16, 2024). The oak tree mitigation plan proposes to purchase credits with the Terrace Oak Bank. The wetland buffer mitigation plan proposes to purchase credits with the Terrace Mitigation Bank.

Title 17 – Land Development

17.19.040 – Infrastructure Standards

NE 13th Street is an existing minor arterial that abuts the site to the north. Access to the site will be via a new entrance/exit from NE 13th Street. Half width improvements are proposed as part of this project. Some improvements at the intersection of NW Friberg-Strunk Street were previously completed. Frontage improvements for this development will begin at the west curb return and continue west along the site frontage. Additional right-of-way will be dedicated to provide a 37' half-width right-of-way with a 52' full-width right-of-way. The 23'paved roadway half width that tapers out to 28.5'at the intersection with NW Friberg-Strunk Street. It includes a 6' detached sidewalk and an 8' planter strip.

NW Friberg-Strunk is an existing 3-lane arterial that is fully improved. No frontage improvements are required or proposed. No access is proposed via NW Friberg-Strunk Street.

Circulation:

No circulation to adjacent parcels is proposed. The site fronts on NE 13th Street and NW Friberg-Strunk Street, therefore no further circulation to the north or east is required. The parcel to the west is zoned residential and falls under Clark County jurisdiction. Any circulation to the west would not be compatible with this proposed use. The parcels to the south are currently developing as a business park and do not require circulation to and through the subject parcel.

Turnarounds:

The proposed drive aisles that will serve the site vary in width from 24' to 32' wide and can be utilized as a loop road for fire turnaround.

Pedestrian/Bicycle Circulation:

All sidewalks, driveway aprons, and pedestrian crossings will comply with the American with Disabilities Act.

Access Spacing:

Required access spacing along an arterial is 660' minimum and 1,000' maximum. The westernmost property line is approximately 367' west of the intersection with NW Friberg-Strunk Street, therefore it is not possible to meet minimum access spacing based on the existing conditions of the site. A deviation request has been submitted with this application to grant relief from this standard. The access to the site has been located as far west as possible, while allowing for a street taper on NE 13th Street and providing space on site for gas tanker trucks to maneuver to exit the site.

Traffic Study:

A Traffic Study has been prepared for this project by Charbonneau Engineering and is included with this application. The following is a summary of the study:

- Intersection sight distance at the access point exceeds the minimum standard (390 feet) as over 500 feet of sightline is available in both directions on NE 13th Street. For safety reasons the sightlines must be maintained and potential obstructions due to street grade,

buildings, parking, signing, fencing, landscaping, above ground utilities, or other objects shall not be permitted.

- The capacity analysis has determined that only one intersection will fail. The signalized intersection at NE 13th Street and NE 192nd Avenue will operate at LOS `F` during the PM peak hour in the year 2026 background and total traffic scenarios. The failing condition is attributed to the growth and in-process traffic. The City has recognized and documented in the TSP that long range future improvements will be necessary on NE 13th Street (Goodwin Road) to accommodate heavier traffic. A year 2035 improvement is listed in Table 6 within the TSP that proposes street widening which should mitigate the issue. Specifically, the current study finds that adding a separate left turn lane on the westbound approach will mitigate the failing condition to acceptable LOS `D`. However, no mitigation is proposed in conjunction with the gas station & market development as the failure is due to the background traffic conditions.

- A left turn lane warrant was assessed for the westbound to southbound movement from NE 13th Street for traffic entering the site. The AM & PM peak hours were evaluated for the year 2026 total traffic scenario. The turn lane is not warranted in the PM peak hour. The warrant curve (Exhibit 1310-7a in the appendix) indicates that a left turn is marginally met based on a 40 MPH travel speed. However, the travel speed on NE 13th Street is 35 MPH which if plotted indicates the warrant would not be met. It is also noted that the queuing analysis for the westbound left turn movement has confirmed that up to one vehicle may queue to make a left turn resulting in a LOS `A` condition. Considering these factors adding a westbound left turn lane on NE 13th Street is not proposed in conjunction with the development.
- Based on the findings of the traffic analysis no off-site improvements to the transportation system are recommended.
- The City of Vancouver's intersections that are identified for future improvements are detailed in the traffic study in Table 4. The table includes the number of peak hour site trips that will impact the locations, cost per trip, and the proportionate share fee equating to $153,050.
- The development at full build out will create an additional 2,281 new trips, with 60 net AM peak hour trips and 81 net PM peak hour trips.

Sewer and Water

The site will be served by the City of Camas for public sewer service. There is an existing 4" pressure sewer main located in the west half of NE Friberg-Strunk Street. A 4" pressure sewer lateral was stubbed to the site from NE Friberg-Strunk Street. A private STEP sewer system is required for this site.

City of Camas will provide public water service. There in an existing 12" water main located in NE Friberg-Strunk Street with an existing 8" water main to the site at the SE corner of the site. The development will extend the existing 8" water main to serve the site.

Stormwater and Erosion Control
Stormwater runoff from pollution generating surfaces is proposed to be treated using filter cartridges and then routed to an underground detention facility. Infiltration was deemed infeasible by the geotechnical engineer, so discharge from the site will be routed to an existing drainage ditch on the north side of the site.

A preliminary stormwater plan has been submitted with this application. The preliminary technical information report (TIR) has also been submitted with this application which better explains the stormwater system and how it meets the applicable code.

Garbage and Recycling:
The location of onsite garbage and recycling receptacles is shown on the preliminary site plan.

Impact Fees:
This development will pay impact fees for traffic and fire.

System Development Charges:
Water and sewer system development charges will be paid by this development.

Fire:
Fire apparatus access is provided onsite with the proposed drive aisles. Permits for underground storage tanks, fuel dispensing, sprinkler system and fire alarm system will be required. One new fire hydrant is proposed onsite.

Title 18 - Zoning

18.05 – Zoning Districts

The site is designated as being within the BP (Business Park) zoning district, a commercial district.

18.07 – Use Authorization

The applicant proposes a gas/fuel station with mini market, which is a permitted uses in the BP zone. Development in this zone is noted as needing to comply with Design Review under CMC 18.19.

18.09 – Density and Dimensions

Density standards are not applicable for this zone/use. The following standards apply to this development:

Table 1 – Density and Dimensions for Commercial and Industrial Zones

	BP	Proposed
Maximum density (dwelling units/net acre)	n/a	n/a

Minimum lot area (square feet)	½ acre	0.97 acres
Minimum lot width (feet)	100	131’
Minimum lot depth (feet)	100	328’
Maximum building lot coverage	50%	20%
Maximum building height (feet)	None	28’
Minimum front yard	15’	15’
Minimum side yard	15’	15’
Minimum rear yard	50’	50’

The development will comply with the above standards.

18.11 – Parking

CMC 18.11.130 requires that gas stations with mini markets provide 1 parking space per nozzle plus 1 space per 250 sf of gross floor area. Car wash uses require 2 spaces per stall and 1 space per 2 employees. The following parking calculations demonstrate what is required for this site:

4,100 sf mini market @ 1/250 sf	= 17 spaces
8 nozzle gas station @ 1/nozzle	= 8 spaces
1 stall carwash w/2 employees @ 2/stall + ½ employees	= 3 spaces
Total	= 28 spaces
Excluding gas fill-up stalls	= 20 spaces

This development proposes a total of 20 parking spaces, all standard size, plus 8 gas fill-up stalls. Of the 20 standard spaces 1 will be ADA compliant, 2 will have electric vehicle charging infrastructure at the time of development and 2 are designated as future electric vehicle charging spaces.

The design of the site limits any vehicle from having to back out into public right-of-way.

18.13 – Landscaping

A Tree Survey has been submitted with this application providing an inventory of existing trees. A Landscape, Tree and Vegetation Plan has been submitted with this application showing proposed landscaping, and all onsite trees proposed to be retained or removed.

A 20-unit/acre tree density per net acre has been incorporated into the site plan. The tree density is met by providing street trees, and plantings withing the proposed tract areas. The proposed and adjacent uses are residential or open space, so specific landscape buffers are not required.

Landscape buffers have been provided as follows:

North: 5’ - L2
West: 10’ – L3
South: 5’ – L2
East: 10’ – L3

The pre-application conference report states that the drive-thru car wash should be screened to a 10'- L3 buffer standard. This would require a 10' – L3 buffer along the east as well as a portion of the north property line. This is not a code requirement, rather a design review recommendation from previous projects. It is not possible to provide the 10' buffer due to the constraints of the parcel. The lot is narrow; after right-of-way dedication the remaining lot width is approximately 124'. A 10' – L3 buffer is provided along NW Friberg-Strunk Street, as the lot is quite deep and there is room for the additional buffer. Along NE 13th Street a 5' – L2 buffer has been shown. It should be noted that the drive-thru for the car wash will generate significantly less traffic than a drive-thru for fast food. In addition, the car wash will generate fewer trips than the traffic utilizing the site for the gas station or the mini mart. From a trip generation/screening standpoint it does not seem that additional screening is necessary for this type of a drive-thru. A deviation request is not submitted for this item because the project does meet written code. The applicant hopes that the City will work with us to find a compromise.

Street trees will be provided along NE 13th Street. NW Friberg-Strunk Street is already built to the required standards with street trees; no street trees along NW Friberg-Strunk Street are proposed.

18.15 – Signs

No signs are proposed with this project at this time.

18.17 – Supplemental Development Standards

This lot is a corner lot, therefore a vision clearance area of 15' x 15' is required.

18.19 – Design Review

Per CMC 18.19.020 Design Review is required for new developments in commercial zones. The applicant has designed the site to provide:

- Parking areas placed towards the interior of the site and screened with landscaping.
- The drive-thru is screened heavily with landscape.
- The design of the site has kept development away from the existing home to the west.
- The proposed building is designed to be built right on the setback line in order to define the streetscape. Blank walls have been avoided.
- Outdoor lighting will be directed so as not to impact adjacent properties and streets.

18.18 – Site Plan Review

This proposal is subject to a Type II Site Plan Review. All applicable content has been submitted for a complete application. The following criteria must be addressed in order for the site plan to be approved:

- *Compatibility with the City's comprehensive plan*

Response: This project encourages economic development in an area designated as Business Park, which is considered Employment Land.

- *Compliance with all applicable design and development standards*

Response: As evidenced in this narrative, and associated plans, the proposed development complies with all applicable codes and development standards.

- *Availability and accessibility of adequate public services*

Response: Public water and sewer are available adjacent to the site in public right-of-way. Garbage and recycling services are available in the area. Emergency services such as fire, medical and police also are available in the area. This development will not impact schools or parks.

- *Adequate provisions are made for other public and private services and utilities, parks, and trails*

Response: This development will pay impact fees for traffic and fire, as well as system development charges for water and sewer. This development will not impact schools or parks as it is commercial in nature. There are no trails in the vicinity of the site to connect to. Garbage and recycling service will be paid for by the owner of the site.

- *Adequate provisions are made for maintenance of public utilities*

Response: Provisions have been made to provide for the maintenance of public utilities by paying impact fees and system development charges.

- *All relevant statutory codes, regulations, ordinance, and compliance with the same*

Response: This narrative and the associated plans and reports address all relevant statutory codes, regulations, ordinance and demonstrate compliance with the applicable codes.

18.55 – Administration and Procedures

This project is subject to a Type II process for Site Plan Review. The application will be subject to the development approval and application timelines of this chapter.

A preapplication meeting is required per CMC 18.55.060. A preapplication conference was held on July 28th, 2022 and a land use application was not submitted within 180 days. The applicant met City staff to review changes made to the layout. Emails with Yvette Sennewold confirm that this meeting acted as a 2nd pre-application conference and no further conference or waiver would be required.

The project received Technically Complete status on December 19, 2023 and Notice of Application was issued. Based on a number of comments the applicant placed the project on hold in order to provide additional environmental information. A revised SEPA with supporting documentation was submitted on July 15, 2024.

The applicant has submitted the required documents and information as required CMC 18.55.110.

Community Development
616 NE Fourth Avenue • Camas, WA 98607
(360) 817-1568
http://www.cityofcamas.us

SEPA ENVIRONMENTAL CHECKLIST

UPDATED 2016

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

***Instructions for applicants*:**

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals: [help]

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background [help]

1. Name of proposed project, if applicable: [help]

   13th Street Site Plan

2. Name of applicant: [help]

Taz Khan

3. Address and phone number of applicant and contact person: [help]

3993 NW Currawong Court
Camas, WA 98607

4. Date checklist prepared: [help]

August 23, 2023
Revised May 2, 2024

5. Agency requesting checklist: [help]

City of Camas

6. Proposed timing or schedule (including phasing, if applicable): [help]

Development is expected to start at the time of final construction drawing approval, likely in early 2024. No phasing is proposed.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. [help]

No, not at this time.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. [help]

SEPA Checklist, Archaeological Predetermination, Geotechnical Report, Critical Areas Report, Oak Mitigation Plan and Wetland Buffer Mitigation Plan

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. [help]

No, there are no known government approvals pending related to this property.

10. List any government approvals or permits that will be needed for your proposal, if known.

- *Preliminary Type II Site Plan*
- *Public notification and staff report publications*
- *Final engineering plan review and approval*
- *Final Site Plan Approval*
- *SEPA*
- *SWWPPP*

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.) [help]

The applicant proposes to construct a 4,100 sf convenience store with gas pumps and a drive through car wash. The site is zoned BP, Business Park, and is 0.97 acres in size.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist. [help]

The site is located at 20101 NE 13th Street, Camas, WA 98607, in the NW ¼ of Section 29, Township 2 North, Range 3 East of the Willamette Meridian. The site is comprised of tax lot 176148000. See the proposed development plans for a preliminary site plan, grading plan, vicinity map and topographical data.

B. ENVIRONMENTAL ELEMENTS [help]

1. Earth [help]

a. General description of the site: [help]

(circle one): (Flat), rolling, hilly, steep slopes, mountainous, other _____

b. What is the steepest slope on the site (approximate percent slope)?

5% per Clark County GIS data

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils. [help]

This site has the following soils onsite per Clark County GIS data:

WrB – Wind River Gravelly Loam, 0-8% slopes
CvA – Cove Silty Loam, 0-3% slopes

It is unknown if these soils are classified as agricultural or if the site contains prime farmland.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe. [help]

There are no known surface indications or history of unstable soils in the immediate area.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill. [help]

There will be grading for the construction of drive aisles, the installation of utilities, and the preparation of the site for the future convenience store, car wash and gas pumps. Surplus material may be required to be hauled from the site to an approved dump site or offsite fill may be required. Quantities and source are unknown at this time.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe. [help]

Standard erosion control measures will be followed during grading construction on the site. A final erosion control plan will be reviewed and approved by City of Camas.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? [help]

Approximately 80%

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any: [help]

Proposed measures to reduce and control erosion include providing an erosion control plan for review and approval prior to starting construction on the site and following the conditions of the approved grading and erosion control plan during all phases of construction.

2. Air [help]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known. [help]

Construction equipment emissions and dust on the short term. Long-term emissions will be produced by automobile traffic and normal commercial/retail uses as well as possible vapor from the gas tanks.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe. [help]

There are no known off-site sources of emissions or odor that may affect the proposal.

c. Proposed measures to reduce or control emissions or other impacts to air, if any: [help]

Dust from construction can be mitigated by sprinkling the site with water during construction as needed. Stage 2 vapor recovery systems will be included in the gas storage tanks and

delivery systems.

3. Water [help]

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into. [help]

There is a wetland to the south of the site that has permits to be filled for the proposed Lacamas Tech Business Park. There is an offsite wetland that has been identified to the west on adjacent property.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans. [help]

Yes, work will take place within 200' of the offsite wetland to the west. No wetland impacts are proposed however a portion of the wetland buffer will be impacted. Approximately 0.16 acres of wetland buffer will be impacted by a paved parking area.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material. [help]

No fill or dredge material is proposed to be placed in or removed from the offsite wetland.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known. [help]

The proposal will not require surface water withdrawals or diversions.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan. [help]

No, the site does not lie within a 100-year floodplain.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge. [help]

No, there will be no discharge of waste material to surface waters.

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known. [help]

No ground water will be withdrawn with this proposal. Stormwater from pollution generating surfaces will be treated prior to being routed to an existing roadside ditch. Runoff around gas pumps will go through an oil/water separator before being discharged to the storm sewer.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if

any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve. [help]

No waste material is proposed to be discharged into the ground.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe. [help]

The main source of runoff is from stormwater. There will be runoff from impervious roof area, drive aisles, parking areas, and landscaped areas. Onsite catch basins will connect to a pipe network that leads to an underground detention facility that will discharge to an existing roadside ditch. Runoff around gas pumps will go through an oil/water separator before being discharged to the storm sewer.

2) Could waste materials enter ground or surface waters? If so, generally describe. [help]

Yes, if waste materials were somehow released or dumped into surface runoff flows, substances associated with the source material could enter ground or other surface waters. There is no proposal to release waste material to the ground or to surface waters.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe. [help]

Not anticipated.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any: [help]

Use of approved erosion control measures during all phases of development. Runoff around gas pumps will go through an oil/water separator before being discharged to the storm sewer. Wetland buffer impacts are proposed to be mitigated offsite by purchasing 0.08 mitigation credits through the Terrace Mitigation Bank LLC. The Wetland Buffer Bank Use Plan, prepared by Ecological Land Services (ELS) and dated May 16, 2024, provides further details.

4. Plants [help]

a. Check the types of vegetation found on the site: [help]

x deciduous tree: alder, **maple**, aspen, **other: Oregon white oak, ash, cottonwood, cherry**
x evergreen tree: **fir**, cedar, pine, other
x shrubs
x grass
____ pasture
____ crop or grain
____ Orchards, vineyards or other permanent crops.
____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____ water plants: water lily, eelgrass, milfoil, other

x other types of vegetation: **blackberry**

b. What kind and amount of vegetation will be removed or altered? [help]

Site vegetation will be stripped for site preparation. Trees beyond the property line are proposed to be retained.

c. List threatened and endangered species known to be on or near the site. [help]

There is 1 priority habitat Oregon white oak onsite.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any: [help]

Landscaping will be provided onsite in accordance with City of Camas requirements. One Oregon white oak will be removed and mitigated offsite at the Terrace Mitigation Bank. Approximately 0.238 credits are proposed to be purchased for mitigation. The revised Oak Bank Use Plan, prepared by ELS and dated May 17, 2024, provides further details.

e. List all noxious weeds and invasive species known to be on or near the site. [help]

None known.

5. Animals [help]

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. [help]

Examples include:
birds: hawk, heron, eagle, **songbirds, other:** mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

Small mammals, such as mice, voles, and rabbits are located on and near the site. This site is also in an area where larger mammals, such as raccoons, opossum, and mammals indigenous to the Clark County area are sometimes located.

b. List any threatened and endangered species known to be on or near the site. [help]

There are no known threatened or endangered species on or near the site.

c. Is the site part of a migration route? If so, explain. help]

This site is part of the Pacific Flyway for migratory waterfowl.

d. Proposed measures to preserve or enhance wildlife, if any: [help]

The site will provide landscaped buffers and street trees.

e. List any invasive animal species known to be on or near the site. [help]

None known

6. Energy and Natural Resources [help]

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc. [help]

The site will be served primarily by electricity.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe. [help]

No.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any: [help]

The convenience store and car wash will have energy efficient windows and will comply with state building codes which include conservation measures.

7. Environmental Health [help]

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe. [help]

The gas station will store and dispense gasoline and diesel, which are flammable and could spill.

1) Describe any known or possible contamination at the site from present or past uses. [help]

Utilizing the "What's in My Neighborhood" section of DOE's database shows that there are no cleanup sites or known hazards within 0.5 miles of the site.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity. [help]

There are no known existing hazardous chemicals/conditions that may affect the development.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project. [help]

The site proposes a gas station; gas and diesel will be stored and used on the site after development.

4) Describe special emergency services that might be required. [help]

No special emergency services outside those normally expected in a

commercial/business area are anticipated to be required in association with this proposal.

5) Proposed measures to reduce or control environmental health hazards, if any: [help]

Emergency shut-off switches will be located inside of the convenience store and outside at the gas pumps. Underground storage and pipes will be double-containment construction with rupture protection. Underground tanks also include monitoring of the inner walls for leaks. Overfill protection, gravity return of undispensed product, breakaway valves and stage 2 vapor recovery systems are also included in the storage tanks and delivery systems.

b. Noise [help]

1) What types of noise exist in the area which may affect your project (for example:traffic, equipment, operation, other)? [help]

Light traffic noise from surrounding areas/roads along with typical home and business use noises. None of these will affect the proposal.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indi- cate what hours noise would come from the site. [help]

Short term noises would include construction noises which would occur during approved hours as mandated by City of Camas and Washington State. Long term noises could include slight increase in traffic noise and vehicle noise at the site.

3) Proposed measures to reduce or control noise impacts, if any: [help]

Construction on the site will take place during normal working hours as allowed by the City.

8. Land and Shoreline Use [help]

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe. [help]

The proposed site has an existing single-family residence and two outbuildings. To the south is a developing business park. West of the site is a single-family residence. To the east of the site across NW Friberg-Strunk Street is land owned by Camas Meadows Golf Club. To the north across NE 13th Street are single family homes.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use? [help]

It is unknown whether the site has been used as working farmlands or forest lands. There are not currently any agricultural or forest uses associated with the site.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how: [help]

No, the proposal will not be affected by, nor will it affect, any surrounding working farm or forest land business.

c. Describe any structures on the site. [help]

Single family residences and two outbuildings.

d. Will any structures be demolished? If so, what? [help]

All structures will be demolished.

e. What is the current zoning classification of the site? [help]

BP – Business Park

f. What is the current comprehensive plan designation of the site? [help]

IND - Industrial

g. If applicable, what is the current shoreline master program designation of the site? [help]

The site does not lie within the shoreline master program.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify. [help]

There is one Oregon white oak on site.

i. Approximately how many people would reside or work in the completed project? [help]

It is currently planned that approximately 2-4 people will work at this site at the time of full buildout.

j. Approximately how many people would the completed project displace? [help]

The removal of one single-family residence has the potential to displace up to 3 people.

k. Proposed measures to avoid or reduce displacement impacts, if any: [help]

There are no measures proposed to avoid or reduce displacement impacts.

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any: [help]

By complying with the zoning designation, the comprehensive plan, and the City of Camas Development Code, the proposal will be compatible with the existing and projected land uses.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any: [help]

No impacts are expected to agricultural or forest lands, therefore no measures are proposed.

9. Housing [help]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. [help]

Not applicable, no homes are proposed.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. [help]

One existing residence will be eliminated. The income level housing type is unknown.

c. Proposed measures to reduce or control housing impacts, if any: [help]

The applicant will pay all impact fees associated with the development at the time of building permit.

10. Aesthetics [help]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? [help]

All new construction will meet City of Camas building codes for commercial/business development. Exterior building materials will include composite wood siding, fiber cement panels, CMU, metal roofing and accents, and veneer stone. The tallest structure will not exceed 28'.

b. What views in the immediate vicinity would be altered or obstructed? [help]

The site will change from a large-lot single family residence to a commercial/retail development with a convenience store, gas station and drive-through car wash. No views will be obstructed though they will be altered as the site develops.

c. Proposed measures to reduce or control aesthetic impacts, if any: [help]

The site will be landscaped as required by the City of Camas. The main roadway frontages will be landscaped with trees per the City of Camas roadway standards.

11. Light and Glare [help]

a. What type of light or glare will the proposal produce? What time of day would it mainly occur? [help]

When the site is built out external illumination will be provided for the canopy/fueling area and for perimeter lot lighting and parking areas.

b. Could light or glare from the finished project be a safety hazard or interfere with views? [help]

No, light or glare from the finished project will not be a safety hazard or interfere with views.

c. What existing off-site sources of light or glare may affect your proposal? [help]

There are existing off-site sources of light from adjacent homes and roads, but they will not affect the proposal.

d. Proposed measures to reduce or control light and glare impacts, if any: [help]

Lights and streetlights will be shielded to reduce light and glare.

12. Recreation [help]

a. What designated and informal recreational opportunities are in the immediate vicinity? [help]

Camas Meadows Golf Club is adjacent to the east. The Harmony Sports Complex is approximately ½ mile to the west.

b. Would the proposed project displace any existing recreational uses? If so, describe. [help]

There will be no recreational uses displaced with this proposal.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any: [help]

No impacts are proposed, therefore no measures to reduce or control impacts on recreation are proposed.

13. Historic and cultural preservation [help]

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers ? If so, specifically describe. [help]

There are no structures recommended for listing in national, state or local preservation registers per the Archaeological Predetermination.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources. [help]

Archaeological Services, LLC (ASCC) performed an onsite field investigation on August 17, 2023. No mention of landmarks, features or other evidence of Indian use or occupation are mentioned. Several artifacts were found including pink glass fragments suspected to be Depression Glass, a coin bank dated to 1926-1930, and a metal bolt. Based on these items, along with the former structures that appear on site in historic photos, ASCC is recording the debris scatter as a historic-area archaeological site and recommends a Cultural Resource Survey Report prior to any ground disturbing activity.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and

historic preservation, archaeological surveys, historic maps, GIS data, etc. [help]

The report utilized surface surveys and excavation of test pits, as well as reviewing historical maps and records on file at the Washington State Department of Archaeology and Historic Preservation.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required. [help]

Based on the findings of the Archaeological Predetermination, a Cultural Resources Study is recommended prior to ground disturbing activity. If during the course of construction any artifacts are discovered, all work will cease, and proper notification shall be given to City of Camas and DAHP.

14. Transportation [help]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any. [help]

NE 13th Street and NW Friberg-Strunk Street abut the site to the north and west. A new driveway off of NE 13th Street will provide access to the site.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop? [help]

C-tran does not operate in close proximity to the site. The nearest stop is 1.6 miles SE of the site along SE 192nd Avenue at Mill Plain Blvd.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate? [help]

20 parking spaces, plus 8 gas fill-up spaces, will be provided with this development. The project will eliminate approximately 2-4 parking spaces with the removal of the existing home.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). [help]

Frontage improvements are proposed to bring NE 13th Street up to half-width roadway standards. NW Friberg-Strunk Street is currently built out to standard.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe. [help].

No

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would

be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates? [help]

A Traffic Analysis Report and Traffic Memo-"Response to City Traffic Comments" have been prepared by Charbonneau Engineering, LLC for the site and are included with this application. The Traffic Analysis estimated that 2,281 new trips per day would be generated by the project. It is expected that 60 trips will occur in the AM peak hour (7:00 – 9:00 AM) and 81 trips will occur in the PM peak hour (4:00 – 6:00). Note that fueling tank trucks will be limited to filling tanks onsite during the hours of 7 pm and 7 am to avoid impacting peak hour traffic.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe. [help]

Not anticipated

h. Proposed measures to reduce or control transportation impacts, if any: [help]

The applicant will pay transportation impact fees. A west bound left turn lane on NE 13th Street is proposed that will improve safety at the site access.

15. Public Services [help]

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe. [help]

Yes. The completion of this development will increase the need for public services in the area.

b. Proposed measures to reduce or control direct impacts on public services, if any. [help]

This project will pay impact fees for traffic at the time of building permit.

16. Utilities [help]

a. Circle utilities currently available at the site: [help]
electricity, natural gas, water, refuse service, telephone, sanitary sewer

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed. [help]

- *Electricity: Clark Public Utilities*
- *Water: City of Camas*
- *Telephone: Century Link, Comcast*
- *Sanitary Sewer: City of Camas*
- *Natural Gas: NW Natural*

C. Signature [help]

Under the penalty of perjury, the above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: DocuSigned by: EF97DED7F6DD4E8...

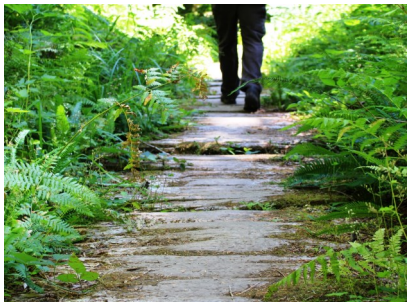
Name of signee Faz Khan

Position and Agency/Organization Managing Member Pak USA Camas, LLC

Date Submitted: 7/9/2024

CRITICAL AREAS REPORT - REVISED

May 2, 2024



13th Street Gas Station
Camas, WA

Prepared for

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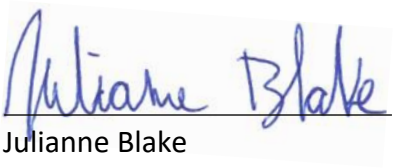
SIGNATURE PAGE

The information in this report was compiled and prepared under the supervision and direction of the undersigned.



Julianne Blake
Biologist III

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Appendix A – Routine Determination Method and Plant Indicator Rating Definitions
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INTRODUCTION

Ecological Land Services, Inc. (ELS) was contracted by PAK USA Camas, LLC (PAK) to complete a critical areas assessment for wetlands and fish and wildlife habitat conservation areas, for the purpose of future development. The site is approximately 0.97 acres and consists of Clark County Tax Parcel 176148000 located at 20101 NE 13th Street within the NW ¼ of Section 29, Township 2 North, and Range 3 East of the Willamette Meridian in Camas, Washington (Figure 1). This report summarizes the findings of the site visit in accordance with *Camas Municipal Code (CMC) Title 16 Environment* (2023).

PROJECT HISTORY

PLS Engineering (PLS) applied for permit approval for site development on behalf of PAK with the City of Camas (City) in December 2023 (DAHP Project Tracking # 2023-12-08397). The *Critical Areas Report for 13th Street Gas Station* completed by ELS in October 2023 identified a single Oregon white oak tree (*Quercus garryana,* FACU) onsite. No other critical areas were identified during the August 29, 2023 site visit. A State Environmental Policy Act (SEPA) Determination of Non-Significance (DNS) was issued by the City on February 22, 2024. The Department of Ecology (Ecology) responded to the SEPA DNS on March 6, 2024 requesting an additional site visit be completed during the normal wet portion of the growing season to reevaluate the property for the presence of wetlands. An additional site visit was completed by ELS on April 2, 2024. Although the site visit confirmed no wetlands or additional critical areas were located onsite, surface water was observed offsite to the west that was not present during the initial August 2023 site visit. This revised critical areas report documents the findings of the August 29, 2023 and April 2, 2024 site visits.

SITE DESCRIPTION

The 0.97-acre site consists of Clark County Tax Parcel 176148000 and is accessed by a paved driveway off NE 13th Street. The site is zoned as Business Park (BP) and currently contains a single-family mobile home, shed, carport, and paved driveway. The site is bordered to the north by NE 13th Street, to the east by NW Friberg-Strunk Street, to the south by undeveloped land and commercial development in progress, and to the west by undeveloped land and a single-family residence (Figure 2).

Vegetation onsite consists primarily of regularly mowed grasses, ornamental shrubs, and coniferous and deciduous trees. Topography onsite is generally flat with NE 13th Street and NW Friberg-Strunk Street roughly two feet higher in elevation than the site. One Oregon white oak was identified onsite along the southern property boundary.

METHODOLOGY

The property was evaluated for the presence of wetlands using the Routine Determination Method according to the U.S. Army Corps of Engineers' 1987 *Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers' Wetland Delineation Manual* (Environmental Laboratory 1987)*; Western Mountains, Valleys, and Coast Region (Version 2.0)* (Corps 2010). The Routine Determination Method and defining wetland criteria are discussed further in Appendix

A. Wetlands are regulated as "Waters of the United States" by the U.S. Army Corps of Engineers (Corps) and as "Waters of the State" by the Washington Department of Ecology (Ecology), and locally by The City of Camas (City).

ELS biologists evaluated the property on August 29, 2023 and April 2, 2024 to determine the presence or absence of critical areas including streams, wetlands, and priority habitats. One Oregon white oak (oak) was identified onsite during the August 2023 site visit, and no wetlands, streams, or other priority habitats were identified onsite. Vegetation, soil, and hydrology data were collected from one test plot (TP-1) during the August 2023 visit in an area with mapped hydric soils. Although no wetlands were present onsite, one wetland (Wetland A) was observed offsite to the southwest during the April 2024 site visit. As such, data was collected from another test plot (TP-2) in the southwest corner of the site, in the vicinity of Wetland A, to determine if the wetland boundaries extend onsite. Offsite boundaries for Wetland A were estimated by visual observations and aerial photos; therefore, Wetland A boundaries are approximate. The oak dripline and test plot locations were mapped using a hand-held Global Positioning System (GPS) unit capable of sub-meter accuracy under ideal conditions.

VEGETATION

General vegetation consists primarily of regularly mowed grass and ornamental trees and shrubs (Photoplates 1 and 2). One Oregon white oak was observed along the southern site boundary. The plant indicator status following the plant scientific name is defined by the *National Wetland Plant List Indicator Rating Definitions* (Corps 2012) and can be found in Appendix A.

WETLANDS

Wetland A is located offsite. As such, wetland vegetation observations were limited to what could be observed from within site boundaries and are therefore generalized. Dominant wetland vegetation consisted of Oregon ash (*Fraxinus latifolia*, FACW) and reed canarygrass (*Phalaris arundinacea*, FACW), as well as other woody and herbaceous species.

UPLANDS

Dominant upland vegetation consisted of domestic apple trees (*Malus* spp., assumed FAC), Japanese maple (*Acer palmatum*, UPL), rhododendron (*Rhododendron* spp., assumed FAC), Oregon white oak, osoberry (*Oemleria cerasiformis*, FACU), mowed English hawthorn saplings (*Crataegus monogyna*, FAC), swordfern (*Polystichum munitum*, FACU), and fescue grass (*Festuca* spp., assumed FAC). The wetland determination data forms contain vegetation information at TP-1 and TP-2 and can be found in Appendix B.

SOILS

The Natural Resources Conservation Service (NRCS) designates soils onsite as cove silty clay loam, thin solum, 0 to 3 percent slopes (CwA), and Wind River gravelly loam, 0 to 8 percent slopes (WrB) (Figure 3, NRCS 2024B). Of the two soil types found onsite, cove silty clay loam, thin solum, 0 to 3 percent slopes is designated as hydric.

According to soil profile descriptions developed by NRCS, cove silty clay loam, thin solum, is characterized as a poorly drained soil, forming on floodplains, with a depth to water table of 0 to 12 inches below ground surface (BGS). A typical soil profile includes silty clay loam from 0 to 14 inches, clay from 14-21 inches, and silt loam from 21 to 60 inches BGS. Wind River gravelly loam is categorized as a somewhat excessively drained soil with a typical soil profile of gravelly loam from 0 to 4 inches, coarse sandy loam from 4 to 24 inches, and loamy coarse sand from 24 to 60 inches BGS. Wind River gravelly loam forms on floodplains from alluvium parent material and has an average depth to water table of more than 80 inches.

Evaluated soils were characterized as loamy with a value of 4, and a chroma of 3, with no observations of redoximorphic concentrations and meeting no hydric soil indicators. Mapped hydric soils do not necessarily mean that an area is or is not a wetland—hydrology, hydrophytic wetland vegetation, and hydric soils must all be present to classify an area as a wetland. The test plot data forms are in Appendix B.

HYDROLOGY

WETLAND A (OFFSITE)

Wetland A is an emergent depressional wetland located just offsite to the west and outlets to Ditch 1. As it was outside of the site boundaries, an approximate boundary was mapped using aerial imagery and topography, and hydrology determinations are approximate. Wetland hydrology likely comes from a seasonally high groundwater table, runoff, and precipitation. Wetland A likely has two hydroperiods, seasonally flooded and saturated only. The wetland rating form is in Appendix D. Surface water was not observed at the time of the August 2023 site visit but was observed at the April 2024 visit.

DITCH 1 (OFFSITE)

One ditch is located just offsite to the west, along NE 13th Street, and is the outlet for Wetland A. Ditch 1 flows west for approximately 250 feet, where it flows through a culvert to the north under NE 13th Street, and discharges into an unnamed, Type F (fish-bearing) stream. Ditch 1 receives road runoff and outflow from Wetland A.

PRECIPITATION

Precipitation data was gathered from the NOAA Regional Climate Centers *Clark County, Washington, WETS Station: Battle Ground*, which is located closest to the site.

AUGUST 2023 SITE VISIT

No rainfall occurred the day of the site visit or in the two weeks prior. Rainfall in June, July, and August 2023 was below exceedance levels and approximately 94 percent of August rainfall occurred prior to the site visit. Furthermore, review of the USACE Antecedent Precipitation Tool (APT) indicates rainfall in the two months preceding the August 29th site visit was drier than normal with a score of 6. A copy of the APT data is provided in Appendix C. Table 1 summarizes the precipitation data.

Table 1. Precipitation Summary – August 29, 2023

Precipitation (inches)								
Date of Visit	Two Weeks Prior	3 Months Prior		30%	70%	DAREM[1]		
		30 Days Ending	Observed			Value	Weight	Total
8/29/23	8/15/23 – 8/28/23	8/29/23	0.05	0.25	0.99	1	3	3
		7/30/23	0.0	0.24	0.82	1	2	2
0.0	0.0	6/30/23	0.83	1.48	2.80	1	1	1
Rainfall 3 months prior was: **drier than normal** (sum 6-9), normal (sum 10-14), wetter than normal (sum 15-18).[1]								6
Year to Date Average Rainfall[2,3]: 50.06								
Year to Date Actual Rainfall[3]: 45.32								

[1] Direct Antecedent Rainfall Evaluation Methods (Sumner et al 2009)
[2] Includes 94% of August Rainfall
[3] Based on a water year, October 2022 – August 2023

April 2024 Site Visit

No rainfall occurred the day of the site visit and 1.82 inches occurred the two weeks prior. Rainfall in February and March was above exceedance levels while rainfall in April was below exceedance levels. Approximately 7 percent of April rainfall occurred prior to the site visit. Furthermore, review of the APT indicates rainfall in the two months preceding the April 2nd site visit was normal with a score of 12. A copy of the APT data is provided in Appendix C. Table 2 summarizes the precipitation data.

Table 2. Precipitation Summary – April 2, 2024

Precipitation (inches)								
Date of Visit	Two Weeks Prior	3 Months Prior		30%	70%	DAREM[1]		
		30 Days Ending	Observed			Value	Weight	Total
4/2/24	3/19/24 – 4/1/24	4/2/24	2.46	3.17	4.86	1	3	3
		3/3/24	5.63	2.71	5.08	3	2	6
0.0	1.82	2/2/24	8.93	4.26	7.11	3	1	3
Rainfall 3 months prior was: drier than normal (sum 6-9), **normal** (sum 10-14), wetter than normal (sum 15-18).[1]								12
Year to Date Average Rainfall[2,3]: 39.50								
Year to Date Actual Rainfall[3]: 43.69								

[1] Direct Antecedent Rainfall Evaluation Methods (Sumner et al 2009)
[2] Includes 7% of April Rainfall
[3] Based on a water year, October 2023 – April 2024

Critical Area Inventories

National Wetlands Inventory

The National Wetlands Inventory (NWI) map does not indicate any wetlands onsite or in the vicinity of the site (Figure 4, USFWS 1988). ELS partially agrees with the NWI mapping as no wetlands were identified onsite, but Wetland A was identified offsite to the west which was not shown by the NWI.

Clark County Critical Area Inventory

The Clark County Critical Area Inventory (CAI) map does not indicate any wetlands onsite or in the location of Wetland A but does indicate potential wetlands presence on the property to the south. Hydric soils are mapped along the eastern site boundary and the southwestern corner, and a habitat area is mapped over the majority of the eastern portion of the site (Figure 5). ELS partially agrees with the CAI as no wetlands were identified onsite and one oak was observed in the vicinity of the mapped habitat area. However, ELS does not agree with the extent of the mapped habitat area as only one oak was identified onsite and no other critical habitats were identified. The potential wetlands mapped to the south of the site are located in the footprint of a commercial development that has received permit approval.

Washington Department of Natural Resources Stream Type

The Washington Department of Natural Resources (WDNR) Stream Type Map does not depict any streams onsite (Figure 6, WDNR 2024). ELS agrees with the WDNR mapping as no streams were observed onsite.

Priority Habitats and Species

The Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) maps indicate oak woodland and caves or cave-rich areas on the southern boundary of the site and within 300 feet of the site to the southwest (Figure 7, WDFW 2024). ELS confirmed the presence of a single oak along the southern site boundary, but no oak woodlands or caves were observed onsite.

Critical area inventory maps are typically used to gather general information about a region and due to the large scale necessary for regional mapping, are limited in accuracy for localized analyses.

Critical Areas Summary

Offsite Wetland

Wetland A is a Category III, depressional, forested and emergent wetland totaling approximately 0.57 acres offsite to the west, and outlets to Ditch 1. Offsite boundaries for Wetland A were estimated by visual observations of changes in vegetation, the presence of surface water, and aerial photos; therefore, Wetland A boundaries are approximate. Vegetation in Wetland A is dominated by deciduous trees and herbaceous vegetation. Wetland hydrology likely comes from a seasonally high groundwater table, runoff, and precipitation. Hydroperiods include seasonally flooded and saturated only. According to the *Washington State Wetland Rating System for*

Western Washington: 2014 Update (Rating System), Wetland A is a Category III wetland scoring 7 points for water quality functions, 7 points for hydrologic functions, and 4 points for habitat functions, for a total of 18 points.

Wetland Buffers and Functional Isolation

The designated buffer width for a Category III wetland with a high land use intensity and a habitat score of 4 is 80 feet, as listed in *CMC Table 16.53.040-1* (Table 3).

According to *CMC 16.53.040(B)(4)(b)*, functionally isolated buffer areas are areas that are separated from a wetland and do not protect the wetland from adverse impacts. When impervious surfaces from previous development, such as pre-existing roads, structures, or vertical separation completely functionally isolate the wetland, the wetland buffer shall extend from the wetland boundary to the impervious surfaces. Wetland A's onsite buffer is functionally isolated on the east side by the existing mobile home.

Table 3. Wetland Summary

Wetland						
Name	**Size**	**Hydrogeomorphic Classification[1]**	**Cowardin Class[2]/ Hydroperiod**	**Habitat Score[3]**	**Category[3]**	**Buffer Width[4]**
A	Approximately 0.57 acres	Depressional	Emergent, Forested/ Saturated Only	4	III	80 ft.

[1]NRCS 2008
[2]FGDC 2013
[3]Hruby 2014
[4]CMC Table 16.53.040-1

Priority Habitats

Oregon White Oak

Oregon white oaks are considered a priority habitat and are regulated by the Washington Department of Fish and Wildlife (WDFW) and locally by the City of Camas. According to WDFW's Management Recommendations for Washington's priority habitats: Oregon white oak woodlands (Larsen and Morgan, 1998), in urban or urbanizing areas west of the Cascades, priority oak habitat is defined as single oaks, stands of pure oak, or oak/conifer associations, one acre or greater in size. WDFW may also consider individual Oregon white oak trees a priority habitat when found to be particularly valuable to wildlife [i.e., contains many cavities, has a large diameter at breast height (DBH), is used by priority species, or has a large canopy]. The site is within the City of Camas. WDFW recommendation is that in urban and urbanizing areas, single trees should be maintained if they are deemed important to species highly associated with Oregon white oak. Oaks and their associated floras comprise distinct woodland ecosystems with various plant communities providing valuable habitat that contributes to wildlife diversity; oak woodlands provide a mix of feeding, resting, and breeding habitat for many wildlife species (Larsen and Morgan 1998).

The WDFW Priority Habitats and Species online mapping tool depicts oak woodlands within the vicinity of the observed oak along the southern site boundary. One oak tree measuring approximately 52 inches DBH was mapped along the southern site boundary during site reconnaissance (Table 4, Figure 2). The oak has several live and dead branches, cavities, and has canopy connectivity with other trees in the vicinity but is not connected with other oaks. The oak location was mapped using a GPS system capable of submeter accuracy in ideal conditions. According to *CMC 16.61.010(3)(a)*, individual Oregon white oak trees with a twenty-inch DBH are considered a priority habitat.

Table 4. Oak Summary

Canopy Area	Diameter at Breast Height	Number of Trunks	Noteworthy Habitat Features
0.08 acres	52 inches	1	• Canopy is interconnected with adjacent trees, but not other oaks • Two large cavities

LIMITATIONS

ELS bases this report's determinations on standard scientific methodology and best professional judgment. In our opinion, local, state, and federal regulatory agencies should agree with our determinations. However, the information contained in this report should be considered preliminary and used at your own risk until it has been approved in writing by the appropriate regulatory agencies. ELS is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this report.

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FIGURES AND PHOTOPLATES

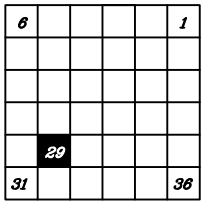
WASHINGTON

SITE

45.6321° Latitude
-122.4664° Longitude

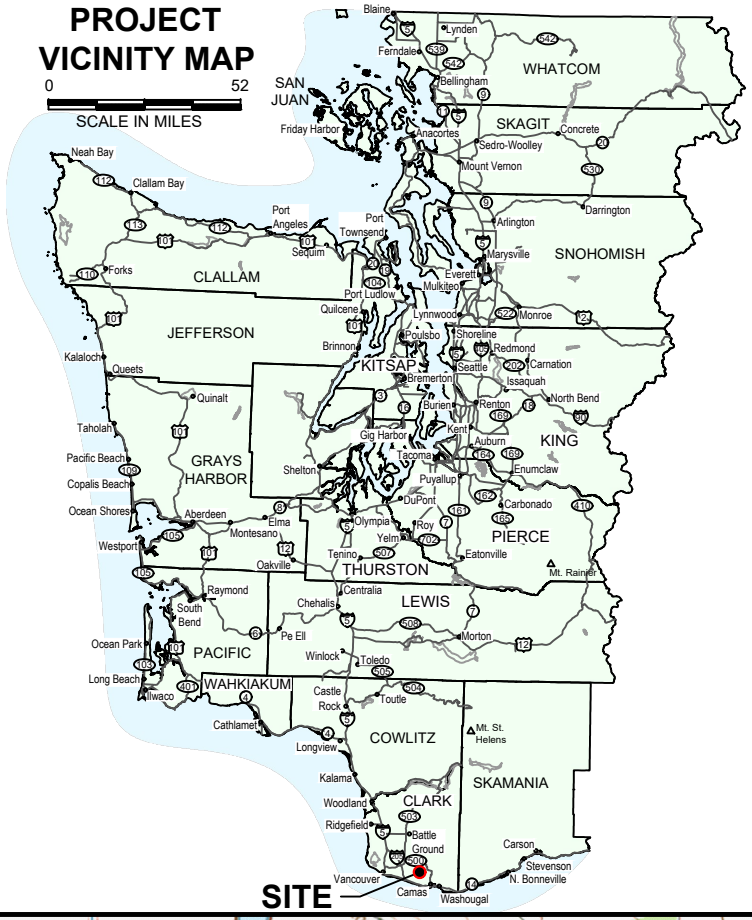
LOCATION MAP

R 3 E



PROJECT VICINITY MAP

0 52
SCALE IN MILES



NOTE:
Quadrangle topographic map from USGS.

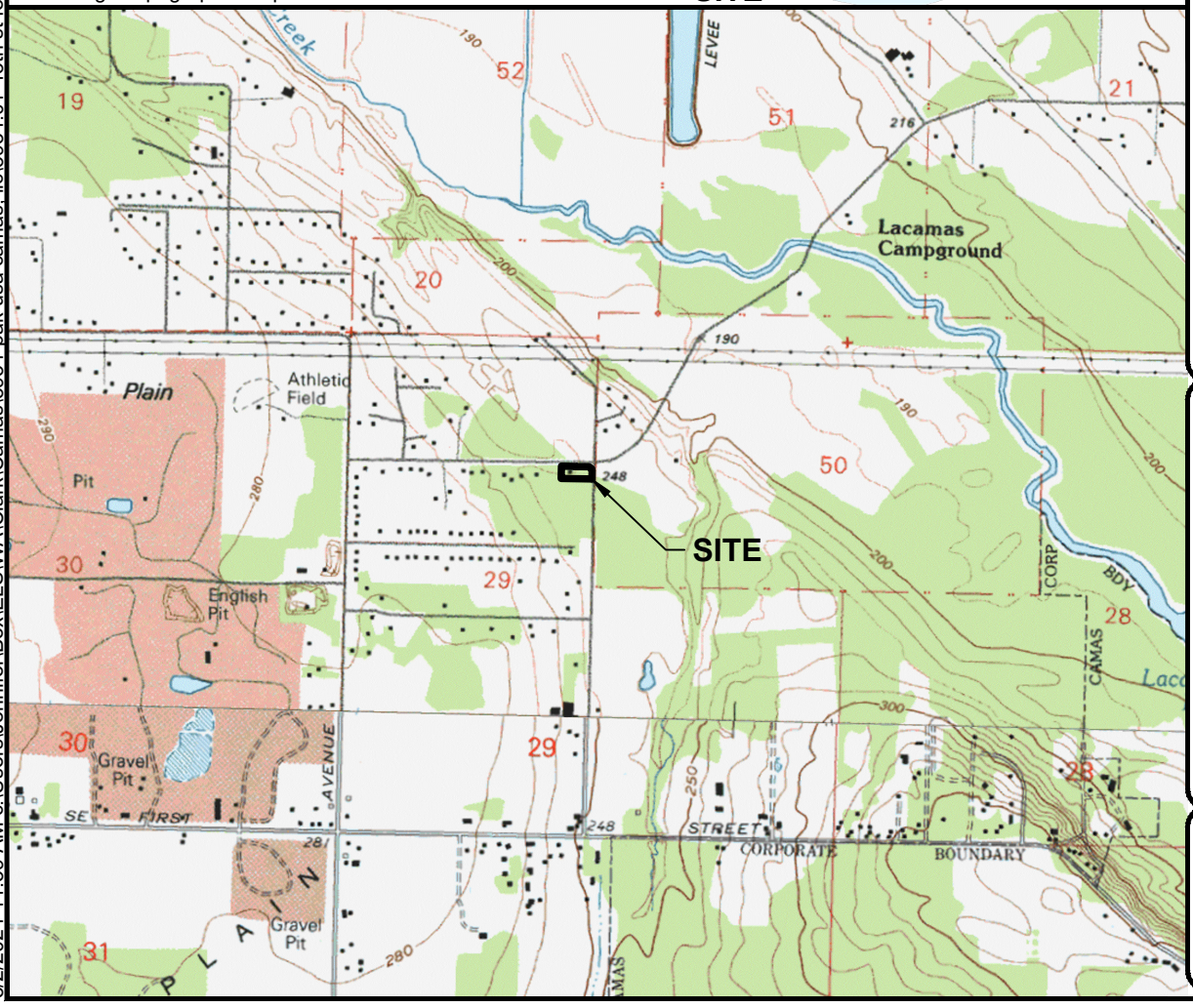


Figure 1
VICINITY MAP
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 5/2/24
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

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Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
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Ecological Land Services

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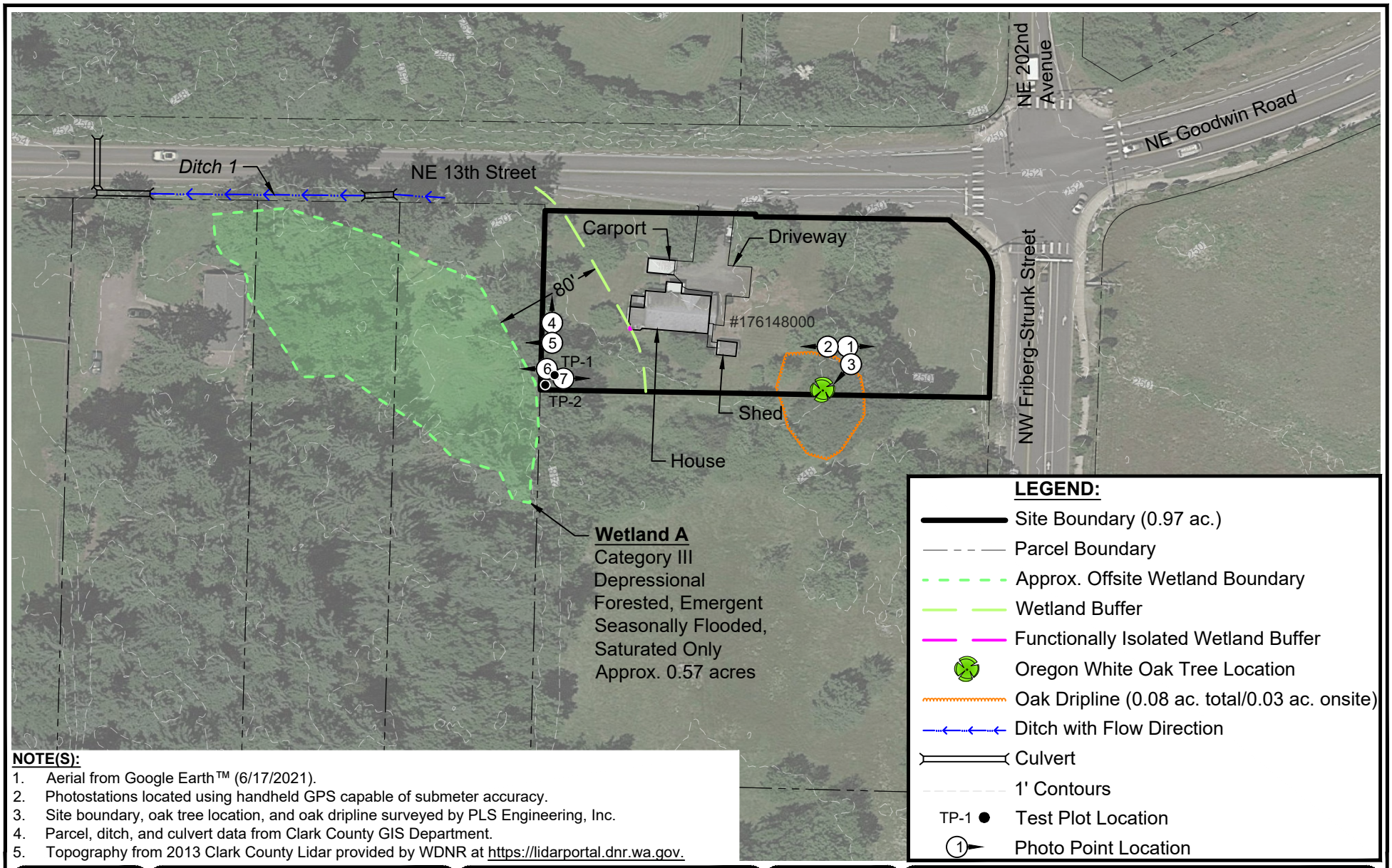

NOTE(S):

1. Aerial from Google Earth™ (6/17/2021).
2. Photostations located using handheld GPS capable of submeter accuracy.
3. Site boundary, oak tree location, and oak dripline surveyed by PLS Engineering, Inc.
4. Parcel, ditch, and culvert data from Clark County GIS Department.
5. Topography from 2013 Clark County Lidar provided by WDNR at https://lidarportal.dnr.wa.gov.

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Figure 2
EXISTING CONDITIONS
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

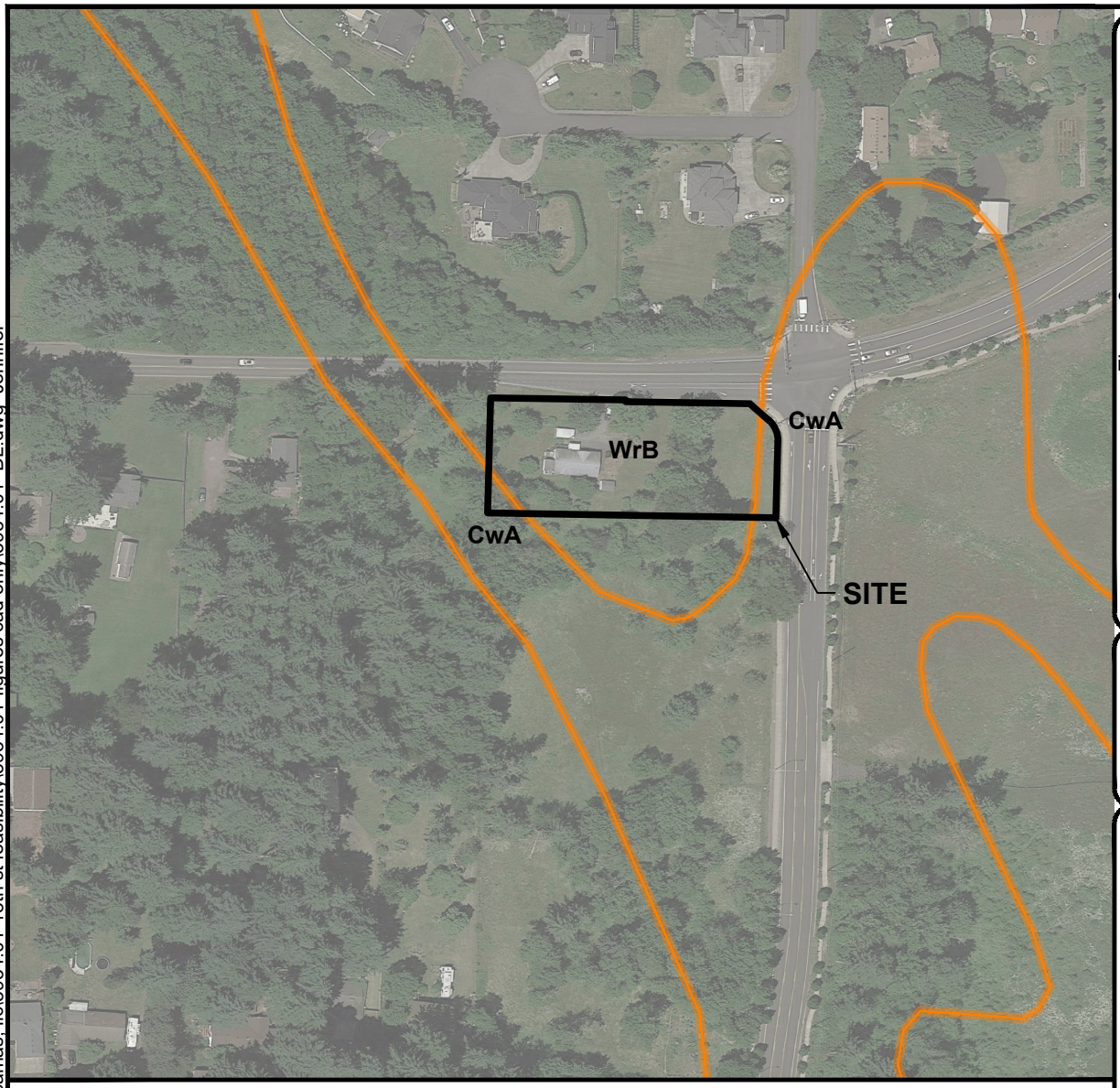

Figure 3
NRCS SOIL SURVEY
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 5/2/24
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LEGEND:

Site Boundary
NRCS Soil Boundary
CwA Cove silty clay loam, thin solum, 0 to 3 percent slopes. **Hydric.**
WrB Wind River gravelly loam, 0 to 8 percent slopes. Not hydric.

NOTE(S):
1. Map provided on-line by NRCS at web address: *http://websoilsurvey.nrcs.usda.gov/app/*

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No mapped wetlands indicated onsite by US Fish & Wildlife Service.

LEGEND:

Site Boundary

Wetlands

Riverine

NOTE(S):

1. Map provided on-line by US Fish & Wildlife Service at web address: *https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper*

Figure 4
USFWS NATIONAL WETLANDS INVENTORY
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 5/2/24
DWN: JKJ
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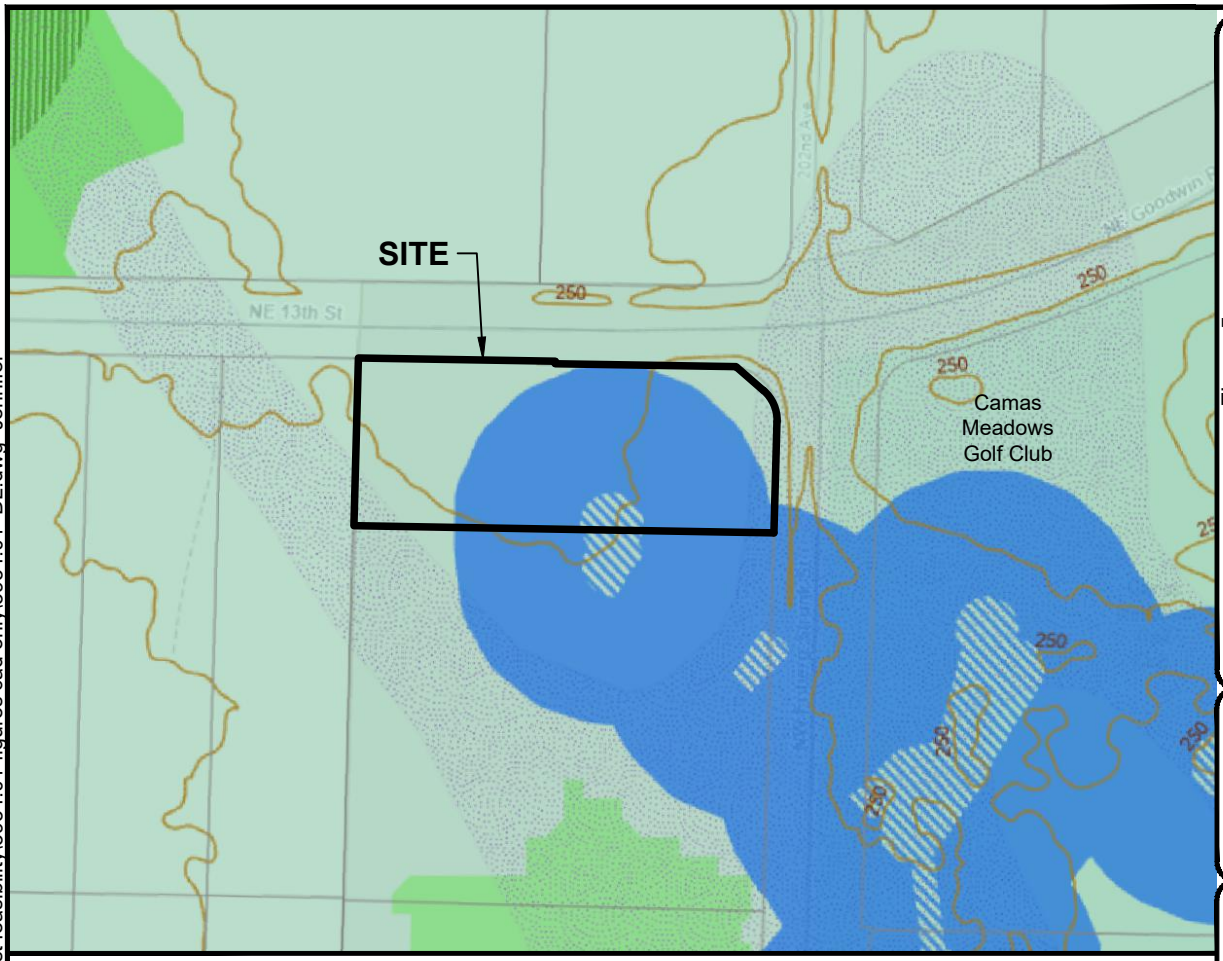

Figure 5
CLARK COUNTY CRITICAL AREAS
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 5/2/24
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LEGEND:

- Site Boundary

Slopes and Geologic Hazards Group
Contour Lines
- Contour Lines - 10 ft

Soils and Wetlands Inventory
- Hydric Soils
- Potential Wetlands Presence
- Permitted Wetland

Priority Habitats and Species Group Habitat
- Habitat Area
- Adjacent to Habitat Area

Riparian Habitat
- Riparian Habitat Area

Location Generalized Due to Sensitivity
- Habitat Area

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NOTE(S):
1. Map provided on-line by Clark County at web address: *https://gis.clark.wa.gov/mapsonline/index.cfm?site=Environmental*

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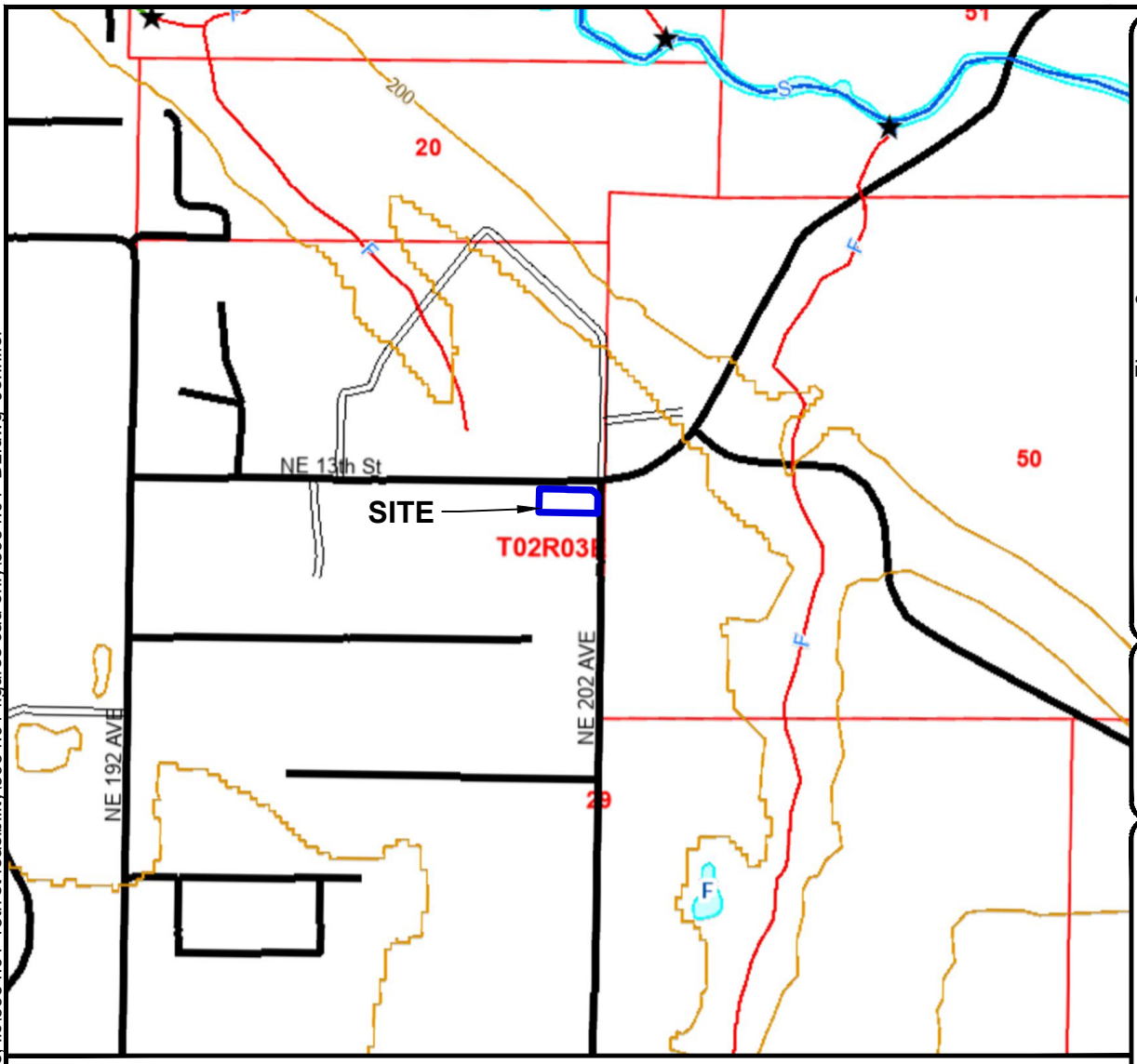

Figure 6
WDNR STREAM TYPE MAP
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 5/2/24
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No mapped streams indicated onsite by the Washington State Department of Natural Resources (DNR).

LEGEND:

- Site Boundary
- 40-foot Contours
  - 40 ft. Contours
- Water Courses (FP)
  - Type S
  - Type F
  - Type N, Np, Ns
  - U, unknown
  - X, non-typed per WAC 222-16
- WRIA Boundaries
  - WRIA Boundaries
- DNR Roads
  - Paved Road
  - Unpaved Road/Surface Unknown
- Unpaved Road/Surface Unknown
  - Water Type Breaks (FP)

SCALE IN FEET
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NOTE: Map provided on-line by Washington State Department of Natural Resources at web address: *http://fortress.wa.gov/dnr/app1/Fpars/viewer.htm*

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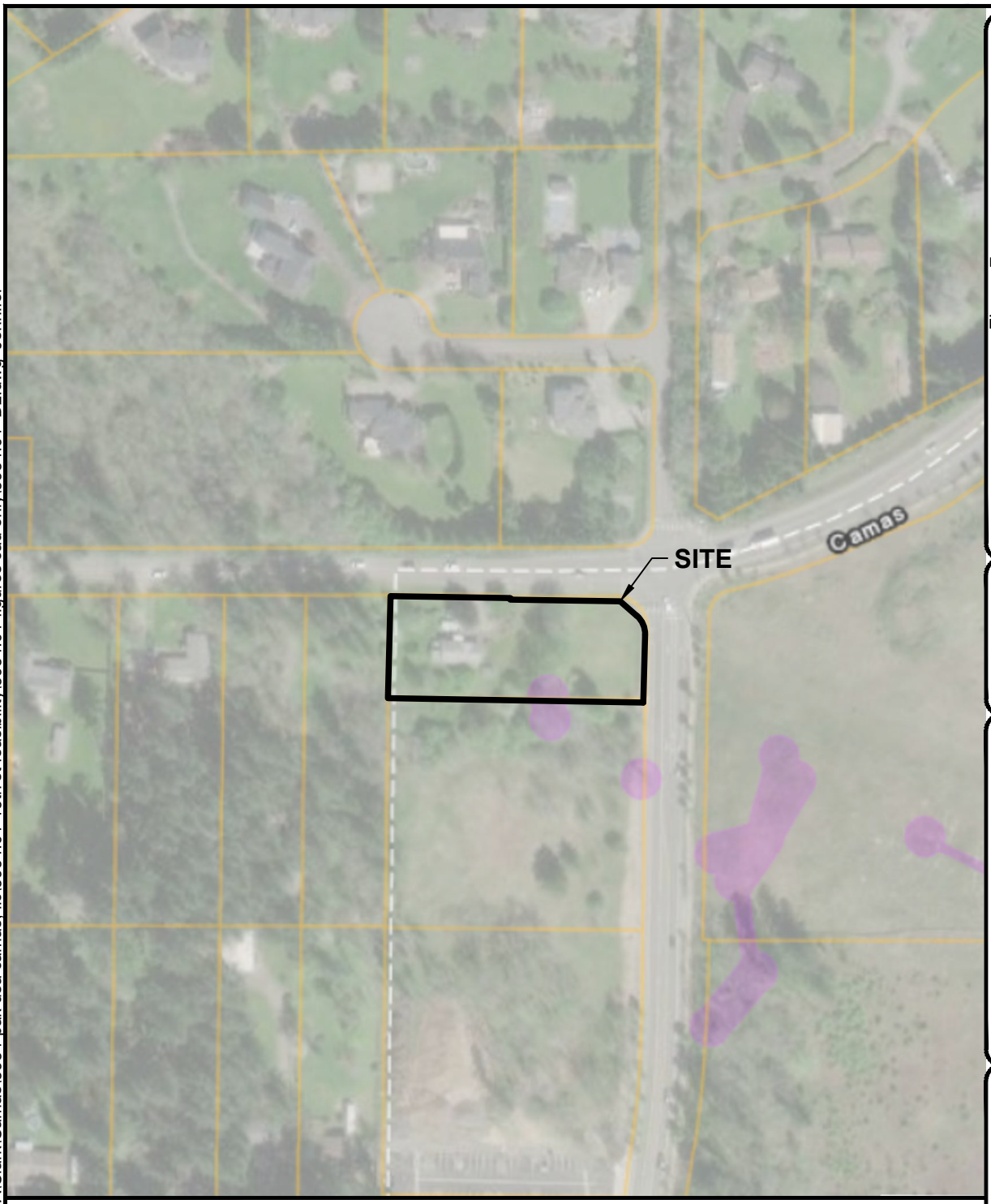

Figure 7
WDFW PRIORITY HABITAT AND SPECIES
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 5/2/24
DWN: JKJ
REQ. BY: JB
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0 200 400
SCALE IN FEET

N W E S

LEGEND:

- Site Boundary
- Parcel Boundary
- Oak Woodland - Habitat Feature

By Township
Caves or Cave-rich Areas

NOTE: Map provided on-line by Washington State Department of Fish & Wildlife at web address:
http://apps.wdfw.wa.gov/phsontheweb/

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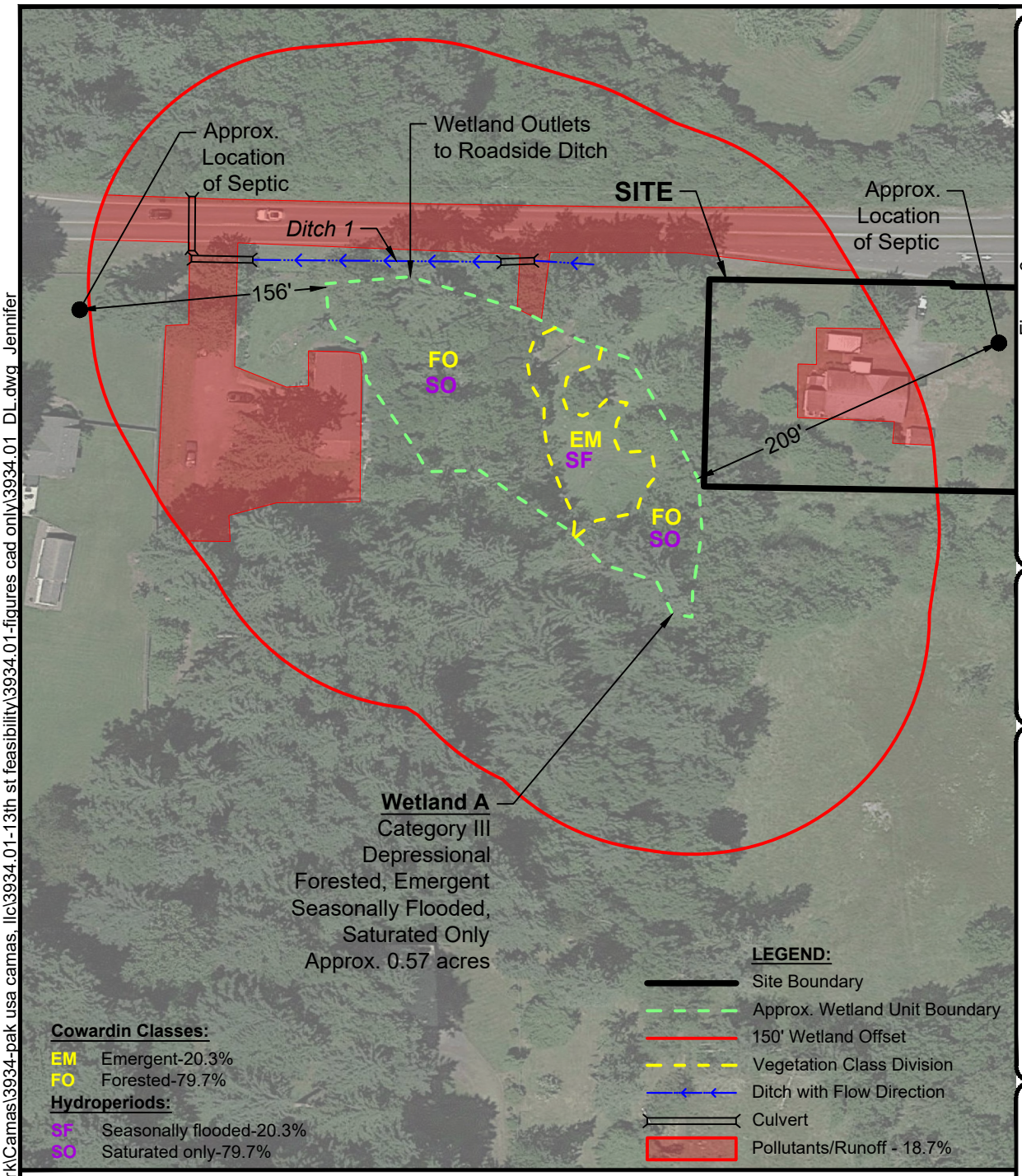

Figure 8
WETLAND RATING FORM-150' OFFSET
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 5/2/24
DWN: JKJ
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PROJECT NO: 3934.01

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SCALE IN FEET
0
100
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Rating Question Depressional	Description	Wetland A
D 1.1, D 4.1	Location of Outlet	Wetland has an intermittently flowing stream or ditch.
D 1.3	Distribution of persistent plants	Wetland has persistent plants >1/2 the area.
D. 1.4	Area of seasonally flooded	Area seasonally ponded <1/4 of area.
D 2.2	Boundary of area w/in 150' of the wetland in land uses that generate pollutants	>10% area within 150' in land use that generate pollutants.
D 5.2	Boundary of area w/in 150' of the wetland in land uses that generate excess runoff	>10% area within 150' in land use that generate excess runoff.
D 4.3	Contributing Basin-Contribution of wetland to storage in the watershed	The area of the basin is 10 to 100 times the area of the unit.
D 5.3	Contributing Basin covered in intensive land uses	>25% of the contributing basin is covered with intensive land uses.
H 1.1	Cowardin Plant Classes	Emergent, Forested
H 1.2	Hydroperiods	Seasonally flooded, Saturated only
H 1.4	Interspersion of habitats	Low interspersion of habitats

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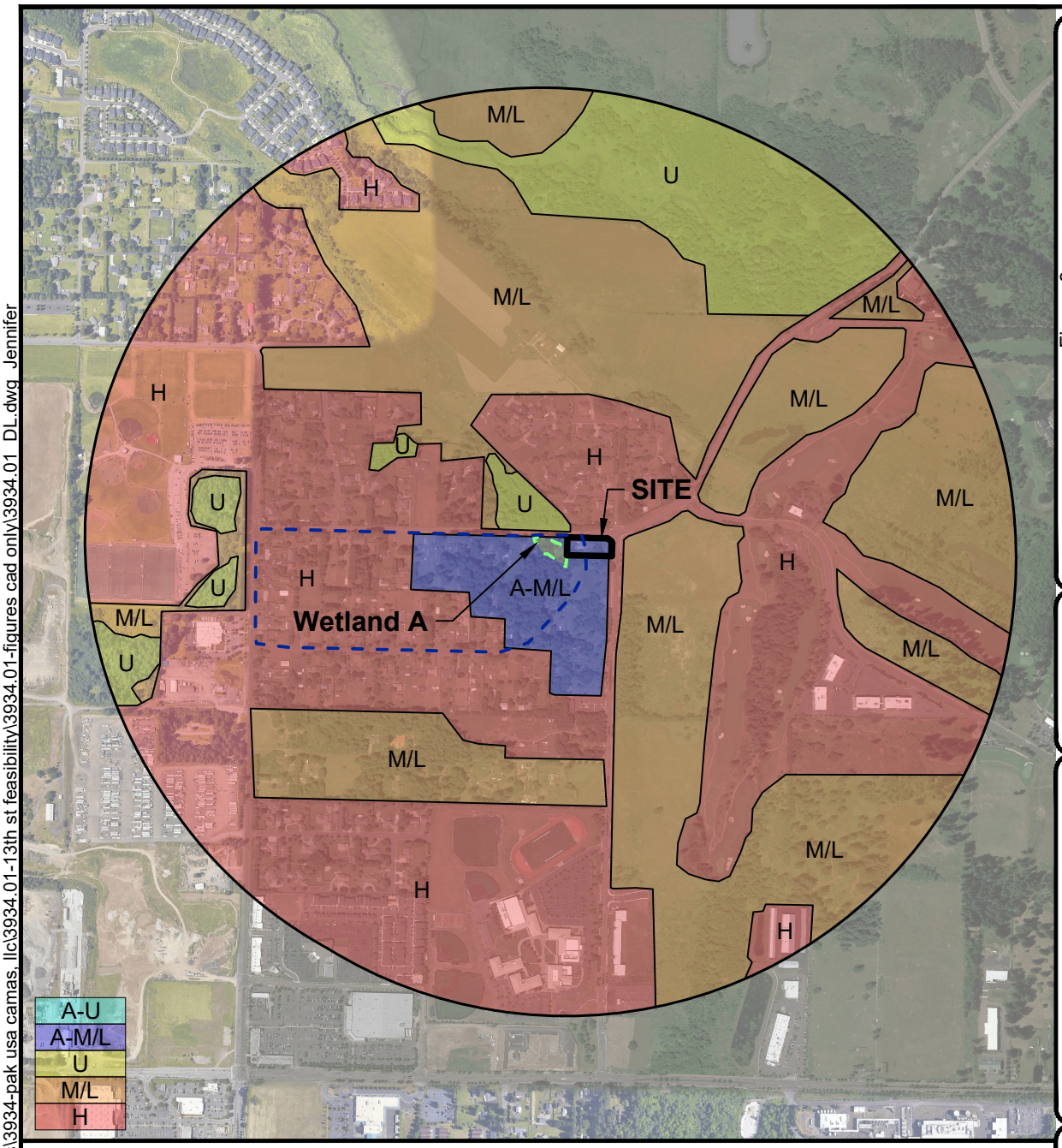

Figure 9
WETLAND RATING FORM-1 km OFFSET
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 5/2/24
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
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Ecological Land Services

SCALE IN FEET
0
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LEGEND:

- Site Boundary
- Approx. Wetland Unit Boundary
- Contributing Basin
  77x area of Wetland A

H2.1 Accessible Habitat

- A-U: A-U (0.0%)
- A-M/L: A-M/L (2.9%)

H2.2 Undisturbed Habitat

- U: U (9.0%)
- M/L: M/L (37.7%)

H2.3 Land Use Intensity

- H: H (50.4%)

H 2.1. Accessible Habitat Equation

% A-U habitat **0.0%** + [(% A-M/L intensity land uses)/2] **1.5%** = **1.5%**

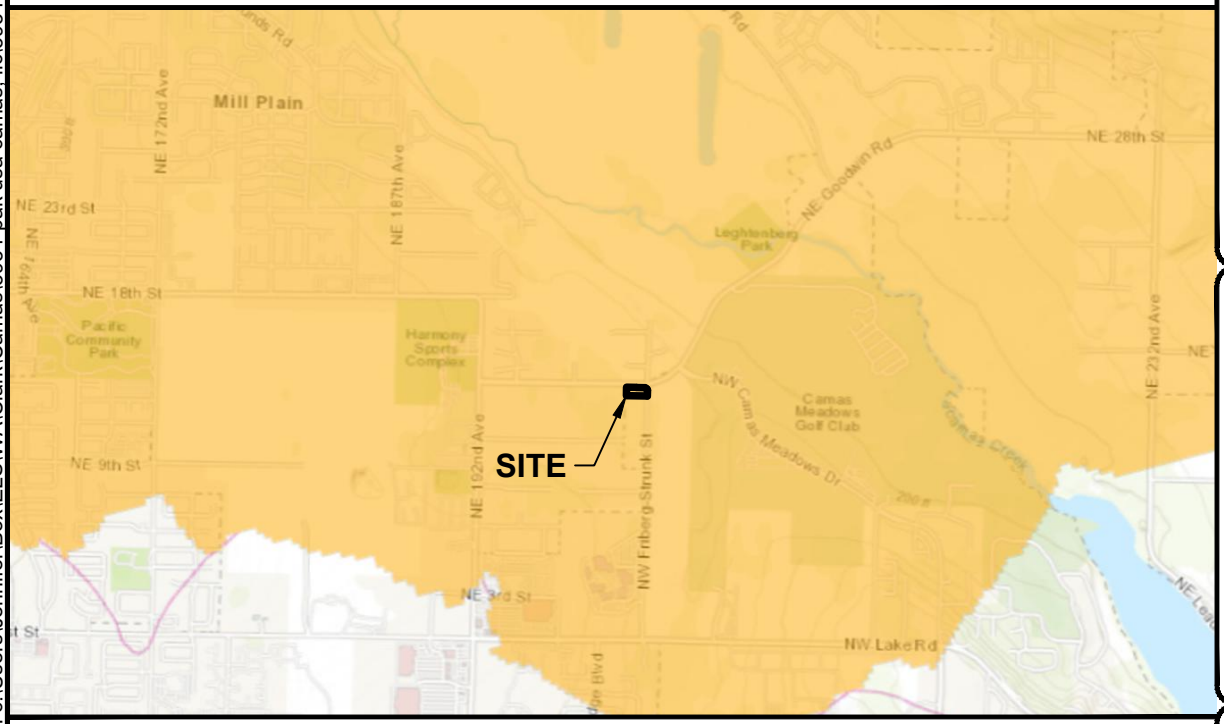
H 2.2. Total Undisturbed Habitat Equation

% A-U + % U habitat **9.0%** + [(% A-M/L + % M/L land uses)/2] **20.3%** = **29.3%**

5/2/2024 11:39 AM c:\Users\Jennifer\Box\ELS\WA\Clark\Camas\3934-pak usa camas, llc\3934.01-13th st feasibility\3934.01-figures cad only\3934.01 DL.dwg Jennifer

Assessed Waters/Sediment

Water	Sediment	Subbasins
Category 5 - 303d	Category 5 - 303d	12 Digit HUC Boundary
Category 4C	Category 4C	
Category 4B	Category 4B	
Category 4A	Category 4A	
Category 2	Category 2	
Category 1	Category 1	



WQ Improvement Projects

- Approved
- In Development

NOTE(S):

1. Map provided on-line by Washington State Department of Ecology at web address: *https://fortress.wa.gov/ecy/waterqualityatlas/map.aspx?*

Figure 10
WETLAND RATING FORM-303(d) and TMDLs
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 5/2/24
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com
Ecological Land Services

SCALE IN FEET
0
3000
6000

N
W
E
S

5/2/2024 11:39 AM c:\Users\Jennifer\Box\ELS\WA\Clark\Camas\3934-pak usa camas, llc\3934.01-13th st feasibility\3934.01-figures cad only\3934.01 DL.dwg Jennifer

Photo 1 was taken facing east and shows general conditions onsite.

Photo 2 was taken facing west and shows general conditions onsite. The oak is visible on the left.

Photo 3 shows the onsite Oregon white oak.

Ecological Land Services

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305

DATE: 08.29.2023
DWN: JB
PRJ. MGR: JB
PROJ.#: 3934.01

Photoplate 1
13th Street Gas Station
Camas, WA
Section 29, Township 2N, Range 3E, W.M.

Photo 4 was taken facing north at TP-1 and shows general conditions onsite.

Photo 5 was taken facing west.

Photo 6 was taken facing west at TP-1.

Photo 7 was taken facing east at TP-1 and shows general conditions onsite.

Ecological Land Services

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305

DATE: 08.29.2023
DWN: JB
PRJ. MGR: JB
PROJ.#: 3934.01

Photoplate 2
13th Street Gas Station
Camas, WA
Section 29, Township 2N, Range 3E, W.M.

APPENDIX A

ROUTINE DETERMINATION METHOD AND PLANT INDICATOR RATING DEFINITIONS

Routine Determination Method

The Routine Determination Method is defined according to the U.S. Army Corps of Engineers' 1987 *Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers' Wetland Delineation Manual* (Environmental Laboratory 1987)*; Western Mountains, Valleys, and Coast Region (Version 2.0)* (Corps 2010). The Routine Determination Method examines three parameters – vegetation, soils, and hydrology – to determine if wetlands exist in a given area. Hydrology is critical in determining what is a wetland, but if often difficult to assess because hydrologic conditions can change periodically (hourly, daily, or seasonally). Consequently, it is necessary to determine if hydrophytic vegetation and hydric soils are present, which would indicate that water is present for a long enough duration to support a wetland plant community. By definition, wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Vegetation Indicator Status

The indicator status, following the scientific names of plant species, indicates the likelihood of the species to be found in wetlands according to the *National Wetland Plant List Indicator Rating Definitions* (Corps 2012). Listed from most likely to least likely to be found in wetlands, the indicator status categories are:

- **OBL** (obligate wetland) - occur almost always under natural conditions in wetlands.
- **FACW** (facultative wetland) - usually occur in wetlands, but occasionally found in non-wetlands.
- **FAC** (facultative) - equally likely to occur in wetlands or non-wetlands.
- **FACU** (facultative upland) - usually occur in non-wetlands, but occasionally found in wetlands.
- **UPL** (obligate upland) - occur almost always under natural conditions in non-wetlands.
- **NI** (no indicator) - insufficient data to assign to an indicator category.

APPENDIX B

WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: 13th Street Gas Station City/County: Camas/Clark Sampling Date: 08/29/2023
Applicant/Owner: PAK USA Camas, LLC State: WA Sampling Point: TP-1
Investigator(s): J. Blake Section, Township, Range: S29, T2N, R3E
Landform (hillslope, terrace, etc.): Floodplains Local relief: (concave, convex, none): Convex Slope (%): 0-3%
Subregion (LRR): LRRA MLRA2 Lat: 45.6318544 Long: -122.4669931 Datum: NAD83
Soil Map Unit Name: Cove silty clay loam, thin solum, 0 to 3 percent slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☐ No☒ (If no, explain Remarks.)
Are Vegetation☐, Soil☐, or Hydrology☐ significantly disturbed? Are "Normal Circumstances" present? Yes☒ No☐
Are Vegetation☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?** Yes☐ No☒
Hydric Soils Present?	Yes ☐	No ☒	
Wetland Hydrology Present?	Yes ☐	No ☒	

Remarks: TP-1 is located in the southwest corner of the site in an area with mapped hydric soils. TP-1 does not meet all three wetland indicators and is therefore in uplands. Hydrologic conditions were not typical for this time of year, as antecedent rainfall was determined to be drier than normal for the two months prior to the site visit.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Malus* spp.*	20%	yes	FAC
2. *Fraxinus latifolia*	20%	yes	FACW
3. *Robinia pseudoacacia*	20%	yes	FACU
4. *Crataegus monogyna*	15%	yes	FAC
50% = 38 20% = 15	75%	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
50% = ___ 20% = ___	%	=Total Cover	
Herb Stratum (Plot size: 5 ft radius)			
1. *Festuca* spp*	93%	yes	FAC
2. *Iris* spp.*	5%	no	FACW
3. *Rubus ursinus*	2%	no	FACU
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
11.	%		
50% = 50 20% = 20	100%	=Total Cover	
Woody Vine Stratum (Plot size: 15 ft radius)			
1. *Rubus armeniacus*	5%	yes	FAC
2.	%		
50% = 3 20% = 1	5%	=Total Cover	

% Bare Ground in Herb Stratum 0%

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC 83 (A/B)

Prevalence Index worksheet

Total % Cover of:		Multiply by:	
OBL species		x 1=	
FACW species		x 2=	
FAC species		x 3=	
FACU species		x 4=	
UPL species		x 5=	
Column Totals:	(A)		(B)

Prevalence Index = B/A=

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 – Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes☒ No☐

Remarks: *Festuca* spp.* and *Malus* spp.* indicator statuses assumed FAC. *Iris* spp.* indicator status assumed FACW.

SOIL

Sampling Point: TP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/3	100%		%			Loam	
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosal (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Minerals (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and Wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: Hardpan
Depth (inches):6

Hydric Soil Present? **Yes☐ No☒**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (min. of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (Inches): ____
Water Table Present?	Yes ☐	No ☒	Depth (Inches): ____
Saturation Present? (Includes Capillary fringe)	Yes ☐	No ☒	Depth (Inches): ____

Wetland Hydrology Present? **Yes ☐ No ☒**

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrologic conditions were not typical for this time of year, as antecedent rainfall was determined to be drier than normal for the two months prior to the site visit.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: 13th Street Gas Station City/County: Camas/Clark Sampling Date: 04/02/2024
Applicant/Owner: PAK USA Camas, LLC State: WA Sampling Point: TP-2
Investigator(s): AJ Rendleman Section, Township, Range: S29, T2N, R3E
Landform (hillslope, terrace, etc.): Floodplains Local relief: (concave, convex, none): Convex Slope (%): 0-3%
Subregion (LRR): LRRA MLRA2 Lat: 45.631925 Long: -122.466933 Datum: NAD83
Soil Map Unit Name: Cove silty clay loam, thin solum, 0 to 3 percent slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☒ No☐ (If no, explain Remarks.)
Are Vegetation☐, Soil☐, or Hydrology☐ significantly disturbed? Are "Normal Circumstances" present? Yes☒ No☐
Are Vegetation☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** **Yes☐ No☒**
Hydric Soils Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☐ No ☒	

Remarks: TP-2 is located in the southwest corner of the site in an area with mapped hydric soils, just southwest of TP-1. TP-2 does not meet all three wetland indicators and is therefore in uplands. Hydrologic conditions were typical for this time of year, as antecedent rainfall was determined to be normal.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Robinia pseudoacacia*	65%	yes	FACU
2. *Fraxinus latifolia*	20%	yes	FACW
3.	%		
4.	%		
50% = 43 20% = 17	85%	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
50% = ___ 20% = ___	%	=Total Cover	
Herb Stratum (Plot size: 5 ft radius)			
1. *Festuca* spp*	100%	yes	FAC
2.	%		
3.	%		
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
11.	%		
50% = 50 20% = 20	100%	=Total Cover	
Woody Vine Stratum (Plot size: 15 ft radius)			
1.	%		
2.	%		
50% = ___ 20% = ___	%	=Total Cover	

% Bare Ground in Herb Stratum 0%

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC 66 (A/B)

Prevalence Index worksheet

Total % Cover of:		Multiply by:	
OBL species		x 1=	
FACW species		x 2=	
FAC species		x 3=	
FACU species		x 4=	
UPL species		x 5=	
Column Totals:	(A)		(B)

Prevalence Index = B/A=

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 – Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes☒ No☐**

Remarks:

SOIL

Sampling Point: TP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/3	100%		%			Silty clay loam	
10-16	10YR 4/2	80%	10YR 4/6	20%	C	M	Silty clay loam	
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosal (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Minerals (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and Wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____
Depth (inches):_____

Hydric Soil Present? **Yes☒ No☐**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (min. of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (Inches): _____
Water Table Present?	Yes ☒	No ☐	Depth (Inches): 13
Saturation Present? (Includes Capillary fringe)	Yes ☒	No ☐	Depth (Inches): 15

Wetland Hydrology Present? **Yes ☐ No ☒**

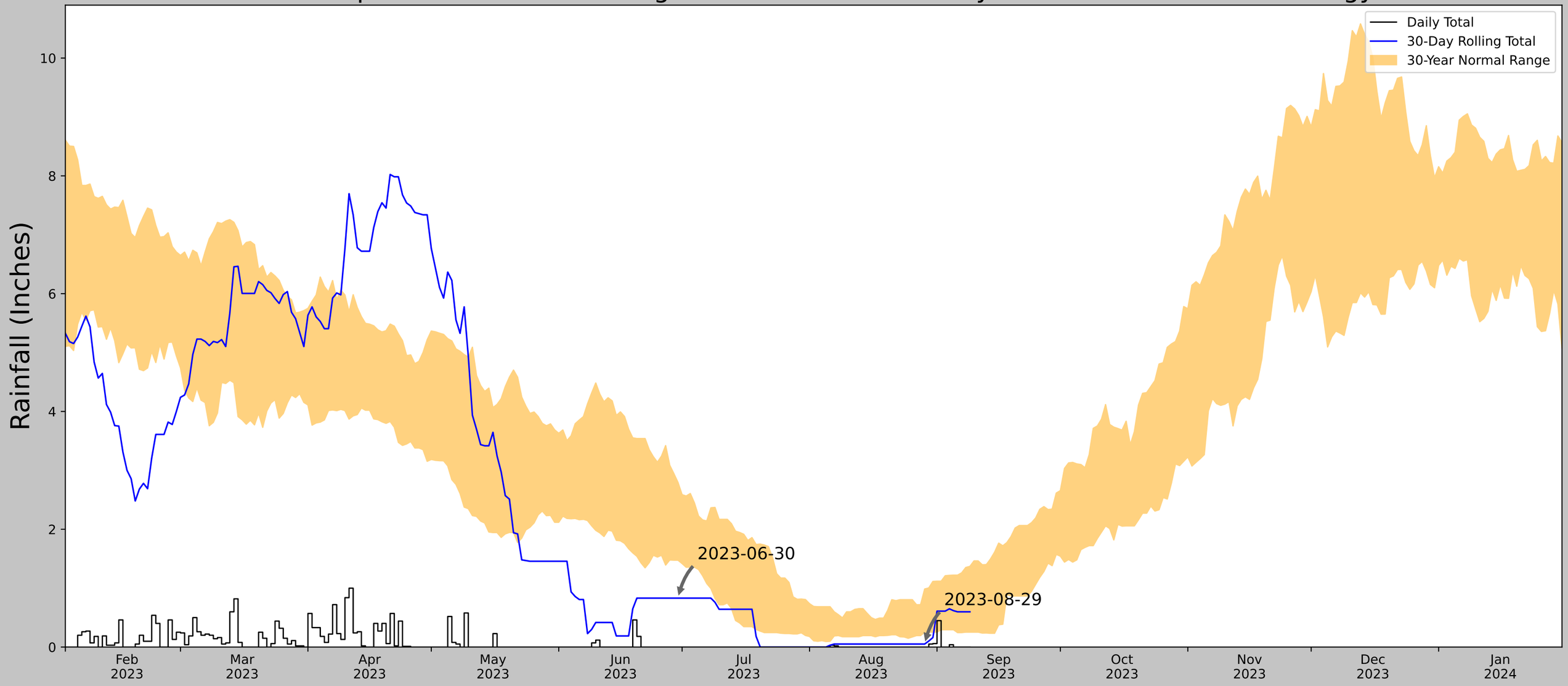
Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:Although the water table and saturation were present in the test pit, they were present too deep in the soil profile to meet wetland hydrologic indicators. Hydrologic conditions were typical for this time of year, as antecedent rainfall was determined to be normal.

APPENDIX C

PRECIPITATION INFORMATION

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	45.632018, -122.467297
Observation Date	2023-08-29
Elevation (ft)	253.44
Drought Index (PDSI)	Severe drought
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-08-29	0.253543	0.986221	0.051181	Dry	1	3	3
2023-07-30	0.24252	0.814961	0.0	Dry	1	2	2
2023-06-30	1.475197	2.795276	0.830709	Dry	1	1	1
Result							Drier than Normal - 6

US Army Corps of Engineers

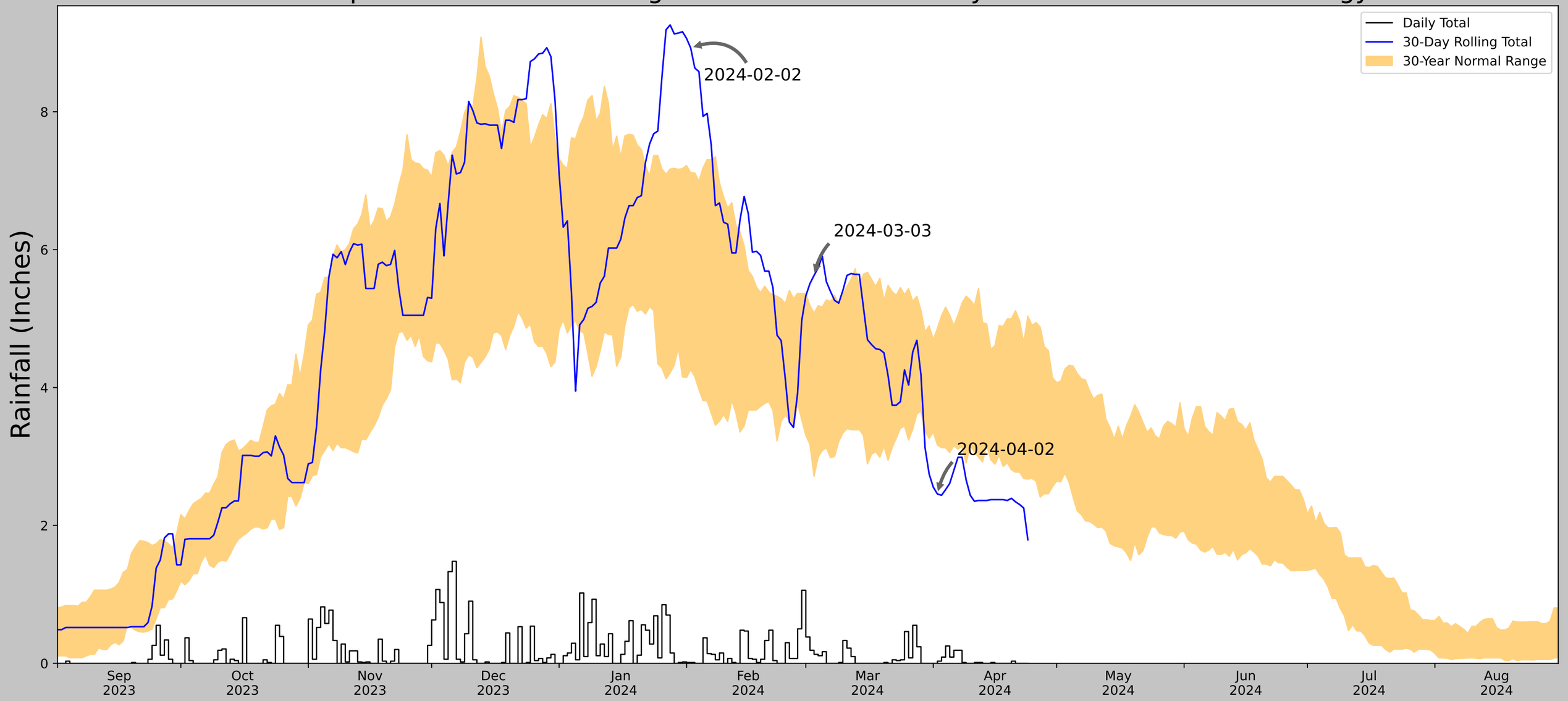
ERDC ENGINEER RESEARCH & DEVELOPMENT CENTER

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
BATTLE GROUND	45.7717, -122.5286	284.121	10.094	30.681	4.852	11318	69
BATTLE GROUND 0.8 N	45.794, -122.5443	316.929	1.716	32.808	0.828	0	1
BATTLE GROUND 1.2 NE	45.7958, -122.5275	361.877	1.666	77.756	0.879	0	20
VANCOUVER 4 NNE	45.6775, -122.6514	220.144	8.8	63.977	4.523	4	0
MERWIN DAM	45.955, -122.5625	224.081	12.769	60.04	6.513	31	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	45.631925, -122.466933
Observation Date	2024-04-02
Elevation (ft)	253.44
Drought Index (PDSI)	Moderate drought (2024-03)
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-04-02	3.166142	4.859449	2.456693	Dry	1	3	3
2024-03-03	2.711811	5.079528	5.625984	Wet	3	2	6
2024-02-02	4.261417	7.114173	8.925197	Wet	3	1	3
Result							Normal Conditions - 12

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
PORTLAND WFO	45.5608, -122.5383	20.997	6.005	232.443	4.098	10000	90
PORTLAND 4.6 ENE	45.5548, -122.5645	139.108	1.334	118.111	0.758	4	0
PORTLAND INTL AP	45.5958, -122.6092	21.982	4.196	0.985	1.892	1348	0

APPENDIX D

WETLAND RATING FORM FOR WESTERN WASHINGTON

Wetland A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A Date of site visit: August 29,2023

Rated by: Julianne Blake Trained by Ecology? X Yes _No Date of training: June 2022

HGM Class used for rating: Depressional Wetland has multiple HGM classes?_____Y _X_N

NOTE: **Form is not complete without the required figures** (figures can be combined).
Source of base aerial photo/map: Google Earth

OVERALL WETLAND CATEGORY III (based on functions X or special characteristics__)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

_____**Category II** – Total score = 20 - 22

__X__**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality			Hydrologic			Habitat			TOTAL
	Circle the appropriate ratings									
Site Potential	H	M	(L)	H	M	(L)	H	M	(L)	
Landscape Potential	(H)	M	L	(H)	M	L	H	M	(L)	
Value	(H)	M	L	(H)	M	L	H	(M)	L	
Score Based on Ratings	7			7			4			18

Score for each function based on three ratings (order of ratings is not important)

9 = H, H, H
8 = H, H, M
7 = H, H, L
7 = H, M, M
6 = H, M, L
6 = M, M, M
5 = H, L, L
5 = M, M, L
4 = M, L, L
3 = L, L, L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	**I II**
Wetland of High Conservation Value	**I**
Bog	**I**
Mature Forest	**I**
Old Growth Forest	**I**
Coastal Lagoon	**I II**
Interdunal	**I II III IV**
None of the above	(Not Applicable)

Wetland A

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	8
Hydroperiods	D 1.4, H 1.2	8
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	8
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	8
Map of the contributing basin	D 4.3, D 5.3	9
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	9
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	10
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	10

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland A

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

NO – go to 2 **YES** – the wetland class is **Tidal Fringe** – go to 1.1

1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

NO – Saltwater Tidal Fringe (Estuarine) **YES – Freshwater Tidal Fringe**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe, it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.

2. The entire wetland unit is flat, and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

NO – go to 3 **YES** – The wetland class is **Flats**

If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet all** of the following criteria?

___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size,

___At least 30% of the open water area is deeper than 6.6 ft (2 m).

NO – go to 4 **YES –** The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?

____The wetland is on a slope (slope can be very gradual),

____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheet flow, or in a swale without distinct banks,

____The water leaves the wetland **without being impounded**.

NO – go to 5 **YES –** The wetland class is **Slope**

NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

Wetland A

5. Does the entire wetland unit **meet all** of the following criteria?
   ____The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   ____The overbank flooding occurs at least once every 2 years.

   NO – go to 6 **YES** – The wetland class is **Riverine**
   NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? This means that any outlet, if present, is higher than the interior of the wetland.

   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched but has no obvious natural outlet.

   NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

   NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.

Wetland A

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	2
D 1.2. The soil 2 in. below the surface (or duff layer) is true clay or true organic *(use NRCS definitions).* Yes = 4 No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed plants > 95% of area points = 5 Wetland has persistent, ungrazed plants > ½ of area points = 3 Wetland has persistent, ungrazed plants ≥ 1/10 of area points = 1 Wetland has persistent, ungrazed plants < 1/10 of area points = 0	3
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is ≥ ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0	0
Total for D 1 Add the points in the boxes above	5

Rating of Site Potential If score is: ___**12-16 = H** ___**6-11 = M** _**X**_**0-5 = L** *Record the rating on the first page*

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	1
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	1
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source_____ Yes = 1 No = 0	0
Total for D 2 Add the points in the boxes above	3

Rating of Landscape Potential If score is: _**X**__**3 or 4 = H** _**1 or 2 = M** ___**0 = L** *Record the rating on the first page*

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	1
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0	1
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? (Answer YES if there is a TMDL in development or in effect for the basin in which the unit is found.) Yes = 2 No = 0	2
Total for D 3 Add the points in the boxes above	4

Rating of Value If score is: _**X**__**2-4 = H** _**1 = M** ___**0 = L** *Record the rating on the first page*

Wetland A

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?	
D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream/ditch, OR highly constricted permanently flowing outlet points = 2 Wetland is a flat depression (question 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	2
D 4.2. Depth of storage during wet periods: Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part. Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	0
D 4.3. Contribution of the wetland to storage in the watershed: Estimate the ratio of the area of upstream basin contributing surface water to the area of the wetland unit itself. The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire wetland is in the Flats class points = 5	3
Total for D 4 Add the points in the boxes above	5

Rating of Site Potential If score is: **___12-16 = H ___6-11 = M _X_0-5 = L** *Record the rating on the first page*

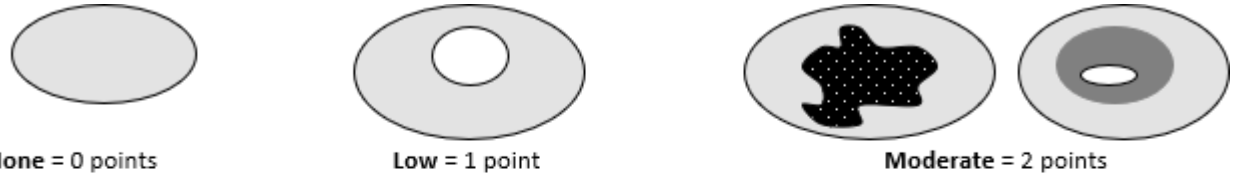
D 5.0. Does the landscape have the potential to support hydrologic functions of the site?	
D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	1
Total for D 5 Add the points in the boxes above	3

Rating of Landscape Potential If score is: **_X__3 = H _1 or 2 = M ___0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?	
D 6.1. Is the unit in a landscape that has flooding problems? Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met. The wetland captures surface water that would otherwise flow downgradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): • Flooding occurs in a sub-basin that is immediately downgradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther downgradient. points = 1 • Flooding from groundwater is an issue in the sub-basin. points = 1 • The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* _____ points = 0 • There are no problems with flooding downstream of the wetland. points = 0	2
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for D 6 Add the points in the boxes above	2

Rating of Value If score is**: _X_2-4 = H __1 = M __0 = L** *Record the rating on the first page*

Wetland A

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat	
H 1.0. Does the site have the potential to provide habitat?	
H 1.1. Structure of plant community: Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac if the unit is at least 2.5 ac, or more than 10% of the unit if it is smaller than 2.5 ac. ____Aquatic bed — 4 structures or more: points = 4 __X__Emergent — 3 structures: points = 2 ____Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points = 1 __X__Forested (areas where trees have > 30% cover) — 1 structure: points = 0 *If the unit has a Forested class, check if:* ____The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/groundcover) that each cover 20% within the Forested polygon	1
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland if the unit is < 2.5 ac, or ¼ ac if the unit is at least 2.5 ac to count (see text for descriptions of hydroperiods). ____Permanently flooded or inundated — 4 or more types present: points = 3 __X__Seasonally flooded or inundated — 3 types present: points = 2 ____Occasionally flooded or inundated — 2 types present: points = 1 __X__Saturated only — 1 type present: points = 0 ____Permanently flowing stream or river in, or adjacent to, the wetland ____Intermittently or seasonally flowing stream in, or adjacent to, the wetland ____**Lake Fringe wetland** — **2 points** ____**Freshwater tidal wetland** — **2 points**	1
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. **Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canada thistle** If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	2
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. If you have four or more plant classes or three classes and open water, the rating is always high.  **None** = 0 points — **Low** = 1 point — **Moderate** = 2 points All three diagrams in this row are **High** = 3 points	1

Wetland A

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. The number of checks is the number of points. **X** Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft long). ____Standing snags (dbh > 4 in.) within the wetland ____Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extend at least 3.3 ft (1 m) over open water or a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ___Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet weathered where wood is exposed) ____At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians) ____Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 above for the list of strata and H 1.5 in the manual for the list of aggressive plant species)	1
Total for H 1 Add the points in the boxes above	6

Rating of Site Potential If score is: ___**15-18 = H** ___**7-14 = M** **X** **0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include only habitat polygons accessible from the wetland. *Calculate:* % relatively undisturbed habitat 0.0 **+** [(% moderate and low intensity land uses)/2] 1.5 **=** 1.5 % Total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	0
H 2.2. Total habitat in 1 km Polygon around the wetland. *Calculate:* % relatively undisturbed habitat 9.0 **+** [(% moderate and low intensity land uses)/2]20.3 **=** 29.3 % Total habitat > 50% of Polygon points = 3 Total habitat 10-50% and in 1-3 patches points = 2 Total habitat 10-50% and > 3 patches points = 1 Total habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	-1

Rating of Landscape Potential If score is**:** ___**4-6 = H** __**1-3 = M** **X** **< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 — It has 3 or more Priority Habitats within 100 m (see next page) — It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) — It is mapped as a location for an individual WDFW Priority Species — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources data — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 Priority Habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0	1

Rating of Value If score is: ___**2 = H** **X** **1 = M** ____**0 = L** *Record the rating on the first page*

Wetland A

WDFW Priority Habitats

See complete descriptions of Priority Habitats listed by WDFW, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008 (current year, as revised). Priority Habitat and Species List.[133] This list was updated for consistency with guidance from WDFW.

This question is independent of the land use between the wetland unit and the Priority Habitat. All vegetated wetlands are by definition a Priority Habitat but are not included in this list because they are addressed by this rating system.

Count how many of the following Priority Habitats are within 330 ft (100 m) of the wetland unit:

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife. This habitat automatically counts if mapped on the PHS online map within 100m of the wetland. If not mapped, a determination can be made in the field.

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Fresh Deepwater:** Lands permanently flooded with freshwater, including environments where surface water is permanent and often deep, so that water, rather than air, is the principal medium within which the dominant organisms live. Substrate does not support emergent vegetation. Do not select if Instream habitat is also present, or if the entire Deepwater feature is included in the wetland unit being rated (such as a pond with a vegetated fringe).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. Do not select if Fresh Deepwater habitat is also present.

— **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in. (81 cm) diameter at breast height (dbh) or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in. (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

[133] http://wdfw.wa.gov/publications/00165/wdfw00165.pdf

Wetland A

_X_ **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important. For single oaks or oak stands <0.4 ha in urban areas, WDFW's Management Recommendations for Oregon White Oak[134] provides more detail for determining if they are Priority Habitats

___ **Riparian:** The area adjacent to freshwater aquatic systems with flowing or standing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

___ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in. (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in. (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

___ **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

___ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie.

[134] https://wdfw.wa.gov/publications/00030/wdfw00030.pdf

Wetland A

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes – Go to **SC 1.1** No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No – Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 10% cover of non-native plant species. If non-native species are *Spartina*, see chapter 4.8 in the manual. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Does the wetland overlap with any known or historical rare plant or rare & high-quality ecosystem polygons on the WNHP Data Explorer?[135] Yes = **Category I** No – Go to **SC 2.2** SC 2.2. Does the wetland have a rare plant species, rare ecosystem (e.g., plant community), or high-quality common ecosystem that may qualify the site as a WHCV? Contact WNHP for resources to help determine the presence of these elements. Yes – Submit data to WA Natural Heritage Program for determination,[136] Go to **SC 2.3** No = **Not a WHCV** SC 2.3. Did WNHP review the site within 30 days and determine that it has a rare plant or ecosystem that meets their criteria? Yes = **Category I** No = **Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES, you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in. or more of the first 32 in. of the soil profile? Yes – Go to **SC 3.3** No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in. deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** No = **Not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Category I bog** No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in. deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Category I bog** No = **Not a bog**	**Cat. I**

[135] https://www.dnr.wa.gov/NHPdata

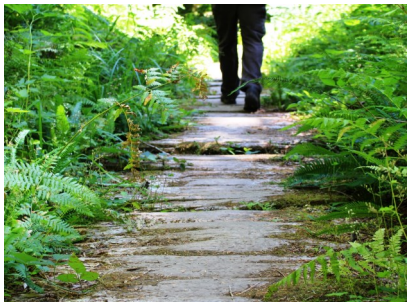
[136] https://www.dnr.wa.gov/Publications/amp_nh_sighting_form.pdf

Wetland A

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as Priority Habitats? ***If you answer YES, you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in. (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in. (53 cm). Yes = **Category I** No = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* — The lagoon retains some of its surface water at low tide during spring tides Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species in H 1.5 in the manual). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer YES, you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 and Ocean Shores Blvd SW, including lands west of E. Oceans Shores Blvd SW. Yes – Go to **SC 6.1** No = **Not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	**Not Applicable**

OAK BANK USE PLAN - REVISED

May 17, 2024



13th Street Gas Station
Camas, WA

Prepared for

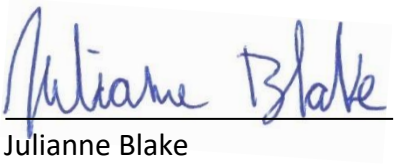
PAK USA Camas, LLC
c/o Taz Khan
3993 NW Currawong Court
Camas, WA 98607
(512) 779-4999

Prepared by

Ecological Land Services
1157 3rd Avenue, Suite 220A • Longview, WA 98632
(360) 578-1371 • Project Number 3934.01

SIGNATURE PAGE

The information in this report was compiled and prepared under the supervision and direction of the undersigned.



Julianne Blake
Biologist III

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INTRODUCTION

Ecological Land Services, Inc. (ELS) was contracted by PAK USA Camas, LLC to prepare this Oak Bank Use Plan to address Oregon white oak (oak) impacts resulting from the construction of a fuel station, convenience store, and associated parking lot. The site is approximately 0.97 acres and consists of Clark County Tax Parcel 176148000 located at 20101 NE 13th Street within the NW ¼ of Section 29, Township 2 North, and Range 3 East of the Willamette Meridian in Camas, Washington (Figure 1). Field work was conducted on August 29, 2023 and April 2, 2024. The project will remove one existing oak (*Quercus garryana*) and impact 0.08 acres (3,456 square feet) of oak canopy. Canopy impacts will be offset by purchasing 0.238 credits from Terrace Oak Bank (Bank). This Bank Use Plan was prepared according to the *Camas Municipal Code (CMC) Title 16 Environment* (2023) and Washington Department of Fish and Wildlife's (WDFW) *Management recommendations for Washington's priority habitats: Oregon white oak woodlands* (1998). This Bank Use Plan will discuss oak impacts only, any impacts to wetland buffers will be addressed in a separate report.

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PROJECT DESCRIPTION

The project area is approximately 0.97 acres and consists of Clark County Tax Parcel 176148000 located at 20101 NE 13th Street within the NW ¼ of Section 29, Township 2 North, and Range 3 East of the Willamette Meridian in Camas, Washington (Figure 1). The project consists of constructing a fuel station, convenience store, and associated parking lot. The parking lot will contain electric vehicle charging stations and vacuum pumps as well as pedestrian crossing areas (Figure 3). The existing oak will be removed as part of the project, removing 0.08 acres (3,546 square feet) of oak canopy. Canopy impacts will be mitigated by purchasing 0.238 credits from Terrace Oak Bank. Construction is anticipated to start upon receipt of all necessary permits.

Best management practices (BMPs) that will be completed prior to construction include designating staging and stockpile areas outside of critical areas and associated buffers, establishing a standard construction entrance, and installing silt fencing to prevent sedimentation. When site preparation is complete, construction will occur. A water truck will be available to prevent dust blowing during construction, if needed. Equipment used may include haul trucks, bulldozers, excavators, pavers, and hand tools. Upon completion of construction activities, disturbed areas that will not be paved will be seeded with a native grass seed mix.

EXISTING CONDITIONS

EXISTING AND SURROUNDING LAND USES

The 0.97-acre site consists of Clark County Tax Parcel 176148000 and is accessed by a paved driveway off NE 13th Street. The site is zoned as Business Park (BP) and currently contains a single-family mobile home, shed, carport, and paved driveway. The site is bordered to the north by NE 13th Street, to the east by NW Friberg-Strunk Street, to the south by undeveloped land and a commercial development in progress, and to the west by undeveloped land and a single-family residence (Figure 2).

EXISTING CRITICAL AREAS

Two site visits were completed by ELS, following the appropriate technical manuals: *The Routine Determination Method according to the Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (U.S. Army Corps of Engineers 2010). The first site visit took place in August 2023 and the second in April 2024, with one oak tree identified onsite. No wetlands were identified onsite at either visit; however, one wetland (Wetland A) was observed offsite to the west during the April 2024 visit (ELS 2024).

Wetland A is a Category III, depressional, forested and emergent wetland totaling approximately 0.57 acres offsite to the west, and outlets to a roadside ditch (Ditch 1). Offsite boundaries for Wetland A were estimated by visual observations of changes in vegetation, the presence of surface water, and aerial photos; therefore, Wetland A boundaries are approximate. Vegetation in Wetland A is dominated by deciduous trees and herbaceous vegetation. Wetland hydrology likely comes from a seasonally high groundwater table, runoff, and precipitation. Hydroperiods

include seasonally flooded and saturated only. According to the Washington State Wetland Rating System for Western Washington: 2014 Update (Rating System), Wetland A is a Category III wetland scoring 7 points for water quality functions, 7 points for hydrologic functions, and 4 points for habitat functions, for a total of 18 points. The designated buffer width for a Category III wetland with a high land use intensity and a habitat score of 4 is 80 feet, as listed in CMC Table 16.53.040-1 (Table 3).

Table 1. Wetland Summary

Name	Size	Hydrogeomorphic Classification[1]	Cowardin Class[2]/ Hydroperiod	Habitat Score[3]	Category[3]	Buffer Width[4]
A	Approximately 0.57 acres	Depressional	Emergent, Forested/ Saturated Only	4	III	80 ft.

[1]NRCS 2008, [2]FGDC 2013, [3]Hruby 2014, [4]CMC Table 16.53.040-1

The WDFW Priority Habitats and Species online mapping tool depicts oak woodlands in the vicinity of the observed oak along the southern site boundary. One oak measuring approximately 52 inches diameter at breast height (DBH) was mapped along the southern site boundary during site reconnaissance (Figure 2). The oak has several live and dead branches, cavities, and has canopy connectivity with other trees in the vicinity but is not connected with other oaks. The oak location was mapped using a GPS system capable of submeter accuracy in ideal conditions. According to *CMC 16.61.010(3)(a)*, individual Oregon white oak trees with a 20-inch DBH are considered a priority habitat. For more information regarding critical areas onsite, see the *Critical Areas Report for 13th Street Gas Station* (ELS 2024).

Table 2. Oak Summary

Total Canopy Area	DBH	Number of Trunks	Noteworthy Habitat Features
0.08 acres 3,456 square feet	52 inches	1	• Canopy is interconnected with adjacent trees, but not other oaks • Two large cavities

AVOIDANCE AND MINIMIZATION

The preferred mitigation sequencing of first avoidance, then minimization, and finally compensation for unavoidable impacts was taken into consideration during the project design process. The engineering team tested several layouts to avoid oak impacts to the maximum extent practicable, originally placing the convenience store on the western property line. However, *CMC 18.09.030-Table 1* states that parcels zoned BP must have a 50-foot setback for the rear yard, which placed the convenience store in the center of the site. Additional requirements include a turning radius large enough for fuel truck maneuvering, tank filling, and other deliveries. This layout did not allow access or the required interior circulation routes to accommodate fuel trucks and other large turning radius vehicles. To allow necessary ingress, egress, and circulation, the convenience store was moved to the east. Design review standards require the building be located as close as possible to the roadway and a driveway is required

around the outside of the store for a drive-thru car wash. Due to the single oak tree being located in an area of the site needed for the driveway, avoiding Oregon white oak impacts altogether is not feasible. The Oregon white oak proposed for removal is the only oak tree onsite.

Unavoidable Oregon White Oak Impacts

Removal of the oak will result in the loss of 0.08 acres (3,456 square feet) of Oregon white oak priority habitat as measured by the oak canopy coverage (drip line). The following table summarizes proposed oak impacts.

Table 3. Oak Impact Summary

Identifier	DBH	Canopy Coverage	Total Impact
Oregon White Oak (Single Mature Tree)	52 inches	0.08 acres 3,456 square feet	0.08 acres 3,456 square feet

Impacted Priority Habitat Functions

ELS assessed the functions provided by the oak during a site visit on August 29, 2023. The functional assessment is based on Washington Department of Fish and Wildlife's (WDFW) *Management Recommendations for Washington's Priority Habitats, Oregon White Oak Woodlands* (Guidance) (Larsen and Morgan 1998).

Habitat Functions

Oak woodlands are considered "priority habitat and species" by WDFW and are protected locally by the City of Camas Municipal Code (*CMC*). According to *CMC 16.61.010(3)(a)*, individual Oregon white oak trees with a twenty-inch DBH are considered a priority habitat.

In urban or urbanizing areas west of the Cascades, WDFW defines priority oak habitat as single oaks, or stands of pure oak, or oak/conifer associations, 1 acre or greater in size. WDFW may also consider individual Oregon white oak trees a priority habitat when found to be particularly valuable to wildlife (i.e., contains many cavities, has a large DBH, is used by priority species, or has a large canopy) (Larsen and Morgan 1998). The project site is within the City of Camas (City). WDFW recommendation is that in urban and urbanizing areas, single trees should be maintained if they are deemed important to species highly associated with Oregon white oak. Oaks and their associated flora comprise distinct woodland ecosystems with various plant communities providing valuable habitat that contributes to wildlife diversity. Oak woodlands provide a mix of feeding, resting, and breeding habitat for many wildlife species (Larsen and Morgan 1998).

The oak proposed for removal has several live and dead branches, cavities, and has canopy connectivity with other trees in the vicinity but is not connected with other oaks. Due to the location of the oak within the City boundaries and lack of habitat connectivity, larger animals or those not adapted to urban conditions are not likely to be present. Therefore, removing the oak would likely result in habitat loss and a food source only for birds and small mammals that are well adapted to urban conditions.

Oregon White Oak Mitigation Selection Rationale

The Oregon white oak proposed for removal is located in the service area for the Terrace Oak Bank (Bank). The oak tree is approximately 4 miles southeast of the Bank, in the Lacamas Creek Watershed which is in the southeastern portion of the service area (Figure 4). The proposed oak removal will be mitigated by purchasing credits from the Bank at ratios specified in the Terrace Oak Bank's Mitigation Banking Instrument (MBI).

Rationale for selecting this mitigation bank is as follows:

- There is not adequate space available within the study area to fully compensate for oak habitat losses utilizing onsite mitigation. The use of the Bank will ensure that habitat functions common to urban areas can be fully replaced.
- The oak onsite does not provide habitat for other priority species that should be replaced onsite. Habitat functions will be impacted for species common to urban areas, which can be fully replaced at the Bank.
- The habitat functions lost from the proposed oak removal correspond directly with the habitat creation purpose, goals, and objectives at the Bank which identifies 13.93 acres of existing Oregon white oak woodland WDFW Priority Habitat that will be restored to pre-agricultural conditions through creation, enhancement, and preservation. Creation and enhancement will be accomplished through planting oak saplings and/or native understory plantings, removing of Douglas-fir, and establishing a conservation easement over the entire 13.93 acres.
- The use of Terrace Oak Bank credits will provide immediate compensation for the accrued oak impacts.

The 2008 *Compensatory Mitigation for Losses of Aquatic Resources, Final Rule* (Corps) recommends purchasing mitigation bank credits for ecological considerations (lower risk of failure and lower temporal loss of resources and services) and to avoid the maintenance and contingency issues and outright failures that often accompany permittee-responsible mitigation sites. Use of the Terrace Oak Bank substantially lowers the risk of failure and temporal loss of resource functions and services over newly established, permittee-responsible mitigation sites and offsite mitigation is anticipated to be more meaningful and beneficial to the watershed's habitat functions.

Functions Provided at Oak Bank

The general goal of the Bank is to restore the approximately 13.93 acres to a state similar to its pre-agricultural condition through creation, enhancement, and preservation of an existing Oregon white oak woodland. All functions related to oak habitat are expected to increase as a result of design implementation. The primary ecological goals of the Bank are as follows:

- Removal of all existing impervious surfaces, including buildings, large equipment, gravel and paved areas, and debris, followed by replanting oak saplings and native understory species.

- Removal of invasive species in creation, enhancement, and preservation areas, primarily English ivy (*Hedera helix*) and Himalayan blackberry (*Rubus armeniacus*).
- Removal of Douglas-fir (*Pseudotsuga menziesii*) overstory as recommended by WDFW to reduce competition and further degradation of the Oregon white oak woodland from shading.
- Replanting of both creation and enhancement areas with oak saplings and native understory species to augment and expand existing Oregon white oak habitat.
- Preserve the Bank through a conservation easement.

Wildlife Habitat

The proposed development site plan will provide diverse habitat for a variety of large and small mammals, songbirds, waterfowl, amphibians, and insects by improving the condition of the existing Oregon White Oak habitat through creation and enhancement that includes replanting of oaks and native understory, removing invasive species, non-native debris, and impervious surfaces, and eliminating Douglas-fir encroachment.

Anticipated Functional Lift

The creation, enhancement, and Douglas-fir stand release activities proposed in the Bank will provide a variety of benefits lifting overall habitat functions. Invasive species eradication and installing oak trees and native understory in open areas will increase the site's potential to provide habitat by providing improved and increased diversity of plant species, structure, and interspersion of habitat. Removing Douglas-fir competition will allow the existing oaks to increase branching and smaller oak trees to become better established. The changes will increase acorn production, provide additional food for wildlife, and support a greater diversity of wildlife species as will removing impervious surfaces and debris. All functions impacted by removing an oak tree at the project site will be fully mitigated at the Bank.

Proposed Mitigation Credits

As stated in the MBI (October 28th, 2020), the local jurisdiction with regulatory authority will determine both how impacts are measured (i.e., square foot of canopy area/root zone, DBH, etc.) and the mitigation ratios required. The mitigation credits required for impacts to Oregon white oak will be determined by using the local jurisdiction's mitigation ratio (6:1) and multiplying this ratio by a "risk reduction factor" of 0.5. Impacts to high functioning Oregon White Oak Priority Habitat stands will be determined by the regulatory agencies on a case-by-case basis. Table 4 summarizes the impact type, mitigation ratio, and total credits proposed for compensation.

Table 4. Proposed Credit Purchase Summary

Impact Type	Impact Amount	Mitigation Ratio	Risk Reduction Multiplier	Mitigation Area Required	Proposed Credit Purchase
Canopy loss	0.08 acres (3,456 sq. ft.)	6:1	0.5	0.238 acres (10,368 sq. ft.)	0.238 credits

Credit Purchase or Transfer Timing

Following permit issuance, PAK USA Camas, LLC, as the applicant, will enter into a Buy/Sell Agreement with Terrace Oak Bank, for purchase of mitigation credits (in the quantity specified in Table 3) that would appropriately mitigate for the proposed project impacts. The actual purchase of credits will occur upon permit issuance. Prior to impacting the project oak, the applicant will submit proof of transfer of mitigation credits to project managers for the City of Camas. Proof of the mitigation transfer will be provided in the form of a notification letter to the approving agencies. Upon service of this notification, the mitigation requirement to purchase 0.238 mitigation credits will be fully satisfied.

Confirmation of Mitigation Credit Availability

Proof of the current number of available mitigation credits at the Terrace Oak Bank site will be confirmed by the approving agency, City of Camas and through the advising members of the Oak Bank Review Team.

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Limitations

ELS bases this report's determinations on standard scientific methodology and best professional judgment. In our opinion, local, state, and federal regulatory agencies should agree with our determinations. However, the information contained in this report should be considered preliminary and used at your own risk until it has been approved in writing by the appropriate regulatory agencies. ELS is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this report.

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FIGURES

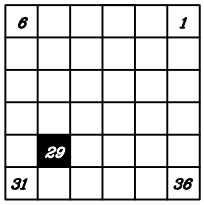
WASHINGTON

SITE

45.6321° Latitude
-122.4664° Longitude

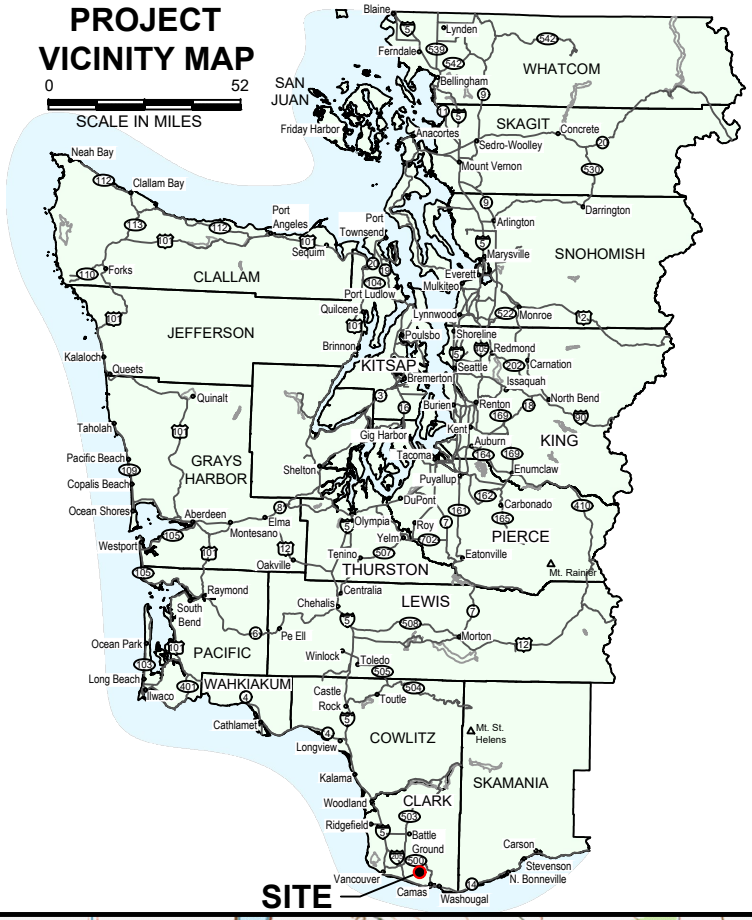
LOCATION MAP

R 3 E



PROJECT VICINITY MAP

0 52
SCALE IN MILES



NOTE:
Quadrangle topographic map from USGS.

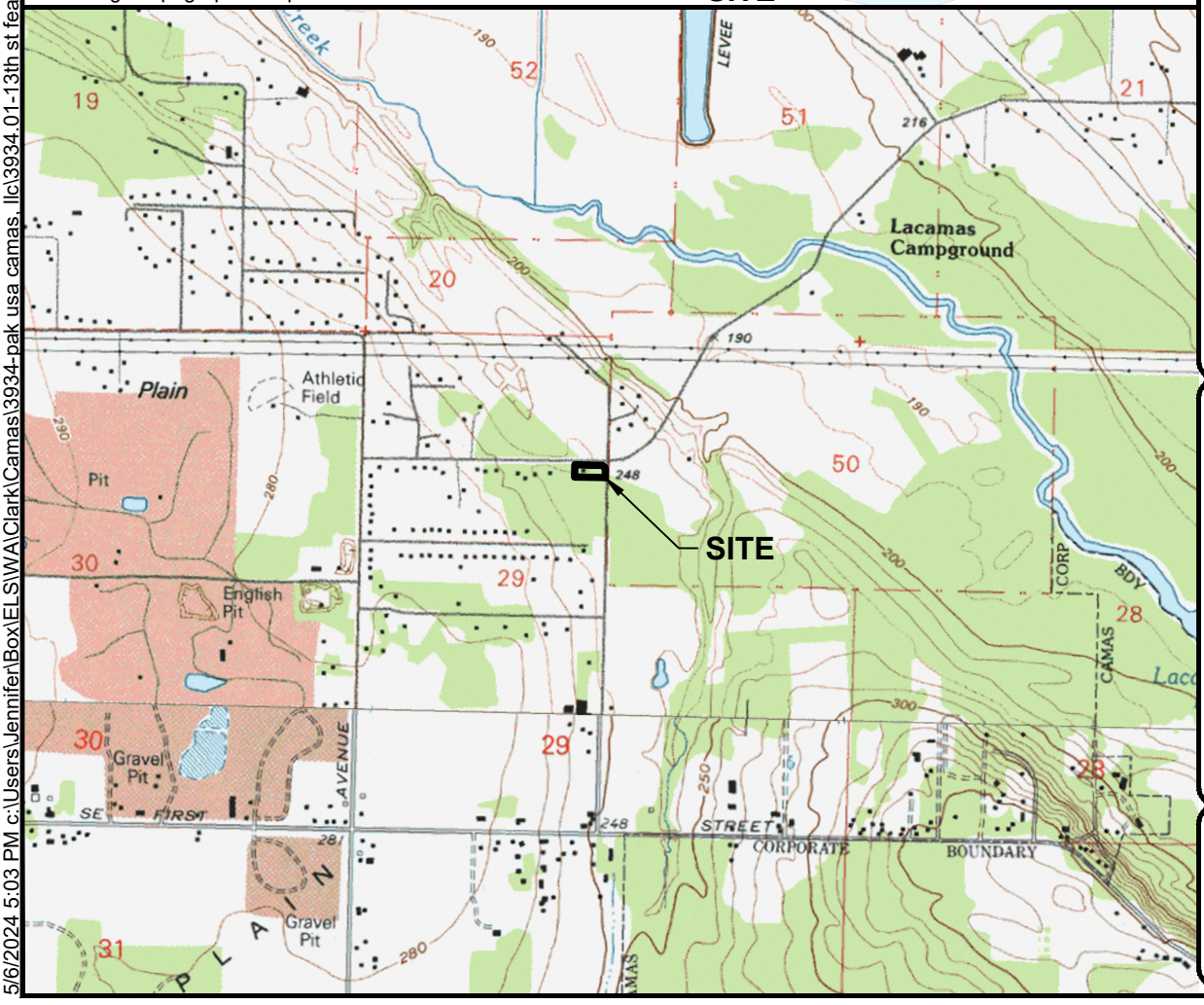


Figure 1
VICINITY MAP
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 5/6/24
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

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Ecological Land Services

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SCALE IN FEET

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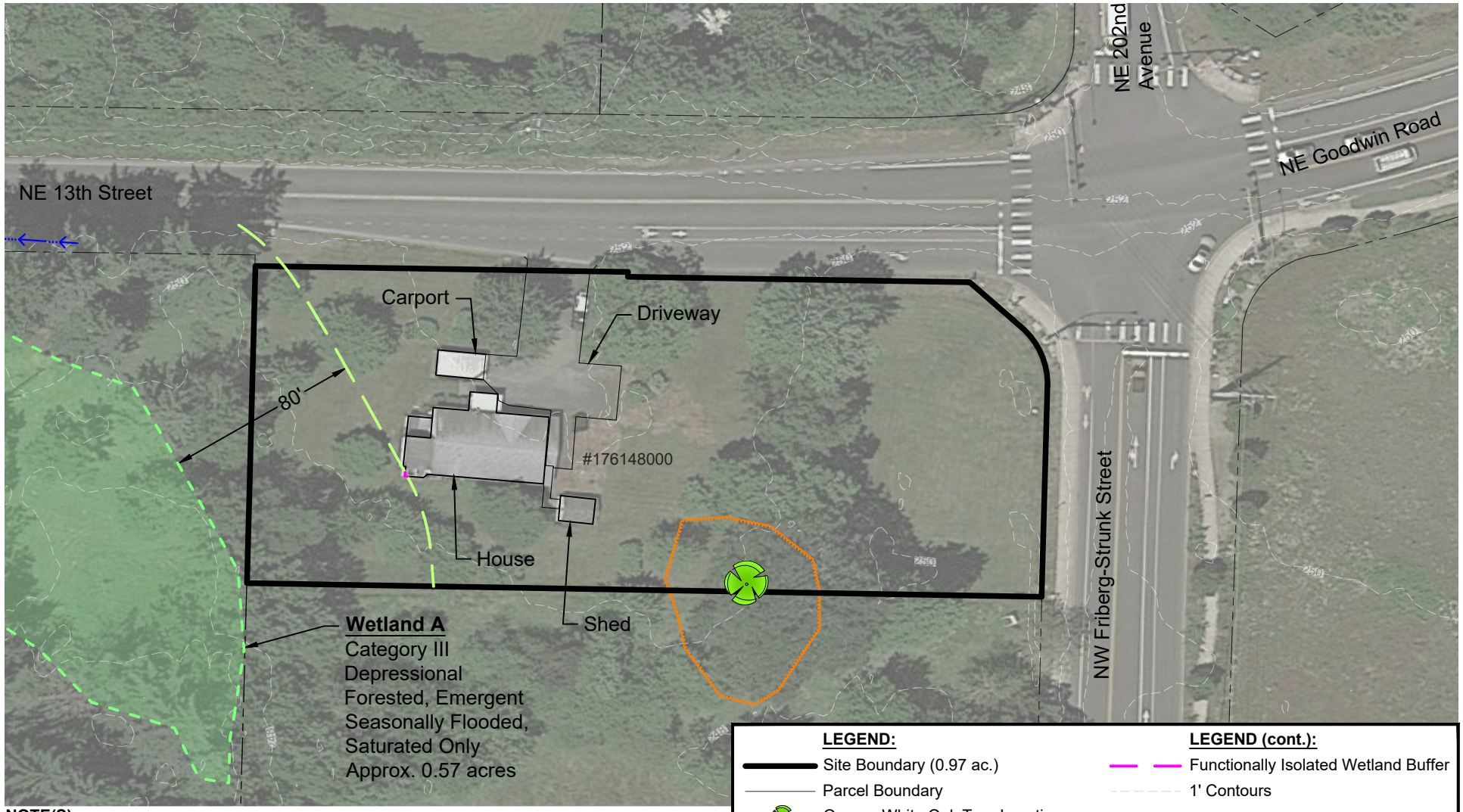

NOTE(S):

1. Aerial from Google Earth™ (6/17/2021).
2. Site boundary, oak tree location, and oak dripline surveyed by PLS Engineering, Inc.
3. Parcel data from Clark County GIS Department.
4. Topography from 2013 Clark County Lidar provided by WDNR at https://lidarportal.dnr.wa.gov.

LEGEND:

- Site Boundary (0.97 ac.)
- Parcel Boundary
- Oregon White Oak Tree Location
- Oak Dripline (0.08 ac. total/0.03 ac. onsite)
- Approx. Offsite Wetland Boundary
- Wetland Buffer

LEGEND (cont.):

- Functionally Isolated Wetland Buffer
- 1' Contours

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SCALE IN FEET

Ecological Land Services
1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com

DATE: 5/6/24
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

Figure 2
EXISTING CONDITIONS
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

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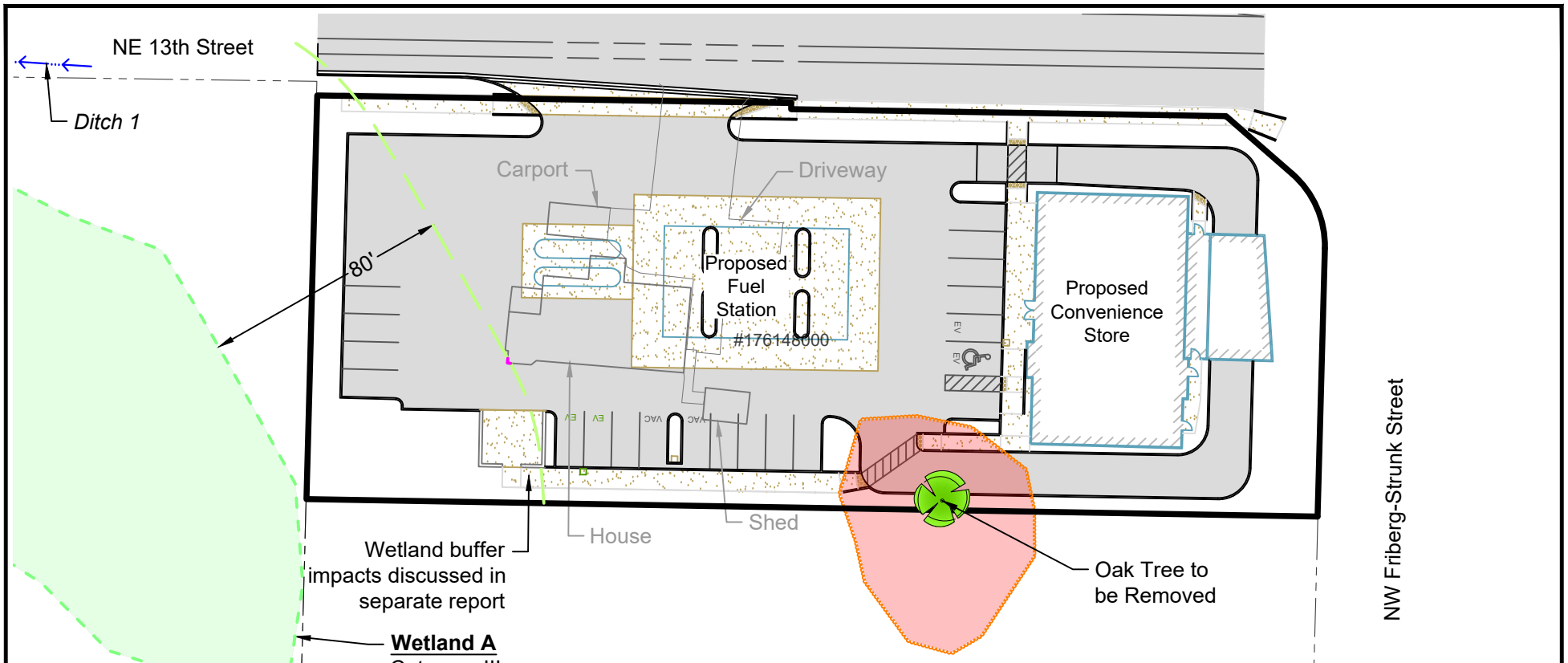

NOTE(S):

1. Site boundary, oak tree location, and oak dripline surveyed by PLS Engineering, Inc.
2. Parcel, ditch, and culvert data from Clark County GIS Department.
3. Site plan by PLS Engineering.

LEGEND:

- Site Boundary (0.97 ac.)
- Parcel Boundary
- Approx. Offsite Wetland Boundary
- Wetland Buffer
- Functionally Isolated Wetland Buffer
- Oregon White Oak Tree Location
- Oak Dripline (0.08 ac. total/0.03 ac. onsite)
- Ditch with Flow Direction

LEGEND:

- Proposed Asphalt
- Proposed Concrete
- Oak Dripline Impact (3,546 sq. ft./0.08 ac.)

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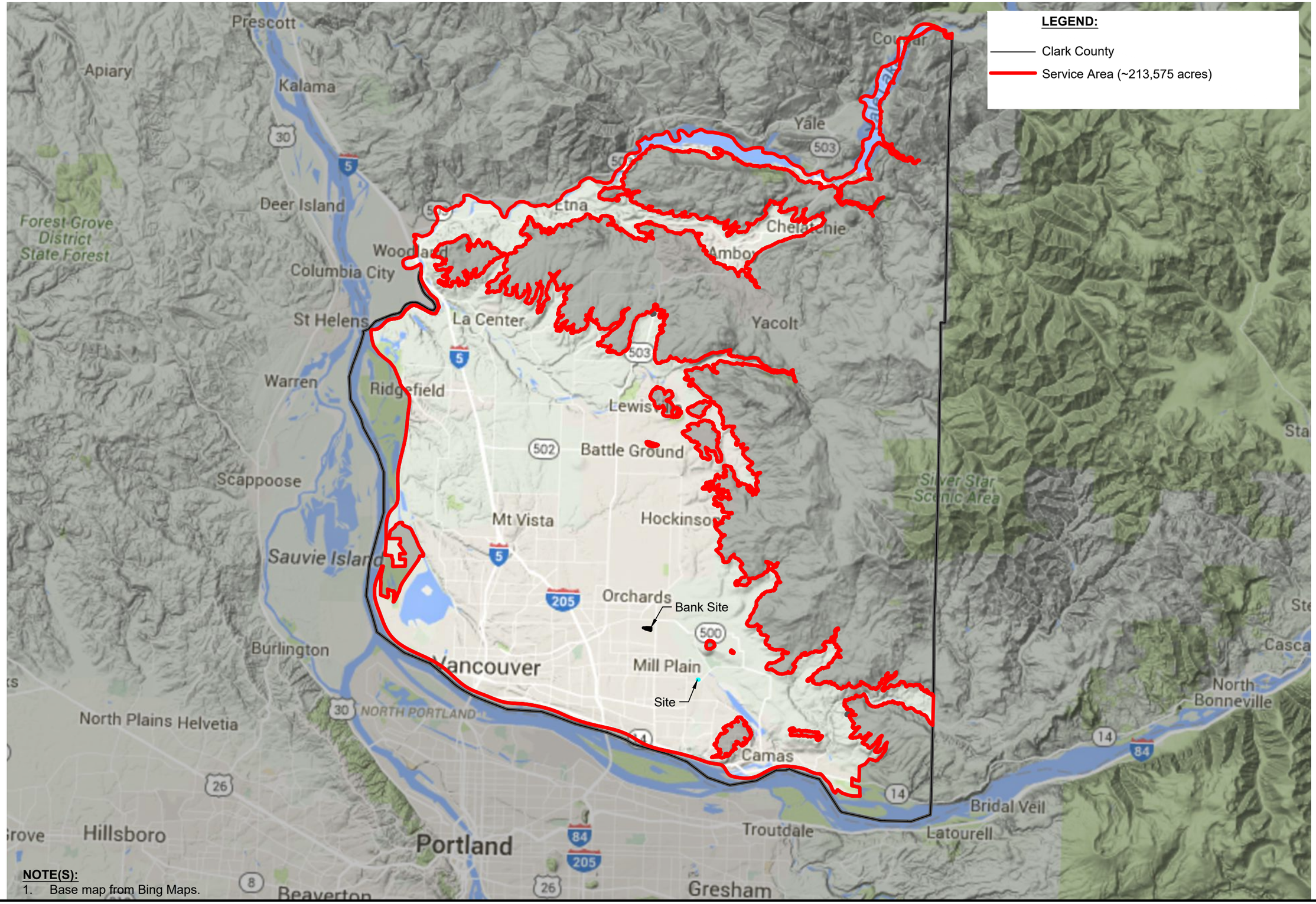
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

Figure 3
PROPOSED CONDITIONS
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.



NOTE(S):
1. Base map from Bing Maps.

Figure 4
TERRACE OAK BANK SERVICE AREA
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

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DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

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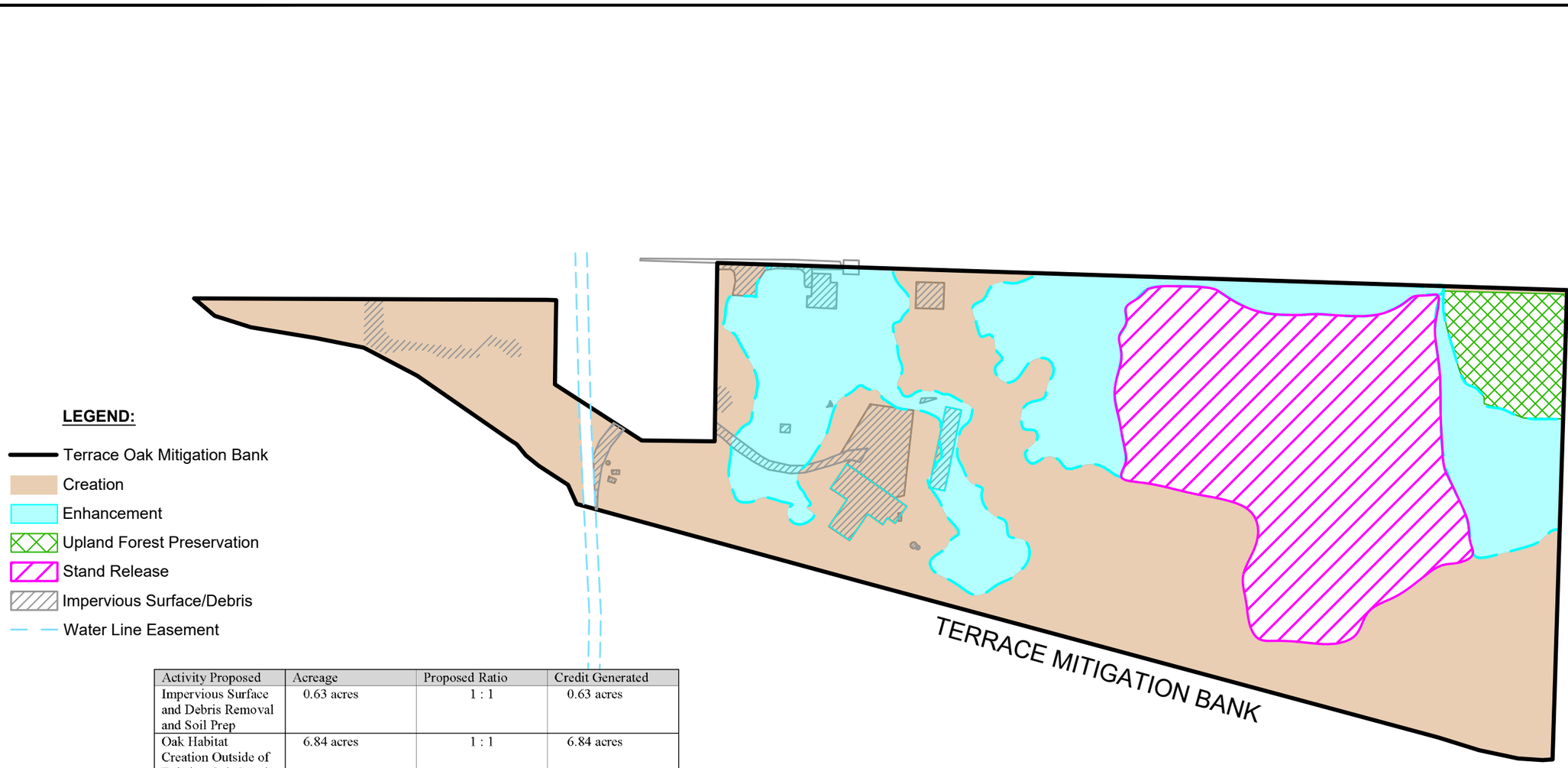

Activity Proposed	Acreage	Proposed Ratio	Credit Generated
Impervious Surface and Debris Removal and Soil Prep	0.63 acres	1 : 1	0.63 acres
Oak Habitat Creation Outside of Existing Oak Stand	6.84 acres	1 : 1	6.84 acres
Douglas Fir Stand Release	3.34 acres	0.4 : 1	8.35 acres
Enhancement of Existing Oak Stand	3.20 acres	0.4 : 1	8.00 acres
Upland Forest Preservation	0.50 acres	0.5 : 1	1.00 acres
Totals	14.51 acres[1]		24.82 acres

[1] Total acreage includes areas of activity overlap and does not include 0.05 acres of water line easement, so is not reflective of the 13.93 acres represented in the legal survey of Oak Bank area.

Table 2. Oak Mitigation Bank Activity Descriptions.

Activity Proposed	Type of Activity/Area
Impervious Surface and Debris Removal and Soil Prep	• Includes: • Buildings, driveways, gravel pads or any other impervious area to be removed (regardless of whether oak tree canopy already covers the area) • Removal of debris piles throughout the site • Loosening of soils following impervious/debris removal
Oak Habitat Creation Outside of Existing Oak Stand	• Includes open areas of all types not currently covered by oak canopy • Areas to be replanted with oak saplings and native understory
Douglas Fir Stand Release	• Includes area of dense fir canopy within existing oak stand • Douglas fir over-story to be removed through harvest or tree girdling/snag creation
Enhancement of Existing Oak Stand	• Includes areas of existing oak canopy • Enhancement areas will have non-natives removed and understory planted with native shrubs typically associated with oak woodlands
Upland Forest Preservation	• Includes areas of deciduous forest adjacent to oak canopy, providing upland forest habitat • Area will be preserved through administration of a conservation easement

Figure 5
TERRACE OAK BANK SITE DESIGN
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 5/6/24
DWN: JKJ
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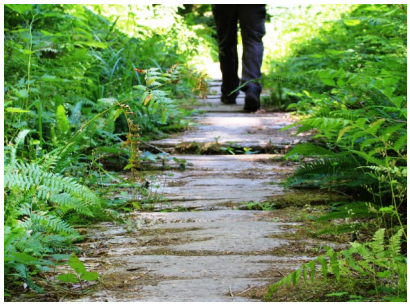
WETLAND BUFFER BANK USE PLAN

May 16, 2024



13th Street Gas Station
Camas, WA

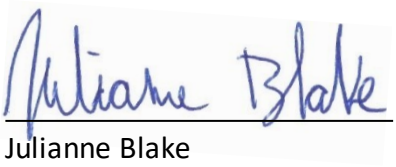
Prepared for

PAK USA Camas, LLC
c/o Taz Khan
3993 NW Currawong Court
Camas, WA 98607
(512) 779-4999

Prepared by
Ecological Land Services
1157 3rd Avenue, Suite 220A • Longview, WA 98632
(360) 578-1371 • Project Number 3934.01

SIGNATURE PAGE

The information in this report was compiled and prepared under the supervision and direction of the undersigned.



Julianne Blake
Biologist III

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INTRODUCTION

Ecological Land Services, Inc. (ELS) was contracted by PAK USA Camas, LLC to prepare this Bank Use Plan to address wetland buffer impacts resulting from the construction of a fuel station, convenience store, and associated parking lot. The site is approximately 0.97 acres and consists of Clark County Tax Parcel 176148000 located at 20101 NE 13th Street within the NW ¼ of Section 29, Township 2 North, and Range 3 East of the Willamette Meridian in Camas, Washington (Figure 1). Field work was conducted on August 29, 2023 and April 2, 2024. The project will impact 0.16 acres (6,810 square feet) of wetland buffer. Buffer impacts will be offset by purchasing 0.08 credits from Terrace Wetland Mitigation Bank (Bank). This Bank Use Plan was prepared according to the *Camas Municipal Code (CMC) Title 16 Environment* (2023), *Interagency Review Team (IRT) for Washington State's Guidance Paper, Using Credits from Wetland Mitigation Banks: Guidance to Applicants on Submittal Contents for Bank Use Plans* (June 2020), the Washington State Department of Ecology (Ecology) *Wetland Mitigation in Washington State Parts 1 and 2* (2021 and 2006), and the U.S. Army Corps of Engineers' (Corps) *Compensatory Mitigation for Losses of Aquatic Resources* (33 C.F.R. §332 (2008)). This Bank Use Plan will discuss wetland buffer impacts only, any impacts to Oregon white oak trees (*Quercus garryana*) will be addressed in a separate report.

RESPONSIBLE PARTIES

PROPERTY OWNER/APPLICANT

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BIOLOGICAL CONSULTANT

Ecological Land Services, Inc.
Julianne Blake – Biologist III
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(360) 578-1371
Julianne@eco-land.com

PROJECT DESCRIPTION

The project area is approximately 0.97 acres and consists of Clark County Tax Parcel 176148000 located at 20101 NE 13th Street within the NW ¼ of Section 29, Township 2 North, and Range 3 East of the Willamette Meridian in Camas, Washington (Figure 1). The project consists of constructing a fuel station, convenience store, and associated parking lot. The parking lot will contain electric vehicle charging stations and vacuum pumps as well as pedestrian crossing areas (Figure 3). The project will impact 0.16 acres (6,810 square feet) of wetland buffer. Buffer impacts will be offset by purchasing 0.08 credits from Terrace Wetland Mitigation Bank. Construction is anticipated to start upon receipt of all necessary permits.

Best management practices (BMPs) that will be completed prior to construction include designating staging and stockpile areas outside of critical areas and associated buffers, establishing a standard construction entrance, and installing silt fencing to prevent sedimentation. When site preparation is complete, construction will occur. A water truck will be available to prevent dust blowing during construction, if needed. Equipment used may include haul trucks, bulldozers, excavators, pavers, and hand tools. Upon completion of construction activities, disturbed areas that will not be paved will be seeded with a native grass seed mix.

EXISTING CONDITIONS

EXISTING AND SURROUNDING LAND USES

The 0.97-acre site consists of Clark County Tax Parcel 176148000 and is accessed by a paved driveway off NE 13th Street. The site is zoned as Business Park (BP) and currently contains a single-family mobile home, shed, carport, and paved driveway. The site is bordered to the north by NE 13th Street, to the east by NW Friberg-Strunk Street, to the south by undeveloped land and a commercial development in progress, and to the west by undeveloped land and a single-family residence (Figure 2).

EXISTING CRITICAL AREAS

Two wetland delineation site visits were completed by ELS, following the appropriate technical manuals: *The Routine Determination Method according to the Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (U.S. Army Corps of Engineers 2010). The first site visit took place in August 2023 and the second in April 2024, with one oak tree identified onsite. No wetlands were identified onsite at either visit; however, one wetland (Wetland A) was observed offsite to the west during the April 2024 visit (ELS 2024).

Wetland A is a Category III, depressional, forested and emergent wetland totaling approximately 0.57 acres offsite to the west, and outlets to a roadside ditch (Ditch 1). Offsite boundaries for Wetland A were estimated by visual observations of changes in vegetation, the presence of surface water, and aerial photos; therefore, Wetland A boundaries are approximate. Vegetation in Wetland A is dominated by deciduous trees and herbaceous vegetation. Wetland hydrology likely comes from a seasonally high groundwater table, runoff, and precipitation. Hydroperiods

include seasonally flooded and saturated only. According to the *Washington State Wetland Rating System for Western Washington: 2014 Update* (Yanke and Hruby 2023; Rating System), Wetland A is a Category III wetland scoring 7 points for water quality functions, 7 points for hydrologic functions, and 4 points for habitat functions, for a total of 18 points. The designated buffer width for a Category III wetland with a high land use intensity and a habitat score of 4 is 80 feet, as listed in CMC Table 16.53.040-1 (Table 3).

Table 1. Offsite Wetland Summary

Name	Size	Hydrogeomorphic Classification[1]	Cowardin Class[2]/ Hydroperiod	Habitat Score[3]	Category[3]	Buffer Width[4]
A	Approximately 0.57 acres	Depressional	Emergent, Forested/ Seasonally Flooded & Saturated Only	4	III	80 ft.

[1]NRCS 2008, [2]FGDC 2013, [3]Yanke and Hruby 2023, [4]CMC Table 16.53.040-1

The WDFW Priority Habitats and Species online mapping tool depicts oak woodlands in the vicinity of the observed oak along the southern site boundary. One oak measuring approximately 52 inches diameter at breast height (DBH) was mapped along the southern site boundary during site reconnaissance (Figure 2). The oak has several live and dead branches, cavities, and has canopy connectivity with other trees in the vicinity but is not connected with other oaks. The oak location and dripline was mapped using a GPS system capable of submeter accuracy in ideal conditions. According to *CMC 16.61.010(3)(a)*, individual Oregon white oak trees with a 20-inch DBH are considered a priority habitat. For more information regarding critical areas onsite, see the *Critical Areas Report for 13th Street Gas Station - Revised* (ELS 2024).

Table 2. Oak Summary

Total Canopy Area	DBH	Number of Trunks	Noteworthy Habitat Features
0.08 acres	52 inches	1	• Canopy is interconnected with adjacent trees, but not other oaks • Two large cavities

WETLAND LANDSCAPE POSITION

The site is generally located on a broad terrace in the southwest portion of the Lacamas Creek subwatershed, within Hydrologic Unit Code (HUC) 170800010605, and Water Resource Inventory Area (WRIA) 28 (Salmon-Washougal). In general, hydrology from the offsite wetland is conveyed to the north to a roadside ditch where it then crosses under NE 13th Street via a culvert and eventually discharges to an unnamed stream. Wetland A is a depressional wetland located offsite to the west and may provide localized flood storage and groundwater recharge functions within the lower portion of the HUC.

Avoidance and Minimization of Wetland Impacts

The wetland mitigation requirements of the local, state, and federal agencies specify that all regulated development activities proposing permanent impacts to wetlands or buffers shall examine whether the impacts can be avoided and/or minimized prior to proposing compensation for the impacts. This project has been designed to construct a fuel station, convenience store, and associated parking lot on approximately one acre of maintained land currently containing a single-family residence. Approximately 0.16 acres of the site is affected by the 80-foot buffer for the offsite wetland, Wetland A. The engineering team tested several layouts to try to avoid impacts to the greatest extent practicable. Ultimately, none of the design alternatives avoided buffer impacts while meeting CMC requirements, resulting in the need for wetland buffer impacts. There will be no direct impacts to wetlands as no wetlands exist onsite. The project cannot avoid impacts to Wetland A buffer because there are no other locations where the required parking lot can be constructed that avoids impacts to wetland buffer.

The hydrologic, water quality, and habitat functionality of onsite Wetland A buffer are degraded due to existing residential uses and regularly maintained landscaping. The project minimizes impervious surface impacts by proposing the smallest construction footprint possible to accomplish the project goals. Impacts to other onsite areas will be minimized by the use of best management practices (BMPs) including installing silt fencing along clearing limits, applying native grass seed to disturbed areas, and making a water truck available to prevent dust blowing during construction. Construction staging areas will be located within onsite uplands outside of the wetland and buffer.

Unavoidable Wetland Buffer Impact Acreage

The project will impact 0.16 acres of the buffer for Wetland A, located offsite to the west. Buffer impacts will be offset by purchasing 0.08 credits from the Bank. Table 3 summarizes all unavoidable wetland buffer impacts.

Table 3. Expected Impacts to Wetlands

Wetland Name	Wetland Area (acres)	Direct Impact (acres)	Buffer Impact (acres)	Ecology Rating[1]	Cowardin Class[2]	Hydrogeomorphic Class[3]
A	Approx. 0.57	0.00	0.16	III	Emergent, Forested	Depressional

[1]*Hruby & Yanke 2023*
[2]*FGDC 2013*
[3]*NRCS 2008*

Impacted Wetland and Buffer Functions

Wetland functions were assessed in May 2024 using the analysis provided in the Rating System. The wetland rating form can be found in the *Critical Areas Report for 13th Street Gas Station - Revised* (ELS 2024).

WATER QUALITY FUNCTIONS

Wetland A achieved a moderately high water quality function score of 7 points in the Rating System. The wetland provides low site potential for improving water quality as it contains an intermittently flowing outlet, greater than 1/2 of its area is covered by persistent, ungrazed plants, and the seasonally ponded area makes up less than 1/4 of the total area of the wetland, allowing for nominal particulate retention and filtration. Wetland A has high potential to support the water quality function of the site as it receives sources of pollutants from surrounding land uses within 150 feet, including adjacent septic systems, which would provide the opportunity for pollutant filtration. The wetland provides high water quality functions valuable to society in that it discharges within a mile to a waterbody on the 303d list and is located in a watershed with TMDLs in development and provides the above pollutant filtration and retention functions to runoff prior to it being discharged into adjacent waters. The majority of Wetland A's water quality functions will be retained as the wetland will not be directly impacted by the proposed development and the existing buffer functions are already degraded.

HYDROLOGIC FUNCTIONS

Wetland A achieved a moderately high hydrologic function score of 7 points in the Rating System. The wetland has low site potential for reducing flooding and erosion due to its intermittently flowing surface outlet and marks of ponding less than six inches from the surface or bottom of the wetland's outlet, which does not allow for high levels of flood storage, retention, or groundwater recharge. The wetland has high potential to support the hydrologic functions of the site as more than 25 percent of its contributing basin is covered with intensive human land uses, and greater than 10 percent of the area within 150 feet upslope of the wetland is in land uses or cover that generate excess runoff, allowing for the opportunity to filter and treat incoming stormwater and pollutants. The hydrologic functions provided by Wetland A are highly valuable to society as there are flooding problems within a sub-basin immediately down-gradient and the wetland may provide a small amount of flood water storage. The majority of the hydrologic functions provided by the wetland will be retained as the wetland will not be directly impacted by the proposed development and the existing buffer functions are already degraded.

HABITAT FUNCTIONS

Wetland A achieved a low habitat function score of 4 points in the Rating System. The wetland has low habitat interspersion with both emergent and forested Cowardin classes and one assumed special habitat feature due to the forested class, large woody debris within the wetland. Additionally, there is low landscape potential to support habitat as surrounding land uses within a 1-kilometer radius contain greater than 50 percent high intensity land uses, accessible habitat is less than 10 percent, and undisturbed habitat is less than 50 percent and found in greater than three patches. Accessibility of habitat provided by the wetland and its buffer to other wetlands or forested areas in the local vicinity is limited by adjacent residential land uses and heavy traffic on NE 13th Street and NW Friberg-Strunk Street. The above constraints limit the amount and diversity of species that can inhabit the onsite wetland. The nominal habitat functions provided by the wetland will be retained as the wetland will not be directly impacted by the proposed development and the existing buffer functions are already degraded.

BUFFER FUNCTIONS

Wetland buffers can reduce adverse impacts to wetland functions and values from adjacent development by moderating the effects of stormwater runoff including stabilizing soil to prevent erosion, filtering runoff, and moderating water level fluctuations. Buffers also provide habitat opportunities for forage, refuge, mobility, and thermal protection. Additionally, buffers help screen the wetland from adjacent developments blocking noise, providing visual separation, and providing protection from other human disturbances (Castelle et al. 1992). The portion of wetland buffer that will be impacted provides low functions as it is comprised of compacted soils covered with frequently mowed upland grasses and ornamental landscaped plants. The primary impacts to the functions and values of Wetland A buffer are loss of minimal habitat area and reduced groundwater recharge functions, as the area will be covered with impervious surfaces. Wetland A will not be directly impacted so it will still function to slow surface flows and recharge groundwater.

WETLAND MITIGATION BANK SITE SELECTION RATIONALE

The wetland proposed for impact is located within the service area for the Terrace Mitigation Bank. The project site is located approximately 3 miles southeast of the Bank site near the southern boundary of the Salmon Creek Watershed (Sheets 1 and 4).

Rationale for selecting this mitigation bank is as follows:

- The development project does not propose impacts to critical wetland functions that should be replaced onsite. The impacted functions are water quality, hydrology, and habitat, which can be fully replaced within the Bank site.

- The wetland mitigation needs of the project correspond directly with the purpose, goals, and objectives of the Bank, as the general Bank goal is to restore approximately 89.15 acres of self-sustaining, diverse forest, scrub-shrub, and emergent wetland habitat. This restoration will be accomplished through re-establishment of a native emergent wetland plant community, and re-establishment of hydrology through the disabling of the drain tiles throughout the Bank site.

The 2008 *Compensatory Mitigation for Losses of Aquatic Resources, Final Rule* (Corps) recommends purchasing mitigation bank credits for ecological considerations (lower risk of failure and lower temporal loss of resources and services) and to avoid the maintenance and contingency issues and outright failures that often accompany permittee-responsible mitigation sites. Use of the Terrace Mitigation Bank substantially lowers the risk of failure and temporal loss of resource functions and services over newly established, permittee-responsible mitigation sites. As described below, the functional lift anticipated in the Terrace Mitigation Bank will adequately compensate for wetland functions lost by development.

Wetland Functions Provided at Mitigation Bank

The general goal of the Bank is to restore approximately 89.15 acres of self-sustaining, diverse forest, scrub-shrub, and emergent wetland habitat, similar to pre-agricultural conditions.

The primary ecological goals of Terrace Mitigation Bank consist of:

- Re-establishing hydrology through the disabling of the drain tiles throughout the site;
- Establishing a native historic forested, scrub-shrub, and emergent wetland plant community in re-established and rehabilitated wetland areas;
- Establishing a native upland scrub-shrub plant community in the upland buffer area within the BPA easement;
- Reshaping of incised stream banks to reconnect the stream to its floodplain and existing wetlands;
- Enhancement of the riparian area along Burnt Bridge Creek by removing invasive species and planting native trees and shrubs to increase shading and lower water temperatures, and provide improved habitat structure and diversity;
- Removing an existing culvert crossing at the west property boundary to improve stream flow, and;
- Removing existing invasive species and preventing the establishment of invasive species throughout the Bank site.

A wetland functions assessment was performed for the Bank, which was based on the water quality, hydrology, and habitat functions identified in the Rating System (Hruby & Yanke 2023).

Water Quality

Water quality functions will be significantly improved over current conditions by replacing the existing disturbed wetland vegetation with forested, scrub-shrub, and emergent persistent vegetation that can trap sediments and pollutants, and the increased inundation resulting from disabling the drain tiles will increase the wetland's ability to provide denitrification.

Additionally, the Bank site itself directly contributes agricultural runoff high in sediment and herbicides. Establishment of the Bank will allow onsite agricultural practices to cease, eliminating the potential for chemical contaminants to enter the downstream watershed from the site. The resulting overall score for the wetland unit improving water quality functions is high (9 points), which reflects a 3 point increase over baseline conditions.

Hydrology

Currently, groundwater, runoff, and flood water from Burnt Bridge Creek within the Bank site is quickly and effectively conveyed downstream through the extensive drain tile system. Once the drain tiles are disabled, water will be impounded for a much longer duration than current conditions, and groundwater storage will be increased, improving the site's hydrologic function. This will supplement summer base flows within Burnt Bridge Creek, buffer peak flows during flood events, reduce offsite flooding, reduce erosion, provide temperature regulation within the Burnt Bridge Creek during the summer, and recharge groundwater.

By increasing groundwater levels at the Bank site through disabling drain tiles, it will have an effect of "mounding" the groundwater. This adds downward pressure on the groundwater as well as increased storage due to the highly absorbent peat soils. Therefore, it should not be assumed that a groundwater elevation increase at the Bank site only benefits Burnt Bridge Creek Watershed hydrologically. Once the tiles are disabled, the flow path of the shallower groundwater will not only be lateral to Burnt Bridge Creek but also vertical and downward to the larger aquifer within the Upper Troutdale Formation (that bisects and discharges to both Burnt Bridge Creek and Lacamas Watersheds), thus providing hydrological improvements to areas well outside of the Bank boundary. The resulting overall score for the wetland unit improving hydrologic functions is moderately high (7 points), which reflects a 3 point increase over baseline conditions.

Wildlife Habitat

The majority of the Bank site currently contains limited habitat for wildlife. The wetlands onsite are low quality wetlands within managed agricultural fields. Within the Bank site, Burnt Bridge Creek consists of a ditched, incised channel with very little native riparian vegetation, and provides less than ideal conditions for resident fish. The Oregon white oak woodland adjacent to the northeast portion of the Bank provides some adjacent priority habitat for the Bank, but this habitat has been impacted by the construction of residential and commercial structures and associated impervious surfaces, invasive species, and competition and succession by Douglas-fir (*Pseudotsuga menziesii*). The woodland area is currently disconnected from the existing wetlands by the historic and existing agricultural use of the majority of the Bank site.

The proposed site plan will provide diverse wetland habitat for a variety of large and small mammals, songbirds, waterfowl, amphibians, and insects. The addition of trees and shrubs along Burnt Bridge Creek will provide temperature regulation, cover, and leaf litter, all important to the overall health of the stream system. Large woody material incorporated within the Bank site, in the form of horizontal logs and snags, and habitat features such as bird boxes and perch poles will provide additional areas for perching and nesting habitat for avian species. The resulting overall score for the wetland unit providing wildlife habitat functions is moderately high (7 points), which reflects a 2 point increase over baseline conditions.

Anticipated Functional Lift

The Bank site will re-establish high quality wetlands and associated wildlife habitat where there is currently a mostly barren, drained agricultural field, providing for significant overall functional lift. Wetlands onsite are expected to be rated as Category I wetlands post-construction (20 years following final mitigation site work and plantings, in contrast to the majority of onsite wetlands which are currently considered Category IV wetlands. The overall functional lift (an increase of 7 to 8 wetland rating points) provided by the post-construction wetlands is reflected in the change (lift) in wetland rating score from the baseline conditions of the four existing Category III, and fourteen Category IV wetlands with the post-construction wetlands scoring 23 points (Category I wetland), and the existing wetlands scoring 15 or 16 total points (Category IV or Category III wetland).

The Bank site location within the landscape and overall design will provide a significant ecological benefit not only to the immediate, surrounding area, but throughout a large portion of the watershed. The post-construction Bank site will consist of a forested, scrub-shrub, and emergent depressional flow-through wetland system that contain the headwaters of a perennial stream. As a whole, the Bank site will provide variety of water regimes, vegetation interspersion, and habitat features which will provide diverse habitat opportunity for wildlife. The re-established wetlands will also increase flood storage, improve water quality, help prevent downstream erosion, recharge groundwater to supplement low summer flows and keep summer water temperatures cooler, similar to pre-agricultural conditions.

WETLAND FUNCTIONS NOT MITIGATED AT MITIGATION BANK

The Bank site is designed to have an overall functional lift in all its baseline water quality, hydrology, and habitat functions over time raising them from their existing low moderate to high functions. Stormwater improvement functions are not provided by the Bank; however, the development will direct stormwater to an underground detention facility where it will be treated before it is directed into the City municipal system. Terrace Mitigation Bank will adequately mitigate for all other wetland and buffer functions impacted by the proposed project.

PROPOSED MITIGATION CREDITS

The table below is from the Mitigation Banking Instrument (MBI) for the Terrace Mitigation Bank (ELS 2017), and it lists the recommended credit ratios for purchasing credits based on the impacted wetland category or buffer.

Table 4. Credits Recommended for Wetland and Buffer Impacts at Terrace Mitigation Bank.

Resource Impact	Bank Credits : Impact Area
Category I Wetland	Case-by-Case
Category II Wetland	1.2:1
Category III Wetland	1:1
Category IV Wetland	0.85:1
Critical Area Buffer	Case-by-Case

Direct impacts result in immediate changes of hydrological characteristics of a wetland, loss of habitat, loss of flood storage, and loss of nutrient removal or retention and shall be mitigated by purchasing credits at the ratios listed in Table 4 above. Wetland buffer impacts will be compensated by multiplying the credits necessary for direct wetland impacts in the table by 0.5 (50 percent of the direct wetland ratio). The 0.50 (50 percent) multiplier is based on the rationale that wetland buffer impacts can be adequately compensated for by using 50 percent of the Bank's required ratio for direct wetland impacts. Buffer impacts adversely affect the ability of the wetland to provide functions and values over time, which the wetland provided prior to disturbance. Examples are changes in drainage characteristics, changes in water levels, and changes in wetland characteristics. Mitigating at 50 percent of the Bank's required ratio for direct wetland impacts is therefore reasonable and ecologically sound.

Bank credits will be purchased from Terrace at the ratio of 1:1 designated for impacts to Category III wetlands. Wetland buffer impacts will be calculated by applying a 0.50 multiplier to the corresponding ratio for wetland category. Table 5 below details the mitigation ratios used to calculate the total number of Bank credits needed to compensate for the project impacts. A total of 0.08 credits will be purchased to compensate for 0.16 acres of wetland buffer impact.

Table 5. Mitigation Bank Credits Proposed for Project Impacts.

Wetland	Wetland Category	Impact Type	Impact Amount	Mitigation Ratio	Multiplier	Proposed Credits
A	III	Buffer	0.16 acres	1:1	0.5	0.08
					Total Credits to be Purchased:	**0.08**

CREDIT PURCHASE OR TRANSFER TIMING

Following permit issuance, PAK USA Camas, LLC, as the applicant, will enter into a Buy/Sell Agreement with Terrace Mitigation Bank, LLC for purchase of mitigation credits (in the quantity specified in Table 5) that would appropriately mitigate for the proposed project impacts. The actual purchase of credits will occur upon permit issuance. Prior to impacting project wetlands, the applicant will submit proof of transfer of mitigation credits to project managers for both Ecology and the Corps. Proof of the mitigation transfer will be provided in the form of a notification letter to the approving agencies. Upon service of this notification, the mitigation requirement to purchase 0.08 mitigation credits will be fully satisfied.

CONFIRMATION OF MITIGATION CREDIT AVAILABILITY

Proof of the current number of available mitigation credits at the Terrace Mitigation Bank site can be confirmed by approving agency(s) through the Interagency Review Team.

Kate Thompson
Washington Department of Ecology
Shorelands and Environmental Assistance Program
P.O. Box 47600
Olympia, WA 98504
(360) 407-6749
kate.thompson@ecy.wa.gov

Suzanne Anderson
US Army Corps of Engineers
Regulatory Branch, Seattle District
PO Box C-3755
Seattle, WA 98124
206-764-3708
Suzanne.L.Anderson@usace.army.mil

LIMITATIONS

ELS bases this report's determinations on standard scientific methodology and best professional judgment. In our opinion, local, state, and federal regulatory agencies should agree with our determinations. However, the information contained in this report should be considered preliminary and used at your own risk until it has been approved in writing by the appropriate regulatory agencies. ELS is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this report.

REFERENCES

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FIGURES

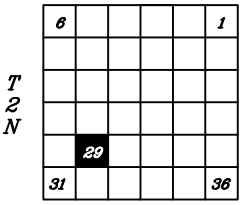
WASHINGTON

SITE

45.6321° Latitude
-122.4664° Longitude

LOCATION MAP

R 3 E



PROJECT VICINITY MAP

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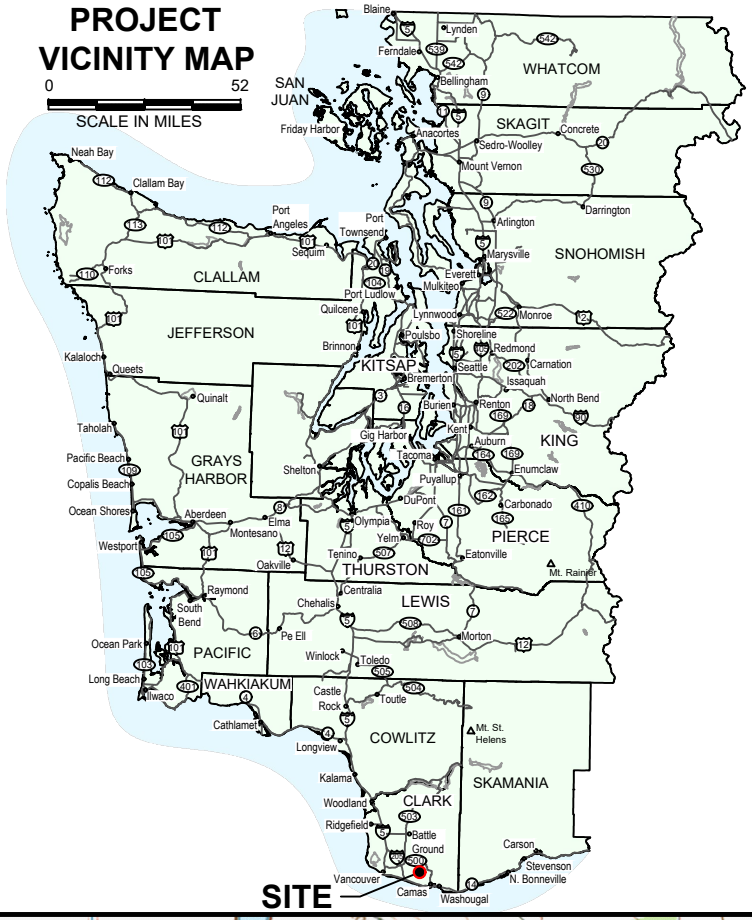

SITE

NOTE:
Quadrangle topographic map from USGS.

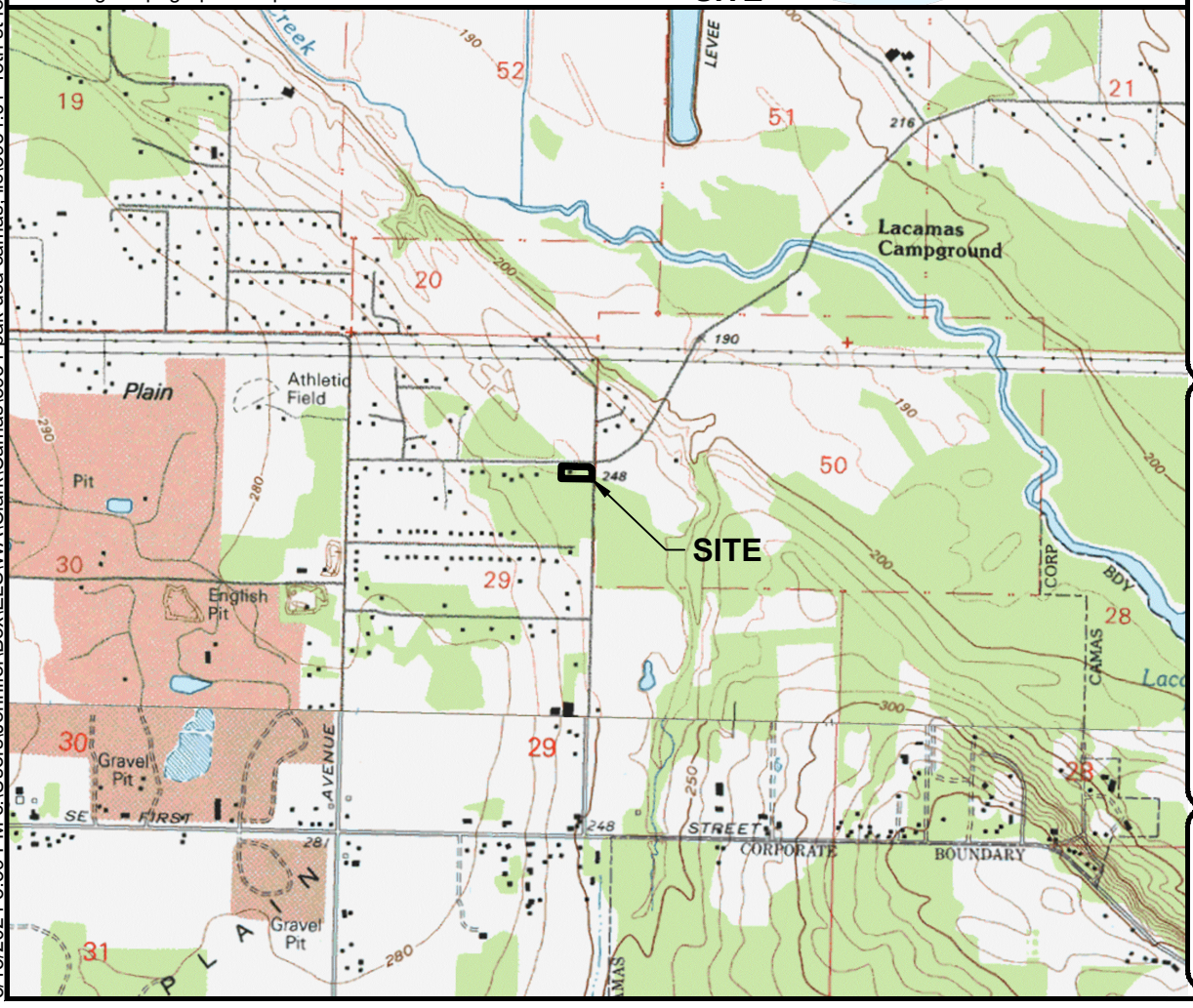

Figure 1
VICINITY MAP
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 5/15/24
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

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Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com

Ecological Land Services

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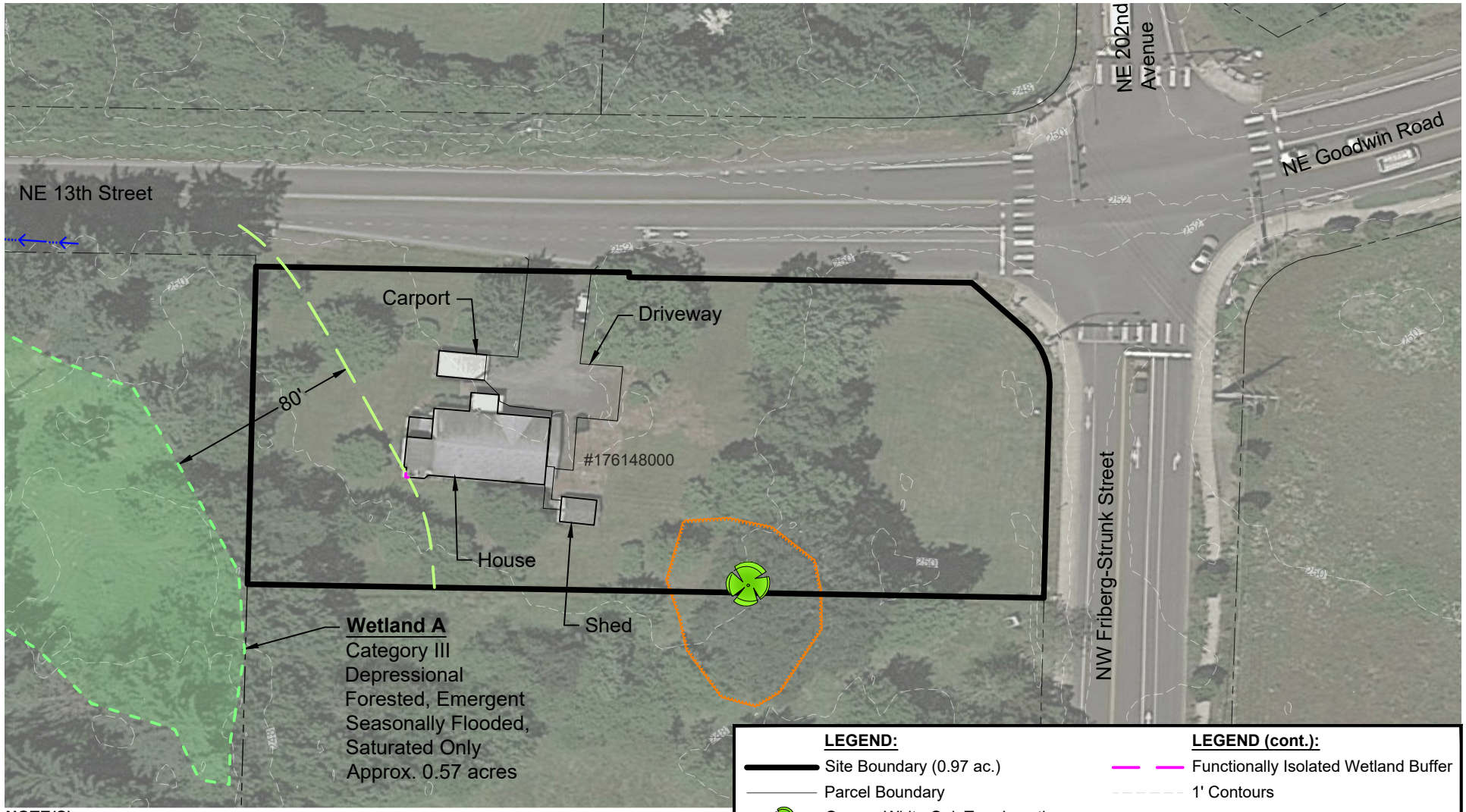

NOTE(S):

1. Aerial from Google Earth™ (6/17/2021).
2. Site boundary, oak tree location, and oak dripline surveyed by PLS Engineering, Inc.
3. Parcel data from Clark County GIS Department.
4. Topography from 2013 Clark County Lidar provided by WDNR at https://lidarportal.dnr.wa.gov.

LEGEND:

- Site Boundary (0.97 ac.)
- Parcel Boundary
- Oregon White Oak Tree Location
- Oak Dripline (0.08 ac. total/0.03 ac. onsite)
- Approx. Offsite Wetland Boundary
- Wetland Buffer

LEGEND (cont.):

- Functionally Isolated Wetland Buffer
- 1' Contours

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Figure 2
EXISTING CONDITIONS
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

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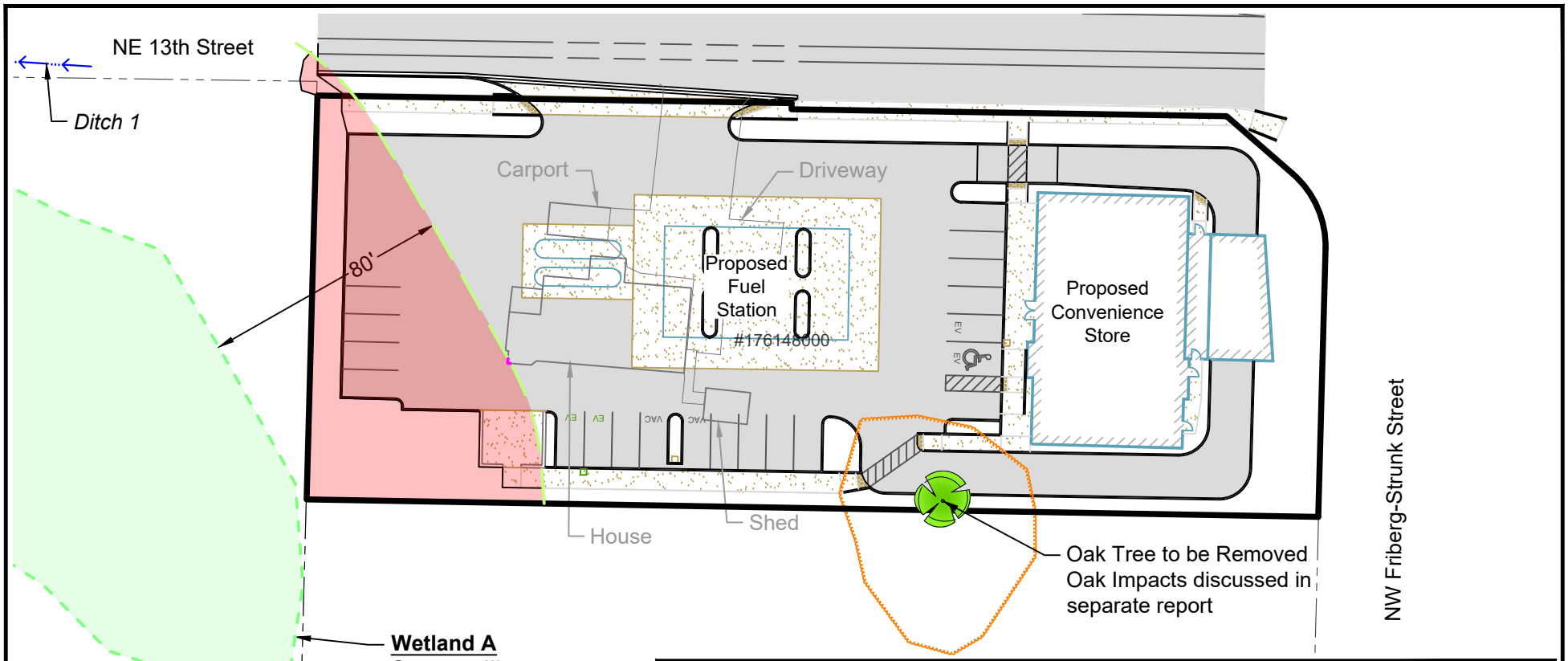

NOTE(S):

1. Site boundary, oak tree location, and oak dripline surveyed by PLS Engineering, Inc.
2. Parcel, ditch, and culvert data from Clark County GIS Department.
3. Site plan by PLS Engineering.

LEGEND:

- Site Boundary (0.97 ac.)
- Parcel Boundary
- Approx. Offsite Wetland Boundary
- Wetland Buffer
- Functionally Isolated Wetland Buffer
- Oregon White Oak Tree Location
- Oak Dripline (0.08 ac. total/0.03 ac. onsite)
- Ditch with Flow Direction

LEGEND:

- Proposed Asphalt
- Proposed Concrete
- Buffer Impact (6,810 sq. ft./0.16 ac.)

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CHK:
PROJECT NO: 3934.01

Figure 3
PROPOSED CONDITIONS
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

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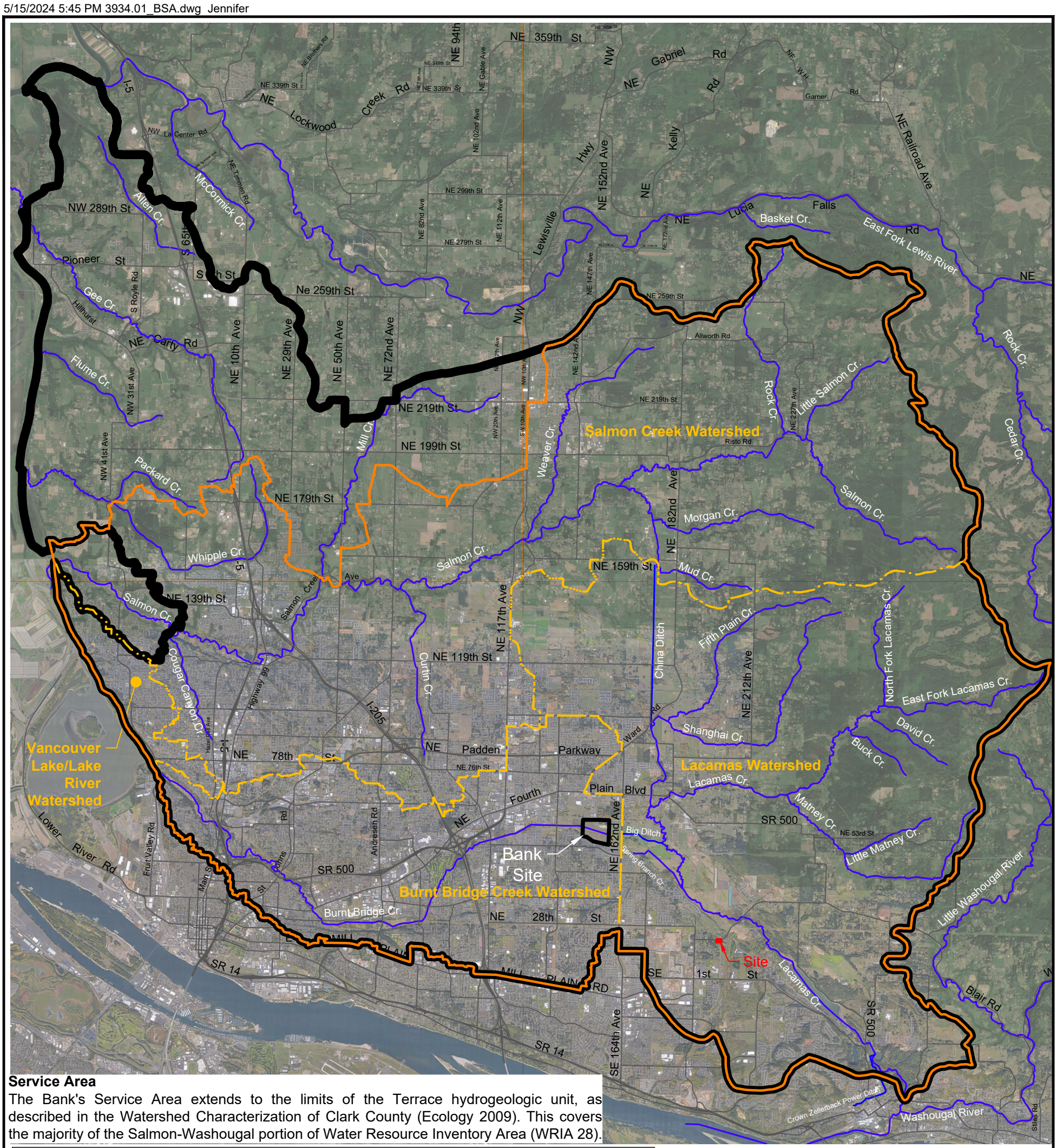

Service Area

The Bank's Service Area extends to the limits of the Terrace hydrogeologic unit, as described in the Watershed Characterization of Clark County (Ecology 2009). This covers the majority of the Salmon-Washougal portion of Water Resource Inventory Area (WRIA 28).

Limits of Terrace Mitigation Bank Service Area	
Northern Limits	Salmon Creek RM 0.60 and 8.96; Upper Whipple Creek, Woodin Creek, and Rock Creek Subwatersheds
Western Limits	Lakeshore and Lower Burnt Bridge Creek Subwatersheds
Southern Limits	Middle Burnt Bridge Creek, Burton Sink, Dwyer Creek, and Lacamas Lake Subwatersheds
Eastern Limits	Matney Creek, Upper Lacamas, and Salmon Creek RM 22.20
Watersheds that are wholly (Lacamas/Burnt Bridge Creek) or partially (Salmon Creek/Vancouver Lake/Lake River) encompassed within the Service Area	**Sub-watersheds in Service Area**
Lacamas	China Ditch, Lower Fifth Plain, Upper Fifth Plain Creek, Shanghai Creek, Upper Lacamas Creek, Lower Lacamas Creek, Matney Creek, Dwyer Creek, and Lacamas Lake
Burnt Bridge Creek	Lower Burnt Bridge Creek, Middle Burnt Bridge Creek, Upper Burnt Bridge Creek, and Burton Sink
Salmon Creek	Salmon Creek RM 0.60, 3.83, 8.96, 14.66, and 22.20; Cougar Creek, Curtin Creek, Woodin Creek, Morgan Creek, Rock Creek, and Upper Whipple Creek
Vancouver Lake/Lake River	Lakeshore

LEGEND:

- Service Area
- Watershed Boundary
- Terrace Hydrogeologic Unit
- Roads
- Streams

NOTES: Aerial photo from Google Earth™. Subwatershed boundaries from Clark County GIS Department.

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1 INCH = 2 MILES

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Figure 4
TERRACE WETLAND MITIGATION BANK SERVICE AREA
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

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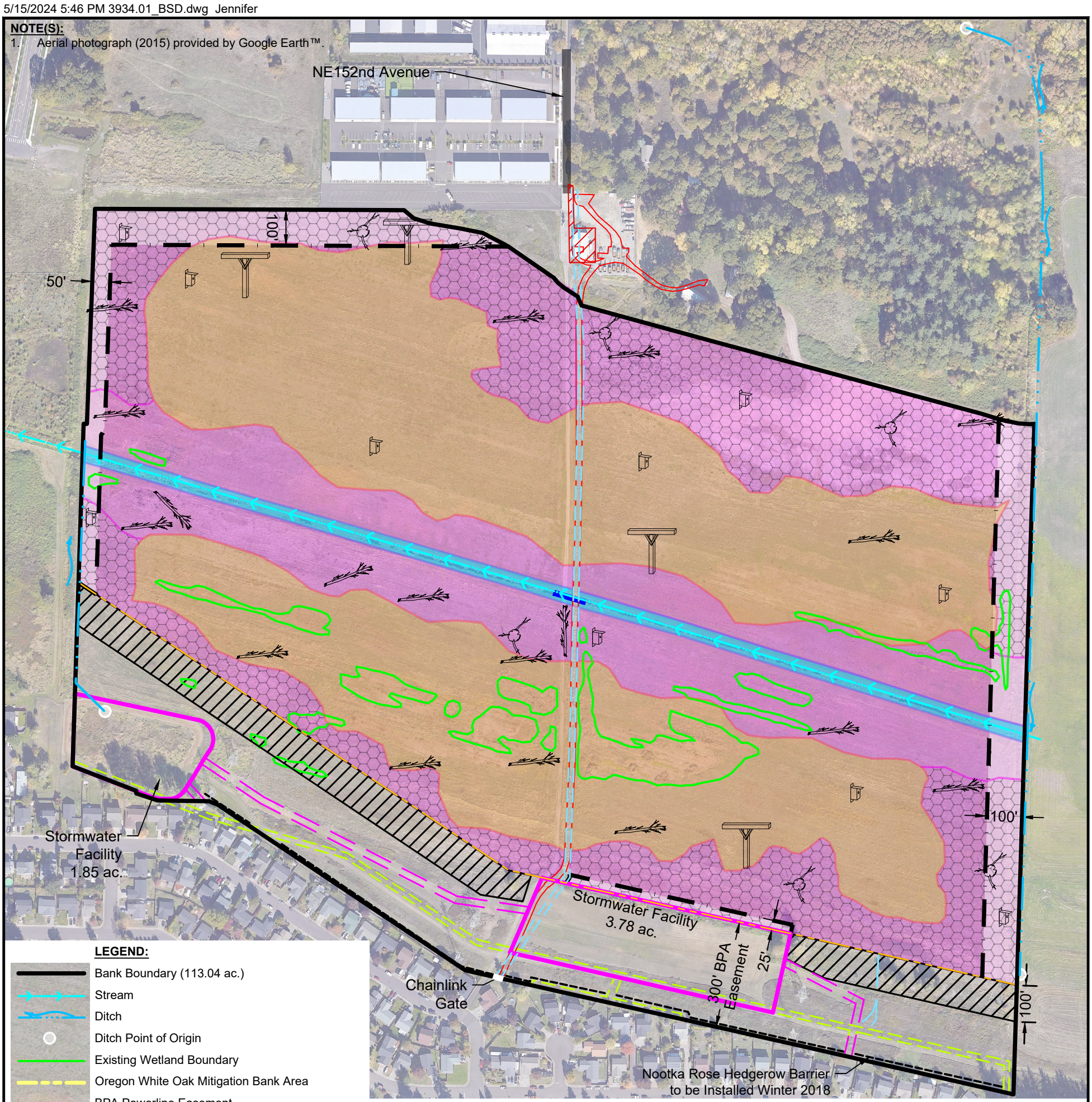
NOTE(S):
1. Aerial photograph (2015) provided by Google Earth™.



LEGEND:

- Bank Boundary (113.04 ac.)
- Stream
- Ditch
- Ditch Point of Origin
- Existing Wetland Boundary
- Oregon White Oak Mitigation Bank Area
- BPA Powerline Easement
- Existing Gravel Road
- Culvert Location
- Mitigation Bank Buffer (7.28 ac.)
- Staging Area
- 20' Storm Sewer Easement
- 20' Sanitary Sewer Easement
- 15' Water Line Easement
- Stormwater Facility
- Area to be Re-graded and Planted Winter 2018 (4.86 ac.)

Proposed Mitigation Habitat

- Palustrine Forested/Scrub-Shrub Mosiac (PFO/PSS) (26.11 ac.)
- Palustrine Forested /Scrub-Shrub Riparian (PFO/PSS) (17.13 ac.)
- Palustrine Emergent (PEM) (45.81 ac.)
- Open Stream Channel Enhancement (2.53 ac.)
- Shrub Buffer Enhancement (SB) (4.85 ac.)
- 8-foot Wide Nootka Rose Hedgerow (NRB) (0.41 ac.) (to be Installed Winter 2018)

Proposed Habitat Features

- Standard Bird Nest Box (10)
- Snags (6)
- Perch Poles (4)
- Horizontal Logs (19)

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SCALE IN FEET
1" = 300'

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Figure 5
TERRACE WETLAND MITIGATION BANK SITE DESIGN
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

GLOBAL Transportation Engineering

MEMORANDUM

DATE: May 1, 2024

TO: City of Camas, Anita Ashton

FROM: Dana Beckwith, PE

DANA M. BECKWITH STATE OF WASHINGTON 39179 REGISTERED PROFESSIONAL ENGINEER

SUBJECT: NE 13th Street Gas Station Traffic Analysis Report Review P24-017

This memorandum summarizes the traffic analysis report review for the proposed NE 13th Street Gas Station Development located on the southwest corner of the NE 13th Street and NW Friberg-Strunk Street intersection within the City of Camas, Washington. The traffic analysis report reviewed is dated September 2023.

1. The applicant needs to provide a site circulation plan with an explanation of ingress / egress at the site entrance and the unloading sequence.
    a. Based on the circulation plan provided the entrance of the site will be blocked while the double trailer semi-tanker is positioning itself to unload fuel. Once positioned, the truck impacts smaller unit trucks (SU-30) entering the site. Both issues create the potential for vehicles wanting to access the site to queue onto NE 13th Street.
    b. What is the purpose of using a WB-67 as the design vehicle? An SU-30, WB-40 and a double trailer semi-tanker would be anticipated on site.
    c. As part of the circulation plan, the path of the double trailer semi-tanker will need to use the right turn and through lane to exit. Is there sufficient distance to the NE 13th Street / NW Friberg-Strunk St intersection for the truck to be positioned to turn onto NW Friberg-Strunk Street and not extend into the northbound left turn lane?
2. The access to the site falls below the City's access spacing of 660ft. This creates several safety concerns near the site access and at the NE 13th Street / NW Friberg-Strunk St intersection. Based on review of the traffic study, the following needs to be provided:
    a. The *Summary and Recommendations* section of the report indicates a left turn is not warranted at 35 mph but is marginally warranted at 40 mph. Due to the sub-standard access spacing, an evaluation using the 85th percentile speed present on the roadway needs to be used for turn lane and sight distance evaluations.
    b. Queuing analysis should be provided using Simtraffic or Poison's distributions. This will typically provide a more conservative estimate of average and 85th percentile queues.
    c. Due to school traffic being predominant along study roadways, traffic counts need to be conducted during the school year to capture the heavy vehicle (bus traffic) presence at the intersection and distribution of that traffic. An actual traffic count will better define the local site and peaking characteristics of traffic. The AM peak is of particular concern for school related traffic. Developing school traffic estimates from the *ITE Trip Generation Manual* does not capture those characteristics in this case.
    d. A westbound left turn lane or restriction of the westbound left turn movement into the site from NE 13th Street needs to be provided due to the sub-standard

distance between the site access and the NE 13th Street / NW Friberg-Strunk St intersection.

i. There is a high probability of eastbound traffic obscuring a vehicle waiting to turn left into the site from motorists turning left from NW Friberg-Strunk Street.

CHARBONNEAU ENGINEERING LLC

MEMORANDUM

Date: June 12, 2024

To: Travis Johnson, PE
PLS Engineering
604 West Evergreen Blvd
Vancouver WA 98660

From: Frank Charbonneau, PE, PTOE

Subject: Response to City Traffic Comments FL2442
NE 13th Street Site Plan Development (Gas Station)
Camas

The City of Camas recently furnished a review of the Charbonneau Engineering traffic study for the NE 13th Street Site Plan (gas station) in Camas. The review memo dated 5/1/24 was prepared by Global Engineering (Dana Beckwith, PE) and listed several issues related to the traffic analysis and site operations.

The proposed gas station is not unique in terms of location and how it will operate. The site is situated at an intersection corner of two moderately busy streets experiencing less than 1,170 total entering vehicles in each of the peak hours. Most often fueling station ownerships prefer an intersection corner location to take advantage of the exposure and accessibility, and typically experience many years of safe operation.

Only one access (NE 13th Street) is permitted to serve the property as no connection is allowed to NE Friberg-Strunk Street. This in itself is unusual for a commercial property use, however, fortunately any potential traffic impacts will be confined to a single driveway location.

To minimize the impacts associated with fueling trucks, deliveries will avoid the peak traffic periods by restricting arrivals and departures to the hours between 7:00PM to 7:00AM. Additionally, the fueling truck operators will be directed to make right turns from/to NE 13th Street when entering and exiting the site. The truck operators will be experienced professional drivers accustomed to accessing similar types of facilities.

Pertaining to comments about the truck turning movements it is recommend that PLS Engineering prepare an illustration showing the wheel paths for trucks entering, maneuvering on-site, and leaving the property. This will demonstrate what infringement (if any) the vehicles may have on the adjacent lanes on the NE 13th Street frontage.

8516 SW 61st Avenue, Portland, OR 97219 Phone: (971) 322-8003

Frontage improvements on NE 13th Street will include a westbound left turn lane for traffic turning into the site. The Charbonneau Engineering memo dated 4/9/24 supports the City's recommendation to install the turn lane as a safety benefit even though the original traffic report noted that the left turn lane was not warranted.

Another set of AM & PM peak hour traffic counts were recently performed at the intersection of NE 13th Avenue/202nd Avenue/NW Friberg-Strunk Street/Goodwin Road. The counts were recorded on Thursday May 16, 2024 when Union High School was in session. The counts used in the original traffic study were taken on August 1, 2023 when school was on summer break. However, to compensate for this condition the school trips were modeled using trip rates from the ITE Trip Generation manual. Listed below are the volume results, including a comparison of the previous traffic study's modeled volumes and those recorded when school was in session. The volumes represent the total entering vehicles (TEV) at NE 13th St/Friberg-Strunk Street intersection.

Peak Hour Count Summary

Data Collected	NE 13th St/Goodwin Rd and NE 202nd Ave/Friberg-Strunk St.	
	AM Peak TEV[1]	PM Peak TEV[1]
Adjusted August 2023 counts[2]	1,062	1,129
May 2024 counts	1,057	1,136
Percent Difference[3]	-0.47%	+0.62%

[1] Total entering vehicles.

[2] The August 2023 counts were adjusted to include modeled Union High School traffic.

[3] Percent Difference = May 2024 TEV / Adjusted August 2023 counts

During the AM peak hour with school in session the volume recorded in May decreased by five vehicles or -0.47% compared to the modeled data used in the year 2023 traffic analysis. In the PM peak hour with school in session the TEV was seven vehicles higher +0.62% compared to the modeled data. These results confirm that using the modeled school trips in the original traffic analysis was accurate and there is no need to perform additional intersection studies. The year 2023 volumes are represented on Figure 3 in the original traffic report. The May 2024 volumes are documented in the traffic count data attached to this memorandum.

A traffic queuing survey was performed on the NE 13th Street eastbound approach to the signal at Friberg-Strunk Street to assess the vehicle stacking length. The output documents if the eastbound queues are currently extending far enough to interfere or block the future gas station access. The surveys were conducted in the AM & PM peak hours with the queues recorded at two-minute intervals. The data is included in the appendix.

The 40-foot-wide site access will be located at a distance of 202 feet from the signalized intersection's eastbound stop bar. For analysis purposes any eastbound queue extending beyond 180 feet from the stop bar would impact the proposed driveway and block left turn traffic entering and leaving the site. During the two-hour period from 7-9AM there were two instances when traffic extended beyond 180 feet (220 feet & 200 feet). During the two-hour

period from 4-6PM there was one instance when traffic extended beyond 180 feet (230 feet). The low blockage frequency is not considered problematic for traffic to safely enter and exit the site throughout the day. Additionally, when the fueling trucks arrive during the off-peak hours no blockages of the access are anticipated.

Based on the results of the follow-up study it is recommended that the City of Camas support the proposed site plan with one 40-foot-wide access on NE 13th Street.

If you should have any questions, please contact Frank Charbonneau, PE, PTOE at 971.322.8003 or email Frank@CharbonneauEngineer.com.

Attachments

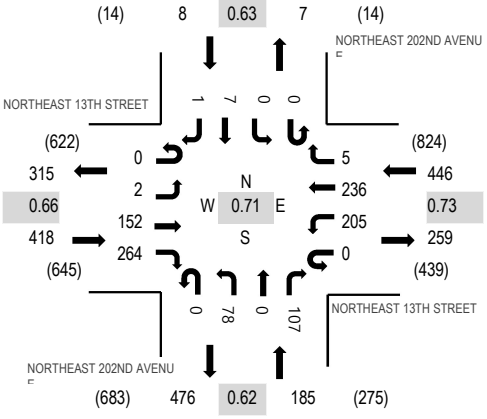
- May 2024 Traffic Count Data
- May 2024 Queuing Survey Results

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

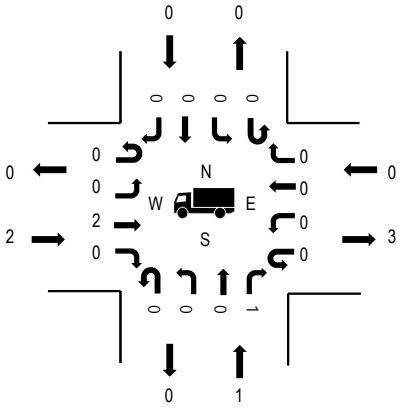
Location: 1 NORTHEAST 202ND AVENUE & NORTHEAST 13TH STREET AM
Date: Thursday, May 16, 2024
Peak Hour: 07:50 AM - 08:50 AM
Peak 15-Minutes: 08:25 AM - 08:40 AM

Peak Hour

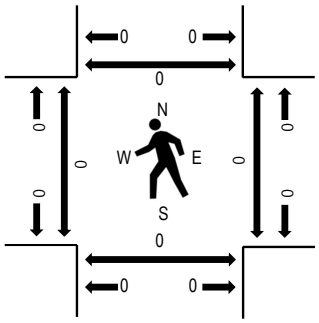
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.5%	0.66
WB	0.0%	0.73
NB	0.5%	0.62
SB	0.0%	0.63
All	0.3%	0.71

Traffic Counts - Motorized Vehicles

Interval Start Time	NORTHEAST 13TH STREET Eastbound				NORTHEAST 13TH STREET Westbound				NORTHEAST 202ND AVENUE Northbound				NORTHEAST 202ND AVENUE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
7:00 AM	0	0	14	4	0	10	20	0	0	1	0	3	0	0	0	0	52	720
7:05 AM	0	0	13	9	0	9	17	0	0	7	0	4	0	0	0	0	59	729
7:10 AM	0	0	13	4	0	3	17	0	0	4	0	5	0	0	0	0	46	732
7:15 AM	0	0	9	9	0	13	27	0	0	5	0	2	0	0	0	0	65	763
7:20 AM	0	0	12	6	0	5	20	0	0	1	0	5	0	1	0	0	50	765
7:25 AM	0	0	10	18	0	7	17	0	0	5	0	1	0	0	0	1	59	826
7:30 AM	0	1	6	3	0	15	31	0	0	4	1	5	0	0	0	0	66	876
7:35 AM	0	0	13	4	0	5	25	0	0	0	0	2	0	0	0	0	49	950
7:40 AM	0	1	8	8	0	13	30	0	0	4	0	4	0	0	1	0	69	1,023
7:45 AM	0	0	17	10	0	11	24	0	0	7	0	4	0	0	1	0	74	1,050
7:50 AM	0	1	18	9	0	15	16	0	0	5	0	12	0	0	0	0	76	1,057
7:55 AM	0	0	18	8	0	9	12	0	0	1	0	7	0	0	0	0	55	1,044
8:00 AM	0	1	12	8	0	7	23	0	0	3	0	6	0	0	1	0	61	1,038
8:05 AM	0	0	11	13	0	15	16	0	0	3	0	4	0	0	0	0	62	
8:10 AM	0	0	18	13	0	16	17	0	0	3	0	10	0	0	0	0	77	
8:15 AM	0	0	8	15	0	16	16	0	0	8	0	3	0	0	1	0	67	
8:20 AM	0	0	12	34	0	28	22	0	0	7	0	5	0	0	3	0	111	
8:25 AM	0	0	8	38	0	26	22	0	0	8	0	7	0	0	0	0	109	
8:30 AM	0	0	13	50	0	34	21	3	0	5	0	13	0	0	1	0	140	
8:35 AM	0	0	8	44	0	18	21	1	0	9	0	19	0	0	1	1	122	
8:40 AM	0	0	12	24	0	12	18	1	0	16	0	13	0	0	0	0	96	
8:45 AM	0	0	14	8	0	9	32	0	0	10	0	8	0	0	0	0	81	
8:50 AM	0	2	12	8	0	12	19	0	0	3	0	5	0	0	2	0	63	
8:55 AM	0	0	8	5	0	12	16	0	0	2	2	4	0	0	0	0	49	
Count Total	0	6	287	352	0	320	499	5	0	121	3	151	0	1	11	2	1,758	
Peak Hour	0	2	152	264	0	205	236	5	0	78	0	107	0	0	7	1	1,057	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

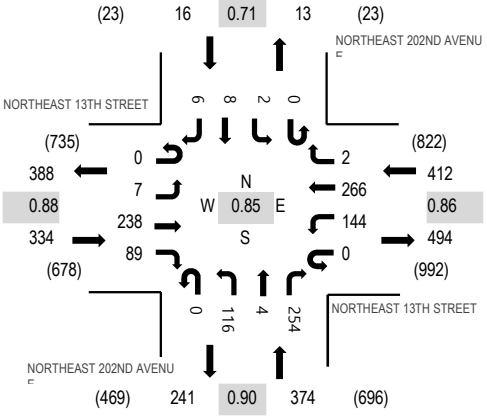
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	1	0	0	0	1	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	1	0	0	0	1	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0	7:20 AM	0	1	0	0	1
7:25 AM	1	0	0	0	1	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	0	0	0	0	0	7:35 AM	1	0	0	0	1	7:35 AM	0	0	0	0	0
7:40 AM	1	0	0	0	1	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	0	0	0	0	0	7:55 AM	2	0	0	0	2	7:55 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	0	1	0	0	1	8:05 AM	1	0	0	0	1	8:05 AM	0	0	0	0	0
8:10 AM	1	0	0	0	1	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	1	0	0	0	1	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	1	0	0	0	1	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	7	1	0	0	8	Count Total	4	0	0	0	4	Count Total	0	1	0	0	1
Peak Hour	2	1	0	0	3	Peak Hour	3	0	0	0	3	Peak Hour	0	0	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

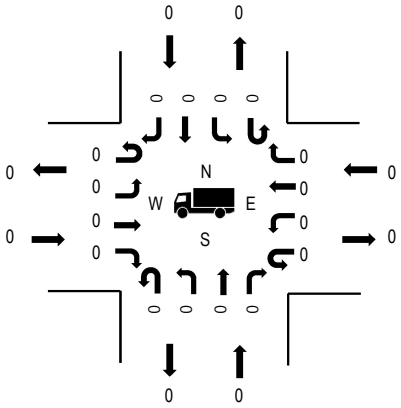
Location: 1 NORTHEAST 202ND AVENUE & NORTHEAST 13TH STREET PM
Date: Thursday, May 16, 2024
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 04:15 PM - 04:30 PM

Peak Hour

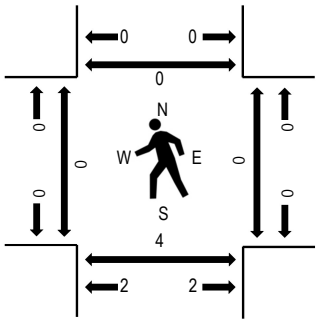
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.88
WB	0.0%	0.86
NB	0.0%	0.90
SB	0.0%	0.71
All	0.0%	0.85

Traffic Counts - Motorized Vehicles

Interval Start Time	NORTHEAST 13TH STREET Eastbound				NORTHEAST 13TH STREET Westbound				NORTHEAST 202ND AVENUE Northbound				NORTHEAST 202ND AVENUE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	0	24	5	0	7	14	0	0	11	0	20	0	0	0	1	82	1,132
4:05 PM	0	0	16	10	0	14	21	1	0	16	0	23	0	0	0	0	101	1,133
4:10 PM	0	0	37	7	0	5	13	0	0	7	1	15	0	1	0	0	86	1,119
4:15 PM	0	0	8	10	0	27	44	1	0	12	0	23	0	1	0	0	126	1,136
4:20 PM	0	2	21	9	0	11	19	0	0	14	0	24	0	0	0	2	102	1,096
4:25 PM	0	0	31	5	0	15	22	0	0	7	0	25	0	0	2	0	107	1,097
4:30 PM	0	2	22	6	0	6	28	0	0	11	0	19	0	0	0	0	94	1,069
4:35 PM	0	0	17	8	0	14	19	0	0	10	0	13	0	0	1	1	83	1,060
4:40 PM	0	0	13	7	0	9	10	0	0	13	0	26	0	0	0	2	80	1,075
4:45 PM	0	1	15	11	0	14	22	0	0	11	1	20	0	0	0	1	96	1,091
4:50 PM	0	0	25	7	0	11	17	0	0	10	1	18	0	0	0	0	89	1,096
4:55 PM	0	1	20	8	0	7	22	0	0	1	0	24	0	0	3	0	86	1,103
5:00 PM	0	0	18	5	0	12	21	1	0	5	1	19	0	0	1	0	83	1,087
5:05 PM	0	0	20	7	0	10	13	0	0	10	0	25	0	1	1	0	87	
5:10 PM	0	1	28	6	0	8	29	0	0	12	1	18	0	0	0	0	103	
5:15 PM	0	0	19	5	0	17	21	0	0	10	0	13	0	0	1	0	86	
5:20 PM	0	0	22	8	0	16	31	0	0	6	0	20	0	0	0	0	103	
5:25 PM	0	0	21	3	0	9	20	0	0	7	0	19	0	0	0	0	79	
5:30 PM	0	0	20	7	0	12	20	0	0	4	0	22	0	0	0	0	85	
5:35 PM	0	0	23	9	0	20	21	0	0	5	0	20	0	0	0	0	98	
5:40 PM	0	1	27	4	0	16	22	1	0	6	2	17	0	0	0	0	96	
5:45 PM	0	2	20	2	0	14	31	0	0	5	0	25	0	1	0	1	101	
5:50 PM	0	1	19	10	0	11	25	0	0	8	1	21	0	0	0	0	96	
5:55 PM	0	0	17	5	0	11	17	0	0	3	0	15	0	1	0	1	70	
Count Total	0	11	503	164	0	296	522	4	0	204	8	484	0	5	9	9	2,219	
Peak Hour	0	7	238	89	0	144	266	2	0	116	4	254	0	2	8	6	1,136	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	0	0	4:00 PM	0	1	0	0	1	4:00 PM	0	0	0	0	0
4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	0	0	0	0	4:10 PM	0	0	1	0	1	4:10 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0	4:30 PM	0	0	1	0	1	4:30 PM	0	2	0	0	2
4:35 PM	0	0	0	0	0	4:35 PM	0	1	0	0	1	4:35 PM	0	2	0	0	2
4:40 PM	0	0	0	0	0	4:40 PM	0	0	1	0	1	4:40 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0	5:15 PM	0	0	1	0	1	5:15 PM	0	0	0	0	0
5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	0	0	1	0	1	5:30 PM	0	0	0	0	0
5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	0	0	0	5:40 PM	0	0	1	0	1	5:40 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	1	0	0	0	1	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	0	0	0	0	0	Count Total	1	2	6	0	9	Count Total	0	4	0	0	4
Peak Hour	0	0	0	0	0	Peak Hour	0	1	2	0	3	Peak Hour	0	4	0	0	4

32041-Camas TMC

1. Northeast 13th Street & Northeast 202nd Avenue

AM Peak Hour: 7:50-8:50 AM PM Peak Hour: 4:15-5:15 PM

EB Movement

TIME	QUEUE BY FEET	ACCESS BLOCKED?
7:00 AM	20	
7:02 AM	90	
7:04 AM	0	
7:06 AM	90	
7:08 AM	90	
7:10 AM	90	
7:12 AM	0	
7:14 AM	125	
7:16 AM	75	
7:18 AM	20	
7:20 AM	0	
7:22 AM	40	
7:24 AM	0	
7:26 AM	20	
7:28 AM	90	
7:30 AM	0	
7:32 AM	40	
7:34 AM	20	
7:36 AM	0	
7:38 AM	0	
7:40 AM	165	
7:42 AM	20	
7:44 AM	65	
7:46 AM	90	
7:48 AM	40	
7:50 AM	30	
7:52 AM	40	
7:54 AM	90	
7:56 AM	150	
7:58 AM	20	
8:00 AM	20	
8:02 AM	25	
8:04 AM	40	
8:06 AM	20	
8:08 AM	30	
8:10 AM	45	
8:12 AM	90	
8:14 AM	90	
8:16 AM	65	
8:18 AM	95	

32041-Camas TMC

1. Northeast 13th Street & Northeast 202nd Avenue

AM Peak Hour: 7:50-8:50 AM PM Peak Hour: 4:15-5:15 PM

EB Movement

TIME	QUEUE BY FEET	ACCESS BLOCKED?
8:20 AM	220	YES
8:22 AM	175	
8:24 AM	35	
8:26 AM	150	
8:28 AM	20	
8:30 AM	175	
8:32 AM	200	YES
8:34 AM	40	
8:36 AM	20	
8:38 AM	65	
8:40 AM	90	
8:42 AM	90	
8:44 AM	70	
8:46 AM	95	
8:48 AM	100	
8:50 AM	130	
8:52 AM	90	
8:54 AM	50	
8:56 AM	40	
8:58 AM	20	
4:00 PM	95	
4:02 PM	45	
4:04 PM	20	
4:06 PM	20	
4:08 PM	130	
4:10 PM	160	
4:12 PM	75	
4:14 PM	80	
4:16 PM	65	
4:18 PM	40	
4:20 PM	100	
4:22 PM	90	
4:24 PM	230	YES
4:26 PM	85	
4:28 PM	175	
4:30 PM	110	
4:32 PM	175	
4:34 PM	30	
4:36 PM	95	
4:38 PM	80	

32041-Camas TMC

1. Northeast 13th Street & Northeast 202nd Avenue

AM Peak Hour: 7:50-8:50 AM PM Peak Hour: 4:15-5:15 PM

EB Movement

TIME	QUEUE BY FEET	ACCESS BLOCKED?
4:40 PM	40	
4:42 PM	105	
4:44 PM	20	
4:46 PM	80	
4:48 PM	50	
4:50 PM	65	
4:52 PM	20	
4:54 PM	45	
4:56 PM	60	
4:58 PM	60	
5:00 PM	20	
5:02 PM	140	
5:04 PM	20	
5:06 PM	95	
5:08 PM	90	
5:10 PM	180	YES
5:12 PM	40	
5:14 PM	130	
5:16 PM	110	
5:18 PM	40	
5:20 PM	85	
5:22 PM	90	
5:24 PM	95	
5:26 PM	20	
5:28 PM	110	
5:30 PM	35	
5:32 PM	90	
5:34 PM	110	
5:36 PM	160	
5:38 PM	90	
5:40 PM	90	
5:42 PM	90	
5:44 PM	90	
5:46 PM	130	
5:48 PM	40	
5:50 PM	40	
5:52 PM	20	
5:54 PM	40	
5:56 PM	20	
5:58 PM	90	

CHARBONNEAU ENGINEERING LLC

MEMORANDUM

Date: April 9, 2024

To: Travis Johnson, PE
PLS Engineering
604 West Evergreen Blvd
Vancouver WA 98660

From: Frank Charbonneau, PE, PTOE

Subject: Westbound Left Turn Lane FL2429
NE 13th Street Site Plan Development (Gas Station)
Camas

In September 2023 Charbonneau Engineering completed a traffic study for the NE 13th Street Site Plan project for a new gas station in Camas. The site location at address #20101 NE 13th Street will have a single access on NE 13th Street.

Originally the analysis found that a separate westbound left turn lane was not warranted for inbound traffic and no recommendation to build the turn lane was made in the traffic report.

At the current time the City is now requiring that a westbound left turn lane be constructed in conjunction with the proposed development. Although initially not warranted the turn lane will provide a safety benefit for vehicles turning into the gas station and westbound flow on NE 13th Street.

Therefore we support the City's recommendation to include the construction of a westbound left turn lane at the site access with NE 13th Street as shown on the attached PLS Engineering site plan.

If you should have any questions, please contact Frank Charbonneau, PE, PTOE at 971.322.8003 or email Frank@CharbonneauEngineer.com.

8516 SW 61st Avenue, Portland, OR 97219 Phone: (971) 322-8003

13th Street Site Plan

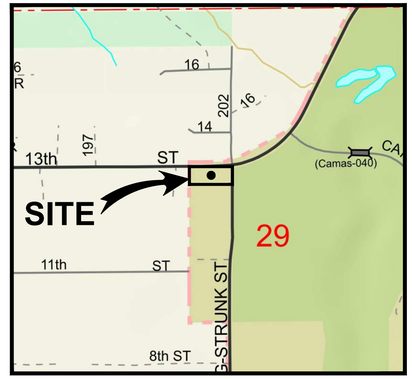
Located in the NW ¼ of Section 29, T2N, R3E, W.M.
City of Camas, Washington

PARCEL STATISTICS		
ZONE: Business Park BP		
Gross Site Area	42,208 SQ FT	0.97 AC
Critical Areas	0 SQ FT	0 AC
	REQUIRED	PROPOSED
Density	N/A	N/A
Maximum Lot Coverage	50%	20%
Setbacks		
North	15'	15'
South	15'	15'
East	15'	15'
West	50'	50'
Maximum Building Height	None	28'
Total Parking Spaces *	20	20
Standard Parking Spaces	70% Min of Total	20
Compact Spaces (C)	30% Max of Total	0
Gas Fill-up Stalls *	1 Per Nozzle (8)	8
ADA Spaces (ADA)	1 Per 25 of Total (1)	1
Spaces with Electric Vehicle Charging Infrastructure (E)	10% Now (2) + 10% Future (2)	2 Now + 2 Future

*Note: The Gas stalls are not actually parking stalls and do not count towards the required ADA and EV calculations.

REQUIRED PARKING CALCULATIONS:

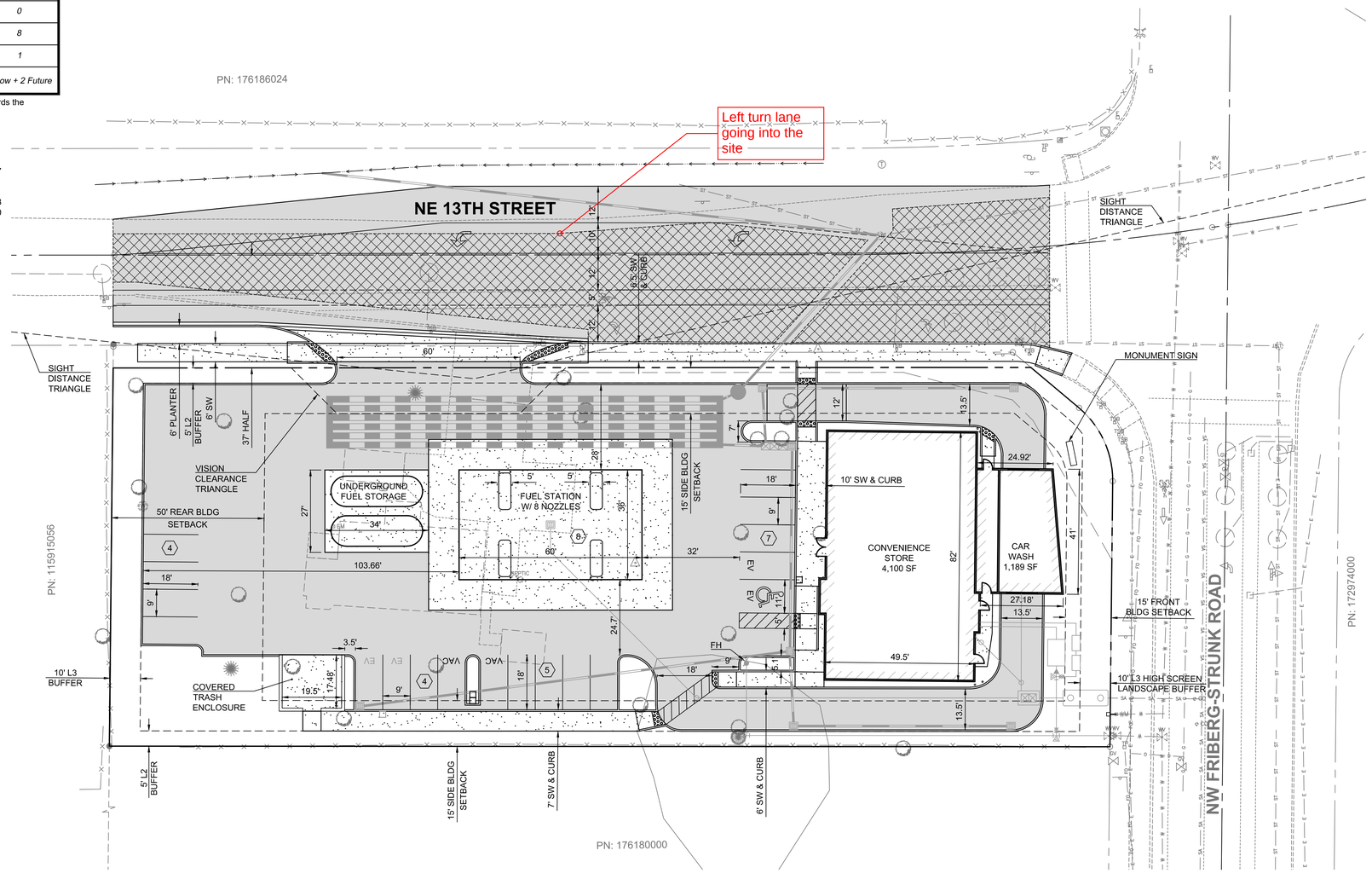
4100 sf c-store @ 1/250 sf	= 17
8 nozzle gas station @ 1/nozzle	= 8
1 stall carwash w/ 2 employees @ 2/stall+1/2 employees	= 3
Total	= 28
Excluding Gas Fill-up Stalls	= 20



VICINITY MAP
NOT TO SCALE

Legend	
Proposed Asphalt Concrete	
Proposed Cement Concrete	
Proposed Grind and Overlay	

Scale 1" = 20'
20 10 0 20



GENERAL NOTES

APPLICANT:
Taz Kahn
3993 NW Currawong Court
Camas, WA 98607
TKahnusa@gmail.com

OWNER:
Pak USA Camas LLC
20107 NE 13th Street
Camas, WA 98607

CIVIL ENGINEER:
PLS Engineering
Contact: Travis Johnson, PE
604 W Evergreen Blvd
Vancouver, WA 98660
PH: (360) 944-6519
pm@plsengineering.com

SITE ADDRESS:
Parcel # 176148-000
20101 NE 13TH ST
Camas, WA 98607

SITE STATISTICS:
Existing Site Area: 42,257 SF (0.97 Acre)
ROW Dedication: 1,832 SF (0.04 Acre)
Developed Site: 42,257 SF (0.93 Acre)

PLS ENGINEERING
Engineering - Surveying - Planning | 604 W. Evergreen Blvd., Vancouver, WA 98660 | PH (360) 944-6519 | Fax (360) 944-6539

Preliminary Site Plan For:
13th Street Site Plan
A Subdivision Located In The City Of Camas, Washington

Revisions

1	2	3	4	5	6

SCOTT W. GILLILAND — STATE OF WASHINGTON — 22773 — REGISTERED PROFESSIONAL ENGINEER
8/31/23

Project No.	3632
SCALE:	H: 1" = 20' V: N/A
DESIGNED BY:	SWG
DRAFTED BY:	JSV
REVIEWED BY:	TGJ

2
8

1070

Ecological Land Services

May 14, 2024

PAK USA Camas, LLC
Attention: Taz Khan
3993 NW Currawong Court
Camas, WA 98607

RE: 13th Street Gas Station Department of Ecology Comment Response (SEPA23-12)

Dear Mr. Khan:

Please find below our responses to comments received from the Washington Department of Ecology (Ecology) in a letter dated March 6, 2024. Comments are stated or paraphrased below in *italics* followed by ELS responses in regular font. This memorandum will address comments by Megan Tait related to Shorelands and Environmental Assistance. The remaining Ecology comments will be addressed by the project engineer.

ECOLOGY COMMENTS

The wetland delineation was conducted in August, typically a dry time of the year for the region. Per the Corps of Engineers WMVC regional supplement to the wetland delineation manual, additional field investigation isnecessary to determine whether a wetland is present. One or more site visits should be scheduled to coincide with the normal wet portion of the growing season, the period of the year when the presence or absence of wetland hydrology indicators is most likely to reflect the true wetland/non-wetland status of the site.

The City of Camas Critical Areas Ordinance states that all wetlands and recommended buffer zones within 300 feet of the project area shall be addressed in the critical area report (16.53.030(B)(2)). Wetlands and buffers on surrounding parcels have not been evaluated and included in the Critical Areas Report dated October 2, 2023 prepared by Ecological Land Services for this project. There are mapped wetlands and hydric soils on the parcel to the west and south of the project area.

An additional site visit was completed on April 2, 2024 to gather data during the normal wet portion of the growing season. The *Critical Areas Report for 13th Street Gas Station* completed by ELS in October 2023 was revised to include the findings from the April 2024 site visit. The site visit confirmed no wetlands were present onsite; however, one wetland (Wetland A) was observed offsite to the west that was not observed during the August 2023 site visit. Offsite boundaries for Wetland A were estimated by visual observations of changes in vegetation, the presence of surface water, and aerial photos; therefore, Wetland A boundaries are approximate. According to the *Washington State Wetland Rating System for Western Washington: 2014 Update* (Rating System), Wetland A is a Category III wetland scoring 7 points for water quality

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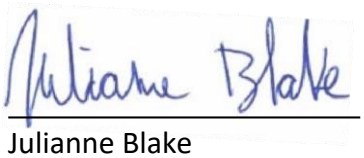
functions, 7 points for hydrologic functions, and 4 points for habitat functions, for a total of 18 points. The designated buffer width for a Category III wetland with a high land use intensity and a habitat score of 4 is 80 feet, as listed in *Camas Municipal Code (CMC) Table 16.53.040-1*. For more information on critical areas onsite and within 300 feet of the project area, please see the *Critical Areas Report for 13th Street Gas Station - Revised* (ELS 2024).

If you have any further questions or need additional information, please contact me by phone at (360) 578-1371 or by email at Julianne@eco-land.com.

Sincerely,



Julianne Blake
Biologist III

Ecological Land Services

May 20, 2024

PAK USA Camas, LLC
Attention: Taz Khan
3993 NW Currawong Court
Camas, WA 98607

RE: 13th Street Gas Station WDFW Comment Response | (SEPA23-12)

Dear Mr. Khan:

Please find below our responses to comments received from the Washington Department of Fish and Wildlife (WDFW) in an email dated February 28, 2024. Comments are stated or paraphrased below in *italics* followed by ELS responses in regular font. This memorandum will address comments by Amaia Smith related to oak impacts and mitigation.

ECOLOGY COMMENTS

WDFW recently published a guidance document, Best management practices for mitigating impacts to Oregon white oak priority habitat*, that describesthe significance of Oregonwhite oaks and identifies best management practices (BMPs) for avoiding, minimizing, and mitigating impacts to this important habitat and is considered best available science. The actions identified in this guidance document can be implemented under the existing critical areas ordinance and is the new standard for evaluating projects that involve Oregon white oak.*

This SEPA notice identifies a priority Oregon white oak on site and states it will be removed for this project. WDFW wants to ensure that the project proponent explored design alternatives that avoid and minimize impacts to the Oregon white oak, as required by CMC 16.51.170 – Mitigation sequencing. If impacts to the Oregon white oak cannot be avoided and is subsequently removed for this project, WDFW recommends updating the mitigation to align with our newly published guidance document. A 6:1 mitigation ratio, as proposed, will result in a net-loss of ecological function due to the life history of Oregon white oaks. Furthermore, we recommend that the proponent explores on-site and off-site options prior to purchasing oak credits from a mitigation bank.

The project application with the City of Camas was deemed Technically Complete on December 19, 2023 and the 2023 ELS reports were completed prior to the release of the updated WDFW guidance. As such, the mitigation plan was designed according to the current guidance at the time of submittal, WDFW's *Management Recommendations for Washington's Priority Habitats, Oregon White Oak Woodlands* (Larsen and Morgan 1998). The project meets the minimum standards for parking and other CMC required improvements and the size and layout of the

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property restrict any onsite oak mitigationpotential. The project also meets mitigationstandards required by CMC and the Terrace Oak Bank's (Bank) Mitigation Banking Instrument (MBI).

The preferred mitigation sequencing of first avoidance, then minimization, and finally compensation for unavoidable impacts was taken into consideration during the project design process. The engineering team tested several layouts to avoid oak impacts to the maximum extent practicable, originally placing the convenience store on the western property line. However, *CMC 18.09.030-Table 1* states that parcels zoned Business Park (BP) must have a 50-foot setback for the rear yard, which placed the convenience store in the center of the site. Additional requirements include a turning radius large enough for fuel truck maneuvering, tank filling, and other deliveries. This layout did not allow access or the required interior circulation routes to accommodate fuel trucks and other large turning radius vehicles. To allow necessary ingress, egress, and circulation, the convenience store was moved to the east. Design review standards require the building be located as close as possible to the roadway and a driveway is required around the outside of the store for a drive-thru car wash. Due to the single oak tree being located in an area of the site needed for the driveway, avoiding Oregon white oak impacts altogether is not feasible.

The oak's functional values were assessed during the August 2023 site visit completed by ELS. The oak canopy is not connected with other oaks in the area and thus is considered an individual tree rather than part of a woodland. Due to the location of the oak within the City boundaries and lack of habitat connectivity, wildlife not adapted to urban conditions are not likely to be present. Therefore, removing the oak would likely result in habitat loss and a food source only for birds and small mammals that are well adapted to urban conditions. The onsite oak does not provide habitat for other priority species that should be replaced onsite. The use of the Bank will ensure that habitat functions common to urban areas canbe fully replaced. Habitat functions will be impacted for species common to urban areas, which can be fully replaced at the Bank. The habitat functions lost from the proposed oak removal correspond directly with the habitat creation purpose, goals, and objectives at the Bank which identifies 13.93 acres of existing Oregon white oak woodland WDFW Priority Habitat that will be restored to pre-agricultural conditions through creation, enhancement, and preservation.

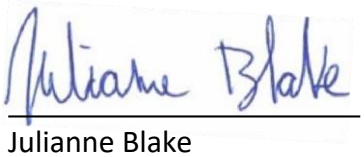
The Corps' 2008 *Compensatory Mitigation for Losses of Aquatic Resources, Final Rule* recommends purchasing mitigation bank credits for ecological considerations (lower risk of failure and lower temporal loss of resources and services) and to avoid the maintenance and contingency issues and outright failures that often accompany permittee-responsible mitigation sites. The lower risk of failure and lower temporal loss of resources and services can also be applied to oak mitigation. According to the WDFW guidance released in January 2024, *Best management practices for mitigating impacts to Oregon white oak priority habitat,* "any plan for compensatory mitigation must address both the physical loss of oak habitat and the temporal loss in ecological function, as many of the critical ecological functions oaks provide are only provided by mature trees, with trees gaining functional capacity as they age. Thus, the loss of functional mature trees can take many decades to replace with young seedlings or saplings." Mitigating onsite or offsite rather than purchasing Bank credits would require the installation of

young seedlings or saplings and lost functions would take decades to replace. Furthermore, there is not adequate space available within the study area to fully compensate for oak habitat losses utilizing onsite mitigation. Use of the Terrace Oak Bank substantially lowers the riskof failure and temporal loss of resource functions and services over newly established, permittee-responsible mitigation sites, and offsite mitigation is anticipated to be more meaningful and beneficial to the watershed's habitat functions by consolidating mitigation into one larger area rather than having smaller isolated mitigation sites. Therefore, purchasing Bank credits will adequately compensate for lost habitat functions.

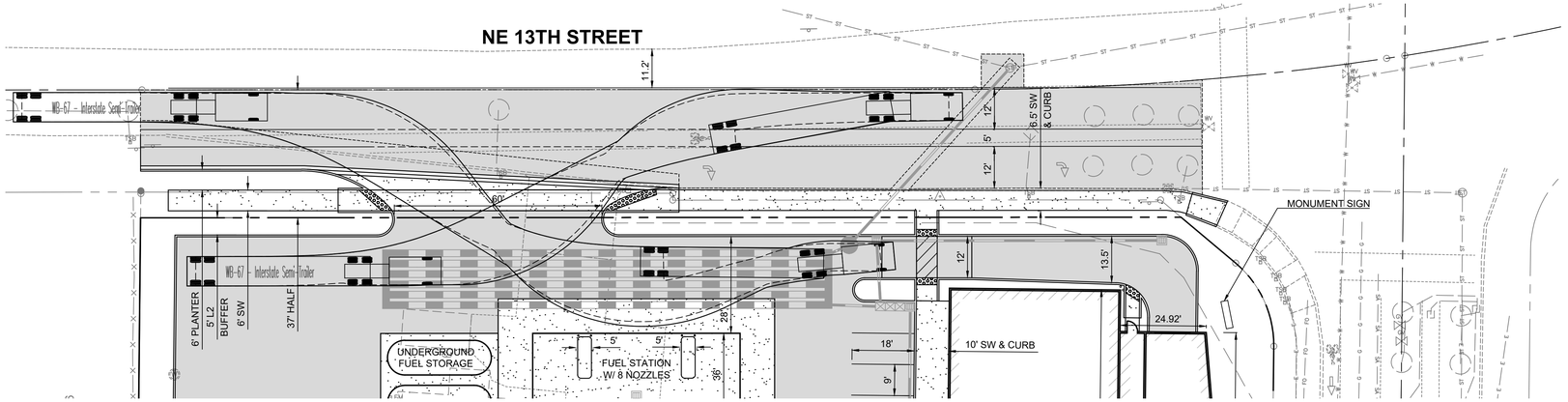
An additional site visit was completed on April 2, 2024 to gather data during the normal wet portion of the growing season to identify whether wetlands were present in the project vicinity. The *Critical Areas Report for 13th Street Gas Station* completed by ELSin October 2023 was revised to include the findings from the April 2024 site visit. Subsequently, the *Bank Use Plan for 13th Street Gas Station* completed by ELS in October 2023 was also revised to include the updated critical areas information. For more information regarding the onsite oak's functional values and other critical areas in the project vicinity, please see the *Critical Areas Report for 13th Street Gas Station - Revised* (ELS 2024) and the *Oak Bank Use Plan for 13th Street Gas Station – Revised* (ELS 2024).

If you have any further questions or need additional information, please contact me by phone at (360) 578-1371 or by email at Julianne@eco-land.com.

Sincerely,



Julianne Blake
Biologist III

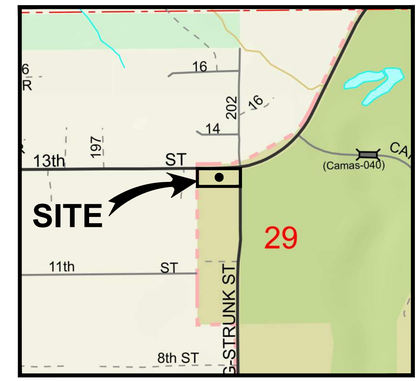


Large Truck Delivery Path

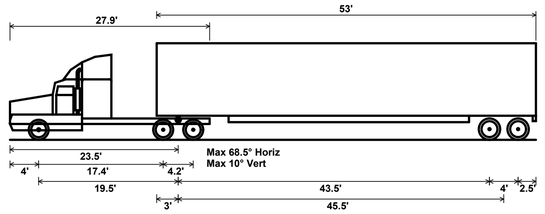
Legend	
Proposed Asphalt Concrete	
Proposed Cement Concrete	

Scale 1" = 20'

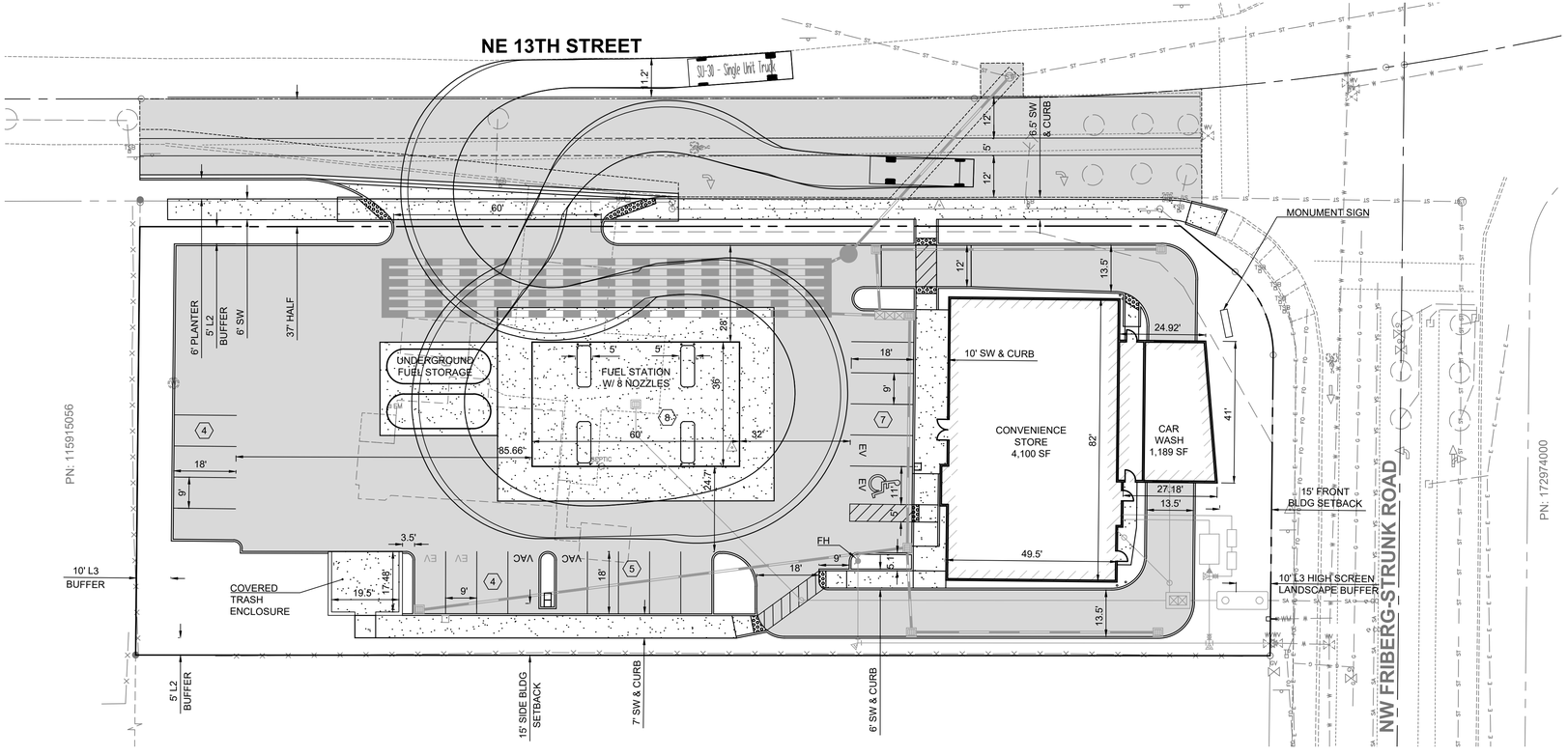
20 10 0 20



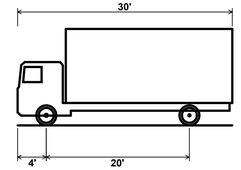
VICINITY MAP
NOT TO SCALE



WB-67 - Interstate Semi-Trailer	
Overall Length	73.501ft
Overall Width	8.500ft
Overall Body Height	13.500ft
Min Body Ground Clearance	1.334ft
Max Track Width	8.500ft
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	28.40°



Small Truck Delivery Path



SU-30 - Single Unit Truck	
Overall Length	30.000ft
Overall Width	8.000ft
Overall Body Height	13.500ft
Min Body Ground Clearance	1.367ft
Track Width	8.000ft
Lock-to-lock time	5.00s
Max Steering Angle (Virtual)	31.80°

GENERAL NOTES

APPLICANT:
Taz Kahn
3993 NW Currawong Court
Camas, WA 98607
TKahnusa@gmail.com

OWNER:
Pak USA Camas LLC
20107 NE 13th Street
Camas, WA 98607

CIVIL ENGINEER:
PLS Engineering
Contact: Travis Johnson, PE
604 W Evergreen Blvd
Vancouver, WA 98660
PH: (360) 944-6519
pm@plsengineering.com

SITE ADDRESS:
Parcel # 176148-000
20101 NE 13TH ST
Camas, WA 98607

CIRCULATION DISCUSSION:
This plan shows that a WB-67 truck can enter and exit the site for deliveries. Note that the turning path does not impact access to the gas pumps. This is the largest possible design vehicle. Additionally, a SU-30 truck path is shown circulating the site. This indicates sufficient space on site for deliveries.

PLS ENGINEERING
604 W. Evergreen Blvd., Vancouver, WA 98660 | PH (360) 944-6519 | Fax (360) 944-6539
Engineering - Surveying - Planning

Preliminary Circulation Plan For:

13th Street Site Plan

A Subdivision Located In The City Of Camas, Washington

Revisions

1	2	3	4	5	6

SCOTT W. GILLILAND — STATE OF WASHINGTON — 42773 — REGISTERED PROFESSIONAL ENGINEER — 11/2023

Project No.	3632
SCALE:	H: 1" = 20' V: N/A
DESIGNED BY:	SWG
DRAFTED BY:	JSV
REVIEWED BY:	TGJ

1 / 1

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

Date Published: August 15, 2024

To Whom It May Concern:

A revised SEPA Checklist and supporting documents were received for the proposed project on July 15, 2024. As such, staff is redistributing the SEPA review that was originally published on February 22, 2024. Please find enclosed a Determination of Non-Significance (DNS) for the **13th Street Gas Station (SEPA23-12)** that was issued pursuant to the State Environmental Policy Act (SEPA) Rules, Chapter 197-11, Washington Administrative Code. The enclosed review comments reflect evaluation of the environmental checklist by the lead agency as required by WAC 197-11-330(1)(a)(i).

The following materials were submitted with the application:

- Application Form and Fees
- Applicant's narrative
- Archaeological Predetermination*
- Critical Areas Report
- Geotechnical Study
- Project Plans
- Public Health Review Letter
- SEPA checklist
- Stormwater Drainage Report

The following materials were submitted with the Revised SEPA Checklist:

- Response to Ecology re: Wetlands – Dated May 14, 2024
- Wetland Buffer Bank Use Plan – Dated May 16, 2024
- Response to Ecology re: Oregon white oaks – Dated May 20, 2024
- Revised Oak Mitigation Plan – Dated May 17, 2024
- Traffic Memo Dated April 9, 2024 – Westbound Left Turn Lane
- Traffic Memo Dated June 12,2024 – Response to City Traffic Comments

All application materials are available for review upon request from the Community Development Department. *Archaeological information is exempt from public disclosure, consistent with RCW 42.56.300.

Written comments may be submitted on this determination within fourteen (14) days of its issuance, after which the DNS will be reconsidered in light of the comments received.

Please address all correspondence to:
City of Camas, SEPA Official
Community Development Department
616 NE Fourth Avenue
Camas, Washington 98607
communitydevelopment@cityofcamas.us

Distribution:

Applicant
C-Tran
Camas School District
Camas Building Official, Brian Smith
Camas Communications Director, Bryan Rachal
Camas Engineering Department Managers and Staff
Camas Fire Department, Randy Miller
Camas Finance Director, Cathy Huber Nickerson
Camas Community Development Director, Alan Peters
Camas Mayor and City Council Members
Camas Parks and Recreation Interim Director, Bryan Rachal
Camas Planning Manager and Staff
Camas Police Chief, Tina Jones
Camas Public Works Director, Steve Wall
Camas Public Library, Connie Urquhart
Camas-Washougal Post Record
Chinook Indian Nation
Cultural Resource Program, Cowlitz Indian Tribe
Cultural Resource Program, Yakama Indian Nation
Clark County Department of Environmental Services
Clark County Department of Transportation
Clark County Natural Resources Council
Clark Public Utilities
Department of Ecology
Department of Fish and Wildlife, Region 5
Department of Natural Resources, SEPA Center
Southwest Clean Air Agency
US Army Corps of Engineers
Vancouver - Clark Parks & Recreation
Washington Office of Archaeology & Historic Preservation
Washington State Department of Transportation
Washington State Parks and Recreation Commission, Environmental Program
Property Owners within 300 feet *(mailed the SEPA Determination & map)*

Preliminary Plat (SEPA23-12)

N

State Environmental Policy Act
Determination of Non-Significance

CASE NO: SEPA23-12 13th Street Gas Station

APPLICANT: PLS Engineering, Travis Johnson
604 W Evergreen Boulevard
Vancouver, WA 98660

REQUEST: To construct a gas station, car wash, and convenience store on the subject 0.97-acre site currently developed with a single-family residence, in the BP – Business Park Zone.

LOCATION: 20101 NE 13TH STREET, CAMAS, WA 98607
PARCEL NUMBER 176148000

LEGAL DESCRIPTION: THE PROJECT IS LOCATED IN THE CITY OF CAMAS IN THE NW ¼ OF SECTION 29, TOWNSHIP 2 NORTH, RANGE 3 EAST OF THE WILLAMETTE MERIDIAN

SEPA DETERMINATION: DETERMINATION OF NON-SIGNIFICANCE (DNS)

COMMENT DEADLINE: **AUGUST 29, 2024, AT 5:00 P.M.**

A revised SEPA Checklist and supporting documents were received for the proposed project on July 15, 2024. As such, staff is redistributing the SEPA review that was originally published on February 22, 2024. As lead agency under the State Environmental Policy Act (SEPA) Rules [Chapter 197-11, Washington Administrative Code (WAC)], the City of Camas must determine if there are possible significant adverse environmental impacts associated with this proposal. The options include the following:

- DS = Determination of Significance (The impacts cannot be mitigated through conditions of approval and, therefore, requiring the preparation of an Environmental Impact Statement (EIS).
- MDNS = Mitigated Determination of Non-Significance (The impacts can be addressed through conditions of approval), or;
- DNS = Determination of Non-Significance (The impacts can be addressed by applying the Camas Municipal Code).

Published in the Post Record on August 15, 2024 Legal Publication #928290
Mailed to property owners within 300-feet on August 14, 2024
Posted on bulletin boards at Camas City Hall, Camas Library and the City of Camas website at: http://www.cityofcamas.us

Determination:

Determination of Non-Significance (DNS). The City of Camas, as lead agency for review of this proposal, has determined that, after review of the revised SEPA Checklist and supporting documents, this proposal does not have a probable significant adverse impact on the environment. An Environmental Impact Statement (EIS) is not required under RCW 43.21C.030(2)(e). This decision was made after review of a completed environmental checklist, and other information on file with the City of Camas.

Date of Publication & Comment Period:

Publication date of this DNS is **August 15, 2024,** and is issued under WAC 197-11-340. The lead agency will not act on this proposal until the close of the 14-day comment period which ends on **August 29, 2024**. Comments may be sent by email to communitydevelopment@cityofcamas.us or regular mail to:

City of Camas SEPA Official
Community Development Department
616 NE Fourth Avenue
Camas, Washington 98607

Responsible Official: Robert Maul (360) 817-1568

Robert Maul, Planning Manager and Responsible Official	**August 15, 2024** **Date of publication**

N

Community Development
616 NE Fourth Avenue • Camas, WA 98607
(360) 817-1568
http://www.cityofcamas.us

SEPA ENVIRONMENTAL CHECKLIST

UPDATED 2016

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

***Instructions for applicants*:**

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals: [help]

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background [help]

1. Name of proposed project, if applicable: [help]

   13th Street Site Plan

2. Name of applicant: [help]

Taz Khan

3. Address and phone number of applicant and contact person: [help]

3993 NW Currawong Court
Camas, WA 98607

4. Date checklist prepared: [help]

August 23, 2023
Revised May 2, 2024

5. Agency requesting checklist: [help]

City of Camas

6. Proposed timing or schedule (including phasing, if applicable): [help]

Development is expected to start at the time of final construction drawing approval, likely in early 2024. No phasing is proposed.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. [help]

No, not at this time.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. [help]

SEPA Checklist, Archaeological Predetermination, Geotechnical Report, Critical Areas Report, Oak Mitigation Plan and Wetland Buffer Mitigation Plan

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. [help]

No, there are no known government approvals pending related to this property.

10. List any government approvals or permits that will be needed for your proposal, if known.

- *Preliminary Type II Site Plan*
- *Public notification and staff report publications*
- *Final engineering plan review and approval*
- *Final Site Plan Approval*
- *SEPA*
- *SWWPPP*

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.) [help]

The applicant proposes to construct a 4,100 sf convenience store with gas pumps and a drive through car wash. The site is zoned BP, Business Park, and is 0.97 acres in size.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist. [help]

The site is located at 20101 NE 13th Street, Camas, WA 98607, in the NW ¼ of Section 29, Township 2 North, Range 3 East of the Willamette Meridian. The site is comprised of tax lot 176148000. See the proposed development plans for a preliminary site plan, grading plan, vicinity map and topographical data.

B. ENVIRONMENTAL ELEMENTS [help]

1. Earth [help]

a. General description of the site: [help]

(circle one): (Flat), rolling, hilly, steep slopes, mountainous, other _____

b. What is the steepest slope on the site (approximate percent slope)?

5% per Clark County GIS data

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils. [help]

This site has the following soils onsite per Clark County GIS data:

WrB – Wind River Gravelly Loam, 0-8% slopes
CvA – Cove Silty Loam, 0-3% slopes

It is unknown if these soils are classified as agricultural or if the site contains prime farmland.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe. [help]

There are no known surface indications or history of unstable soils in the immediate area.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill. [help]

There will be grading for the construction of drive aisles, the installation of utilities, and the preparation of the site for the future convenience store, car wash and gas pumps. Surplus material may be required to be hauled from the site to an approved dump site or offsite fill may be required. Quantities and source are unknown at this time.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe. [help]

Standard erosion control measures will be followed during grading construction on the site. A final erosion control plan will be reviewed and approved by City of Camas.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? [help]

Approximately 80%

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any: [help]

Proposed measures to reduce and control erosion include providing an erosion control plan for review and approval prior to starting construction on the site and following the conditions of the approved grading and erosion control plan during all phases of construction.

2. Air [help]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known. [help]

Construction equipment emissions and dust on the short term. Long-term emissions will be produced by automobile traffic and normal commercial/retail uses as well as possible vapor from the gas tanks.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe. [help]

There are no known off-site sources of emissions or odor that may affect the proposal.

c. Proposed measures to reduce or control emissions or other impacts to air, if any: [help]

Dust from construction can be mitigated by sprinkling the site with water during construction as needed. Stage 2 vapor recovery systems will be included in the gas storage tanks and

delivery systems.

3. Water [help]

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into. [help]

There is a wetland to the south of the site that has permits to be filled for the proposed Lacamas Tech Business Park. There is an offsite wetland that has been identified to the west on adjacent property.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans. [help]

Yes, work will take place within 200' of the offsite wetland to the west. No wetland impacts are proposed however a portion of the wetland buffer will be impacted. Approximately 0.16 acres of wetland buffer will be impacted by a paved parking area.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material. [help]

No fill or dredge material is proposed to be placed in or removed from the offsite wetland.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known. [help]

The proposal will not require surface water withdrawals or diversions.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan. [help]

No, the site does not lie within a 100-year floodplain.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge. [help]

No, there will be no discharge of waste material to surface waters.

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known. [help]

No ground water will be withdrawn with this proposal. Stormwater from pollution generating surfaces will be treated prior to being routed to an existing roadside ditch. Runoff around gas pumps will go through an oil/water separator before being discharged to the storm sewer.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if

any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve. [help]

No waste material is proposed to be discharged into the ground.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe. [help]

The main source of runoff is from stormwater. There will be runoff from impervious roof area, drive aisles, parking areas, and landscaped areas. Onsite catch basins will connect to a pipe network that leads to an underground detention facility that will discharge to an existing roadside ditch. Runoff around gas pumps will go through an oil/water separator before being discharged to the storm sewer.

2) Could waste materials enter ground or surface waters? If so, generally describe. [help]

Yes, if waste materials were somehow released or dumped into surface runoff flows, substances associated with the source material could enter ground or other surface waters. There is no proposal to release waste material to the ground or to surface waters.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe. [help]

Not anticipated.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any: [help]

Use of approved erosion control measures during all phases of development. Runoff around gas pumps will go through an oil/water separator before being discharged to the storm sewer. Wetland buffer impacts are proposed to be mitigated offsite by purchasing 0.08 mitigation credits through the Terrace Mitigation Bank LLC. The Wetland Buffer Bank Use Plan, prepared by Ecological Land Services (ELS) and dated May 16, 2024, provides further details.

4. Plants [help]

a. Check the types of vegetation found on the site: [help]

x deciduous tree: alder, **maple**, aspen, **other: Oregon white oak, ash, cottonwood, cherry**
x evergreen tree: **fir**, cedar, pine, other
x shrubs
x grass
____ pasture
____ crop or grain
____ Orchards, vineyards or other permanent crops.
____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____ water plants: water lily, eelgrass, milfoil, other

x other types of vegetation: **blackberry**

b. What kind and amount of vegetation will be removed or altered? [help]

Site vegetation will be stripped for site preparation. Trees beyond the property line are proposed to be retained.

c. List threatened and endangered species known to be on or near the site. [help]

There is 1 priority habitat Oregon white oak onsite.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any: [help]

Landscaping will be provided onsite in accordance with City of Camas requirements. One Oregon white oak will be removed and mitigated offsite at the Terrace Mitigation Bank. Approximately 0.238 credits are proposed to be purchased for mitigation. The revised Oak Bank Use Plan, prepared by ELS and dated May 17, 2024, provides further details.

e. List all noxious weeds and invasive species known to be on or near the site. [help]

None known.

5. Animals [help]

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. [help]

Examples include:
birds: hawk, heron, eagle, **songbirds, other:** mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

Small mammals, such as mice, voles, and rabbits are located on and near the site. This site is also in an area where larger mammals, such as raccoons, opossum, and mammals indigenous to the Clark County area are sometimes located.

b. List any threatened and endangered species known to be on or near the site. [help]

There are no known threatened or endangered species on or near the site.

c. Is the site part of a migration route? If so, explain. help]

This site is part of the Pacific Flyway for migratory waterfowl.

d. Proposed measures to preserve or enhance wildlife, if any: [help]

The site will provide landscaped buffers and street trees.

e. List any invasive animal species known to be on or near the site. [help]

None known

6. Energy and Natural Resources [help]

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc. [help]

The site will be served primarily by electricity.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe. [help]

No.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any: [help]

The convenience store and car wash will have energy efficient windows and will comply with state building codes which include conservation measures.

7. Environmental Health [help]

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe. [help]

The gas station will store and dispense gasoline and diesel, which are flammable and could spill.

1) Describe any known or possible contamination at the site from present or past uses. [help]

Utilizing the "What's in My Neighborhood" section of DOE's database shows that there are no cleanup sites or known hazards within 0.5 miles of the site.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity. [help]

There are no known existing hazardous chemicals/conditions that may affect the development.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project. [help]

The site proposes a gas station; gas and diesel will be stored and used on the site after development.

4) Describe special emergency services that might be required. [help]

No special emergency services outside those normally expected in a

commercial/business area are anticipated to be required in association with this proposal.

5) Proposed measures to reduce or control environmental health hazards, if any: [help]

Emergency shut-off switches will be located inside of the convenience store and outside at the gas pumps. Underground storage and pipes will be double-containment construction with rupture protection. Underground tanks also include monitoring of the inner walls for leaks. Overfill protection, gravity return of undispensed product, breakaway valves and stage 2 vapor recovery systems are also included in the storage tanks and delivery systems.

b. Noise [help]

1) What types of noise exist in the area which may affect your project (for example:traffic, equipment, operation, other)? [help]

Light traffic noise from surrounding areas/roads along with typical home and business use noises. None of these will affect the proposal.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indi- cate what hours noise would come from the site. [help]

Short term noises would include construction noises which would occur during approved hours as mandated by City of Camas and Washington State. Long term noises could include slight increase in traffic noise and vehicle noise at the site.

3) Proposed measures to reduce or control noise impacts, if any: [help]

Construction on the site will take place during normal working hours as allowed by the City.

8. Land and Shoreline Use [help]

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe. [help]

The proposed site has an existing single-family residence and two outbuildings. To the south is a developing business park. West of the site is a single-family residence. To the east of the site across NW Friberg-Strunk Street is land owned by Camas Meadows Golf Club. To the north across NE 13th Street are single family homes.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use? [help]

It is unknown whether the site has been used as working farmlands or forest lands. There are not currently any agricultural or forest uses associated with the site.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how: [help]

No, the proposal will not be affected by, nor will it affect, any surrounding working farm or forest land business.

c. Describe any structures on the site. [help]

Single family residences and two outbuildings.

d. Will any structures be demolished? If so, what? [help]

All structures will be demolished.

e. What is the current zoning classification of the site? [help]

BP – Business Park

f. What is the current comprehensive plan designation of the site? [help]

IND - Industrial

g. If applicable, what is the current shoreline master program designation of the site? [help]

The site does not lie within the shoreline master program.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify. [help]

There is one Oregon white oak on site.

i. Approximately how many people would reside or work in the completed project? [help]

It is currently planned that approximately 2-4 people will work at this site at the time of full buildout.

j. Approximately how many people would the completed project displace? [help]

The removal of one single-family residence has the potential to displace up to 3 people.

k. Proposed measures to avoid or reduce displacement impacts, if any: [help]

There are no measures proposed to avoid or reduce displacement impacts.

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any: [help]

By complying with the zoning designation, the comprehensive plan, and the City of Camas Development Code, the proposal will be compatible with the existing and projected land uses.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any: [help]

No impacts are expected to agricultural or forest lands, therefore no measures are proposed.

9. Housing [help]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. [help]

Not applicable, no homes are proposed.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. [help]

One existing residence will be eliminated. The income level housing type is unknown.

c. Proposed measures to reduce or control housing impacts, if any: [help]

The applicant will pay all impact fees associated with the development at the time of building permit.

10. Aesthetics [help]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? [help]

All new construction will meet City of Camas building codes for commercial/business development. Exterior building materials will include composite wood siding, fiber cement panels, CMU, metal roofing and accents, and veneer stone. The tallest structure will not exceed 28'.

b. What views in the immediate vicinity would be altered or obstructed? [help]

The site will change from a large-lot single family residence to a commercial/retail development with a convenience store, gas station and drive-through car wash. No views will be obstructed though they will be altered as the site develops.

c. Proposed measures to reduce or control aesthetic impacts, if any: [help]

The site will be landscaped as required by the City of Camas. The main roadway frontages will be landscaped with trees per the City of Camas roadway standards.

11. Light and Glare [help]

a. What type of light or glare will the proposal produce? What time of day would it mainly occur? [help]

When the site is built out external illumination will be provided for the canopy/fueling area and for perimeter lot lighting and parking areas.

b. Could light or glare from the finished project be a safety hazard or interfere with views? [help]

No, light or glare from the finished project will not be a safety hazard or interfere with views.

c. What existing off-site sources of light or glare may affect your proposal? [help]

There are existing off-site sources of light from adjacent homes and roads, but they will not affect the proposal.

d. Proposed measures to reduce or control light and glare impacts, if any: [help]

Lights and streetlights will be shielded to reduce light and glare.

12. Recreation [help]

a. What designated and informal recreational opportunities are in the immediate vicinity? [help]

Camas Meadows Golf Club is adjacent to the east. The Harmony Sports Complex is approximately ½ mile to the west.

b. Would the proposed project displace any existing recreational uses? If so, describe. [help]

There will be no recreational uses displaced with this proposal.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any: [help]

No impacts are proposed, therefore no measures to reduce or control impacts on recreation are proposed.

13. Historic and cultural preservation [help]

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers ? If so, specifically describe. [help]

There are no structures recommended for listing in national, state or local preservation registers per the Archaeological Predetermination.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources. [help]

Archaeological Services, LLC (ASCC) performed an onsite field investigation on August 17, 2023. No mention of landmarks, features or other evidence of Indian use or occupation are mentioned. Several artifacts were found including pink glass fragments suspected to be Depression Glass, a coin bank dated to 1926-1930, and a metal bolt. Based on these items, along with the former structures that appear on site in historic photos, ASCC is recording the debris scatter as a historic-area archaeological site and recommends a Cultural Resource Survey Report prior to any ground disturbing activity.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and

historic preservation, archaeological surveys, historic maps, GIS data, etc. [help]

The report utilized surface surveys and excavation of test pits, as well as reviewing historical maps and records on file at the Washington State Department of Archaeology and Historic Preservation.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required. [help]

Based on the findings of the Archaeological Predetermination, a Cultural Resources Study is recommended prior to ground disturbing activity. If during the course of construction any artifacts are discovered, all work will cease, and proper notification shall be given to City of Camas and DAHP.

14. Transportation [help]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any. [help]

NE 13th Street and NW Friberg-Strunk Street abut the site to the north and west. A new driveway off of NE 13th Street will provide access to the site.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop? [help]

C-tran does not operate in close proximity to the site. The nearest stop is 1.6 miles SE of the site along SE 192nd Avenue at Mill Plain Blvd.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate? [help]

20 parking spaces, plus 8 gas fill-up spaces, will be provided with this development. The project will eliminate approximately 2-4 parking spaces with the removal of the existing home.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). [help]

Frontage improvements are proposed to bring NE 13th Street up to half-width roadway standards. NW Friberg-Strunk Street is currently built out to standard.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe. [help].

No

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would

be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates? [help]

A Traffic Analysis Report and Traffic Memo-"Response to City Traffic Comments" have been prepared by Charbonneau Engineering, LLC for the site and are included with this application. The Traffic Analysis estimated that 2,281 new trips per day would be generated by the project. It is expected that 60 trips will occur in the AM peak hour (7:00 – 9:00 AM) and 81 trips will occur in the PM peak hour (4:00 – 6:00). Note that fueling tank trucks will be limited to filling tanks onsite during the hours of 7 pm and 7 am to avoid impacting peak hour traffic.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe. [help]

Not anticipated

h. Proposed measures to reduce or control transportation impacts, if any: [help]

The applicant will pay transportation impact fees. A west bound left turn lane on NE 13th Street is proposed that will improve safety at the site access.

15. Public Services [help]

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe. [help]

Yes. The completion of this development will increase the need for public services in the area.

b. Proposed measures to reduce or control direct impacts on public services, if any. [help]

This project will pay impact fees for traffic at the time of building permit.

16. Utilities [help]

a. Circle utilities currently available at the site: [help]
electricity, natural gas, water, refuse service, telephone, sanitary sewer

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed. [help]

- *Electricity: Clark Public Utilities*
- *Water: City of Camas*
- *Telephone: Century Link, Comcast*
- *Sanitary Sewer: City of Camas*
- *Natural Gas: NW Natural*

C. Signature [help]

Under the penalty of perjury, the above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: DocuSigned by: EF97DED7F6DD4E8...

Name of signee Faz Khan

Position and Agency/Organization Managing Member Pak USA Camas, LLC

Date Submitted: 7/9/2024

State of Washington
DEPARTMENT OF FISH AND WILDLIFE
Southwest Region 5 • 5525 South 11th St Ridgefield, WA 98642
Telephone: (360) 696-6211 • Fax: (360) 906-6776

August 30, 2024

Attn: Yvette Sennewald
City of Camas – Community Development
616 NE 4th Avenue
Camas, WA 98607

Dear Yvette Sennewald:

Thank you for the opportunity to comment on the **SEPA DNS for the 13th Street Gas Station project (SEPA23-12).** My predecessor, Amaia Smith, contributed comments via email in February of this year; after reviewing the applicant's revised Oak Bank Use Plan (May 2024), I would like to reiterate her message and provide additional details on WDFW's recommendations based on best available science.

The proposed plan indicates that a large Oregon white oak (OWO) tree growing at the southern edge of the property will be removed. This tree is not only large, with a trunk that is 52 inches diameter at breast height (DBH), it also has high ecological value due to two large cavities which can be used by nesting birds and other types of wildlife. WDFW's Priority Habitats and Species (PHS) List (2023) classifies individual OWO trees of this size (in urban areas) as priority habitats. The Camas Municipal Code (CMC) also classifies individual OWO trees, if they are at least 20-in DBH, as habitats of local importance and thereby a type of fish and wildlife conservation area, per CMC 16.61.010(3). The tree proposed to be removed for this project is more than twice this 20-in threshold value, which highlights the quantity of habitat that this tree currently provides.

Considering the distinct importance of OWO trees to local ecosystems, it is important to ascertain whether all avoidance and minimization alternatives have been thoroughly explored for this project, as is required by CMC 16.51.170 – Mitigation sequencing. If all avoidance and minimization alternatives are deemed unachievable, it is critical to evaluate whether proposed mitigation measures will adequately provide for no net loss of ecological function. When mitigation is necessary, WDFW recommends that project proponents explore on-site or, secondarily, off-site mitigation opportunities before resorting to the purchase of mitigation credits.

The applicant's Critical Areas Report (Oct 2023) and revised Oak Bank Use Plan (May 2024) cite an OWO management document which our agency published in 1998. Notably, our agency published updated guidance on this subject in January 2024: *"Management recommendations for*

Washington's priority habitats: Best management practices for mitigating impacts to Oregon white oak priority habitat" (Nolan & Azerrad 2024). WDFW has recommended that the project proponent update their mitigation plan to align with this updated guidance, which is based on best available science.

WDFW's current OWO mitigation guidance (Nolan & Azerrad 2024) indicates that removal of a high-functioning OWO tree with a 52-in DBH trunk and a 0.08-acre canopy should require **both**:

- Physical mitigation in the form of 250 OWO saplings planted
- Temporal mitigation in the form of 0.80 acres of OWO habitat enhanced

By contrast, the proposed mitigation plan provides for only 0.238 acres of oak habitat to be planted/enhanced (via mitigation bank credit). According to the applicant's revised Oak Bank Use Plan, this value is based on a 6:1 mitigation ratio with a 0.5 "risk reduction multiplier", which effectively brings the mitigation ratio to only 3:1. Our agency's best available science indicates that such efforts would fall short of accomplishing no net loss of ecological function.

Finally, WDFW recommends that any trees felled in the course of construction be retained on the property or moved to nearby woodland habitat. Dead snags and logs provide valuable habitat to cavity-nesting birds and mammals, which is why WDFW's PHS List identifies snags and logs as a type of priority habitat. CMC 16.61.010(3) also classifies OWO snags as habitats of local importance and thereby a type of fish and wildlife conservation area.

Please feel free reach out if there are any questions about our updated OWO mitigation guidance document. Additionally, the project proponent can contact me directly with questions about this guidance.

Thank you,

Joy Peplinski
Habitat Biologist
Washington Department of Fish & Wildlife

Outlook

13th St Gas Station Public Comment

From SHANNON CONNELL <gsconnell@comcast.net>
Date Tue 8/27/2024 8:06 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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To Whom it may concern,

A couple of comments regarding the issue regarding the SEPA 23-12 13th St. Gas Station. I find it interesting, per the report, the gas station convience store was originally going to be placed on the west end of the property but due to 50ft buffer requirements it would not fit on the lot. Therefore the site of the location of the convience store was moved to the east end of the lot. The Oak tree was the only thing holding up this location. The reality is this is a poor lot for this type of business. Single access with a needed driveway variance to make it even possible is ridiculous. Observing the the complex method fuel trucks will have to maneuver to fill the tanks is also ridiculous. This will back up traffic on an increasingly busy 2 lane road with no plan to improve it on the county road plan (I assume the county will require significant traffic impact fees in its approval process). 13th is quickly becoming the primary access road for the numerous housing developments to the north of Lacamas Lake. Vehicles traveling west attempting a left turn into the gas station will routinely back up into the intersection making an already dangerous intersection worse. More then likely this will result in a left turn restriction and therefore severely hampering the success of such a business. Since this study was undertaken multiple businesss have entered the area increasing traffic even more (the warehouse, food cart pod, and more business park. The study didn't study traffic when school was in session when traffic is busy for hours a day. This is a poor business plan for this location. An actual business park business is the most appropriate occupier of this lot not a high traffic convience store. There have been to many "adjustments" to make this "work".

Greg & Shannon Connell
20002 NE 14th St. Camas WA

1100

Outlook

Gas station on 13th street

From Cooper Dean <jklantchnek@gmail.com>
Date Mon 9/16/2024 7:23 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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As a local of Camas, DO NOT PUT IN ANOTHER GAS STATION.

We have enough traffic in this city, the air pollution and water runoff are SERIOUS concerns and another gas station will only cause MORE damage. Just look at Lacamas Lake, its pollution is entirely from water runoff and lack of care.

Besides, what about all of those kids who walk to school? Are you just going to let traffic accidents happen?

By the way, who do you people think you are trying to move an entire family just to destroy their home? That is downright evil, no matter the reason. Do you not care about the lives you're playing with?

If you all TRULY care about the citizens who live here, THEN DON'T BUILD THE GAS STATION ON 13TH STREET, OUR ENVIRONMENT CAN'T HANDLE ANY MORE DEVELOPMENT.

Once more, as a local, I can clearly see that this towns development is NOT for the good of the people, it's just so the city can get tourist revenue. It's painfully obvious.

Outlook

Gas Station Development

From Sophia Hackl <sghackl08@gmail.com>
Date Sat 8/24/2024 12:11 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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As someone who grew up in Camas, I'd like to express my dissatisfaction with the ruling that the gas station won't have an impact on the environment. Every single thing human beings do and add to the world changes and impacts the environment. Demolishing homes creates waste to create space, removing vital tree species to clear space for a parking lot. It's pretty clear profit has won out over actually caring about the environment in Camas, but it's easy to line your own pockets when it's not you who has to breathe the air in 20 years. Consider your children, and your children's children. It's not fair you are choosing profit over protecting the local community, but it's certainly not surprising.

Best,
Sophia Hackl

Outlook

Updated/new Traffic study request regarding Proposed 13th Street Gasoline Station Project

From Karin Nosrati, DC <bforback@gmail.com>
Date Wed 8/28/2024 10:57 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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Hi,

In light of the increased traffic due to

- newly built housing developments to the east (Green Mountain Golf course area) from Goodwin Rd.
- further housing development in progress to the east from Goodwin
- apartments to the south along Friberg,
- new business center building in progress along Friberg (Nex Generation)
- new high cube warehouse with semi truck traffic along Friberg,
- the food truck location, Oak Tree Station, along Friberg,
- new housing development in progress along Camas Meadows Drive
- traffic from Union High School previously not captured (because the traffic study was conducted in August (!) when high school was not in session)

and the previous traffic study having been conducted during Covid, when traffic was slowed significantly.

We request that an updated traffic study will be conducted.

Traffic at this intersection has grown so significantly that any barriers to smooth flow could result in motor vehicle accidents.

To improve the validity of the new traffic study, it should be conducted with common sense timing, which would capture the traffic from Union High School.
Bell schedule: 8:45 a.m. - 3:15 p.m., traffic naturally occurring prior to start and right after end of school day. Early Release hours should be paid attention to, which are only some Wednesdays: 8:45 a.m. - 12:50 p.m.

The importance of including High School traffic in these projections/studies has been echoed by many residents of Camas, regarding Camas High School, who experience delays in trip times.

Thank you,

Karin Nosrati
360-254-1585

Comments to the SEPA revision of May 2, 2024 for the 13th Street Gasoline Station Project

B. 2.: Air: The revised SEPA does not address the following issues

- Vapor leaks of gasoline during customer filling and tanker truck filling of underground storage tank (UST)
- Exhaust fumes from cars waiting, idling, from trucks idling, even more from diesel powered engines on cars and trucks, exhaust fumes from tanker trucks
- Exhaust fumes from 2,281 of additional trips of cars and trucks to the site
- The City of Camas has permitted a large warehouse with 50+ truck bays, storing highly flammable batteries, which may simultaneously arrive and depart. The air pollution from this amount of exhaust fumes and exacerbated by another project with exhaust and vapor fumes is overwhelming and beyond excessive, given that it is surrounded by residences and a high school.
- Vacuums from car wash operation/customers vacuuming releasing particles.

3.: Water: a. Surface water

1) The revised SEPA does NOT acknowledge that there are 4 bodies of surface water

- Neighbor to the west at 20005 NE 13th Street has standing water most of the year (more about this later), 17' from the property line to the proposed development
- Neighbor to the north at 20107 NE 14th Street has a storm water pond that contains water most of the year (ours)

* Neighbor, also to the north at 20009 NE 14th Street has a large green belt with wetland protection

- Commercially zoned parcel to the south at 7163 NW FRIBERG-STRUNK ST has a wetland immediately adjacent to the parcel, belongs to the same developer (only this one is mentioned in the revised SEPA)

2) Work would need to be performed within 200 feet of the surface water pond to the north, which drains toward Lacamas Creek

- See wetlands map
- Camas Municipal Code 16.55.080 F. prohibits Fuel and/or gas stations

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

- Surface spills during the rainy season may be carried away to the street and from there to the storm water pond and Lacamas Creek/Lacamas Lake below
- The car wash suds and grime-laden waste water (Hydrofluoric acid, waxes/petroleum products) will supposedly be treated by the "waste water treatment". However,

afterwards it will be discharged to the ditch which will drain toward Lacamas Creek/Lacamas Lake

- What is the reliability of these waste water treatment systems, their capacity, inspection frequency, and ability to dissolve petroleum products and car wash chemicals?
- These waste waters may also discharge to the property to the west (that has wetlands/standing water) which may even seep to the aquifer below.
- Researchers at John Hopkins University have found that spillage of fuel releases an average of 40 gallons of gasoline annually at the pumps of a typical gas station. Furthermore they found that spilled gasoline can migrate through the concrete pads.

c. Water Runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

- Yes, this water will flow into other waters.
- When there is snow and ice melt it will cross the road and run toward the property at 20107 NE 14th Street and others.
- Surface spills during the rainy season will mix with storm water which would then be discharged into the nearby ditch which leads to Lacamas Creek/Lacamas Lake, toward the west and its wetland/standing water, the aquifer below.
- With 80% impervious surfaces, as proposed for the development and the types of sudden excessive rainfall we frequently experience, extremely harmful chemicals will be discharged from the parcel to neighboring residents. Onsite catch basins are designed to capture average rainfall, but will fail during sudden bursts of rain which will result in flooding, to the detriment of adjacent parcels and the stormwater pond across 13th Street.
- A geohydrolic study is needed

2) Could waste materials enter ground or surface waters? If so, generally describe.

The revised SEPA acknowledges that waste materials could enter ground or surface waters. They do not have a proposal for a remedy should this problem occur.

This is not an acceptable risk to have petroleum and other chemicals which are toxic to human health enter the area where adjacent neighbors get their drinking water through wells from an aquifer below.
Periodic testing of wells along 13th Street and special insurance coverage for cleanup of future problems of contaminated wells and drinking water and health-related issues need to be written into the design plan. The stormwater pond across the street should be tested periodically and a potential cleanup plan/funding needs to be put into place now. It should

not be the taxpayer's responsibility or the EPA to pay to clean the problems caused by gasoline contamination from a business.

3) The revised SEPA does not address the fact that the prior developments of Nex Generation have already affected the drainage pattern of the property at 20005 NE 13th Street, as we described in our previous comments.

There is a strong probability that this development would further aggravate a situation caused by the current development to the south (Nex Generation) of the projected project. It states that 80% of its surfaces are impervious. Water may continue to seep westward.

(Please see our previous submission below:

- The property owner at 20005 NE 13th Street experienced drainage problems and flooding onto this property, when the parcel of the current Lacamas Tech Center was initially leveled, a trench was dug in the western perimeter and wetlands were filled in. (To our knowledge the filling of the wetlands at that time was not properly managed by the City of Camas. The property owner complained and wrote to the City, with no avail.) However, water will continue to find its way and it has: In this case, consequential to activities on the neighboring commercial property it has created or enlarged a wetland at the property at 20005 NE 13th Street that is not yet on the original maps. This property is IMMEDIATELY adjacent to the proposed gas station, the new wetland is 17' from the east boundary of the proposed gas station and would very likely receive run-off.
- The current project would once again affect the drainage pattern to this property.

7. Environmental

4) **Describe special emergency services that might be required.**

- Added new storage of highly flammable batteries in a warehouse battery storage facility across the street from a gasoline fuel station is a HIGH RISK PROJECT, that the City of Camas may not be equipped to deal with in the case of an emergency. These adjacent uses are not compatible.
  - Police activity to deal with shoplifting, break-ins and robberies
  - Fire truck activity for fuel fires
  - Police activity to address unhoused people loitering and camping due to access to bathrooms and trash receptacles
  - Spill clean-up cannot be performed with 2 or 3 employees and a 4,000 sq. ft. convenience store. The employees will be pre-occupied tending to customers and

preventing shoplifting to care about performing a spill clean-up/over flow that is also dangerous to their health.

- Too few employees to monitor for spills/environmental hazards
- Spills caused by customers driving away with the nozzle still attached causing a large spill, which will need more manpower than 2 or 3 employees tending to other duties. (Costco has a dedicated employee tending their gas station [which is literally within walking distance])

b. Noise

1) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site)?

The revised SEPA fails to acknowledge the increase in noise pollution.

- In the section Transportation f) it states that fueling tank trucks will be onsite during hours of 7 pm to 7 am, resulting in an unacceptable noise burden to residences during the night.

Please note the following real scenarios that will occur daily, hourly:

- car wash: swooshing, blowing, loud noises
- customers: music from cars when doors are opened, and/or windows rolled down
- idling cars
- motor cycle and diesel truck engine noises
- starting of motor vehicles and motorcycles
- braking noise from motor vehicles
- horns if there is congestion, which is likely given how the entry/exit is designed
- tanker truck delivery process
- customers' loud voices
- this violates Section 9.32.050 Public disturbance noises. of the Camas Municipal Code,

- 4. The creation of frequent, repetitive or continuous sounds in connection with the starting, operation, repair, rebuilding or testing of any motor vehicle, motorcycle, off-road vehicle, or internal combustion engine so as to unreasonably disturb or interfere with the peace, comfort and repose of owners or possessors of neighboring or nearby real property, provided, however, that this subsection shall not apply to the operation of lawn mowers, garden tools, chain saws or other power equipment used for building repair or grounds maintenance between the hours of 7 a.m. and 10 p.m.

  2.The making of any loud or raucous sound within one thousand feet of any school, hospital, sanitarium, nursing or convalescent facility, which unreasonably interferes with the use of such facility, or with the peace, comfort or repose of persons therein.
  - Union High School is 1,839 feet from the proposed property
  - A chiropractic office is within 70 feet of the proposed property

Proposed measures to reduce or control noise impacts, if any:

- There are companies which prepare noise level reports. This report should be generated for a project with the equivalent scope.

8. Land and shoreline use

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

The revised SEPA fails to address how the proposal will affect current land uses.

It does not address how the developer will set aside funding for the owners of parcels within ¼ mile to pay for additional appraisals – see below.

The revised SEPA does not address the City of Camas's own Neighborhood Preservation Standards.

- Surrounded by quiet residential properties
- It will disturb and interfere with the peace, comfort and repose of owners or possessors of neighboring and nearby real property
- The externalities from this project will destabilize property values of all neighbors (more than 27 homes) which is a violation of Camas City code:
- Section 18.01.020 of the Camas Municipal code states

A.The purposes of this title are: to implement the comprehensive plan for the city; to encourage the most appropriate use of land; to conserve and stabilize the value of property; to aid in rendering of fire and police protection; to provide adequate open space for light and air; to lessen the congestion on streets; to give an orderly growth to the city; to prevent undue concentration of population; to improve the city's appearance; to facilitate adequate provisions for community utilities and facilities such as water, sewerage, and electrical distribution system, transportation, schools, parks, and other public requirements; and in general to promote public health, safety and general welfare.

B.Since the public health, safety and general welfare is superior to the interests and pecuniary gains of the individual, this title may limit the use of property and prevent its most profitable gain. If some reasonable use of property is allowed by this title and the effect is not confiscatory, the city is exercising a proper use of police power. (Ord. 2515 § 1 (Exh. A (part)), 2008: Ord. 2443 § 3 (Exh. A (part)), 2006)

- This next section shows how the land use of a gas station, car wash and convenience store next to residential properties violates the City of Camas' Neighborhood Preservation Ordinance:

  - **8.06.010 - General provisions.** This chapter shall be known as the "neighborhood preservation ordinance" of the city, may be cited as such, and will be referred to hereinafter as "this chapter." (Ord. 2193 § 1 (part), 1999)

8.06.020 - Purpose and scope.

A. The purpose of this chapter is to promote the health, safety and welfare of the citizens of Camas, Washington, and to protect neighborhoods against hazards, blighting, and deteriorating influences or conditions that have a negative impact on families; encourage social disorder and crime; and decrease area property values, by establishing minimum standards for the maintenance of all residential and nonresidential buildings and structures, and vacant and improved land.

B. This chapter shall apply to all buildings, structures and lands within the city regardless of the use, the date of construction, improvement or alteration.

C. This chapter shall be fairly, sensibly and reasonably applied to promote the maintenance of all existing buildings and land in the city. The intent is to ensure that individuals and families do not suffer undue hardship.

- In this section is also a definition of Public nuisance. Near residential land use, a gas station, car wash and convenience store fits the description of the a public nuisance. Please see below, as each item individually qualifies as a definition of a public nuisance, because they are separated by the word "or":

- "Public nuisance" means a thing, act, omission to act, occupation, or use of property which annoys, injures or endangers the safety, health, comfort, or repose of the public, offends public decency, is offensive to the senses, lawfully interferes with, obstructs, or renders dangerous any portion of the city, or in any way renders other persons insecure in life or use of property, or obstructs the free use of property so as to essentially interfere with the comfort and enjoyment of life and property.

- The "senses" above are sense of smell (vapors and diesel and gasoline exhaust fumes), soundnoise (engines starting, vacuums from car wash, car wash water spraying, spinning brushes, etc.), sight (lights and lighting and lack of dark sky after dark)

- The proposed Camas development will cause undue burden on the adjacent neighborhoods and the City will experience a strain to their 911 call system.

- **Per Camas Municipal code 9.20.020 - Public consumption.** Except as permitted by RCW

Chapter 66, no person shall open the package containing liquor or consume liquor in a public place within the limits of the city.

- This convenience store will make our neighborhoods and driveways targets for local loitering and consumption of items purchased. Trash is likely to be tossed into our neighborhood lawns, streets and Clark County public spaces.
  The proposed development will create additional cost for adjacent well-owning properties within ¼ mile of the gas station, when they try to sell their property:
- The FHA Single Family Housing Policy Handbook for Appraiser and Property Requirements for Title II Forward and Reverse Mortgages states …that properties within one quarter mile of a gas station will need to conduct an independent inspection of their wells ('for the appraisal').
- Has the developer made provisions to set aside funding for these homeowners within these distances?
- This requirement is an additional burden and expense to all the homes on NE 13th Street and in Morning Meadows and Katie's Hill neighborhoods that are on drinking water wells.
- https://www.hud.gov/sites/documents/SFH_POLI_APPR_PROP.PDF
- https://www.hud.gov/sites/dfiles/OCHCO/documents/4000.1hsgh-080923.pdf page 604

L) **Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any.**

- This project is incompatible in this location which consists of one-acre residences. It does not take into account that it surrounded by quiet residences and that this project would vault its collective problems onto them. This would be a complete "lose" situation for the pre-existing homes, and a "win" for the gasoline station. The project would gain from the appearance of the residential community and the residences would suffer from all the reasons no one wants to live near a gas station.

10. Aesthetics

a. What views in the immediate vicinity would be altered or obstructed?

- A 28' structure at a corner of an intersection would reduce sight distances. We already have everyone comment about the Great Wall of Camas when referring to how the City-approved set-back from the warehouse in the southeast corner of the intersection is too narrow, representing an eye-sore.
- Customers of convenience stores and gas stations will litter and leave trash on the adjacent side-walks, properties, undeveloped ditches and NE 13th Street and Friberg-Strunk Road.
- Will the City of Camas clean this, or because it is adjacent to Clark County, it will only be cleaned twice per year, never, or become the burden of the residents living in the homes surrounding the gas station?
- Our neighbors have been walking with trash bags for years collecting the trash littering this portion of Camas leading to our neighborhood. Camas has not been collecting the trash and we are concerned that the City will not send crews to collect roadside trash.
- Customers may decide to consume purchases from the convenience store (including but not limited to alcohol) in the nearby residential neighborhoods, causing disturbances and leaving trash behind.
- Will the developer help with Graffiti removal and replacement? This development could create foot traffic that never existed before that may target our fence.

- A monument sign at the corner would obstruct the view for drivers making a right turn. Building set-backs should not be deviated from for the same reason as not to violate Camas City Code:

- **18.15.080 - Signs prohibited.**
- The following signs are specifically prohibited in the city:

  B.Signs located in such a manner so that by location, color, size, shape, nature would tend to obstruct the view or be confused with official traffic signage.

11. Light and glare

What type of light or glare will the proposal produce? What time of day would it mainly occur?

- The revised SEPA does not address the time of day that light or glare would be emitted.
- During what hours would light be emitted from the proposed project? It does not address any light emitted from signage.

- Can it be assumed that there will be no lighted signs?
- Will the business go completely dark, just like the surrounding residences to preserve dark sky and avoid light and colored light pollution, typical of gas station canopy/signage lighting?

    - Camas Municipal code 18.21.060 G.:
    - Lighting. Site and building lighting shall be designed to minimize glare or objectionable effects to the adjacent properties. Residential neighborhoods are of particular concern. Site-lighting poles shall not exceed twenty feet in height and shall direct the light downward. Lighting sources viewed from above or below on adjacent property shall be shielded. Building lighting is to be concealed and indirect. Lighting in service areas is to be contained to conceal visibility of light sources from street and adjacent property. Site lighting is to be designed to provide uniform distribution, and the light levels shall be adequate for reasonable security and safety on the premises.
    - Monument sign would create light pollution outside of the perimeter of the parcel
    - LED bright lighting of the interior of the convenience store will project onto the concrete surfaces and reflect to neighboring properties
    - LED lighting from the gas station canopy will reflect off the concrete surfaces.
    - The area is steeped in darkness, except at the intersection. Dark sky benefits to wildlife and humans (improved sleep) have been widely documented.

Could light or glare from the finished project be a safety hazard or interfere with views?

The revised SEPA does not address and even denies the impact created by the proposed development.

- Each vehicle exiting the parcel, which will be hundreds (2,000+) per day, will shine their headlights at the two residential homes on the other side of NE 13th Street (20107 NE 14th Street and 20009 NE 14th Street). Especially during darkness which is in the early morning and late afternoons for 50% of the year, this will create a strobe-light effect, shining light into these properties. (The existing trees located on these properties do not adequately shield this light created by the development's customers, nor should they have to, because it is the responsibility of the development to shield the neighboring properties from light.
- Extra tall walls/fence needs to be erected to shield against any light projected in the north direction by cars. Keep in mind that if there is a curb an exiting vehicle may project very high up, before entering the roadway

- Each vehicle entering the parcel making a left turn will shine their headlights at the residential property at 20005 NE 13th Circle. This also needs to be shielded or remedied by a tall wall
- This project would significantly change the night sky. There are many mammals in the wooded residential lots and the wetland at 20009 NE 14th Street, which is within 70 feet of the proposed development (including deer, which use the proposed development to move to/from the Camas Meadows Golf course.)

Proposed measures to reduce or control light and glare impacts, if any:

- The Camas code referenced above needs to be enforced such that residential properties and animal habitat are completely shielded from the light used and emanating from the site.

12. Recreation

The revised SEPA is incomplete:

What designated and informal recreational opportunities are in the immediate vicinity?

- Developer did not mention that Union High School with enrollment over 2,000 students and all their sports facilities, including walking paths are along Friberg-Strunk Road. It is just 1,839 feet away.
- They only mention a golf course and a sports complex further away

Would the proposed project displace any existing recreational uses? If so, describe.

- Currently the sidewalks are used by Union High School daily for a class called "Fit for Life walking"
- Cross-country teams from the High School run along this road
- Due to exposure to vapors and fumes during exercise, and the attractive nuisance of a convenience store, these school and recreational activities may have to be abandoned by the students and the school district

14. Transportation

Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle, or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

We have contacted the City of Camas' engineering department, regarding questions arising from reading the pre-application meeting notes dated August 8. 2022. There are access spacing standards that should not be deviated from when they would make car travel unsafe. A permitted left turn into the parcel short of the existing 660 ft minimum spacing standard would create a high risk left turn.

We have already experienced another deviation that was granted for the Oak Tree Station, for which drivers are often caught off-guard for having to slow down for vehicles entering via a right turn to the food truck driveway on Friberg-Strunk Road.

As Union High school begins session next week, it will be interesting to see if this deviation will result in any vehicular accidents, because it does not allow drivers enough time to react to a car slowing down ahead of them.

Concerns:

- Will NE 13th Street receive a left turn median turning strip/lane into the gas station?
- Will the speed limit be lowered to 25 mph?
- Will the traffic coming north on Goodwin be warned with a flashing sign about "slow traffic ahead" whenever a car is stopped in the west-bound lane awaiting it's turn to turn into the driveway?

These are the unanswered questions:

- On page 6, "Streets: 4.c. ...The applicant will be required to dedicate ... and a center left turn median." Does the applicant have to widen the road to accommodate this median? Will a left turn allowed from NE 13th Street into the proposed development? If so, will there be a median lane, essentially widening that portion from the existing 3 lanes (1-east, 1-west, 1-right turn) to 4 lanes with the center median lane? How long would that median lane be and would it extend into the Clark County portion of the road, even to the west of the parcel?

- And, will cars exiting the proposed development be allowed to make a left turn? If not, will a concrete traffic curb be installed to prevent this?

- Will funding be set aside for repair of our fence, if the gas station access/egress situation caused damage to our fence through a vehicular accident?

Due to the poor sight distance created by the uphill and around the corner design of Goodwin Road, one would think cars would travel at the recommended 35 mph.

However, most don't and as a remedy would you consider lowering the speed limit to 25 mph to accommodate this development to prevent rear-end collisions resulting from left-turn being allowed from the proposed development?

- also on page 6, "Streets: 5.b.i. Meeting the required offset from the back of sidewalk would further reduce the developable area. ii. A deviation request from the minimum 50-foot setback requirement should be submitted. A deviation request from this standard would be supported by the city engineer."
- The developer is asking the City to disregard the setback “standards” and allow them to place more parking spaces closer to the road.

Will the City of Camas uphold the setback standard?

I request that the City of Camas reject granting any deviations.

- also on page 6, "Streets:6. "Per CDSM Table 3, Access Spacing Standards on a roadway classified as an arterial are 660-feet minimum ... c. A deviation request from meeting the minimum access spacing required should be submitted."

- The developer is asking for a dangerous shortening of the City access standard. This will result in rear-end collisions. West-bound collisions will almost exclusively be suffered by City of Camas residents as the come up the hill on Goodwin from the homes below. I predict that east-bound collisions will be suffered mostly by high school students on their way to school.

The City should protect its citizens and reject any request for a deviations for this high-risk development.

Outlook

Propose Gas Station 13th and Freiburg/Strunk

From Mike Ogden <mogden@westernconstruction.com>
Date Thu 8/29/2024 12:50 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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I would recommend to the City to NOT ALLOW a deviation from their standards in access spacing below 660 ft. A permitted left turn would cause rear-end collisions as vehicles travel up the hill and around the poorly visible intersection with Goodwin Rd. would not expect a car to be stopped to make a left turn.

Mike Ogden
Project Manager
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Cell: 360.798.4713

Sent from my iPhone
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Outlook

Proposed Project on 13th Street in Camas (Clark County Tax Parcel 176148000, SPRV23-06)

From Kristin Price <19813mkp@gmail.com>
Date Thu 8/29/2024 1:55 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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To: Community Development Office, City of Camas
(communitydevelopment@cityofcamas.us)
Regarding: Proposed Project on 13th Street in Camas (Clark County Tax Parcel 176148000, SPRV23-06)
Date: August 28, 2024
Respectfully submitted,
M. Kristin Price (19813 NE 13th Street, Camas WA.)

On behalf of families residing in the vicinity of the proposed convenience store/gas station, request is made for an extension of the time allotted for review of revised SEP report and additional documents. Residents in the nearby neighborhoods have only recently learned of the the revised SEP report. The City of Camas website indicates recent posting of documents (8/22/2024). Project development has taken place without sufficient planning and consideration for the neighborhood, the community, students & faculty of Union High School. While the proposed project cites adjacent properties in its description, the revised SEP application fails to address environmental impacts for multiple neighborhoods to the north and west of the proposed project site.

To facilitate further review, additional materials are needed: a detailed schematic of the proposed facility, with any modifications; and a schematic with detail about anticipated roadway/sidewalk modifications both on-site and adjacent to the facility. A full copy of the referenced Traffic Analysis Report should be available for review, with updates to reflect current traffic flow. It appears that additional studies may be required before reasonable consideration of this project.

Comment: The proposed project requires an updated study of traffic impact. The current study does not accurately represent the volume of traffic in this area, with recent increases due to residential areas to the east, industrial development at the intersection, new high-rise housing on 1st Street, and newly constructed commercial and office buildings. There are significant safety concerns related to the positioning of the project at a busy intersection. The project design does not provide safe entry and egress from the facility site. The proposed facility proposes entry across a stream of traffic on 13th Street - impeding traffic flow and increasing the risk of crashes near the location. Modifications are needed in the project design in terms of crosswalk design and

addressing pedestrian safety, including safety for students who walk or bicycle to school at Union High School. The proposed location would interfere with safe and efficient school bus transport for an extended period of time each afternoon. An updated traffic study detailing impact at peak hours and impact of traffic associated with the industrial facility under construction on the east side of the intersection should be requisite to approval of the proposed project.

1.3. Water runoff (including stormwater):
1) Describe the source of runoff (including storm water) and method of collection and disposal.
The main source of runoff is from stormwater. There will be runoff from impervious roof area, drive aisles, parking areas, and landscaped areas. Onsite catch basins will connect to a pipe network that leads to an underground detention facility that will discharge to an existing roadside ditch. Runoff around gas pumps will go through an oil/water separator before being discharged to the storm sewer.
2) Could waste materials enter ground or surface waters? …. Yes, if waste materials were somehow released or dumped into surface runoff flows, substances associated with the source material could enter ground or other surface waters. There is no proposal to release waste material to the ground or to surface waters.

Comment: The SEP proposal does not adequately address the potential for discharge impacting the Lacamas Lake watershed.

7.*Environmental Health Proposed measures to reduce or control environmental health hazards.*
Air. *a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.*
Construction equipment emissions and dust on the short term. Long-term emissions will be produced by automobile traffic and normal commercial/retail uses as well as possible vapor from the gas tanks.

Comment: The SEP proposal does not include an analysis of the environment impact related to air pollution in the nearby neighborhood areas or approximated quantities of pollutants. How would climate variations (temperature, wind) affect these patterns of pollution?

7. *Noise*

Comment: The revised SEP application indicates a plan to scheduling fueling truck visits between 7p - 7a. This plan has implications for adjacent neighborhoods in terms of noise and disruption during these hours. A clearer plan is needed in terms of operating hours for this location, minimizing impacts for families residing near the location.

12. *Recreation. What designated and informal recreational opportunities are in the immediate vicinity?*
Camas Meadows Golf Club is adjacent to the east. The Harmony Sports Complex is approximately ½ mile to the west.

Comment: The application does not consider current recreational uses of the area, including bicycle paths and walking paths on Friberg-Strunk Road. The proposed facility will interfere with safe passage for bicyclists and pedestrians. The proposal does not identify sports events at Union High School in terms of planning. The facility will result in traffic disruption when events are scheduled at Union High School.

14d. *Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).*
Frontage improvements are proposed to bring NE 13th Street up to half-width roadway standards. NW Friberg-Strunk Street is currently built out to standard.

Comment: Further detail is needed about anticipated improvements, including modifications to roadway and construction of sidewalks to permit safe passage for pedestrians in an increasingly busy area.

h. *Has any part of the site been classified as a critical area by the city or county? If so, specify.*

There is one Oregon white oak on site

Comment: Mitigation has been proposed. However, the area identified for mitigation is Salmon Creek - a geographic area more than 10 miles from the proposed site. Further detail is needed to establish mitigation in the area adjacent to the proposed site, e.g. creation of a buffer area with plantings to the west of the site and detail about other proposed plantings on site or in the immediate area.

Proposed measures to reduce or control transportation impacts, if any:
The applicant will pay transportation impact fees. A west bound left turn lane on NE 13th Street is proposed that will improve safety at the site access

Comment: The revised SEP proposal fails to address the impact to traffic on 13th Street, where the proposed entry to the site is near the intersection, west of the traffic signal at the intersection. The site plan requires modification to establish separate entry and exits to the proposed location. The proposal needs to assure that driveway access will be maintained for residents living along 13th street and in adjacent neighborhoods.

15. *Public Services.*
The revised SEP application confirms that additional public services (for example fire protection, police protection)

'Yes. The completion of this development will increase the need for public services in the area.'

Comment: The SEP proposal does not address increased needs for public services. - including law enforcement and fire department services.

Outlook

SEPA23-12 Comments

From joanier@comcast.net <joanier@comcast.net>
Date Thu 8/29/2024 2:52 PM
To Community Development Email <communitydevelopment@cityofcamas.us>
Cc rickdr@comcast.net <rickdr@comcast.net>; JOAN RICKARD <joanier@comcast.net>

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August 29, 2024

Robert Maul,
City Of Camas SEPA Official
Community Development Department
616 NE 4th Ave.
Camas, WA 68607

Re: SEPA23-12 13th Street Gas Station

Dear Robert Maul,

We are responding to the City of Camas August 15, 2024, letter concerning SEPA23-12 Determination of Non-Significance. We strongly disagree with the Camas Community Development Department recommendation of the **SEPA23-12 13th Street Gas Station Determination of Non-Significance**. We believe that this project will have a negative effect on the environment and our neighborhood. Our property is less than 200' from the proposed gas station.

If this proposed project goes forward the air quality will be affected by the gas vapors escaping from the underground storage tanks when they are being filled and vapor leaks from the underground storage tanks venting systems, and gas vapor leaks from the pumps when customers fill their cars gas tank.

The water quality will be affected by this project. The aquifer and wetlands need to be protected. Several homes on both sides of 13th St. rely on private household drinking water wells. Some of these wells are less than 500' from the proposed gas storage tanks. The FHA single Housing Policy Handbook for Appraisers and Property Requirements states that if you have a drinking water well that is within ¼ mile of a gas station, when you sell your home, you will need to obtain an independent inspection of your well as part of the appraisal process.

From the SEPA Checklist, Ground Water and Water Runoff section, it states that "Stormwater from pollution generating surfaces will be treated prior to being routed to an existing roadside ditch. Runo

around gas pumps will go through an oil/water separator before being discharged to the storm sewer." How well will the catch basin filter system be able to filter out all the everyday surface runoff of gas, oil spills, car wash detergent (Hydrofluoric acid, waxes/petroleum products), and grimy wastewater before it is discharged to the existing roadside ditch that flows into Lacamas Creek?

If this Gas Station / Car Wash Convenience Store project is approved, will they be allowed to operate 24 hours a day? Will gas and other deliveries be allowed in the middle of the night? Are there quiet hours that the gas station / car wash will need to adhere to? The gas station / car wash will create loud noises from many sources such as the car wash and vacuums, customers' loud music and voices, idling cars, motorcycles, trucks, horns, the backup warning beeps from the delivery trucks and the fuel tanker trucks. The surrounding area is a quiet residential neighborhood. The gas station / car wash will disturb and interfere with the peace and quiet of those living in the neighborhood.

Light pollution can negatively affect many parts of our environment, including migratory birds, pollinators, plants, animals, and people. As stated in the SEPA Checklist for this proposed gas station, this site is part of the Pacific Flyway for migratory waterfowl. This project would significantly change the night sky. The lighting from the monument sign would create light pollution outside of the perimeter of the project. The LED bright lighting of the interior of the convenience store will project onto the concrete surfaces and reflect to neighboring properties and the LED lighting from the gas pump overhangs will reflect off the concrete surfaces. Vehicles entering and exiting the gas station would shine their headlights into neighboring homes, this will especially be worse in winter with the prolonged daytime darkness.

The proposed gas station will have only one entrance / exit fronting 13th St. and that entrance is only a couple hundred feet from the intersection of 13th St and Friberg-Strunk. The 13th St. /Strunk-Friberg intersection is already dangerous with school buses and scores of inexperienced high school drivers passing though it twice a day during the school year. Large trucks entering and exiting the warehouse east of the proposed gas station adds even more traffic and congestion at that intersection and then on top of all that adding another 2200 vehicle trips per day to the 13th St. gas station would just compound the problem.

The Traffic Analysis Report traffic study submitted with the SEPA Checklist was done in September 2023 and states that Union High was not in session at the time of the traffic study. Since September 2023 Oak Tree Station, Lacamas Tech Center and the Panantttoni Industrial Building Warehouse have opened on Friberg-Strunk St. and they all contribute to increased traffic and congestion in the area that was not there at the time when the traffic study was done. Also, there are a few other developments that are in the works nearby that will affect the traffic on Friberg-Strunk and 13th St. in the near future. The Traffic Study is outdated and should be redone when school is in session.

While the Traffic Analysis says it compensated for Union High not being in session by using the number of students enrolled, I do not think they took in to consideration that most of the Union High School boundary is to the north of the school so a majority of the students driving to school and the school busses use 13th St. to get to and from the school. While the capacity analysis of the Traffic Report says there would be no impact at the Friberg-Strunk and 13th St. intersection, it did state that the 192nd Ave. and 13th St. intersection would fail during peak PM time by 2026. That intersection is already failing during afternoon peak time, it can take 6 - 10 minutes to drive ½ mile westbound on 13th St. to 192nd. And in the morning eastbound traffic on 13th St. can be almost as bad. During peak morning and evening times cars trying to enter the Gas Station could block traffic. For the entrance/exit of the gas station to be safer for both vehicles and pedestrians, 13th St should be

widened to add a left turn lane. Sidewalks should be installed on both sides of 13th St. from Friberg-Strunk down to 192nd Ave.

In summary we think this project is incompatible with our neighborhood community. The proposed gas station is surrounded by quiet residences and would project its collective problems onto the neighborhood. Due to the environmental concerns and the traffic issues this is not the best location for a gas station, car wash and convenience store. A gas station is not needed at this location. Within 3 miles there are at least 6 gas stations / convenience stores and car washes, most are open 24 hours.

We ask you to carefully consider the environmental, traffic safety, and quality of life issues for the neighborhood and not approve this project. Thank you.

Sincerely,

Richard and Joan Rickard

Outlook

Comments for SEPA for 13th St - Gas Station project

From Randy Nosrati <randynos1@gmail.com>
Date Thu 8/29/2024 1:00 PM
To Community Development Email <communitydevelopment@cityofcamas.us>

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Dear Sir / Madam,

Please see my comments / concerns below regarding the Gas Station project at 13th St.

Noise pollution: For context: We have already experienced noise outside of the hours permitted per the Camas Municipal code from the new high cube warehouse. They have trucks arrive and/or depart at night, which try to hook to or uncouple from their landing dock and create loud noises that travel to our residences. In addition, they are planning to install a heavy duty gate. It's operation may create additional noise at night.

A gasoline station, convenience store and car wash, regardless of their zoning, when located in the city limits, have to obey the City of Camas' noise ordinance. As a residential community we will not tolerate any discretion and will pursue all regulatory and when indicated legal means to bring any occupants of adjacent parcels into compliance. We do not believe that the noise generated by the proposed development, its suppliers and customers will conform with the City's intended municipal noise code. This could result in massive complaints and legal challenges for the City of Camas.

Thank you for your consideration,

Randy Nosrati
(360) 954-6757

Outlook

Comments on SEPA for Gas Station at 13th/ Friberg

From Russell Wegner <russwegner@mac.com>
Date Thu 8/29/2024 3:10 PM
To Community Development Email <communitydevelopment@cityofcamas.us>
Cc Karin Nosrati, DC <bforback@gmail.com>

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I stand against this project and the SEPA determination for some basic reasons and disagree with the SEPA for the following reasons:

1. Environmental- Wetlands are too close. Well water for residents is too close. Lacamas Prairie and Lacamas Creek and Lake is too close and contamination would flow directly downhill to the precious areas.
Environmental insurance should be part of this permit and a certification for liability insurance should name additional insured as City of Camas/ Clark County

2. Traffic Study in adequate- Exit/ Entrance is poorly planned in terms of safety, entrance/ exit plan and high school proximity.

3. Re: GMA, gas station is not in line with the goals for the community. The clear lack of support from neighbors and community is a testament to this.

4. The credentials of author of SEPA are questionable and a second study should be done to confirm accuracy. Wetland measurements for example were not verified and the timing of study questionable.The environmental impacts of gas station and risks not truly accounted for. A second study by professional with gas station development experience should be done.

Russell Wegner
19910 NE 16th St.
Camas, WA 98607

360-314-4500 Land
415-716-4373 mobile

russwegner@mac.com

STAFF REPORT & DECISION

13th Street Gas Station

File Number SPRV23-06 (CONSOLIDATED FILES: ARCH23-07, CA23-08, DR23-09, SEPA23-12)

Type II

Decision Date: September 16, 2024

PROPOSAL The proposal includes the construction of an 8-pump gas station, a 4,100 square-foot convenience store, and a drive-thru car wash, located at 20101 NE 13th Street, in the BP - Business Park Zone.

LOCATION The property is located on the southwesterly corner of the intersection at NE 13th Street and NW Friberg-Strunk Street. The parcel number is 176148000, situated in the NW 1/4 of Section 29, Township 2 North, Range 3 East of the Willamette Meridian, Clark County.

APPLICANT	PLS Engineering, Travis Johnson 604 W. Evergreen Blvd. Vancouver, WA 98660 (360) 944-6519	**OWNER**	Pak USA Camas, LLC 3993 NW Currawong Court Camas, WA 98607 (512) 779-4999

APPLICABLE LAW: The application was submitted on November 9, 2023, and the applicable codes are those codes that were in effect at the date of application. Camas Municipal Code (CMC) Title 17 Land Development and Title 18, specifically (but not limited to): Chapter 18.11 - Parking, Chapter 18.13 - Landscaping, Chapter 18.18 - Site Plan Review, Chapter 18.19 Design Review, Chapter 18.37 Business Park, and Chapter 18.55 Administrative Procedures.

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SUMMARY

The applicant is currently seeking approval to construct an 8-pump gas station, a 4,100 square-foot convenience, and a drive-thru car wash on an approximately 0.97-acre parcel currently developed with a single-family residence, situated in the BP – Business Park Zone. According to CMC 18.07.030 – Table 1,

the proposed uses are allowed within the BP Zone, subject to the necessary approvals. The convenience store is proposed to have small general retail sales including food items, cold beverages, and potentially some on-site prepared foods.

The site is located at 20101 NE 13th Street and is situated on the southwesterly corner of the intersection at NE 13th Street and NW Friberg-Strunk Street. Parcels to the north across NE 13th Street, as well as directly west, are developed with single-family residential uses under Clark County jurisdiction. The property south of the project site is developed with a business park (Lacamas Tech Business Park). East of the project site is a business park development that is currently under construction.

The subject property is relatively flat with vegetation consisting primarily of grass with scattered trees and is surrounded by properties in Clark County jurisdiction to the North and West zoned Single-Family Residential, to the South and East by properties located within the City of Camas jurisdiction with a BP – Business Park Zone designation.

The proposed project requires permits and approvals from the city to include archeological review, critical area review, design review, SEPA review, site plan review, engineering site construction approvals and building permits.

FINDINGS

Title 16 Environment

STATE ENVIRONMENTAL POLICY ACT (SEPA23-12)	CMC CHAPTER 16.07

A SEPA checklist was submitted, and a Determination of Non-Significance (DNS) was issued February 22, 2024. The comment period closed on March 7, 2024. The city received SEPA comments from the Department of Ecology related to hazardous waste and toxics reduction during demolition of the existing structure as well as comments related to the wetland delineation conducted for the project site. Staff also received comments from the Southwest Clean Air Agency (SWCAA) with regards to demolition of existing structures and construction dust, and comments from Washington Department of Fish & Wildlife (WDFW) related to mitigation measures for the removal of one Oregon white oak that is currently on the project site. During the initial SEPA comment period, staff received 41 comments from residents, both in support of and opposition to the proposed project. The comments in opposition were related to potential increases traffic, air quality, water quality, and pedestrian safety. Because of the comments received during the initial comment period, the applicant placed the project on hold to reevaluate some of the technical reports that were submitted with the initial application.

A revised SEPA checklist and supporting documentation were submitted July 15, 2024. Upon review and acceptance, the revised SEPA checklist was redistributed and a Determination of Non-Significance (DNS) was issued August 15, 2024. The comment period closed on August 29, 2024. In addition to the comments received from the previous SEPA distribution (March 2024), the city received a total of 9 comments from residents related to potential increases in traffic, noise, and environmental impacts. One agency comment from Washington Department of Fish and Wildlife (WDFW) was received related to the applicant's Oak Bank Use Plan. State agencies provide industry standards for different types of development. The applicant will be required to comply with all State Agency requirements for the proposed gas station, car wash, and convenience store.

> **FINDING:** Staff finds the comments and recommendations provided by the Department of Ecology, SWCAA, and WDFW should be complied with and conditioned as such.

ARCHAEOLOGICAL RESOURCE PRESERVATION (ARCH23-07) CMC CHAPTER 16.31

An Archaeological Predetermination Survey was performed by Archaeological Services LLC on August 17, 2023, for the proposed project. Based on the survey report, no further study was necessary. A copy of the report was forwarded to Tribes and the Department of Archaeological and Historic Preservation (DAHP). The report and findings are not subject to the open public records act and as such, the city cannot disclose the results.

> **FINDING:** Staff finds a condition of approval is warranted that if potential artifacts are discovered during construction, work must immediately cease, and both the Department of Archaeological and Historic Preservation and the City must be notified.

CRITICAL AREA (CA23-08) CMC CHAPTER 16.51

WDFW has mapped the site as potentially having oak woodlands and being within a cave rich area. No wetlands were mapped onsite, however potential wetlands are mapped by Clark County GIS on the property to the south. A Critical Areas Report (dated October 2, 2023) has been prepared by Ecological Land Services (ELS) for the project site and concludes that there is one Oregon White Oak on the southerly portion of the site, but no oak woodlands or caves as mapped by WDFW. The potential wetland to the south is located within the footprint of a proposed building and that application has received permits to fill the wetland.

A revised Critical Areas Report (CAR) prepared by ELS and dated May 2, 2024, was submitted to the City of Camas along with other supporting documents that address comments received during the 1st Notice of Application. The revised CAR includes findings from an April 2024 site visit that include a wetland to the southwest of the site with a buffer that extends on to the subject parcel however; no wetlands were identified onsite.

Along with a revised CAR, ELS issued a revised Oak Mitigation Plan (dated May 17, 2024) as well as a Wetland Buffer Mitigation Plan (dated May 16, 2024). The oak tree mitigation plan proposes to purchase credits with the Terrace Oak Bank. The wetland buffer mitigation plan proposes to purchase credits with the Terrace Mitigation Bank

During the comment period for the revised SEPA checklist, staff received comments from WDFW related to the removal and mitigation of the Oregon white oak found on the project site. WDFW noted the recently published guidance document that describes the significance of Oregon white oaks and identifies best management practices for avoiding, minimizing, and mitigating impacts to this habitat. The actions identified in the guidance document can be implemented under the existing critical areas ordinance (CMC 16.51.170 – Mitigation Sequencing) for evaluating projects that involve Oregon white oak.

WDFW wants to ensure that the project proponent explored design alternatives that avoid and minimize impacts to the Oregon white oak, as required by CMC 16.51.170. If impacts to the Oregon white oak cannot be avoided and it is subsequently removed for this project, WDFW recommends updating the mitigation to align with their newly published guidance document. WDFW's current Oregon white oak mitigation guidance indicates that removal of a high-functioning white oak tree with a 52-inch DBH trunk and a 0.08-acre tree canopy should require both:

- Physical mitigation in the form of 250 Oregon white oak saplings planted.
- Temporal mitigation in the form of 0.80 acres of Oregon white oak habitat enhanced.

WDFW noted that the proposed mitigation plan provides for only 0.238 acres of oak habitat to be planted/enhanced (via mitigation bank credit). According to the applicant's revised Oak Bank Use Plan,

this value is based on a 6:1 ratio with a 0.5 "risk reduction multiplier", which brings the mitigation ratio to only 3:1. The agency indicates the proposed efforts would fall short of accomplishing no net loss of ecological function. WDFW recommends any trees felled during construction be retained on site or moved to a nearby woodland habitat as dead snags and logs provide valuable habitat to cavity-nesting birds and mammals, which is why WDFW's PHS List identifies snags and logs as a type of priority habitat.

FINDING: Staff finds that the applicant should comply with the comments received by WDFW and conditions of approval have been added as such.

Title 18 Zoning

SITE PLAN REVIEW (SPRV23-06) CMC CHAPTER 18.18

CMC Section 18.18.060 Criteria of approval.

A. Compatibility with the city's comprehensive plan;

The subject property is designated Industrial in the Camas 2035 Comprehensive Plan, which includes the BP – Business Park zone designation. The proposed convenience store, gas station, and drive-thru car wash proposal is consistent with the following Comprehensive Plan policies:

- Land Use Policy LU-1.3: Maintain compatible use and design within the surrounding built and natural environments when considering new development or redevelopments.
- Land Use Policy LU-1.5: Where compatible with surrounding uses, encourage redevelopment or infill development to support the efficient use of urban land.
- Employment Land Use Goal LU-2: Create a diversified economy and serve Camas' residents and tourists by providing sufficient land throughout the City to support a variety of business types and employment opportunities.
- Employment Land Use Policy LU-2.1: Attract and encourage a balance of new commercial, light industrial, and knowledge-based business, medical, and high-tech uses, and the expansion of existing businesses to provide regional and local employment.
- Employment Land Use Policy LU-2.5: Ensure industrial development and other employment lands are compatible with adjacent neighborhoods through development and landscaping regulations and design review.
- Economic Development Policy ED-1.8: Ensure that development standards are balanced in order to promote high-quality building and site design and encourage businesses to operate in an environmentally responsible manner.

FINDING: The proposed project provides local employment and compatibility in site design and architecture with the surrounding area. As such, staff finds that the proposed project is compatible with and complements the Comprehensive Plan.

B. Compliance with all applicable design and development regulations;

The applicant provided a project narrative, site plan, utility plan, grading plan, landscape plan, and building elevations that are adequate for Site Plan and Design Review.

Density and Dimensions

Per CMC 18.09.030 Table 1, the Business Park (BP) zone is unrestricted with density and building height but requires a minimum lot area of half and acre and a maximum lot coverage of 50%. The applicable development setback standards in the BP zone are as follows: 1) minimum lot width and depth are 100-feet, 2) minimum front and side yard is 15-feet and 3) minimum rear yard is 50-feet. As proposed, staff finds the applicant complies with the density and dimensional standards of the BP zone.

Parking

New and expanded commercial uses must provide adequate off-street parking pursuant to CMC Chapter 18.11.130 *Standards* and per CMC Table 18.11-1 as follows:

- A "*gas station with mini market*" use requires one parking space per nozzle, plus 1 space per 250 square-feet of gross floor area. Based on the proposed 4,100 square-foot convenience store and 8 gas pumps, 17 parking stalls are required plus 8 spaces at the gas pumps.
- A "*car wash*" use requires 1 space per 2 employees.

As such, a total of 20 parking stalls are required in the parking lot area and 20 have been provided for plus 8 spaces at the pumps. Of the 20 standard parking spaces provided, 2 will have electric vehicle charging infrastructure and the time of development and 2 will be designated as "future electric vehicle parking spaces". The proposed project is in compliance with the required off-street parking space requirements.

Per Camas Design Standards Manual (CDSM), Table 1 Guidelines for Geometry of Private Roadway, Note 2.d Ingress aisles setback from back of sidewalk: collectors minimum 40-feet, arterials minimum 50-feet. NE 13th Street is a federally functional classified as a minor arterial within the city limits of Camas. The preliminary site plans show that the ingress parking spaces on the west side of the proposed development meet the minimum 50-foot setback requirement. The parking spaces along the front of the mini-market also meet the minimum 50-foot setback requirement as they are located over 50-feet from the ingress aisle.

Landscaping

The proposal must comply with the applicable landscaping standards in CMC Chapter 18.13 *Landscaping* in addition to the landscaping standards in CMC Chapter 18.37 *Business Park*. The applicant has focused the planting areas immediately adjacent to the building, at the site's perimeter, within the parking areas. The proposed plant materials indicated on the preliminary landscape plan include a mix of low-maintenance ornamental trees and shrubs. The proposed landscaping will provide a softening to the building, respond to the building architecture, and provide screening of the parking lot while still allowing tenant and patron security and safety. The proposed landscape plan meets the landscaping, screening, and buffering requirements for the parking area, provides for year-round color and texture, and will provide the site with a cohesive design with trees and shrubs that are adapted to the climate of the area and match the surrounding environs.

[Business Park landscape standards]:
Design of business park facilities should be a "campus-style" with landscape buffers. Per CMC 18.37.040.A, the entire street frontage shall receive landscaping of trees, shrubs, and groundcover plants within the landscape buffer. As proposed, the preliminary landscape plan indicates that the street frontage has been provided with this combination of landscaping and is in compliance with this requirement.

[Landscape buffers]:
The preliminary landscape plan shows a 10-foot wide L3 landscape buffer is being provided along the westerly and easterly property lines, and a 5'L2 landscape buffer is provided along the northerly and southerly property lines. The proposed landscape buffers are in compliance with the requirements of CMC 18.13.055 – Table 1.

[Parking lot landscaping]:
The purpose of landscaping within parking areas is to not only minimize the visual impact of paved areas but also provide shade and relief per CMC 18.13.060.B. As noted in CMC 18.13.060.C, parking lots shall

include a minimum ratio of one tree per six parking spaces. The proposed landscape plan shows a variety of trees to be planted throughout the parking areas, such that this requirement can be met. The parking lot planter islands are required to comply with the minimum 8'x 8' planter area requirement and the project will be conditioned as such prior to engineering plan approval. Wheel stops are required at all parking spaces and adjacent to planter areas to protect landscaping from car overhangs per CMC 18.13.060.F. Additionally, wheel stops will be required adjacent to sidewalks to allow for a clear pedestrian pathway and to protect pedestrians from car overhangs and will be conditioned as such prior to engineering plan approval.

[Tree Survey/Tree Density]:
Per CMC 18.13.051(A) Table 1- Required Tree Density, a minimum of 20 tree units (TUs) per net acre is required to be incorporated into the overall landscape plan. The applicant has indicated that the subject site requires a total of 19 tree units where a total of 33 tree units have been provided. The proposed project exceeds the requirement for tree density.

Staff recommends a condition of approval that prior to engineering plan approval, the applicant submit a final landscape plan consistent with the landscaping standards in CMC Chapter 18.13 and CMC Section 18.37.040. Plants proposed for the site are required to be listed on the city's approved Landscape list per the Camas Design Manual planting specifications and landscape notes. For plants not on the approved list, a characteristic card should be submitted for review and approval. Irrigation and landscaping improvements should be installed or bonded prior to final acceptance.

Signage
CMC 18.15.060.A.2 states *"If plans submitted for Design Review include construction plans in sufficient detail to determine compliance with the provisions of this chapter, then issuance of such design review may constitute approval of the placement of sign or signs (other structural/mechanical permits may be required)."* Detailed construction plans for signs were not provided and therefore will require a separate review and approval prior to the issuance of a building permit, if proposed.

> **FINDING:** As identified in this staff report, the applicant's narrative, on the submitted preliminary plans and as conditioned, staff concurs that this project can or will comply with all applicable design and development standards of the code.

C. Availability and accessibility of adequate public services such as roads, sanitary and storm sewer, and water to serve the site at the time development is to occur, unless otherwise provided for by the applicable regulations;

Roads:
The proposed project is to meet the requirements of CMC 17.19.040.B Streets.

[Public Roads]: The proposed project is bordered on the east side by NW Friberg-Strunk Street, a fully improved 3-lane arterial with bike lanes, curbs, sidewalks, and planter strips. Currently the frontage along NE 13th Street, a 2-lane unimproved federally functional minor arterial, is predominantly without bike lanes, curbs, sidewalks, or planter strips on either side of the road. Existing improvements on NE 13th Street are limited to the intersection improvements for the traffic signal upgrade that was completed with the NW Friberg-Strunk Street Road Improvement project in 2015.

Per CMC 17.19.040.B.1, half-width street improvements are required from the centerline of the existing right-of-way and are to be constructed in accordance with the minimum full-depth structural street section per the CDSM, Street Detail ST5 3 Lane Collector/Arterial (74' ROW).

Per CMC 17.19.040.B Table 17.19.040-2 – Minimum Public Street Standards C. 3 Lane Collector/Arterial the minimum requirements are as follows:

- 74-foot right-of-way, 46-feet of paved street width to include 12-foot center median or left-turn lane, bike lanes, 6-foot detached sidewalks, 5.5 & 7.5-foot planter strips, no parking on both sides, and street lighting.
- Curb radii, at drive access locations, are to be a minimum of 35-foot curb radius.
- ADA accessible curb ramps on both sides of the drive access location; and
- Off-street parking setbacks, at the ingress aisles, are to be 50-feet from back of sidewalk.

The preliminary site plans, submitted in December 2023, did not meet the minimum requirements as noted in CMC 17.19.040.B Table 2 nor in the CDSM, Section III Design Standards, Table 2. The preliminary site plans include the existing westbound lane (11.5'), the existing eastbound lane (12'), the existing bike lane (5'), the dedicated right-turn lane (12'), a 6-foot attached sidewalk, and a 6-foot L2 landscape buffer on the east side of the drive access. CDSM Table 1, Note 2.c requires a minimum drive aisle width of 24-feet to allow for 2-way vehicular movements. The drive access is shown to be 60-foot wide, which exceeds the 24-foot drive access width. The west side of the drive access is shown with a 6-foot landscape strip, 6-foot detached sidewalk, and a 6-foot L2 landscape buffer. Additionally, the street sections called out on the preliminary plans show minimal areas of the required full-depth road section with most of the road improvements as a grind and inlay. The frontage improvements as shown on the preliminary plans do not meet the minimum required road improvements as noted in CMC 17.19.040.B.

Staff recommends a condition of approval that prior to engineering plan approval the applicant is to submit site plans with the following revisions:

- Maintain, at a minimum, the existing westbound thru-lane width.
- Provide a dedicated left turn lane onto the site.
- Maintain the eastbound thru-lane and eastbound bike lane.
- Maintain the dedicated right-turn lane onto NW Friberg-Strunk Street.
- The future sidewalk along the frontage is to be a detached sidewalk with planter strip and curb & gutter from the end of the existing curb return and extended the full length of the future frontage to the west end of Parcel no. 176148000.
- The drive access width is to be reduced to a maximum width of 40-feet for personal motorist access, with mountable curb and a concrete island on either side of the drive access to allow for truck accessibility. ADA access must be maintained across the entire driveway opening.
- A full-depth road section is required from the northside of the left-turn lane to the face of curb along the frontage improvements.

Per CMC 17.19.040.B.5 the applicant is required to dedicate sufficient right-of-way (ROW) for the full frontage improvements.

The full existing right-of-way width on NE 13th Street varies from approximately 60-feet to 63-feet along the frontage of the proposed development. The existing right-of-way width from the centerline to the north property line of Parcel no. 176148000 varies from 25-feet to 27-feet. The applicant is required to dedicate sufficient right-of-way width to construct the required frontage improvements from the north side of the dedicated left-turn lane to the south side of the future sidewalk. Per the preliminary site plans sufficient right-of-way width has not been shown for the required frontage improvements.

Staff recommends a condition of approval that prior to engineering plan approval, the applicant is to dedicate sufficient right-of-way to construct the following improvements:

- The dedicated left-turn lane, the eastbound thru-lane, the eastbound bike lane, the dedicated right-turn lane onto NW Friberg-Strunk Street, curb & gutter, minimum 6-foot-wide planter strip, and 6-foot-wide detached sidewalk.

Per CDSM, Section III Design Standards, *Table 3 Access Spacing Standards*, the access spacing standards on a roadway classified as an arterial are a minimum of 660-feet and a maximum of 1,000-feet.

Per the preliminary site plans the location of the drive access into the proposed development is shown to be approximately 260-feet from the centerline of NW Friberg-Strunk Street to the centerline of the drive access location. The location of the drive access, as shown, does not meet the minimum access spacing standard for a road classified as an arterial. Due to the length of the parcel frontage along NE 13th Street, which is approximately 328-feet, it is not possible for the applicant to meet the minimum access spacing standards and still access the proposed development from NE 13th Street. Therefore, a deviation request to the city engineer was required for the location of the drive access as shown. A deviation request was submitted by the applicant.

The deviation request from the minimum access spacing standards is not supported without a dedicated left-turn lane into the proposed development.

The preliminary site plans, submitted in December 2023, did not include the dedicated left-turn lane as discussed with the applicant's team. However, a revised site plan was submitted with the Traffic Engineer's *Left Turn Lane Memo*, dated April 9, 2024, that includes a dedicated left-turn lane.

Staff recommends a condition of approval that prior to engineering plan approval, the site plans for the proposed development, are to be revised and resubmitted with the dedicated left-turn lane into the site as a requirement for support of the deviation request from the minimum access spacing standards on an arterial from the city engineer.

Per CDSM, Table 1 Guidelines for Geometry of Private Roadway, Note 2.c Aisles dimensions: one-way drive aisles are to be a minimum of 15-feet and two-way drive aisles are to be a minimum of 24-feet. The preliminary site plans indicate that all the on-site drive aisles are a minimum of 24-feet in width to serve as two-way drive aisles.

The preliminary site plans show that the ingress parking spaces on the west side of the proposed development meet the minimum 50-foot setback requirement. Additionally, the parking spaces along the front of the mini-market also meet the minimum 50-foot setback requirement as they are located over 50-feet from the ingress aisle.

FINDING: Staff finds that the development, as conditioned, can and will meet the requirements of the Camas Design Standards Manual (CDSM) for Roads.

Traffic and Transportation:

Per CMC 18.18.040.E a transportation impact analysis (TIA) may be required when a development generates 200 or greater average daily trips (ADTs).

A traffic analysis report (TIA), dated September 2023, was prepared by Charbonneau Engineering, Inc. Per the September 2023 TIA and the 11th Edition Institute of Transportation Engineers (ITE) manual, the total number of average daily trips (ADTs) generated by the proposed development, as shown in Table 1 Trip Generation Summary, is 2,281 ADTs. The ADTs were based on the land-use codes for a Gas Station with Market (LUC 945) which were reduced based on a percentage of pass-by trips for a Gas Station with Market; an Automated Car Wash (LUC 948); and trip credits for the existing single-family residence.

Based on the current 11th Edition ITE Trip Generation manual, the proposed development will generate approximately 2,281 ADTs, with a total of 60 AM Peak Hour trips (30 In / 30 Out) and a total of 81 PM

Peak Hour trips (41 In / 40 Out). Transportation Impact Fees (TIF) are updated yearly on January 1st or when a new TIF study is adopted. The TIF due at the time of building permit approval will be based on the number of PM Peak Hour Trips (81) times the TIF amount during the year that the building permit is submitted.

> Staff recommends a condition of approval that prior to Building Permit approval the applicant is to pay the applicable City of Camas Transportation Impact Fee (TIF) amount during the year the building permit is submitted * 81 PM Peak Hour Trips.

Left Turn Lane Requirements:

Access to the proposed development is located approximately 260-feet from the intersection of NE 13th Street and NW Friberg-Strunk Street. The minimum access spacing standards for a roadway classified as an arterial are 660-feet minimum and 1000-feet maximum. Due to the length of the parcel frontage along NE 13th Street, which is approximately 328-feet, it is not possible for the applicant to meet the minimum access spacing standards. The proposed access location would require a deviation request to, and support from, the city engineer. Based on the reduced distance of the driveway from the intersection, the applicant was informed that the deviation request would not be supported by the city engineer unless a dedicated left-turn lane was provided. The left turn lane will alleviate safety concerns regarding rear end collisions and the potential of stacking vehicles in the westbound through lane into the intersection.

Charbonneau Engineering's initial TIA, dated September 2023, stated the following:

> *"A left turn lane warrant was assessed for the westbound to southbound movement from NE 13th Street for traffic entering the site. The AM & PM peak hours were evaluated for the year 2026 total traffic scenario.*
>
> *The turn lane is not warranted in the PM peak hour.*
>
> *The warrant curve shown on Exhibit 1310-7a in the appendix indicates that a left turn is marginally met based on a 40 MPH travel speed. However, the travel speed on NE 13th Street is 35 MPH which if plotted indicates the warrant would not be met. It is also noted that the queuing analysis for the westbound left turn movement has confirmed that up to one vehicle may queue to make a left turn resulting in a LOS `A` condition. As a result, adding a westbound left turn lane on NE 13th Street is not proposed in conjunction with gas station, market, and car wash development."*

Based on the city engineer's requirement for a dedicated left-turn lane to support the deviation request, the city sent the applicant's initial TIA to Global Transportation Engineering (GTE), for a third-party review.

GTE provided a memo to the city, dated May 1, 2024, after reviewing Charbonneau Engineering's initial TIA. GTE's review addressed the proposed location of the access drive as follows:

> *"The access to the site falls below the City's access spacing of 660ft. This creates several safety concerns near the site access and at the NE 13th Street / NW Friberg- Strunk St intersection. Based on review of the traffic study, the following needs to be provided:*
>
> a. *The Summary and Recommendations section of the report indicates a left turn is not warranted at 35 mph but is marginally warranted at 40 mph. Due to the sub- standard access spacing, an evaluation using the 85th percentile speed present on the roadway needs to be used for turn lane and sight distance evaluations.*
>
> b. *Queuing analysis should be provided using Simtraffic or Poison's distributions. This will typically provide a more conservative estimate of average and 85th percentile queues.*

c. *Due to school traffic being predominant along study roadways, traffic counts need to be conducted during the school year to capture the heavy vehicle (bus traffic) presence at the intersection and distribution of that traffic. An actual traffic count will better define the local site and peaking characteristics of traffic. The AM peak is of particular concern for school related traffic. Developing school traffic estimates from the ITE Trip Generation Manual does not capture those characteristics in this case.*

d. *A westbound left turn lane or restriction of the westbound left turn movement into the site from NE 13th Street needs to be provided due to the sub-standard distance between the site access and the NE 13th Street / NW Friberg-Strunk St intersection.*

    i. *There is a high probability of eastbound traffic obscuring a vehicle waiting to turn left into the site from motorists turning left from NW Friberg-Strunk Street."*

The Memo from GTE was sent to Charbonneau Engineering for review. Charbonneau Engineering subsequently responded to GTE's Memo with a Memo dated June 12, 2024. Highlights of the Charbonneau Engineering Memo and the city's responses are as follows:

- *"Only one access (NE 13th Street) is permitted to serve the property as no connection is allowed to NE Friberg-Strunk Street."*

  The pre-application notes stated no access onto NE Friberg-Strunk Street would be permitted; however, during the application review process, staff stated that access onto NW Friberg-Strunk would be supported as a right-in/right-out only.

- *"To minimize the impacts associated with fueling trucks, deliveries will avoid the peak traffic periods by restricting arrivals and departures to the hours between 7:00 PM to 7:00 AM. Additionally, the fueling truck operators will be directed to make right turns from/to NE 13th Street when entering and exiting the site."* A condition of approval is warranted.

  Staff recommends a condition of approval that prior to engineering plan approval, the applicant is to add the following notes to the site plans:
  - Fueling trucks and delivery trucks are restricted to the hours between 7:00 PM and 7:00 AM.
  - Fueling trucks are restricted to right-in/right-out movements from and onto NE 13th Street when exiting the site.

- *"Pertaining to comments about the truck turning movements it is recommended that PLS Engineering prepare an illustration showing the wheel paths for trucks entering, maneuvering on-site, and leaving the property."*

  An updated circulation plan was submitted on July 17, 2024.

- *"Frontage improvements on NE 13th Street will include a westbound left turn lane for traffic turning into the site. The Charbonneau Engineering memo dated 4/9/24 supports the city's recommendation to install the turn lane as a safety benefit even though the original traffic report noted that the left turn lane was not warranted."*

  The installation of the left turn lane was not a recommendation by the city. The left turn lane is a requirement due to the access spacing standards not being met. The deviation request from the access spacing standards was supported by the city engineer only if the left turn lane is to be installed.

- *"The year 2023 volumes are represented in the original traffic report … and the May 2024 volumes are documented in the traffic count data attached to the June 12, 2024, memo."*

  Based on the 2024 counts and the 2023 traffic counts there does not appear to be a marked difference between the two years. **Staff concurs.**

- *"Based on the results of the follow-up study it is recommended that the City of Camas support the proposed site plan with one 40-foot-wide access on NE 13th Street."* A COA for both is warranted.

  Staff concurs with the memo and a condition of approval requiring the left turn lane and 40-foot-wide access on NE 13th Street.

[Signing and Striping]
The proposed development is required to provide a signing and striping plan for onsite, including the driveway ingress and egress lanes, as well as the dedicated left-turn lane into the site, the dedicated right-turn lane onto NW Friberg-Strunk Street, the eastbound through lane, and the eastbound bike lane.

> Staff recommends a condition of approval that prior to engineering plan approval, the applicant is to submit a signing and striping plan for onsite, including the driveway ingress and egress lanes; and offsite, including for the dedicated left-turn lane into the site, the dedicated right-turn only lane onto NW Friberg-Strunk, the eastbound through lane, and the dedicated through bike lane.

[City of Vancouver Concurrency]:
At the time of the pre-application meeting for the proposed development, the City of Vancouver's (COV) Traffic Engineer provide a memo, dated July 14, 2022, outlining the trip generation and distribution requirements and the concurrency requirements for COV's proportionate share intersections. The September 2023 TIA, was sent to the City of Vancouver and Clark County for transportation concurrency reviews.

- Concurrency review comments were not received from Clark County.
- Concurrency review comments were received from the City of Vancouver on March 5, 2024. The City of Vancouver's review comments are as follows:

The "applicant's traffic study identified City of Vancouver proportionate share fees total $153,050" per the proportionate share Table 4 as shown in the TIA. The proportionate share table below includes only those intersections that meet COVs requirements for proportionate share fees applicable to the proposed project.

Proportionate Share Project Name	Number of PM Peak Hour Trips	Fee Rate per PM Peak hour trip	Total Fee per Intersection
NE 192nd Ave & NE 13th St SE 192nd Ave & SE 34th St	57 13	$400.00 $150 .00	$22,800.00 $1,950.00
SE 192nd Ave & SR-14 ramp terminal	13	$2,000.00	$26,000.00
NE 172nd Avenue & NE 18th Street	20	$300.00	$6,000.00
NE 179th Place & NE 18th Street	20	$900.00	$18,000.00
NE 187th Avenue & NE 18th Street	24	$1,200.00	$28,800.00
NE 192nd Avenue & NE 9th Street	33	$1,100.00	$36,300.00
NE 187th Avenue & SE 1st Street	12	$1,100.00	$13,200.00
Proportionate Share Total Amount Due			**$153,050.00**

The City of Vancouver requests a condition of approval requiring proportionate share payment prior to building permit approval.

> Staff recommends a condition of approval that prior to Building Permit approval the applicant is to provide the City of Camas Building Division verification of payment of the proportionate share fees, in the amount of $153,050.00, to the City of Vancouver.

FINDING: Staff finds that the development, as conditioned, can and will meet the requirements of the Camas Design Standards Manual (CDSM) for Traffic and Transportation.

Sanitary Sewer:

The proposed project is to meet the requirements of CMC 17.19.040.C.2 sanitary sewers.

There is an existing 4-inch PVC sanitary sewer pressure main located just west of centerline, east of the 12-inch watermain, in NW Friberg-Strunk Street. A 4-inch pressure sewer lateral was stubbed to parcel number 176148000 for future development.

Per CMC 13.62.080 The riser lids for the STEP tank are to be accessible at all times to insure proper and timely emergency and/or maintenance response to the system. Per the preliminary utility plans, the proposed STEP tank is shown located east of the mini-market, in the landscape area between the drive aisle for the carwash and the sidewalk along NW Friberg-Strunk Street. There is an oil/water separator shown on the west side of the STEP tank and located in the drive aisle for the carwash.

The applicant is responsible for the sizing of the STEP tank and the oil/water separator for the proposed development. As the oil/water separator is located within a drive aisle, the oil/water separator is to be installed with H-25 traffic-rated lids.

> Staff recommends a condition of approval that prior to engineering plan approval the applicant is to submit to the City for review and approval, the design, specifications, and sizing calculations for the proposed STEP tank and oil/water separator. The design for the oil/water separator is to include H-25 traffic-rated lids.

Per CMC 13.62.060.B "*All STEP systems serving commercial, industrial, and other nonresidential properties shall be owned by the owner of the subject property, except for the service box at the point where the STEP system connects to the city sanitary sewer system, which shall be owned by the city. The owner shall be responsible for maintaining all components of the STEP system and its ownership and shall be responsible for pumping the STEP tank as needed and for disposing of the waste in an approved manner. The owner shall further be responsible for paying all electrical costs associated with the operation of the STEP system".*

> Staff recommends a condition of approval that prior to engineering plan approval a note is to be added to the engineering plans stating that all components of the onsite private sanitary sewer system, including but not limited to the STEP tank, the sanitary catch basins, and the oil/water separator shall be privately owned and maintained by the property owners, with a right-of-entry granted to the city for inspection purposes.

FINDING: Staff finds that the development, as conditioned, can and will meet the requirements of the Camas Design Standards Manual (CDSM) for Sanitary Sewer.

Stormwater:

The proposed project is to meet the requirements of CMC 17.19.040.C.2 Stormwater Control

The total land-disturbing activities for the proposed development consists of approximately 1.13 acres (49,045 sf) total for the proposed improvements. The total includes the future onsite development

improvements which is approximately 0.95 acres (41,382 sf), and the additional frontage improvements which is approximately 0.18 acres (7,663 sf) of new plus replaced impervious surface.

The preliminary stormwater technical information report (PTIR) dated November 2023, was prepared by PLS Engineering, Inc. The proposed development site is located on the southwest corner of NE Friberg-Strunk Street and NE 13th Street. The proposed development improvements include a mini-market, gas station, parking lot, a drive-thru carwash, and stormwater treatment and detention structures.

Per the preliminary stormwater report the onsite "stormwater runoff from the pollution generating impervious surfaces (PGIS) will be routed to the underground treatment vault. After the PGIS surface runoff is treated via the underground treatment vault, the stormwater will drain to the underground detention facility then to a new flow control manhole prior to draining to the existing stormwater manhole in NE 13th Street, which discharges to an existing conveyance system in NE 13th Street/NW Goodwin Road, and ultimately east into Lacamas Creek. The preliminary stormwater report did not address the offsite stormwater runoff from the new pollution generating impervious surfaces constructed with the frontage improvements.

The PTIR was prepared in accordance with Ecology's *Stormwater Management Manual for Western Washington* (2019 SWMMWW). Ecology issued the 2024 *Stormwater Management Manual for Western Washington* which was effective as of August 1, 2024. Both the 2019 and the 2024 manuals state that minimum requirements (MR) #1-#9 will apply for a new development project that results in 5,000 sf or greater of new plus replaced hard surface area. Minimum requirements #1 - #9 applies to the proposed development.

> Staff recommends a condition of approval that prior to engineering plan approval the applicant is to revise the preliminary stormwater report in accordance with the *2024 Stormwater Maintenance Manual for Western Washington (SWMMWW*) and submit as a final stormwater report (TIR) for review and approval.

MR #1 - Preparation of Stormwater Site Plans: The preliminary stormwater utility plan was incomplete as the plans did not include the design plans and details for the stormwater treatment and detention structures, flow control manhole, catch basins, the conveyance system.

> Staff recommends a condition of approval that prior to engineering plan approval, the applicant is to submit a complete set of stormwater plans for review and approval in accordance with CMC 14.02, CDSM, and Ecology's *2024 SWMMWW* and MR #1.
>
> Staff recommends a condition of approval that prior to engineering plan approval, a note is to be added to the stormwater plans stating that "all components of the onsite stormwater system are to be owned and maintained by the property owner, with right-of-entry granted to the city for inspection purposes.

MR #2 – Construction Stormwater Pollution Prevention Plan (SWPPP): The SWPPP was included in the preliminary TIR. The SWPPP is incomplete as it does not include contact information for the Contractor, CESCL, or the plans for erosion and sediment control.

> Staff recommends a condition of approval that prior to any land-disturbing activities the applicant should revise and submit an updated SWPPP, that includes the contact information for the Contractor, CESCL, or the plans for erosion and sediment control.

MR #3 – Source Control of Pollution: The preliminary TIR addresses the various BMPs required for source control, which are included in Section D of the preliminary TIR.

MR #4 – Preservation of Natural Drainage Systems and Outfalls: The preliminary TIR states that the proposed development will "restore the historic flow path" which had flowed to the north side of NW Goodwin Road which in turn will "maintain and preserve the natural drainage systems".

MR #5 – On-site Stormwater Management: The preliminary TIR addresses on-site stormwater management in Section E.

MR #6 – Runoff treatment is addressed in Section F of the preliminary TIR. The proposed development consists of approximately 1.13 acres (49,045 sf) total of onsite and offsite improvements. The report states that stormwater runoff from the onsite improvements will be treated with a system of treatment cartridges contained within a treatment vault. The PTIR specifically states that the runoff from roofs, landscape areas, and the frontage improvements "will not be treated as part of the final design".

The required frontage improvements will result in approximately 0.18 acres (7,660 sf) of new pollution generated surfaces, therefore stormwater runoff from the frontage improvements require treatment for the pollution generated impervious surfaces. Maintenance and ownership of said treatment measures for the frontage improvements are the responsibility of the owner of the proposed development.

> Staff recommends a condition of approval that prior to engineering plan approval, the applicant is to submit a revised stormwater report (TIR) that addresses both the onsite and the offsite treatment measures for stormwater runoff from all the new and existing pollution generating surfaces, per MR #6.
>
> Staff recommends a condition of approval that prior to engineering plan approval, the applicant is to submit revised stormwater plans that provide for treatment of both the onsite and the offsite stormwater runoff, per MR #6.

MR #7 – Flow Control Analysis and Design is addressed in Section G of the preliminary TIR. Per the preliminary TIR, onsite stormwater runoff will be detained in an underground detention facility. The preliminary TIR does not address the new plus replaced hard surface areas constructed as part of the frontage improvements along NE 13th Street.

> Staff recommends a condition of approval that prior to engineering plan approval, the applicant is to revise and resubmit the preliminary stormwater report addressing the new plus replaced hard surface areas constructed with the frontage improvements on NE 13th Street, per MR #7.

MR #8 – Wetland Protection is addressed in Section F of the preliminary TIR. Per the report, there appears to be a potential wetland to the south, which is a development site that is currently under construction, there are no wetlands located onsite.

MR #9 – Operation and Maintenance are addressed in Appendix D of the preliminary TIR. Per the report, maintenance of the facilities will be in accordance with the City of Camas *Stormwater Facility Maintenance Manual*. The property owner is responsible for ownership and maintenance of the onsite stormwater system with right-of-entry granted to the city for inspection purposes.

Ecology's *SWMMWW* requires that a designated concrete washout area (Vol. II, Chap. 3, BMP C154) be constructed on a job site that is provided for washout of concrete trucks and, prior to leaving a job site. This is to ensure that the contaminated washout water is not washed into any storm drains, whether private or public.

> Staff recommends a condition of approval that prior to engineering plan approval the applicant is required to provide a location on the engineering plans as a designated concrete washout area during construction of the building.

FINDING: Staff finds that the development, as conditioned, can and will meet the requirements of the Camas Design Standards Manual (CDSM) for Stormwater.

Water:

The proposed project is to meet the requirements of CMC 17.19.040.C.4 Water System.

There is an existing 12-inch DIP water main on the west side of NW Friberg-Strunk Street. An 8-inch service and a 1-inch water service were stubbed to parcel no. 176148000 for future development improvements. The 8-inch water service is in the southeast corner of the parcel and the 1-inch water service is located approximately 5-feet north of the 8-inch service.

Per the preliminary utility plans submitted on December 4, 2023, show that the applicant is proposing to reduce the 8-inch water service that was stubbed to the parcel to a 6-inch water service to provide for the private onsite water system for the mini-market and carwash; installation of a private fire hydrant to be located between the mini-market and the fueling station; and a dedicated fire line to the mini-market.

The proposed 6-inch water line shows the domestic water service stubbed from the onsite 6-inch water line to provide service to the mini-market and the carwash with a domestic water meter and a double check detector valve assembly on the private side of the meter. As stated in the pre-application notes, an above-ground reduced pressure valve assembly (RPBA) is to be installed behind the water meter and is to be accessible for testing and inspections, both of which are to be located adjacent to the public right-of-way; additionally, the fire line is shown to stubbed to the building from the 6-inch water line, with a double detection check valve (DDCV) vault all of which are to be located adjacent to the public right-of-way.

> Staff recommends a condition of approval that prior to engineering plan approval, the applicant is to revise the water utility plans to include an above-ground reduced pressure valve assembly (RPBA) that is to be installed behind the water meter and is to be accessible for testing and inspections.

Additionally, the preliminary water plans state that there is an existing irrigation meter and double check valve assembly. The applicant is to verify that this is an existing water service only that was stubbed for future development improvements and not the irrigation service for the frontage improvements on NW Friberg-Strunk Street.

> Staff recommends a condition of approval that prior to engineering plan approval, the applicant is to verify that the existing water service referenced as an existing irrigation meter and backflow prevention device is a service stub only for the benefit of the proposed development and not the irrigation service, meter, and backflow prevention device for the landscape improvements along NW Friberg-Strunk Street.

The preliminary landscape plans do not show the location nor size of the proposed irrigation meter on the landscape plans or on the water utility plans. The applicant is required to provide a separate irrigation meter and backflow prevention device. The preliminary water utility plans and the landscape plans are to show the location and size of the irrigation meter and the backflow prevention device.

> Staff recommends a condition of approval that prior to engineering plan approval, the applicant is to submit revised water utility and landscape plans for review and approval with the following changes:
>
> - The irrigation meter and backflow prevention device are to be located adjacent to the public right-of-way.
> - The water utility and the landscape plans are to include the locations and sizes of both the domestic water meter and the irrigation meter with backflow prevention devices.

Per CMC 13.32.080 Backflow prevention devices shall be inspected and tested at least annually, by an authorized representative. Inspection reports are to be submitted to the city. If a device is found to not be in satisfactory operating condition, the connection between the City water supply and the system shall be severed immediately or City water service may be discontinued without notice.

The Fire Department Connection (FDC) needs to be located within 75-ft of a fire hydrant, per fire code. The fire line location is to be shown on the utility plans for informational purposes only. The fire line plans are required to be submitted to the Fire Marshall's office for issuance of the NFPA24 Fire Main Underground Permit prior to any fire line installation beyond the right-of-way.

Staff recommends a condition of approval that prior to engineering plan approval the applicant is to submit revised onsite water plans that include the proposed location of the fire line, fire hydrant, and the location of the Fire Department Connection (FDC) as the FDC is to be located within 75-ft of a fire hydrant, per fire code.

Staff recommends a condition of approval that prior to engineering plan approval and the applicant is to apply for the required fire permit from the Fire Marshal's Office for this project.

- Plans, specifications, and other information as may be necessary to determine compliance with fire and life safety code and standards shall be submitted with permit.
- The NFPA24 Fire Main Underground Permit is required for fire line installation beyond the right-of-way.
- Contact the Fire Marshal's office at 360-834-6191 for submittal information.
- Fire permit forms and submittal instructions are available online or can be picked up at the Fire Marshal's office at 605 NE 3rd Avenue.

All components of the onsite private water system, including the domestic water line; the fire line, including the private fire hydrant; and the irrigation system are to be privately owned and maintained by the property owner.

Staff recommends a condition of approval that prior to engineering plan approval, a note is to be added to the engineering plans, which states 'All private fire hydrants are to be ordered from the factory and painted powder coated red.'

Staff recommends a condition of approval that prior to engineering plan approval, a note is to be added to the engineering plans, which states that the onsite private water system, including the domestic water line; the fire line, including the private fire hydrant; and the irrigation system are to be owned and maintained by the property owner.

FINDING: Staff finds that the development, as conditioned, can and will meet the requirements of the Camas Design Standards Manual (CDSM) for Water.

Erosion Control:

The proposed project is to meet the requirements of CMC 14.06 Erosion and Sediment Control. Erosion and sediment control (ESC) plans are to be prepared in accordance with adopted city standards.

The applicant submitted preliminary grading plans with the original application and with subsequent preliminary grading and site plans. However, preliminary plans did not include erosion and sediment control plans.

Staff recommends a condition of approval that prior to engineering plan approval the applicant is to submit with the *Civil Construction Application* permit, a set of Erosion Sediment Control (ESC) plans for review and approval.

The total land-disturbing activities for the proposed development consists of approximately 1.13 acres (49,045 sf). The total includes the future onsite development parcel which is approximately 0.95 acres (41,382 sf) and an additional 0.18 acres (7,663 sf) of new plus replaced impervious surface with the required frontage improvements along NE 13th Street.

As the proposed development site consists of land-disturbing activities of more than 1 acre, the applicant is required to obtain an *NPDES General Construction Stormwater Permit (GCSWP),* which is issued by the Washington State Department of Ecology.

> Staff recommends a condition of approval that prior to land-disturbing activities the applicant is to submit a copy of the *NPDES General Construction Stormwater Permit (GCSWP)*.

Per CMC 17.21.50.B.3, land-disturbing activities of more than an acre require the applicant to provide an Erosion Control Bond in the amount of 200% of the cost for erosion control measures, prior to commencement of any land-disturbing activities.

> Staff recommends a condition of approval that prior to land-disturbing activities the applicant is to provide an Erosion Control Bond in the amount of 200% of the cost for erosion control measures.

FINDING: Staff finds that the development, as conditioned, can and will meet the requirements of the Camas Design Standards Manual (CDSM) for Erosion Control.

FINDING: Staff finds that the development, as conditioned, can and will meet the roads, transportation, water, stormwater, sanitary sewer, and erosion control requirements of the Camas Design Standards.

D. Adequate provisions are made for other public and private services and utilities, parks, and trails;

[Public Utilities]:
Street lighting currently exists along NW Friberg-Strunk Street; however, street lighting does not exist along either side of the NE 13th Street frontage improvements.

> Staff recommends a condition of approval that prior to engineering plan approval the applicant is to submit for review and approval street lighting plans in accordance with the Camas Design Standards Manual (CDSM), Section III Design Standards for Street Lighting along the NE 13th Street frontage improvements.

[Private Utilities]:
The applicant is proposing to install pole mounted lights within the parking lot and wall mounted lights on the building. Lighting is addressed in further detail under the Design Review section of this staff report.

The applicant will be responsible for the operation, ownership, and maintenance of the on-site private stormwater treatment and conveyance system, with right-of-entry granted to the city for inspection purposes and shall be conditioned as such. A note will be added to the stormwater plans prior to engineering plan approval.

The applicant will be responsible for the maintenance of all other on-site private improvements, including but not limited to, the private water and fire line system, the private irrigation system, the private sanitary sewer system, the parking areas, on-site lighting, and landscaping and shall be conditioned as such. Notes will be added to the utility and landscape plans prior to engineering plan approval.

[Parks and Trails]:
There are no City requirements for parks, trails or other public improvements associated with the development of this property.

FINDING: Staff finds that the applicant, as conditioned, can or will make provisions for adequate maintenance of the private improvements.

E. Adequate provisions are made for maintenance of public utilities;

The applicant is required to extend water and sanitary sewer mains, and construct frontage improvements that include curb and gutter, sidewalk, and planter strip with the frontage improvements on NE 13th Street for the proposed development. The city will maintain the existing and proposed public streets improvements, public storm system, public sanitary sewer, and the public water systems located along NW Friberg-Strunk Street and the future improvements on NE 13th Street.

The applicant is required to obtain fire and building permits and to perform to the standards of CMC Title 15 Buildings and Construction.

FINDING: Staff finds that adequate provisions can or will be made for maintenance of public utilities.

F. All relevant statutory codes, regulations, ordinances, and compliance with the same. The review and decision of the city shall be in accordance with the provisions of CMC Chapter 18.55;

FINDING: As discussed throughout this staff report, and as conditioned, this proposal can or will meet all relevant codes, regulations, ordinances, and other requirements as identified herein.

DESIGN REVIEW (DR23-09) CMC CHAPTER 18.19

Design Review is required for new developments within BP - Business Park zones per CMC 18.19.020 therefore the proposed project is subject to the applicable design review standards in CMC 18.19.050.A *Standard Principles*, the guidelines in the Camas Design Review Manual "DRM", and the Business Park *architectural design standards* in CMC 18.37.030.C.

As conditioned, a Design Review Committee (DRC) public meeting will be held prior to engineering plan approval.

CMC 18.19.050.A Standard Principles:

1. **Landscaping shall be done with a purpose. It shall be used as a tool to integrate the proposed development into the surrounding environment.**

As previously stated, the proposal must comply with the applicable landscaping standards in CMC Chapter 18.13 Landscaping in addition to the landscaping standards in CMC Chapter 18.37 Business Park. The applicant has focused the planting areas immediately adjacent to the building, at the site's perimeter, within the parking areas. The proposed plant materials indicated on the preliminary landscape plan include a mix of low-maintenance ornamental trees and shrubs. The proposed landscape plan meets the landscaping, screening, and buffering requirements for the parking area, provides for year-round color and texture, and will provide the site with a cohesive design with trees and shrubs that are adapted to the climate of the area and match the surrounding environs.

2. **All attempts shall be made at minimizing the removal of significant natural features. Significant natural features shall be integrated into the overall site plan.**

There are no significant natural features on site.

3. **Buildings shall have a "finished" look. Any use of panelized materials shall be integrated into the development in a manner that achieves a seamless appearance.**

The proposed building is approximately 27' 10" tall at the highest point, with the building displaying varying materials that achieve a seamless appearance. A variety of building materials such as fiber cement

panels, CMU Type 1 and 2, and stone veneer will be incorporated into the design. The building will also include an aluminum storefront window system, metal capping and fascia, along with metal roofing and a heavy timber pergola. The west elevation of the building contains articulation to avoid a blank look. This includes areas of cement fiber siding broken up with areas of stone veneer extending to the cornice that ties the building together. The proposed design includes neutral earth toned colors and materials that are consistent with surrounding buildings.

4. A proposed development shall attempt to incorporate or enhance historic/heritage elements related to the specific site or surrounding area.

The proposed development does not incorporate or enhance historic/heritage elements related to the specific site or surrounding area.

CMC 18.19.050.B Specific Principles:

2. Commercial and Mixed Uses

a. On-site parking areas shall be placed to the interior of the development unless site development proves prohibitive. All on-site parking areas along adjacent roadways shall be screened with landscaping.

Onsite parking has been placed towards the interior of the site and landscaping has been utilized to provide screening from the street view. Additionally, a 10-foot L3 landscape buffer has been provided to screen the drive-thru car wash. A 5-foot, L2 landscape buffer is provided along the NE 13th Street frontage that will include trees and shrubs to screen the parking adjacent to the roadway.

b. Buildings shall be used to define the streetscape unless site conditions prove prohibitive.

The subject site is relatively flat with vegetation consisting of grass and scattered trees. The preliminary site plan shows the proposed building to be situated in the easterly portion of the site, providing building presence along the street frontages at the intersection of NE 13th Street and NE Friberg-Strunk Street.

c. Structures abutting, located in, or located near less intensive uses or zoned areas (such as commercial development next to residential areas) shall be designed to mitigate size and scale differences.

To help mitigate size and scale differences with existing single-family residences adjacent to the westerly side property line, the building is located on the easterly portion of subject property with a setback of approximately 80-feet and is screened with 15–20-foot landscape buffer.

d. Developments containing a multiple of uses/activities shall integrate each use/activity in a manner that achieves a seamless appearance or creates a cohesive development.

The proposed development achieves a seamless appearance and cohesive development.

e. Mixed-use development that places uses throughout the site (horizontal development) shall organize elements in a manner that minimizes their impact on adjacent lower intensity uses.

Not applicable as the proposal is not a mixed-use development.

f. Walls shall be broken up to avoid a blank look and a provided a sense of scale.

The building elevations provide visual interest and variety using different materials/colors and design elements that produce slight articulation to the front facades to include stepped parapets.

g. Outdoor lighting shall not be directed off-site.

The applicant's narrative indicates that the lighting plan meets the minimum safety standards and outdoor lighting will be shielded to prevent off-site light intrusion to the greatest extent possible. Landscape,

parking lot and/or building lighting shall be directed, hooded, or shielded away from surrounding properties and is conditioned as such.

18.37.030 – Architectural design standards.

C. Building materials.

a. A minimum of seventy-five percent of the walls visible to the right-of-way (excluding glass) shall be indigenous such as cedar, wood logs, brick, stone, rusticated block, or comparable modular masonry are preferred. New materials that convey the texture, scale, color and finish similar to these natural products will be considered where appropriate. Large blank walls facing the right of way are prohibited.

The building's façade is primarily comprised of stone veneer and fiber cement siding. As such, staff finds large blank walls have been avoided using varying materials and a vertical modulated building façade.

b. Secondary materials such as metal siding may be used as accents and may compose twenty-five percent of the walls visible from the right-of-way (excluding glass).

Metal accents are proposed via pre-finished metal coping at the top base of the buildings and steel canopies above aluminum storefront entries. Staff finds the proposed metal accents are in compliance with this requirement.

c. Prefabricated metal buildings or structures are not permitted.

Prefabricated metal buildings are not permitted, and therefore this criterion is not applicable.

d. Glare reduction. All glazing must be low-reflective. Given the city's location near airports and within the Pacific Flyway, the use of tinted glass, tilted glass, or other bird-friendly glazing methods (See Exhibit 1) are preferred.

The architectural elevations do not indicate whether the window glazing is low-reflective and therefore will be conditioned as such.

e. Use muted earth tone colors for building and roof materials.
i. Bright colors are only appropriate for accents.
ii. A minimum of seventy-five percent of the exterior walls seen from the public right-of-way shall have muted tones.

The proposed building elevation appears to show muted earth tone colors. Final colors should be reviewed and approved by city staff prior to building permit approval and conditioned as such.

D. Building massing and scale

a. Provide a human scale to the primary entrance.
b. Express the position of each floor in the external design of the building by changing materials between floors, or use an expression line, or articulate structural elements.
c. Avoid large, panelized products or extensive featureless surfaces.

The proposed building utilizes various building materials and muted colors to avoid the appearance of a large monotonous front facade. The building provides vertical modulations that are articulated by stone veneer, fiber cement siding and metal canopies above the primary entrances to provide a sense of human scale.

E. Roof form. Incorporate at least two of the following features to add architectural articulation:

a. A flat roof with a parapet that screens rooftop equipment from view;
b. A cornice or molding to define the top of a parapet;

c. Overhanging eaves;
d. Sloping roofs with a minimum pitch of 4:12; and/or
e. Multiple roof planes.

The building exhibits a vertical modulation on the portion of the building which exhibits a flat roof with a parapet and molding that defines the top of the parapet and therefore complies with this criterion.

F. All vents, flues, or other protrusions through the roof, less than sixteen inches in diameter need not be screened from view but must be painted or treated to blend with the color of the background. All such vents, flues, or other protrusions through the roof, more than sixteen inches in diameter shall be considered mechanical equipment and shall be screened from view.

Staff finds a condition of approval is required that any proposed mechanical equipment greater than 16-inches diameter should be screened from view and less than 16-inches in diameter should be painted or treated to blend with the structure.

G. Refuses/storage. Refuse areas and service/storage areas are to be located under cover, and/or not visible from the public right-of-way or adjacent properties.

Trash receptacles and service areas should be screened from the public right-of-way including adjacent properties and conditioned as such.

H. Fencing heights may exceed those specified at CMC Chapter 18.18-Supplemental Development Standards as follows. A wrought-iron fence, vinyl-coated chain link, masonry, stone, or a combination, may be up to six feet high along the front property line or within the front yard setback.

The preliminary site plan does not indicate any fencing for the proposed development.

I. Security fencing shall be compatible with landscaping of the entire site. Evergreen plant material will be located adjacent to security fencing and shall provide a vegetative screen when mature.

Security fencing, if proposed, should be compatible with landscaping of the entire site and conditioned as such.

J. Lighting. Lighting shall be directed to the interior of the site and shielded from adjacent properties. Building lighting is to be concealed and indirect.

Any landscape, parking lot, or building lighting should be directed, hooded, or shielded away from surrounding properties. Lighting specifications should be provided for city review and approval prior to building permit approval.

> **FINDING**: The proposed building design is generally in compliance with the Design Review Manual, the applicable design principles and guidelines of CMC Chapter 18.19 and CMC 18.37.030.C as conditioned.

CONCLUSIONS OF LAW

As conditioned in this staff report, this land development application has the ability to meet the requirements of Title 16 – Environment, Title 17 – Land Development, and Title 18 – Zoning of the Camas Municipal Codes.

DECISION

The consolidated application (SPRV23-06 and DR23-09) for the 13th Street Gas Station is approved based on the applicant's narrative, drawings, and technical reports, except as otherwise clarified or modified through the conditions of approval stated herein.

CONDITIONS OF APPROVAL

Standard Conditions:

1. Engineering site improvement plans shall be prepared in accordance with the City of Camas Design Standards Manual (CDSM) and CMC 17.19.040.
2. Per CMC 17.19.040.C.1 and 1.a: All utilities designed to serve the development shall be placed underground. Those utilities to be located beneath paved surfaces, including all service connections, shall be installed prior to application of any surface materials.
3. Installation of public improvements shall be in accordance with CMC 17.21 Procedures for Public Improvements.
4. The engineering site plans shall be prepared by a licensed civil engineer in Washington State and submitted to the City's Community Development Engineering Department for review and approval.
5. After the land-use decision is issued, the applicant is to submit the Civil construction plans via the online portal at www.cityofcamas.us/Permits/Civil Construction Application.
6. Community Development (CDEV) Engineering shall collect a total 3% plan review and construction inspection (PR&CI) fee for the proposed development.
    a. Payment of the 1% plan review (PR) fee shall be due prior to the start of the plan review process. Staff will provide the 1% fee amount.
    b. Payment of the 2% construction inspection (CI) fee shall be due prior to engineering plan approval and release of approved plans to the applicant's consultant. Staff will provide the 2% fee amount.
    c. Under no circumstances will the applicant be allowed to begin land-disturbing activities prior to engineering plan approval.
7. If applicable, existing wells, septic tank, and septic drain fields shall be decommissioned in accordance with state and county guidelines, per CMC 17.19.020.
8. Prior to any land-disturbing activities of an acre or more, the applicant shall submit a copy of the *NPDES General Construction Stormwater Permit* (GCSWP), which is issued by the Washington State Dept. of Ecology, and the *Stormwater Pollution Prevention Plan* (SWPPP), which is required as a component of the NPDES GCSWP permit.
9. Prior to commencing any land-disturbing activities of an acre or more, the applicant shall submit an Erosion Control Bond in the amount of 200% of the cost for erosion control measures, per CMC 14.06.200.
10. If any item of archaeological interest is uncovered during a permitted land-disturbing action or activity, all ground disturbing activities shall immediately cease, and the applicant shall notify the City and the Department of Archaeology and Historic Preservation (DAHP).
11. Fire permit(s) and inspections are required by the Fire Marshal's Office for this project.
    a. Plans, specifications, and other information as may be necessary to determine compliance with fire and life safety code and standards shall be submitted with permit.

b. Contact the Fire Marshal's office at 360-834-6191 for submittal information.

12. Fire permit forms and submittal instructions are available online or can be picked up at the Fire Marshal's office at 605 NE 3rd Avenue.
13. A building permit shall be required prior to commencement of construction of a building structure.
14. At the time of building permit issuance, the applicant shall pay the appropriate impact fees in accordance with the provisions of CMC 3.88.
15. Prior to final acceptance, the applicant shall remove all temporary erosion prevention and sediment control measures from the site at completion of all site improvements, which includes stabilization of all disturbed soil, prior to issuance of Final Acceptance from CDEV Engineering.
16. As a component for final acceptance, final as-built construction drawing submittals shall meet the requirements of the Camas Design Standards Manual (CDSM).
    a. The as-built cover sheet is to be the originally approved cover sheet signed by the City Engineer.
    b. As-builts are to be submitted as PDFs.
    c. As-builts are to be submitted in either AutoCad or Carlson formats.
17. Per CMC 17.21.050.B.2 and prior to final acceptance a 2-year warranty maintenance bond is to be submitted for all public improvements.
    a. Per CMC 17.21.070.A Upon final acceptance of the development improvements the two-year (2) warranty bond commences.
18. Per CMC 17.21.070.E A letter of final acceptance will be issued once all items listed in 17.21.070.B-C have been completed, submitted, reviewed, and approved by the city.
19. Per CMC 18.18.070.B, prior to issuance of final occupancy permits, all public and private improvements shall be completed in accordance with CMC 17.21.070 Final Acceptance.
20. The applicant will be responsible for maintenance of all on-site private improvements, including but not limited to the private water and fire line system, the private sanitary sewer system, the on-site stormwater facilities, the parking areas, pedestrian pathways, lighting, and landscaping.
21. Unless construction of this site commences within two (2) years of issuance of this decision, this permit will expire.

Special Conditions:

Prior to Engineering Plan Approval:

Planning:

22. The applicant shall comply with the following SEPA23-12 conditions, including Department of Ecology, Southwest Clean Air Agency, and Washington Department of Fish and Wildlife:

    - Department of Ecology
        a. Review "Dangerous Waste Rules for Demolition, Construction and Renovation Wastes" posted on Ecology's website.
        b. Perform one or more site visits that coincide with the normal wet portion of the growing season to ensure absence of wetland indicators.
    - Southwest Clean Air Agency
        c. Prior to demolition, a thorough asbestos inspection must be conducted by an AHERA-certified inspector in order to determine the presence of asbestos containing materials. A copy of the asbestos inspection report must be posted for viewing at the project site.

d. Comply with Construction Dust General Regulations for Air Pollution Sources.

e. Comply with Registration, Notification, and Permitting of Air Pollution Sources. The proposed project will likely require an ADP from Southwest Clean Air Agency. Contact Agency permitting engineer at 360-574-3058 to discuss project, equipment requirements, and need to obtain ADP before dispensing gasoline.

- Washington Department of Fish & Wildlife

f. Comply with WDFW's "Washington's Priority Habitats: Best Management Practices for Mitigating Impacts to Oregon White Oak Priority Habitat" with an updated mitigation plan that aligns with adopted guidance document.

23. Prior to Engineering Plan approval, the project is required to go through Design Review Committee for review and input.
24. Prior to Engineering Plan approval, a final landscape, tree, and vegetation plan consistent with the landscaping standards in CMC 18.13 shall be submitted to the city for review and approval to include the following but not limited to:
    a. Lawns, if proposed, shall consist of drought-tolerant grasses per CMC 18.37.040.G.
    b. The planting legend shall identify the 15-gallon container size for the deciduous trees consistent with CMC 18.13.050.C.2.
    c. Parking lot planter islands shall comply with the minimum 8'x 8' planter area requirement.
    d. Wheel stops shall be installed adjacent to planter areas per CMC 18.13.060.F, including installation of wheel stops adjacent to sidewalks to allow for a clear pedestrian pathway and to protect pedestrians from car overhangs.
    e. The final landscape plan shall provide a minimum of 19 total tree units for the proposed project and in compliance with CMC 18.13.051(A) Table 1.
    f. Street trees within the right of way shall not be removed without City review and approval and mitigation may be required at the discretion of the City.
    g. The planting specifications and landscape notes in the Camas Design Manual shall be included on the final landscape plan.
25. The applicant shall take appropriate measures to ensure landscaping success for a minimum of three years after issuance of Certificate of Occupancy. If plantings fail to survive, the property owner shall promptly replace them.
26. Trash receptacles and service areas shall be screened from the public right-of-way including adjacent properties and shown on the final engineering plans.

Engineering:

[Roads]

27. The applicant is to submit site plans with the following revisions:
    a. Maintain, at a minimum, the existing westbound thru-lane width.
    b. Provide a dedicated left turn lane onto the site.
    c. Maintain the eastbound thru-lane and eastbound bike lane.
    d. Maintain the dedicated right-turn lane onto NW Friberg-Strunk Street.
    e. The future sidewalk along the frontage is to be a detached sidewalk with planter strip and curb & gutter from the end of the existing curb return and extended the full length of the future frontage to the west end of Parcel no. 176148000.

f. The drive access width is to be reduced to a maximum width of 40-feet for personal motorist access, with mountable curb and a concrete island on either side of the drive access to allow for truck accessibility. ADA access must be maintained across the entire driveway opening.
g. A full-depth road section is required from the northside of the left-turn lane to the face of curb along the frontage improvements.

28. The applicant is to dedicate sufficient right-of-way to construct the following improvements:
    a. The dedicated left-turn lane, the eastbound thru-lane, the eastbound bike lane, the dedicated right-turn lane onto NW Friberg-Strunk Street, curb & gutter, minimum 6-foot-wide planter strip, and 6-foot-wide detached sidewalk.

29. The site plans for the proposed development are to be revised and resubmitted with the dedicated left-turn lane into the site as a requirement for support of the deviation request from the minimum access spacing standards on an arterial from the city engineer.

[Transportation]

30. The applicant is to add the following notes to the site plans:
    a. Fueling trucks and delivery trucks are restricted to the hours between 7:00 PM and 7:00 AM.
    b. Fueling trucks are restricted to right-in/right-out movements from and onto NE 13th Street when exiting the site.

31. The applicant is to submit a signing and striping plan for onsite, including the driveway ingress and egress lanes; and offsite, including for the dedicated left-turn lane into the site, the dedicated right-turn only lane onto NW Friberg-Strunk, the eastbound through lane, and the dedicated through bike lane.

[Sanitary Sewage]

32. The applicant is to submit to the City for review and approval, the design, specifications, and sizing calculations for the proposed STEP tank and oil/water separator. The design for the oil/water separator is to include H-25 traffic-rated lids.

33. A note is to be added to the engineering plans stating that all components of the onsite private sanitary sewer system, including but not limited to the STEP tank, the sanitary catch basins, and the oil/water separator shall be privately owned and maintained by the property owners, with a right-of-entry granted to the city for inspection purposes.

[Stormwater]

34. The applicant is to revise the preliminary stormwater report in accordance with the *2024 Stormwater Maintenance Manual for Western Washington (SWMMWW*) and submit as a final stormwater report (TIR) for review and approval.

35. The applicant is to submit a complete set of stormwater plans for review and approval in accordance with CMC 14.02, CDSM, and Ecology's *2024 SWMMWW*, per MR #1.

36. A note is to be added to the stormwater plans stating that "all components of the onsite stormwater system are to be owned and maintained by the property owner, with right-of-entry granted to the city for inspection purposes.

37. The applicant is to submit a revised stormwater report (TIR) that addresses both the onsite and the offsite treatment measures for stormwater runoff from all the new and existing pollution generating surfaces, per MR #6.

38. Staff recommends a condition of approval that prior to engineering plan approval, the applicant is to submit revised stormwater plans that provide for treatment of both the onsite and the offsite stormwater runoff, per MR #6.
39. The applicant is to revise and resubmit the preliminary stormwater report addressing the new plus replaced hard surface areas constructed with the frontage improvements on NE 13th Street, per MR #7
40. The applicant is required to provide a location on the engineering plans as a designated concrete washout area during construction of the building.

[Water]

41. The applicant is to revise the water utility plans to include an above-ground reduced pressure valve assembly (RPBA) that is to be installed behind the water meter and is to be accessible for testing and inspections.
42. The applicant is to verify that the existing water service referenced as an existing irrigation meter and backflow prevention device is a service stub only for the benefit of the proposed development and not the irrigation service, meter, and backflow prevention device for the landscape improvements along NW Friberg-Strunk Street.
43. The applicant is to submit revised onsite water plans for review and approval with the following revisions:
    a. The irrigation meter and backflow prevention device are to be located adjacent to the public right-of-way.
    b. The water utility and the landscape plans are to include the locations and sizes of both the domestic water meter and the irrigation meter with backflow prevention devices.
44. The applicant is to submit revised onsite water plans that include the proposed location of the fire line, fire hydrant, and the location of the Fire Department Connection (FDC) as the FDC is to be located within 75-ft of a fire hydrant, per fire code.
45. Fire permit(s) and inspections are required by the Fire Marshal's Office for this project.
    a. Plans, specifications, and other information as may be necessary to determine compliance with fire and life safety code and standards shall be submitted with permit.
    b. The NFPA24 Fire Main Underground Permit is required for fire line installation beyond the right-of-way.
    c. Contact the Fire Marshal's office at 360-834-6191 for submittal information.
    d. Fire permit forms and submittal instructions are available online or can be picked up at the Fire Marshal's office at 605 NE 3rd Avenue.
46. A note is to be added to the engineering plans, which states 'All private fire hydrants are to be ordered from the factory and painted powder coated red.'
47. A note is to be added to the engineering plans, which states that the onsite private water system, including the domestic water line; the fire line, including private fire hydrant; and the irrigation system are to be owned and maintained by the property owner.

[Erosion Control]

48. The applicant is to submit with the *Civil Construction Application* permit, a set of Erosion Sediment Control (ESC) plans for review and approval.

[Public Utilities]

49. The applicant is to submit for review and approval street lighting plans in accordance with the Camas Design Standards Manual (CDSM), Section III Design Standards for Street Lighting along the NE 13th Street frontage improvements.

[Private Utilities]:

50. A note will be added to the stormwater plans stating that the applicant will be responsible for the operation and maintenance of the on-site private stormwater treatment and conveyance system with a right-of-entry granted to the city for inspection purposes.
51. Notes will be added to the utility and landscape plans stating that the applicant will be responsible for the maintenance of all other on-site private improvements, including but not limited to, the private water and fire line system, the private irrigation system, the private sanitary sewer system, the parking areas, lighting, and landscaping.

Prior to Any Land-disturbing Activities:

Engineering:

52. The applicant is to revise and submit an updated SWPPP, that includes the contact information for the Contractor, CESCL, or the plans for erosion and sediment control, per MR #2.
53. The applicant is to provide copies of Ecology's NPDES General Construction Stormwater Permit (GCSWP) and the Erosion and Sedimentation Control (ESC) bond, prior to any land-disturbing activities.
54. The applicant is to provide an Erosion Control Bond in the amount of 200% of the cost for ersion control measures.

Prior to Final Acceptance:

Planning:

55. Landscaping and irrigation shall be installed or bonded prior to final acceptance.

Engineering:

56. Prior to final acceptance, the applicant is to verify that the vision clearance / site distance triangle requirements have been met.
57. Prior to final acceptance, final as-built construction drawing submittals shall meet the requirements of the Camas Design Standards Manual (CDSM).
    a. As-builts are to be submitted in PDF format.
    b. As-builts are to be submitted in either AutoCad or Carlson formats.
    c. The originally approved and signed cover sheet is to be included with the as-builts.
58. Prior to final acceptance the 2-year warranty maintenance bond is to be submitted in accordance with CMC 17.21.070.A.

Prior to Building Permit Approval:

Planning:

59. Prior to building permit approval, all window glazing shall be low-reflective and noted on the architectural elevations.
60. Any proposed mechanical equipment greater than 16-inches diameter shall be screened from view and less than 16-inches in diameter shall be painted or treated to blend with the structure.

61. Prior to Building Permit approval, lighting specifications shall be provided for city review and approval. Landscape, parking lot and/or building lighting shall be directed, hooded, or shielded away from surrounding properties.
62. Building materials shall be in conformance with the design review approval. Building colors shall be reviewed and approved by the City prior to building permit approval.

Engineering:

63. Prior to Building Permit approval, the applicant is to pay the applicable City of Camas Transportation Impact Fee (TIF) amount during the year the building permit is submitted * 81 PM Peak Hour Trips.
64. Prior to Building Permit approval, the applicant is to provide the City of Camas Building Dept. verification of payment of the proportionate share fees, in the amount of $153,050.00, to the City of Vancouver.
65. Per CMC 18.18.080, This decision will expire 2-years from date of issuance if construction on the project has not commenced.

DATED this 16th Day of September 2024

_____

Yvette Sennewald, Senior Planner

Community Development Department
616 NE 4th Ave. | Camas, WA 98607

NOTICE OF DECISION

13TH STREET GAS STATION (FILE NO. SPRV23-06)

(CONSOLIDATED FILES: ARCH23-07, CA23-08, DR23-09, SEPA23-12)

DECISION ISSUED: September 16, 2024

CITY STAFF CONTACT: Yvette Sennewald, Senior Planner
Phone: (360) 817-1568
Email: communitydevelopment@cityofcamas.us

APPLICANT: Taz Khan: tkhanusa@gmail.com
PLS Engineering: pm@plsengineering.com

LOCATION: The property is located on the southwesterly corner of the intersection at NE 13th Street and NW Friberg-Strunk Street. The parcel number is 176148000, situated in the NW 1/4 of Section 29, Township 2 North, Range 3 East of the Willamette Meridian, Clark County.

THIS IS TO SERVE AS NOTICE that a decision of APPROVAL has been rendered for a Type II Site Plan Review Application for the **13th Street Gas Station**. The proposal includes the construction of an 8-pump gas station, a 4,100 square-foot convenience store, and a drive-thru car wash, located at 20101 NE 13th Street, in the BP - Business Park Zone.

A detailed staff report and decision with conditions of approval, including application materials, are available upon request. See City staff contact information above.

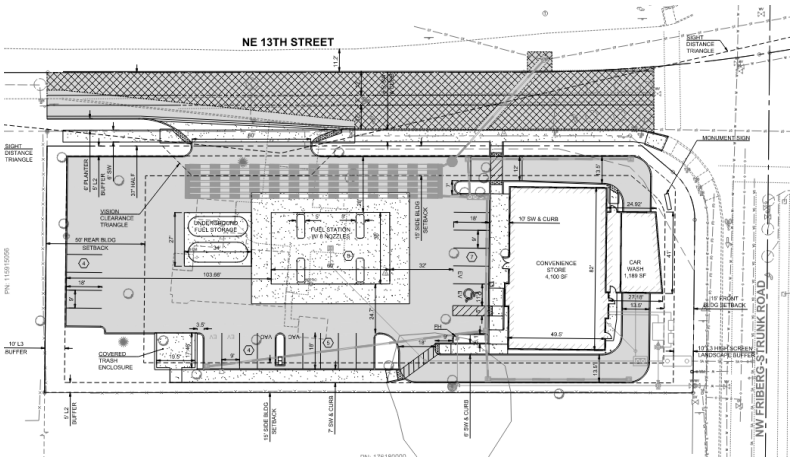
APPEAL PROCEDURES:

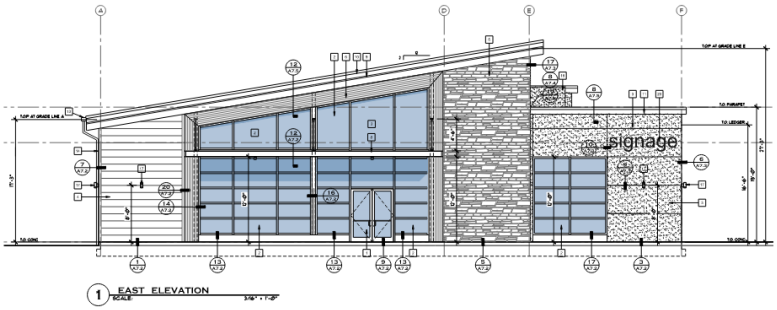
Decisions may be appealed to the hearing examiner. All appeals are initiated by filing a notice of appeal with the appeal fee of $456.00 to the Community Development Director within fourteen (14) days of issuance of the decision being appealed.

The notice of appeal shall be in writing and contain the following information:

(1) Appellant's name, address, and phone number;
(2) Appellant's statement describing his or other standing to appeal;
(3) Identification of the application which is the subject of the appeal;
(4) Appellant's statement of grounds for the appeal and the facts upon which the appeal is based;
(5) The relief sought, including the specific nature and extent;
(6) A statement that the appellant has read the notice of appeal and believes the content to be true, followed by the appellant's signature.

13th Street Gas Station





Karin L Nosrati
20107 NE 14th Street
Camas, WA 98607
360-254-1585

On behalf of the residents of Morning Meadows Estates, residents of Katie's Hill and residents of Evergreen Acre Tracts, I am appealing the approval of a project called 13TH STREET GAS STATION (FILE NO. SPRV23-06). We live in single family residences adjacent to the project.

The project is called 13TH STREET GAS STATION (FILE NO. SPRV23-06)

This project has potential to

- Pollute open waters in the vicinity, increasing concerns about management of the Lacamas Lake watershed.
- Endanger safe drinking water supply of immediate neighbors on wells
- Create noise and light pollution that would interfere with the quiet enjoyment of residences in nearby neighborhoods
- Permit the construction of a car wash in a BP zoning, potentially violating zoning requirements. Camas has previously only permitted car washes in CC zoning. A car wash is not listed in the City of Camas Code of Ordinances
- Create a dangerous intersection with multiple safety concerns: Ingress and egress is proposed where there is poor visibility due to the topography of the Goodwin Road hill and it's near 90 degree turn; insufficient braking distance to avoid a crash; disrupt traffic including school bus traffic to nearby high school
- Expose the City of Camas to liability for granting an exception to the posted Access Standards if permitting a left turn access shorter than 660 ft into the parcel.
- Disrupt recreational use of the designated bicycle route; create a hazardous crossing for pedestrians, including students

Deny approval of this project or allow with the following modifications

- Require 300 ft distance from nearest drinking water wells and open bodies of water to underground storage tanks
- Require the project development owner to conduct a baseline comprehensive chemical drinking water well inspection of nearby wells. Thereafter the gasoline station owner shall be required to perform annual well inspections and if pollutants are detected, they must be remedied.
- Conduct a geological test that verifies the movement of ground water of the existing wells
- Lower the floor/topography of the filling stations 2 ft. below street level to contain spills and vehicle drips to the property to prevent their release to the street during heavy rains

and ice melts, which are common at this intersection and to prevent run-off to property to the north

- Conduct an updated traffic study that accounts for the new warehouse, the new residential traffic east (Goodwin/Green Mountain), Union High School traffic, the new Oak Tree Station, the new Business Park mall buildings on NW Friberg-Strunk St., and to include the traffic impact of Harmony Sports Complex.
- City of Camas to decline the request from the developer to allow a deviation from the City's Access Spacing Standards (Resolution 17-005) and setback requirements
- Only allow a right turn ingress to the project by building a concrete divider in the center of NE 13th Street, to block dangerous left turns
- Require separate ingress and egress for better traffic flow, including a primary exit to NW Friberg-Strunk St.
- Provide an updated circulation plan that describes stacking of cars waiting for a pump and how it would not interfere with traffic on this arterial
- Conduct a separate SEPA study for the carwash facility because the current SEPA addresses mostly the gas station
- Correct and update the Wetland Buffer Bank Use plan, as it omits the wetland to the south and was conducted without access to the wetland or spring on the adjacent property to the west.
- Remove car wash from the project
- Reduce the size of the convenience store due to estimated traffic to the location; limit operation and sales hours for alcohol due to proximity to high school.
- Post signs on project property reminding patrons of City of Camas' noise ordinance. No noise should be added to the surrounding neighborhoods.
- Erect a 12 ft noise and light barrier wall for neighbors to the west, east and north to diminish noise and light pollution
- Establish a litter control plan, including graffiti clean-up, and funding into perpetuity for twice-per-week trash collection along all four roads for 1000 ft.
- Operating hours of the gas station shall be in compliance with BP zoning, including all gasoline tanker trucks filling gasoline and all deliveries. There should be no night time noise generated.
- Require payment to well owners for a well inspection upon project construction start date. Homeowners along 13th Street and adjacent Streets in a ½ mile radius of a gas station, will incur the additional expense of a well inspection during the sale of their property to an FHA buyer due to the underground storage tank.
- Submit a decommissioning plan to address end-of-life of the gas station
- Require all provisions and responsibilities to transfer to subsequent owners of the gas station.

I have read the appeal and believe the content to be true.

Karin L. Nosrati

Please note: We request permission to submit a rebuttal to the traffic study at a later date, given the short period of time since your decision on September 16, 2024.

All previously submitted information/comments shall be part of this appeal.

The following neighbors would like to be included in the appeal and receive an invitation to the hearing:

Judith WILSON

20008 NE 11TH ST
CAMAS WA, 98607

Norma and Ernie HARRISON

20002 NE 11TH ST
CAMAS WA, 98607

Don LINGLE

19912 NE 11TH ST
CAMAS WA, 98607

Jeff and Keli GOERTZEN

20009 NE 14TH ST
CAMAS WA, 98607

Greg and Shannon CONNELL

20002 NE 14TH ST
CAMAS WA, 98607

Ken and Lisa WALTOS

20106 NE 14TH ST
CAMAS WA, 98607

Joan and Richard RICKARD

1417 NE 202ND AVE
CAMAS WA, 98607

Ruth and William SMALL

20217 NE 16TH ST
CAMAS WA, 98607

Heidi and Butch PARKER

20103 NE 16TH ST
CAMAS WA, 98607

SOLDATI MELISSA

19915 NE 16TH ST
CAMAS WA, 98607

Lisa and Mike OGDEN

19916 NE 16TH ST
CAMAS WA, 98607

Kristin Price

19813 NE 13TH ST
CAMAS WA, 98607

Anthony BRAUNSTEIN

19700 NE 11TH ST
CAMAS WA, 98607

Lisa and Michael MCCOLM

19606 NE 11TH ST
CAMAS WA, 98607

Sam WEBER

19514 NE 11TH ST
CAMAS WA, 98607

Stan GHEZZI

19504 NE 11TH ST
CAMAS WA, 98607

Beverly TERRY

19410 NE 11TH ST
CAMAS WA, 98607

Troy TIBBS

19505 NE 11TH ST
CAMAS WA, 98607

MARTIN LYNN E

19701 NE 11TH ST
CAMAS WA, 98607

Linda SHREVES

19805 NE 11TH ST
CAMAS WA, 98607

Rodney SMITH

19813 NE 11TH ST
CAMAS WA, 98607

Tressia and Max MORROW

19821 NE 11TH ST
CAMAS WA, 98607

Alan JOHNSTON

20003 NE 11TH ST UNIT 38
CAMAS WA, 98607

Tim LOY

20009 NE 11TH ST
CAMAS WA, 98607

Tony AGOLIO

19717 NE 11TH ST
CAMAS WA, 98607

Lee and Julie BOLLING

19607 NE 11TH ST
CAMAS WA, 98607

Kylene and Harold STENGEL

19411 NE 11TH ST
CAMAS WA, 98607

Kerry and Carol BASKIN

19403 NE 11TH ST
CAMAS WA, 98607

Jim Hughes
19812 NE 11TH ST
CAMAS WA, 98607

Tim and Julie LOY

20009 NE 11TH ST
CAMAS WA, 9860

Steve and Jeanette MURPHY

20007 NE 16TH ST
CAMAS WA, 98607

Brittany and Jonathan BOZARTH

19821 NE 13TH ST
CAMAS WA, 98607

Chris Yetter
20210 NE 16th
CAMAS, WA 98607

Karin and Randy NOSRATI (Appellant)
20107 NE 14th Street
Camas, WA 98607

Community Development Department

Notice of Public Hearing

Appeal of Decision for SPRV23-06: 13th Street Gas Station

Planning Case APPEAL24-1001

A public hearing will be held on **Thursday, November 14, 2024 at 4:30 p.m.,** or soon thereafter, before the City's Hearings Examiner to consider the appeal of the decision for the 13th Street Gas Station (SPRV23-06). The public hearing will be held remotely and in person at city hall. The proposal includes the construction of an 8-pump gas station, a 4,100 square-foot convenience store, and a drive-thru car wash, located at 20101 NE 13th Street, in the BP - Business Park Zone. The application was determined technically complete on November 7, 2022. A Notice of Decision for the project approval was issued on September 16, 2024. An appeal of the decision was received on September 30, 2024.

Questions/Comments: The public hearing will follow the quasi-judicial process described within Camas Municipal Code §18.55.180. Comments related to this development may be submitted as follows: (1) In person by testifying at the public hearing; (2) by regular mail to Community Development Department staff, Yvette Sennewald, Senior Planner, at Camas City Hall, 616 Northeast Fourth Avenue, Camas, WA 98607; (3) by phone at (360) 817-1568; or (4) by email to: communitydevelopment@cityofcamas.us. It is preferable that written comments be received at least five working days prior to the public hearing, in order to be available with the online agenda and materials. After the agenda has been posted online, all other written comments must be received no later than noon (12:00 p.m.) the day of the hearing, in order for those comments to be handed to the Hearings Examiner by Staff. Written and oral comments may also be submitted in person during the hearing.

Application Materials: The application included the following: project narrative, development plans and environmental reports, as required for a complete application pursuant to Camas Municipal Code (CMC) §18.55.110. The application materials are also available for viewing at the Community Development Department (616 NE 4th Avenue, Camas, WA) during regular business hours Monday – Friday 8 a.m-5 p.m.

Participate: All citizens are entitled to have equal access to the services, benefits, and programs of the City of Camas. Please contact the **City Clerk at (360) 817-1591** for special accommodations if needed. The city will provide translators for non-English speaking persons who request assistance at least three working days prior to a public meeting or hearing.

More Information: The public hearing agenda and supporting documents will be available for review on the City's website at the "Minutes, Agendas & Videos" link within the drop-down menu that is labeled "Your Government" or follow this link: http://www.cityofcamas.us/yourgovernment/minuteagendavideo.

Published in the Post Record on October 31, 2024 Legal Publication# 945930
Posted at Camas City Hall, Camas Library, City of Camas website at: http://www.cityofcamas.us
Mailed to parties of record on October 30, 2024

Russell and Barbara Wegner
19910 NE 16th St.
Camas, WA 98607

Russwegner@mac.com

November 10, 2024

City of Camas

Dear [City of Camas/ c/oRobert Maul,

I am writing to express my concerns for the upcoming hearing regarding the proposed construction of a gas station and car wash in our neighborhood, specifically 13th Street Gas Station: File Number SPRV23-06.

While I understand the importance of providing essential services to our community, I believe that this particular project may have detrimental effects on our quality of life, environment, and local economy.

1. **Traffic and Safety Concerns**: The addition of a gas station and car wash is likely to increase traffic congestion in our area. The influx of vehicles can compromise the safety of pedestrians, cyclists, and especially children. Our neighborhood is primarily residential, and the expected volume of cars could pose significant safety hazards.
2. **Environmental Impact**: The construction and operation of a gas station can lead to increased air and noise pollution, which would negatively impact our community's health and well-being. **Additionally, the potential for oil spills and groundwater contamination is a considerable risk that**

could threaten local ecosystems and drinking water sources. We strongly feel the study of wells in the proximity has not been addressed. Stormwater contamination risk has also not been fully addressed. The SEPA needs to be redone. The distances of this environmentally risky businessis to close to drinking water resources, (over a dozen wells) Lacamas Prairie, Lacamas Creek and Lacamas Lake. An Insurance bond could be a consideration.

2B. **Environmental Facts and Concerns**

1) A medium gas station puts out around 400,000 liters of gas per month. That puts out 24,000 liters of compound/ vapors which equals I 6,000 gallons of compounds/ vapors each month
2) Vapors travels approximately 600 feet in the surrounding aera in all direction depending on winds
3) Diesel can put out double this number.

1) As we all know, we are an area of major precipitation. These compounds /particles will go where the water goes. and drift into the near by wetlands, wells, and aquifers. A major Aquifer that is within 200 feet of the gas station supplies all the wells on 13th street.

1. Drinking water and is number one risk water plus potential contamination risk for wildlife, wetlands. As covered in the press, Bradshaw Lomatia, which only recently came off endangered species list could easily come back on endangered species list and is in very close proximity. The Preliminary Stormwater Technical Information Report (PTIR) dated November 2023, was prepared by PLS Engineering, Inc. *Yes,* The PTIR was prepared in accordance with Ecology's *Stormwater Management Manual for Western Washington* (2019

SWMMWW). Ecology issued the 2024\ However, the report is flawed. There is no opinion or formal review of this document from The Dept. of Ecology. Very important to note, there are at least 13 wells not mentioned anywhere in the report which are not on public record and the DOE is in the process of gathering well tags and ensuring registered with county. Right now, unfortunately, these legal wells are not on county record and their water may be impacted by the gas station/ car wash.

2) Safety of Children - by having this business at this location is a concern
3) Across the country and in other states hundreds of new gas stations have been forbidden to be built for many of these reasons.
4) If they go bankrupt in the near future who will do the $200 million dollar clean up for the City of Camas?

3. **Impact on Local Businesses**: The introduction of a gas station and car wash may drive business away from our local establishments, which are essential to fostering a strong community. Supporting local businesses helps maintain the character of our neighborhood and contributes to our economic stability.
4. **Property Values**: Studies have shown that properties located near gas stations can experience a decrease in value. This decline can affect homeowners' investments and the overall appeal of the neighborhood, which is a concern for many residents.
5. **Community Character**: Our neighborhood is known for its family-friendly atmosphere and community-oriented spaces.
6. The establishment of a gas station and car wash may detract from this appeal, changing the character of our area in a way that many residents may find undesirable.

In light of these concerns, I urge the City Council to reconsider the approval of this project. We need to prioritize the well-being of our community and look for solutions that align with our vision for a sustainable, healthy, and vibrant neighborhood.
Thank you for taking the time to consider my perspective. I hope you will take the necessary steps to protect our community's interests.

Sincerely,

Russell Wegner

Russell Wegner

Barbara Wegner

Barbara Wegner

V-Naught Traffic Solutions, LLC
Planning | Operations | Design | Engineering

Memorandum

To: Karin Nosrati, DC
From: Mark Haines, PE, PTOE
Date: 11/11/2024
Subject: NE 13th Street Gas STation Traffic Analysis Report Review

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SUMMARY

This memorandum summarizes the traffic analysis report review for the proposed NE 13th Street Gas Station Development location on the southwest corner of the NE 13th Street and NW Friberg-Strunk Street intersection within the City of Camas, Washington. The traffic analysis report reviewed is dated September 2023.

- Generally, the traffic impact study (TIS) did not follow the guidelines that the City of Camas has outlined
- The traffic analysis appears to have missed several key elements:
  - The data used in the analysis did not include the 24 hours count required by the City of Camas
  - Some of the data used for the LOS and travel demand calculations were estimated using engineering judgment
  - The data did not directly account for traffic demand related to the nearby high school
  - The dataset did not clearly include speed data including 85th percentile speeds used in other analyses
  - The analysis assumed only one vehicle in the peak hours entering and exiting the gas station
- The TIS used the WSDOT design manual instead of AASHTO in certain key places including the analysis of the left turn lane in the westbound direction
  - The intersection sight distance used the posted speed limit and did not review scenarios for 85th or 95th percentile speeds
  - There was no decision sight distance analysis completed for vehicles traveling westbound toward a queue of drivers accessing the site
- The crash data analysis did not specifically relate the development with any crash trends in the area or their potential mitigation
  - The safety analysis did not take into account the context of the lane configuration with any queuing related to the nearby traffic signal in relation to the develop site driveway access
  - The roadway configuration described in the TIS ignored the eastbound bike lane

TRAFFIC ANALYSIS REPORT

FOR

NE 13TH STREET GAS STATION

NE 13TH STREET

CAMAS

SUBMITTED BY

CHARBONNEAU ENGINEERING LLC

September 2023

Project 23-24

TRAFFIC ANALYSIS REPORT

FOR

NE 13TH STREET GAS STATION

NE 13TH STREET

CAMAS

Prepared By

CHARBONNEAU Engineering LLC

9-13-23

September 2023

Project 23-24

8516 SW 61st Avenue, Portland, OR 97219 Phone: 971.322.8003

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INTRODUCTION

This traffic analysis has been prepared to evaluate and document the operations and safety conditions for the NE 13th Street Gas Station development being planned in Camas, Washington. The development will construct a gas station with eight fueling positions, market, and car wash totaling 1,189 square feet. One single-family home will be demolished on the site.

The site is located at address #20101 NE 13th Street, on a 0.95-acre property (tax lot #176148-000). Currently a single-family home occupies the property. Figure 'a' in the appendix is a vicinity map highlighting the project location.

Both the City of Camas and City of Vancouver specified the transportation elements that needed to be addressed within the Pre-Application staff report (Camas – File #PA22-32). Therefore, it was necessary to evaluate several intersections in terms of traffic operations, safety, and for concurrency purposes.

TRAFFIC ANALYSIS CONSIDERATIONS

In order to address and evaluate the required transportation elements the following major tasks were performed.

- Inventory and record pertinent information such as traffic control devices, circulation patterns, lane conditions, pedestrian & bicycle facilities, transit zones, parking, and street characteristics.
- Record data on typical weekdays during the AM and PM peak traffic hours.
- Collect traffic count data at three study intersections.
- Address the City of Vancouver's concurrency needs including the number of trips distributed within the designated corridors and the associated proportionate share fees.
- Level of service (LOS) analysis of the study intersections and site access intersection to measure the approach delays for comparison to the City of Camas standards.
- Determination of vehicular queuing at the site access.
- Review intersection sight distance at the proposed access location.
- Documentation of the proposed access spacing and compare to the City's standards.
- Review traffic crash data furnished by WSDOT. Determine the intersection crash rates for the study intersections and verify if safety improvements are needed.

SITE DESCRIPTION, STREET, ACCESS, AND CRITICAL INTERSECTIONS

Development of the NE 13th Street Gas Station facility includes construction of an eight fueling position gas station, market, and car wash totaling 1,189 square feet. The site consists of a 0.95-acre parcel that is situated within the southwest intersection corner at NE 13th Street and NW Friberg-Strunk Street.

Access to the proposed development will be provided with a separate driveway connection to NE 13th Street. No access will occur on NW Friberg-Strunk Street. The proposed access will be controlled by stop signing on the approach to NE 13th Street. The project site plan (Figure 'b') illustrates the access location.

The study intersections in the area include NE 13th Street at NE 192nd Avenue and at NW Friberg-Strunk Street and SE 1st Street at NW Friberg-Strunk Street. Each of the locations are controlled by signalization.

Northeast 192nd Avenue at NE 13th Street is configured as a tee-shaped design with single-lane approaches on the south and east legs. The north leg includes a separate left turn lane and southbound through lane. A marked pedestrian crosswalk is in place on the intersection's north leg.

NE 13th Street at NW Friberg-Strunk Street is a four-way design with separate right turn lanes on the west and south legs. The east approach includes a separate left turn lane. The north leg has a single lane approach. Pedestrian crosswalks occur on each approach.

NW Friberg-Strunk Street at SE 1st Street is a four-way design with a separate right turn lane on the north leg. The east and west approaches include separate left turn lanes. The south leg has a single lane approach. Pedestrian crosswalks occur on each approach.

The existing and proposed lane configurations and traffic control are presented in Figure `c` in the report's appendix.

Southeast 13th Street is classified as a minor arterial within the Camas City limits and the City's minimum access spacing is 660 feet. The travel speed is posted at 35 MPH along the project site's frontage. The street grade is flat and the alignment is tangent. There is one travel lane in each direction with narrow paved/gravel surfaced shoulders of approximately one foot wide. Drainage ditches are present adjacent to the shoulders.

TRAFFIC OPERATIONAL ANALYSIS

In order to evaluate traffic flow and delay the study intersections were analyzed for level of service (LOS) conditions, delay, queuing, and safety. The intersections evaluated included NE 13th Street at NE 192nd Avenue and at NW Friberg-Strunk Street, and SE 1st Street at NW Friberg-Strunk Street. The site access at NE 13th Street was also evaluated.

To perform the LOS analysis new traffic counts were conducted. The counts were collected in August 2023 during the AM peak (7:00-9:00 AM) and PM peak (4:00-6:00 PM) traffic hours. Figure 1 illustrates the existing traffic volume data for the AM & PM peak hours.

Union High School is located approximately a half-mile south of the gas station/market site was not in session when the traffic counts were recorded. Therefore, to account for the

school's trips it was necessary to model the school's traffic. Using an enrollment of 1,970 students as provided by the school district, the trips were calculated using the ITE trip generation rates (LUC #525) for public high schools. Figure 2 illustrates the school's traffic assignments for the AM & PM peak hours.

Figure 3 presents the year 2023 traffic flow for the combined (existing plus modeled high school) traffic scenario.

In-Process traffic was accounted for in the project and is presented on Figure 4. Several approved (and not yet built) development projects were identified by the City. These included the following;

- Camas Heights – NE 28th St
- Green Mountain B1 South Phase
- Panattoni Industrial Bldg-Lot 6
- Lacamas Tech Center
- Village at Camas Meadows
- Parklands at Camas Meadows
- Green Mountain Estates
- Oak Tree Station

Three years of traffic growth at 2% per year was added to the existing traffic to account for future conditions. Figure 5 represents the year 2026 background traffic scenario and incorporates three years of growth traffic at 2% per year, in-process traffic, and existing traffic plus the modeled high school traffic.

Pass-By traffic is permitted in the trip generation calculations according to the ITE Trip Generation Handbook for the gas station use (LUC #945). These are trips that access the site from existing traffic flow within the area. Figure 6 illustrates these trips, which are included with the total traffic scenario.

VEHICULAR TRIP GENERATION

Trip rates presented in the Institute of Transportation Engineers (ITE) Trip Generation manual, 11th edition (year 2021) were utilized to estimate the site's trip generation. The trip generation is summarized in Table 1 (following page).

Trip rates for ITE land use code #945 (gas station w/market) and land use code #948 (automated car wash) was applied for the trip generation calculations. Trip credits were taken into account for the existing single-family home that occupies the property is also listed in the table.

Table 1 Trip Generation Summary

ITE Land Use	Units	Weekday						
		ADT	AM Peak Hour			PM Peak Hour		
			Total	Enter	Exit	Total	Enter	Exit
PROPOSED SITE TRIPS								
Gas Station with Market (#945)	8 fueling positions							
Generation Rate [1]		265.12	16.06	50%	50%	18.42	50%	50%
Total Driveway Trips		**2,121**	**128**	64	64	**147**	74	73
Pass-By Trips[2] (AM=62%; PM=56%)			79	40	39	82	41	41
Automated Car Wash (#948)	1,189 sq. ft.							
Generation Rate [1,3,4]		142.00	9.94	50%	50%	14.20	50%	50%
Total Driveway Trips		**169**	**12**	6	6	**17**	9	8
EXISTING SITE TRIPS (TRIP CREDITS)								
Single-Family (#210)	1 single-family home							
Generation Rate [1]		9.43	0.70	26%	74%	0.94	63%	37%
Total Driveway Trips		**-9**	**-1**	0	-1	**-1**	-1	0
Net Total Trips[5]		**2,281**	**139**	70	69	**163**	82	81
Site Pass-by Trips		**0**	**79**	40	39	**82**	41	41
Net New Trips[6]		**2,281**	**60**	30	30	**81**	41	40

[1] Source: *Trip Generation* , 11th Edition, ITE, 2021, average rates.

[2] Pass-by percentages based on Trip Generation Handbook, 3rd Edition, ITE, 2017.

[3] ADT rate estimated as 10 times the PM peak hour rate.

[4] AM peak rate estimated as 70% of PM peak rate. AM peak distribution is reverse of PM peak distribution.

[5] Net Total Trips = Proposed Total Site Trips - Existing Total Site Trips.

[6] Net New Trips = Net Total Trips - Site Pass-by Trips.

Development of project is expected to generate a net of 2,281 daily trips, 60 net AM peak hour trips, and 81 net PM peak hour trips.

The NE 13th Street Gas Station trip distribution was based on the existing count data and engineering judgment. This information is presented on Figure 7. The corresponding trip assignments are presented on Figures 8a and 8b for the AM & PM peak hours, respectively. Figure 9 illustrates the year 2026 total traffic conditions.

CAPACITY ANALYSIS

Capacity analyses were performed to determine the levels of service for the weekday peak hours. Synchro v11.1 software was used to determine the approach delays and level of service (LOS) for the site access study intersections. The program is based on the year 2016 Highway Capacity Manual methodology. Table 2 summarizes the analysis results. Copies of the capacity analysis summaries are included in the appendix.

Table 2 Capacity Analysis Summary

Intersection	Type of Control	Peak Hour	Traffic Scenario											
			2023 Adjusted Existing				2026 Background				2026 Total			
			Crit. Mov't	LOS	Delay	v/c	Crit. Mov't	LOS	Delay	v/c	Crit. Mov't	LOS	Delay	v/c
NE 192nd Avenue & NE 13th Street	Signal	AM	-	C	20.5	0.56	-	D	41.1	0.70	-	D	50.4	0.75
		PM	-	C	34.6	0.65	-	F	81.8	0.82	-	F	100.6	0.86
	Mitigated [1]	*AM*	-	-	-	-	-	-	-	-	-	-	-	-
		PM	-	-	-	-	-	D	35.8	0.71	-	D	41.2	0.73
Site Access & NE 13th Street	Two-way Stop	AM	NB	C	17.9	0.00	NB	C	24.0	0.01	NB	D	30.8	0.36
		PM	NB	A	0.0	0.00	NB	A	0.0	0.00	NB	D	31.1	0.40
NW Friberg-Strunk St & NE 13th Street	Signal	AM	-	B	13.2	0.27	-	B	17.7	0.35	-	B	17.7	0.35
		PM	-	B	16.3	0.27	-	C	23.2	0.36	-	C	23.1	0.37
NW Friberg-Strunk St & SE 1st St/NW Lake Rd	Signal	AM	-	C	25.7	0.28	-	C	24.5	0.30	-	C	24.9	0.30
		PM	-	B	16.7	0.29	-	B	17.6	0.33	-	B	17.7	0.33

Notes: 2016 Highway Capacity Manual methodology used in analysis, Synchro v11. NB - Northbound, Crit. Mov't - Critical movement or critical approach.

[1] Mitigation: Widen NE 13th Street approach at NE 192nd Avenue to provide a separate westbound left turn lane and westbound shared through-right lane.

With the exception of NE 13th Street at NE 192nd Avenue the analysis has documented that the study intersections will operate acceptable at LOS `D` or better in the year 2026 total traffic scenario and meet the City's level of service standards.

At NE 13th Street and NE 192nd Avenue the analysis determined that the intersection will operate at LOS `F` during the PM peak hour in the year 2026 background and total traffic scenarios. The failing condition is attributed to the growth and in-process traffic. The City has recognized and documented in the TSP that future improvements will be necessary on NE 13th Street (Goodwin Road) to accommodate heavier traffic. A year 2035 improvement is listed in Table 6 within the TSP that proposes street widening which should mitigate the issue. Specifically the current study finds that adding a separate westbound left turn lane at the NE 192nd Avenue signal will mitigate the failing condition to acceptable LOS `D`. However, no mitigation is proposed in conjunction with the gas station & market development as the failure is due to the background traffic conditions.

Generally, LOS 'A', 'B', 'C', and 'D' are desirable service levels ranging from no vehicle delays to average or longer than average delays in the peak hours. Level 'E' represents long delays indicating signalization warrants need to be reviewed and signals considered only if warrants are met. Level 'F' indicates that intersection improvements, such as widening and signalization, may be required. According to the Highway Capacity Manual (HCM*)*, the following delay times are associated with the LOS at stop controlled unsignalized and signalized intersections.

Level of Service criteria defined in Highway Capacity Manual

Level of Service (LOS)	Unsignalized Control Stopped Delay (sec/veh)	Signalized Control Stopped Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 and ≤ 15	> 10 and ≤ 20
C	> 15 and ≤ 25	> 20 and ≤ 35
D	> 25 and ≤ 35	> 35 and ≤ 55
E	> 35 and ≤ 50	> 55 and ≤ 80
F	> 50	> 80

QUEUING ANALYSIS

Queue lengths at the proposed site access intersection with NE 13th Street were assessed based on the 95th percentile demand values for the year 2026 total traffic scenarios. Both the AM & PM peak hour results were established in the Synchro analysis. Copies of the reports are included in the appendix.

During the AM peak hour the northbound site access approach is expected to experience a queue of one to two vehicles. For the westbound to southbound left turn from NE 13th Street into the site the projected queue is one car.

During the PM peak hour the northbound site access approach is expected to experience a queue of two vehicles. For the westbound to southbound left turn from NE 13th Street into the site the projected queue is one car.

INTERSECTION SIGHT DISTANCE

The development's access on NE 13th Street was analyzed for intersection sight distance requirements in accordance with the AASHTO standards. Northeast 13th Street has a posted speeds of 35 MPH and therefore the intersection sight distance standard is 390 feet.

A review of the sight distance at the site's access revealed that there are no restrictions in either direction along NE 13th Street and over 500 feet of sightline is available. Therefore, the intersection sight distance standard is met.

For safety reasons the sightlines must be maintained and potential obstructions due to street grade, buildings, parking, signing, fencing, landscaping, above ground utilities, or other objects shall not be permitted.

LEFT TURN LANE REQUIREMENTS

A left turn lane warrant was assessed for the westbound to southbound movement from NE 13th Street for traffic entering the site. The AM & PM peak hours were evaluated for the year 2026 total traffic scenario.

The turn lane is not warranted in the PM peak hour.

The warrant curve shown on Exhibit 1310-7a in the appendix indicates that a left turn is marginally met based on a 40 MPH travel speed. However, the travel speed on NE 13th Street is 35 MPH which if plotted indicates the warrant would not be met. It is also noted that the queuing analysis for the westbound left turn movement has confirmed that up to one vehicle may queue to make a left turn resulting in a LOS `A` condition. As a result adding a westbound left turn lane on NE 13th Street is not proposed in conjunction with gas station, market, and car wash development.

The warrant figure is included in the appendix.

ACCESS SPACING & SPACING STANDARDS

The proposed access location was assessed for conformance to the City's access spacing standards. NE 13th Street is classified as a minor arterial and the City's minimum spacing is 660 feet.

The proposed access spacing will occur at approximately 200 feet west of the signalized intersection at Friberg-Strunk Street and therefore does not meet the spacing standard. Placing the site access any further to the west is not viable from an operational standpoint because trucks (including gas tanker trucks) need the turning capability to maneuver on-site in order to exit the lot. It is noted that the pre-application staff report indicates that the City would support the substandard spacing condition if the design is supported by a deviation request. The request will be presented in a separate document.

ACCIDENT HISTORY

Crash data for study intersections was obtained from WSDOT staff and reviewed to help identify if there were any traffic safety issues. The study period covered five years from January 2018 through December 2022 for the intersections at NE 13th Street/NE 192nd Avenue, NE 13th Street/Friberg-Strunk Street, and SE 1st Street/Friberg-Strunk Street.

The crash rates presented in Table 3 are based on the number of accidents per million entering vehicles (MEV) per year. Typically, an intersection is not considered unsafe unless its accident rate exceeds the threshold value of 1.0 accidents per MEV.

The study intersections did not experience a crash rate greater than 0.27 crashes per MEV/year and therefore no safety improvements are proposed.

Table 3 Crash Rate Results

Intersection	Crash History (Years)	Number of Crashes	Crashes per year	Annual Traffic Entering (veh/yr)	Crash rate per M.E.V.*
NE 192nd Ave & NE 13th St	5.26	9	1.7	6391700	**0.27**
NW Friberg-Strunk St & NE 13th St	5.26	3	0.6	3944592	**0.14**
SE 1st St & NW Friberg-Strunk St	5.26	5	1.0	5774444	**0.16**

* M.E.V. - million entering vehicles.

PEDESTRIANS, BICYCLES, & BUSES

No sidewalk is present on NE 13th Street adjacent to the project site's frontage. Sidewalk will be constructed with the development along the property's NE 13th Street frontage (south street side). Sidewalk is present on Friberg-Strunk Street.

Bike lanes are not provided on NE 13th Street. Bike lanes are present on Friberg-Strunk Street. Additional bicycle lanes are not planned with the development.

C-Tran does not provide transit service in the immediate area of the development. It does provide service between the Camas City Center and the 99th Street Transit Center in Vancouver.

CITY OF VANCOUVER CONCURRENCY DOCUMENTATION

Table 4 lists the City of Vancouver's intersections that are identified for future improvements. The table includes the number of peak hour site trips that will impact the locations, cost per trip, and the proportionate share fee equating to $153,050.

Table 4 Proportionate Share Project Intersections & Fees

Intersection	Cost Per Trip	Peak Trips	Proportionate Share
AM PEAK HOUR			
Grove St / Columbia House Blvd / SR-14 WB off-ramp	$600.00	0	$0.00
PM PEAK HOUR			
137th Avenue - from NE 49th St to Fourth Plain Blvd	$3,000.00	0	$0.00
Fourth Plain Boulevard & NE 152nd Avenue	$333.00	0	$0.00
Leiser Rd/St. Helens Av/MacArthur Blvd (future)	$2,000.00	0	$0.00
SE 176th Avenue & SE 20th Street	$400.00	0	$0.00
NE 192nd Avenue & NE 13th Street	$400.00	57	$22,800.00
SE 192nd Avenue & SE 34th Street	$150.00	13	$1,950.00
SE 192nd Avenue & SR-14 ramp terminals	$2,000.00	13	$26,000.00
MacArthur Boulevard & Andresen Road roundabout	$2,285.00	0	$0.00
MacArthur Boulevard & Devine Road roundabout	$2,226.00	0	$0.00
NE 172nd Avenue & NE 18th Street	$300.00	20	$6,000.00
NE 179th Place & NE 18th Street	$900.00	20	$18,000.00
NE 187th Avenue & NE 18th Street	$1,200.00	24	$28,800.00
NE 162nd Avenue and NE 9th Street	$1,500.00	0	$0.00
NE 172nd Avenue and NE 9th Street	$4,100.00	0	$0.00
NE 192nd Avenue and NE 9th Street	$1,100.00	33	$36,300.00
NE 187th Avenue & SE 1st Street	$1,100.00	12	$13,200.00
PROPORTIONATE SHARE TOTAL			**$153,050.00**

Table 5 provides a summary of the development's trips that are projected to travel in the City's adopted Transportation Management Zone (TMZ) corridors during the PM peak hour.

Table 5 Number of Site Generated Trips Using Adopted TMZ Corridors

TMZ Corridor	Limits of Corridor	PM Peak Hour Trips
Fourth Plain Boulevard	Mill Plain Boulevard to I-5	0
	I-5 to Andresen Road	0
	Andresen Road to I-205	0
	I-205 to NE 162nd Avenue	0
Burton Road / NE 28th Street	NE 18th Street to NE 112th Avenue	0
	NE 112th Avenue to NE 138th Avenue	0
	NE 138th Avenue to NE 162nd Avenue	0
NE 18th Street	NE 112th Avenue to NE 138th Avenue	4
	NE 138th Avenue to NE 162nd Avenue	8
Mill Plain Boulevard	Fourth Plain Boulevard to I-5	0
	I-5 to Andresen Road	0
	Andresen Road to I-205	0
	I-205 to NE 136th Avenue	4
	NE 136th Avenue to NE 164th Avenue	8
	NE 164th Avenue to NE 192nd Avenue	8
St. Johns / Ft. Van Way	Mill Plain Boulevard to NE 63rd Street	0
Andresen Road	Mill Plain Boulevard to SR-500	0
	SR-500 to NE 78th Street	0
NE 112th Avenue	Mill Plain Boulevard to NE 28th Street	0
	NE 28th Street to NE 51st Street	0
NE 136th / 137th Avenue	Mill Plain Boulevard to NE 28th Street	0
	NE 28th Street to Fourth Plain Boulevard	0
NE 162nd/164th Avenue	SE 1st Street to Fourth Plain Boulevard	0
	SR-14 to SE 1st Street	0
SE 192nd Avenue	SR-14 to NE 18th Street	57

Table 6 lists the number of site trips projected to impact the Mill Plain Blvd corridor intersections.

Table 6 Number of Site Generated Trips Impacting the Mill Plain Boulevard Corridor Intersections

Intersection	PM Peak Hour											
	SB			WB			NB			EB		
	R	T	L	R	T	L	R	T	L	R	T	L
Mill Plain Boulevard & Chkalov Drive/112th Avenue	-	-	-	-	-	-	-	-	-	-	-	-
Mill Plain Boulevard & SE 117th Avenue	-	-	-	-	-	-	-	-	-	-	-	-
Mill Plain Boulevard & SE 120th Avenue	-	-	-	-	-	-	-	-	-	-	-	-
Mill Plain Boulevard & SE 123rd/124th Avenue	-	-	-	-	-	-	-	-	-	-	-	-
Mill Plain Boulevard & SE 126th Avenue	-	-	-	-	-	-	-	-	-	-	-	-
Mill Plain Boulevard & Park Plaza Drive	-	-	-	-	-	-	-	-	-	-	-	-
Mill Plain Boulevard & SE 136th Avenue	-	-	-	-	2	-	-	-	-	-	2	-
Mill Plain Blvd. & Hearthwood Blvd./Park Crest Avenue	-	-	-	-	2	-	-	-	-	-	2	-
Mill Plain Boulevard & SE 164th Avenue	-	-	-	-	4	-	-	-	-	-	4	-
Mill Plain Boulevard & SE 172nd Avenue	-	-	-	-	4	-	-	-	-	-	4	-
Mill Plain Boulevard & SE 192nd Avenue	4	6	-	-	-	-	-	7	-	-	-	4

SUMMARY AND RECOMMENDATIONS

Development of the NE 13th Street Gas Station facility includes construction of a gas station with eight fueling positions, market, and car wash totaling 1,189 square feet. One existing home on the property will be demolished. The project will generate a net of 2,281 daily trips, 60 AM peak hour trips, and 81 PM peak hour trips.

The site is situated in the southwest corner of the intersection at NE 13th Street and Friberg-Strunk Street. Access to the proposed development will be provided with one driveway on NE 13th Street. The driveway will be controlled by stop signing. Intersection sight distance at the access point exceeds the minimum standard (390 feet) as over 500 feet of sightline is available in both directions on NE 13th Street. For safety reasons the sightlines must be maintained and potential obstructions due to street grade, buildings, parking, signing, fencing, landscaping, above ground utilities, or other objects shall not be permitted.

The capacity analysis has determined that only one intersection will fail. The signalized intersection at NE 13th Street and NE 192nd Avenue will operate at LOS `F` during the PM peak hour in the year 2026 background and total traffic scenarios. The failing condition is attributed to the growth and in-process traffic. The City has recognized and documented in the TSP that long range future improvements will be necessary on NE 13th Street (Goodwin Road) to accommodate heavier traffic. A year 2035 improvement is listed in Table 6 within the TSP that proposes street widening which should mitigate the issue. Specifically, the current study finds that adding a separate left turn lane on the westbound approach will mitigate the failing condition to acceptable LOS `D`. However, no mitigation is proposed in conjunction with the gas station & market development as the failure is due to the background traffic conditions.

No new traffic signals are proposed in conjunction with the proposed development.

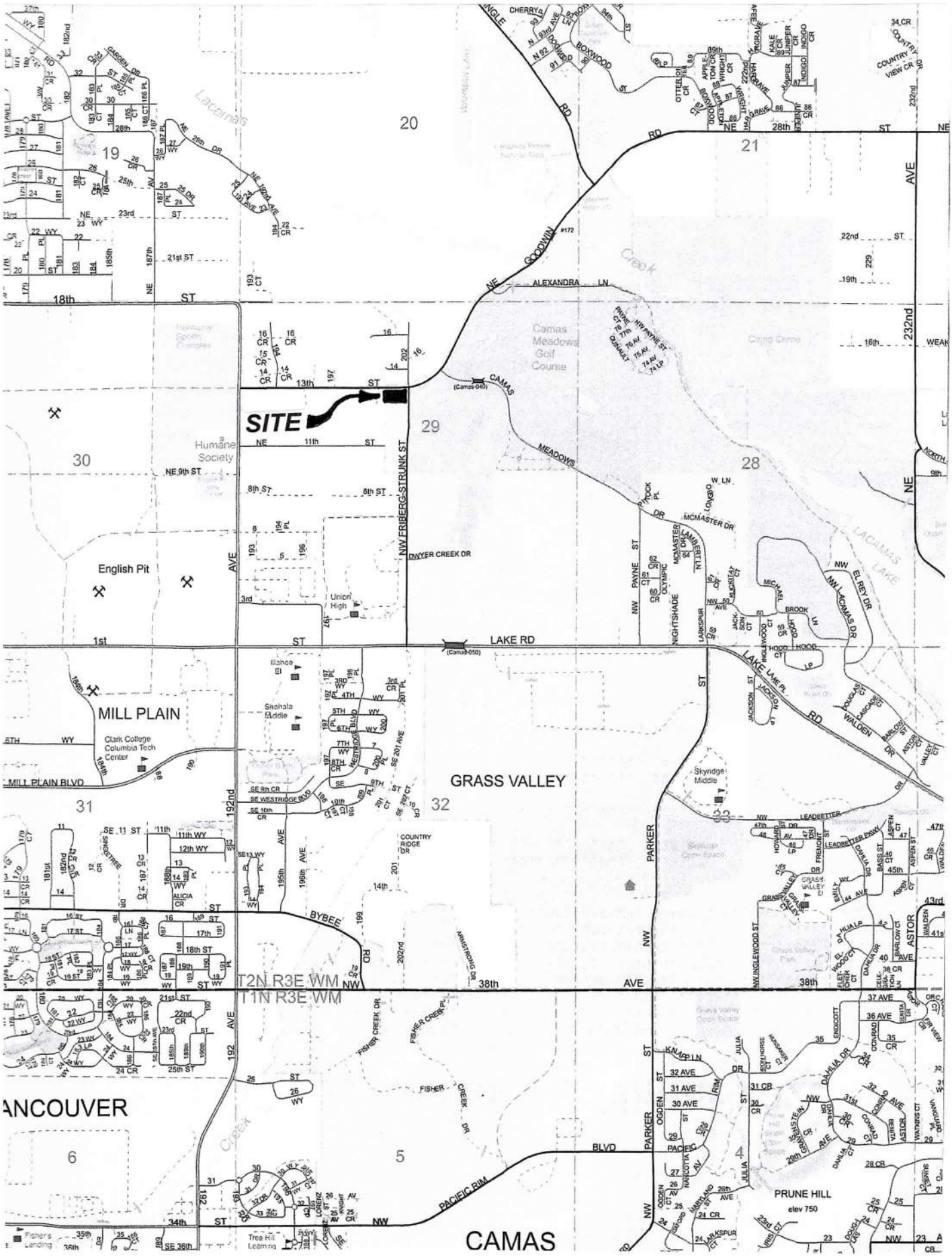
A left turn lane warrant was assessed for the westbound to southbound movement from NE 13th Street for traffic entering the site. The AM & PM peak hours were evaluated for the year 2026 total traffic scenario. The turn lane is not warranted in the PM peak hour. The warrant curve (Exhibit 1310-7a in the appendix) indicates that a left turn is marginally met based on a 40 MPH travel speed. However, the travel speed on NE 13th Street is 35 MPH which if plotted indicates the warrant would not be met. It is also noted that the queuing analysis for the westbound left turn movement has confirmed that up to one vehicle may queue to make a left turn resulting in a LOS `A` condition. Considering these factors adding a westbound left turn lane on NE 13th Street is not proposed in conjunction with the development.

The City of Vancouver's concurrency requirements are documented and referenced in Tables #4, #5, & #6.

Based on the findings of the traffic analysis no off-site improvements to the transportation system are recommend.

APPENDIX

- Vicinity Map — Figure `a`
- Site Plan — Figure `b`
- Lane Configuration & Traffic Control — Figure `c`
- Traffic Flow Figures
  - Figure 1 — Year 2023 Existing Traffic (without Union H.S. traffic)
  - Figure 2 — Union High School Modeled Peak Hour Traffic
  - Figure 3 — Year 2023 Existing Traffic (with Union H.S. traffic)
  - Figure 4 — In-Process Traffic (eight projects)
  - Figure 5 — Year 2023 Background Traffic
  - Figure 6 — Pass-By Trips
  - Figure 7 — Trip Distribution
  - Figure 8a — Trip Assignment, AM Peak Hour
  - Figure 8b — Trip Assignment, PM Peak Hour
  - Figure 9 — Year 2023 Total Traffic
- Traffic Count Data
- In-Process Traffic Flow Maps (eight development projects)
- Left Turn Lane Warrant
- Peak Hour Signal Warrant
- Crash History Summary
- City of Vancouver Trip Distribution within Concurrency Corridor Intersections
- City of Vancouver Trip Assignment within Concurrency Corridor Intersections
- Year 2035 Acknowledged TSP Mitigation, Friberg at Goodwin/13th Street Improvements
- Synchro Capacity Analysis Reports



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PLOT DATE: 09.08.23

CHARBONNEAU ENGINEERING LLC

PROJECT: 23-24

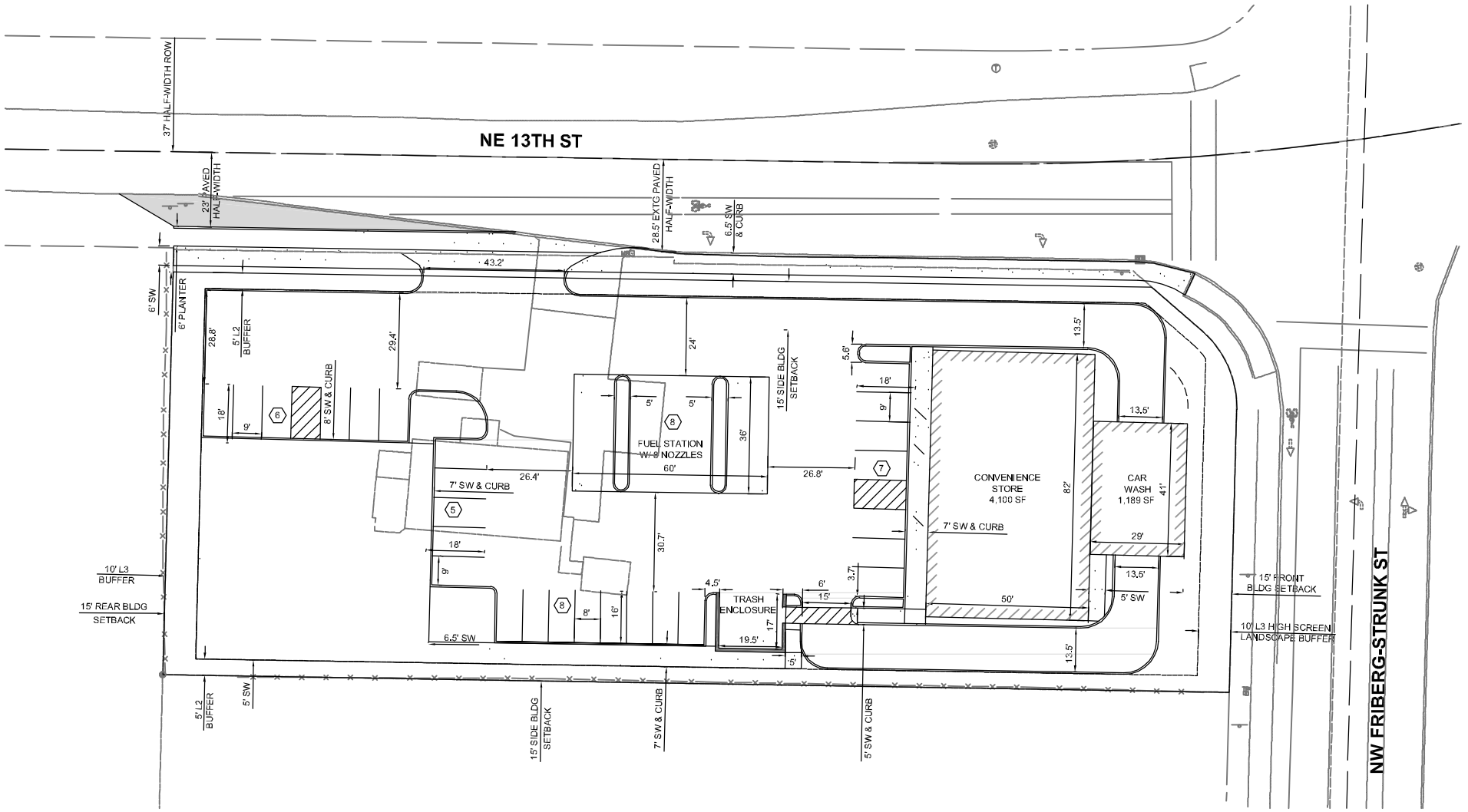
NOTES:
NO SCALE

N

VICINITY MAP
13TH STREET GAS STATION

FIGURE
1186

PLOT DATE: 09.08.23 FILE: 2324flow.dwg



1187 CHARBONNEAU ENGINEERING LLC

PROJECT: 23-24

NOTES: NO SCALE

N

SITE PLAN

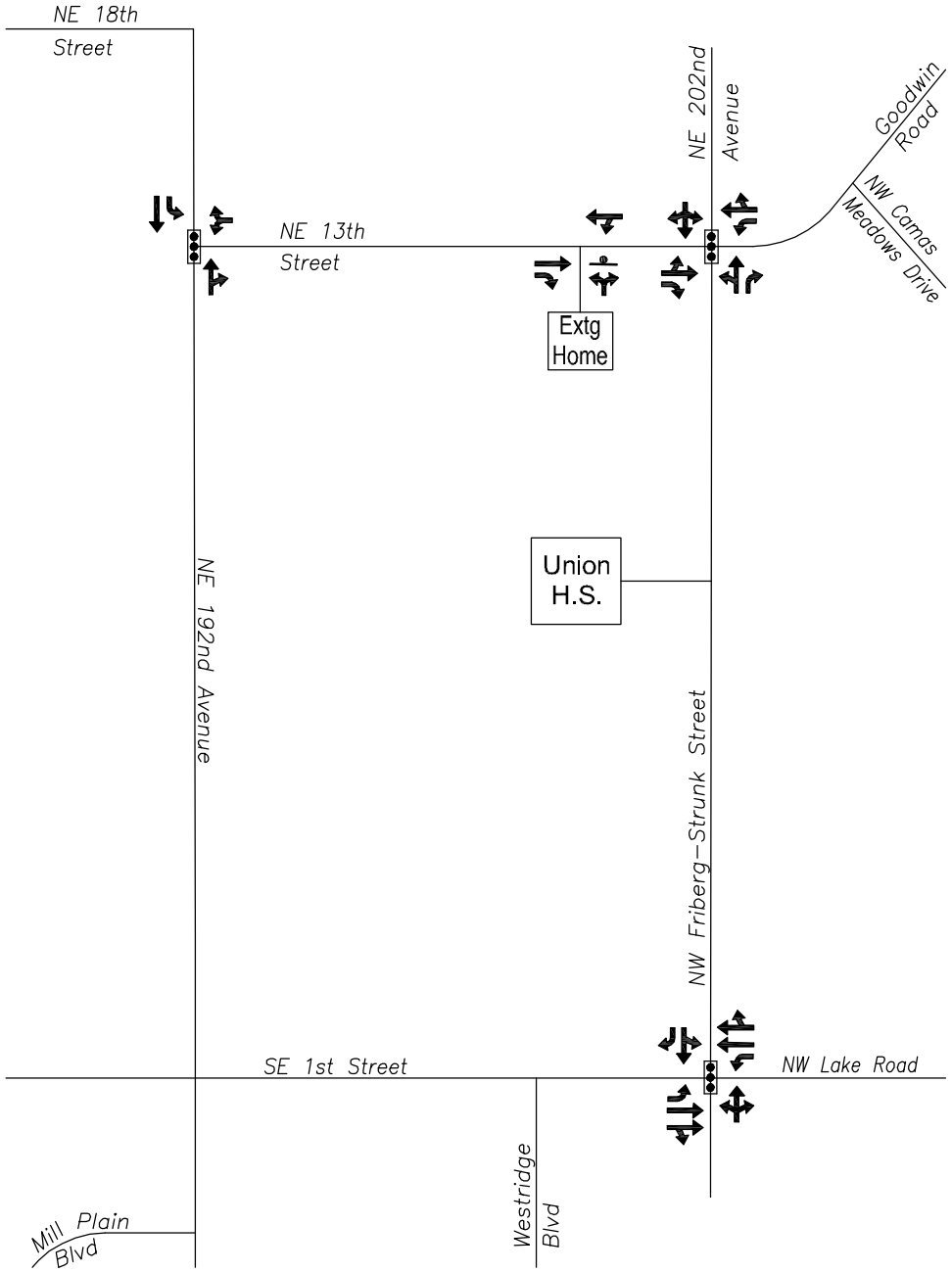
13TH STREET GAS STATION

FIGURE

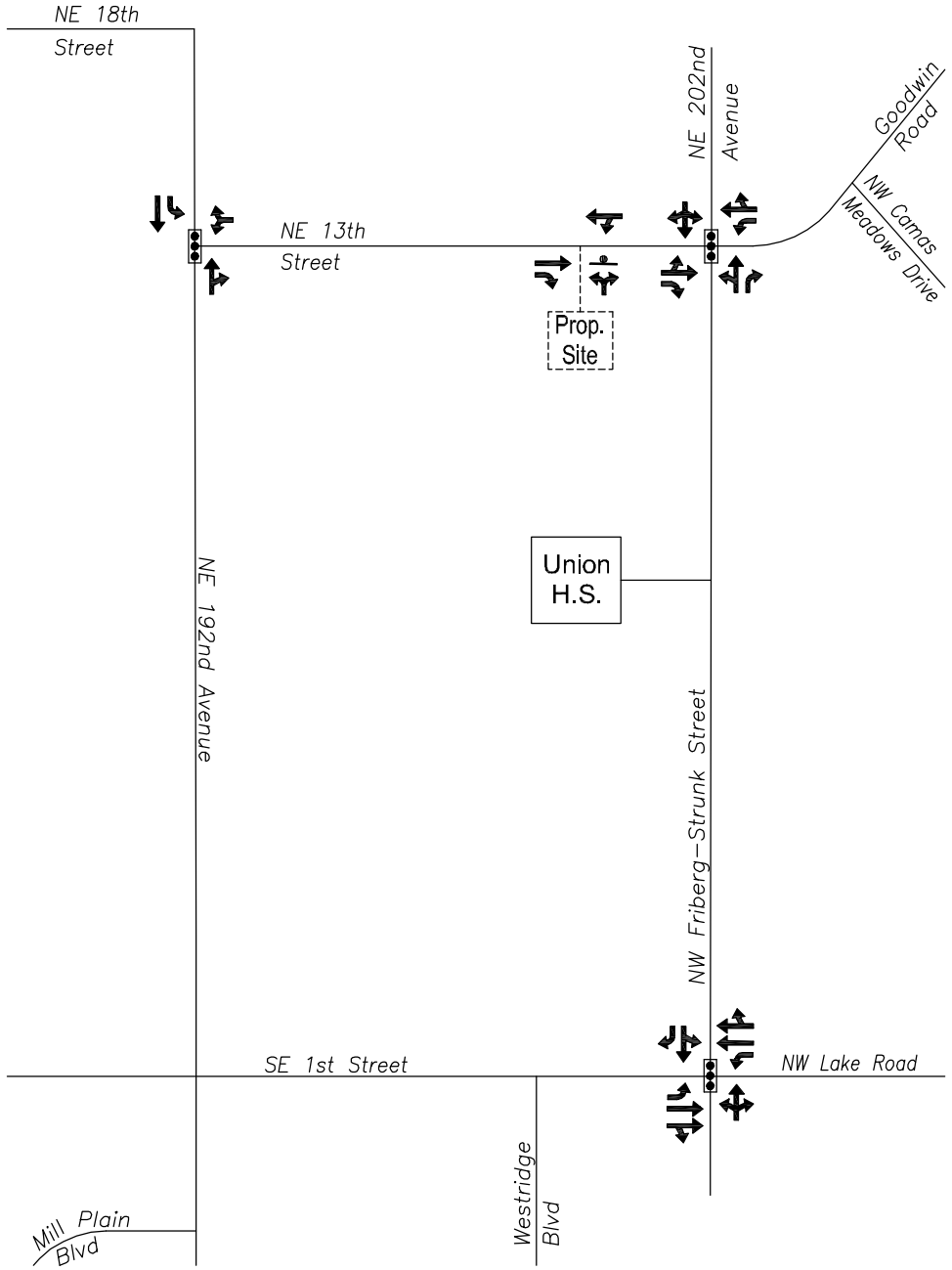
b

Exhibit 108 APPEAL24-1001

PLOT DATE: 09.08.23 FILE: 2324flow.dwg



EXISTING



PROPOSED

1188 CHARBONNEAU ENGINEERING LLC

PROJECT: 23-24

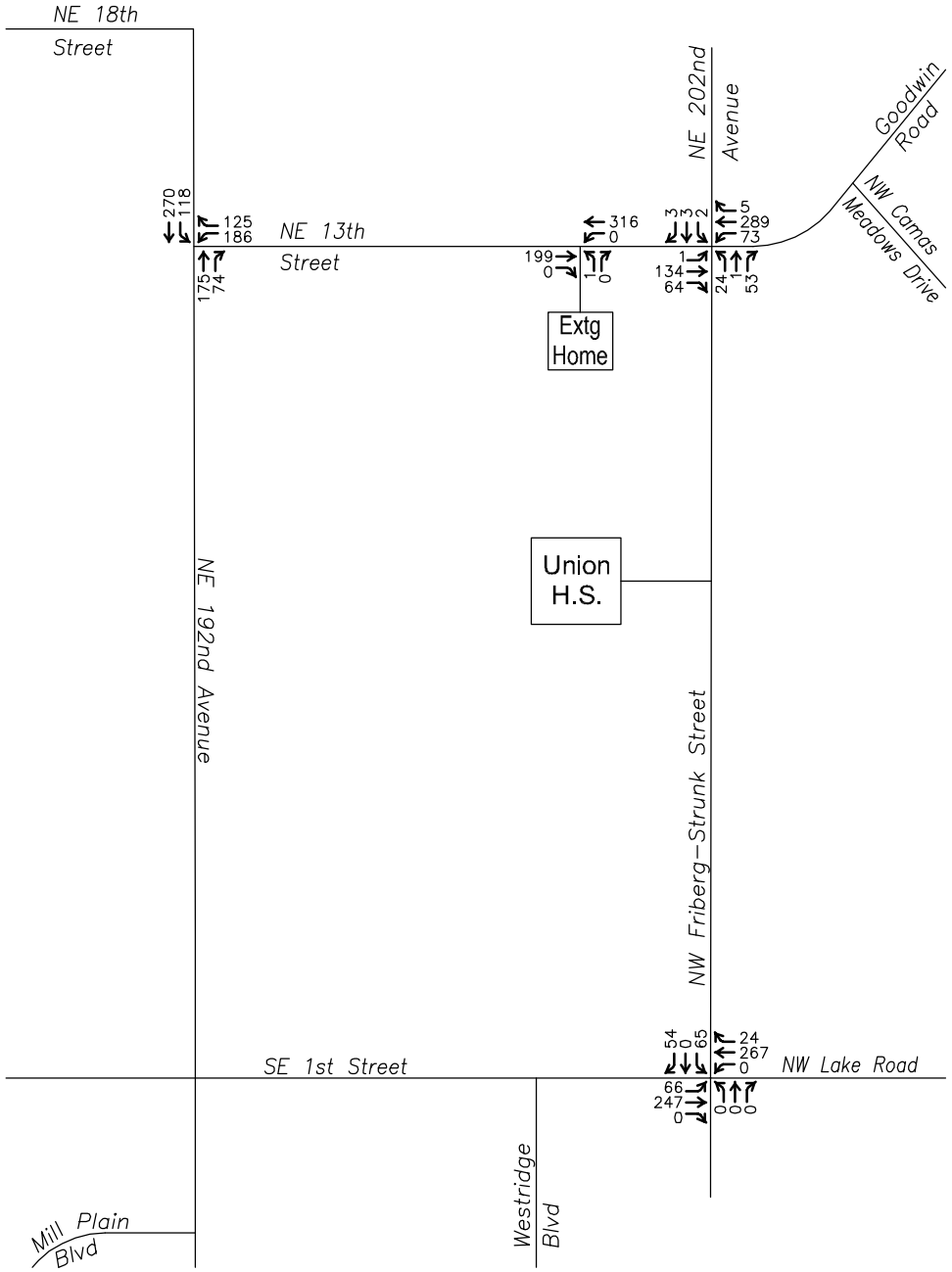
NOTES:

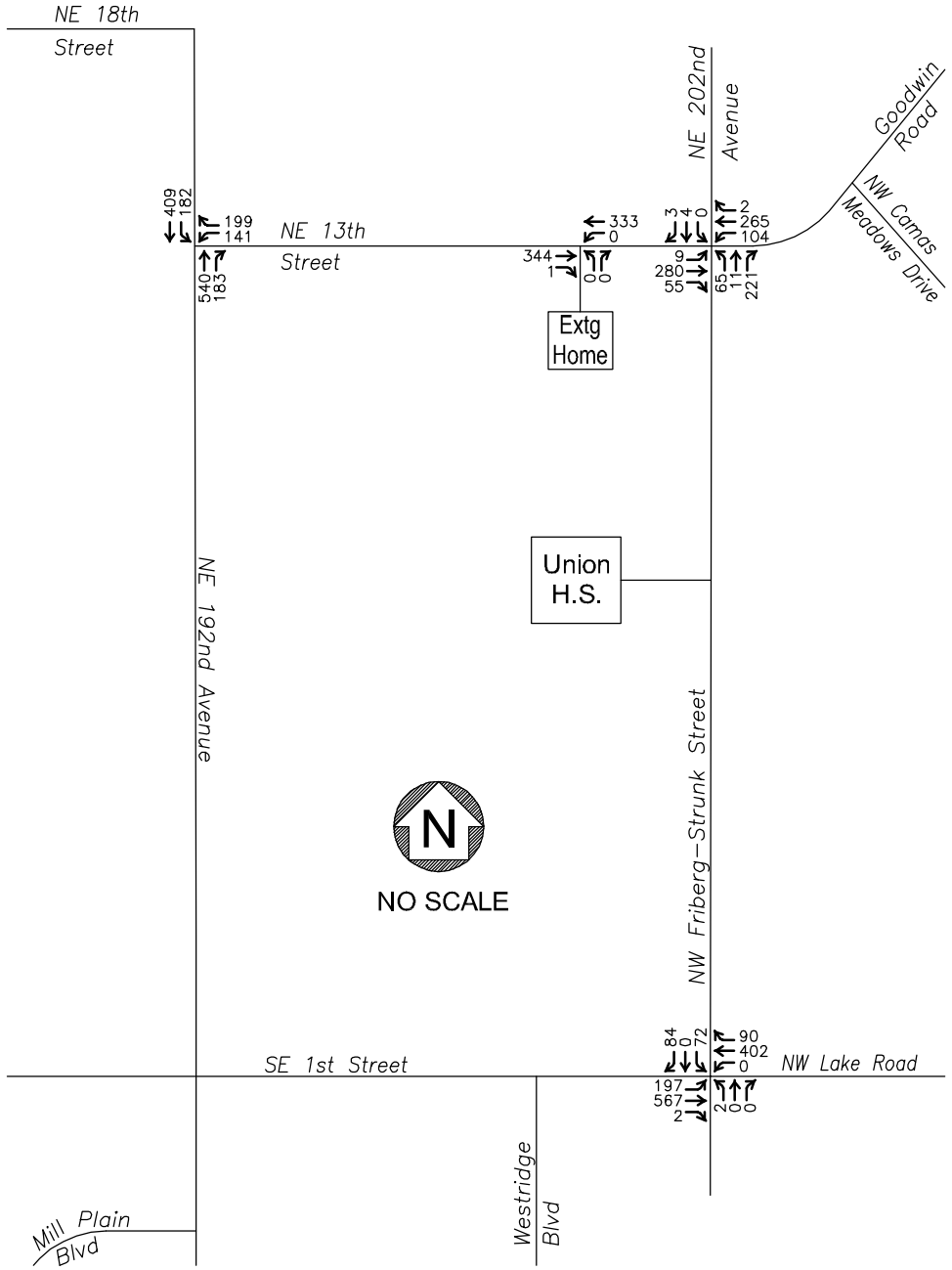
LANE CONFIGURATIONS AND TRAFFIC CONTROL
13TH STREET GAS STATION

FIGURE C

Exhibit 108 APPEAL24-1001

PLOT DATE: 09.08.23 FILE: 2324flow.dwg



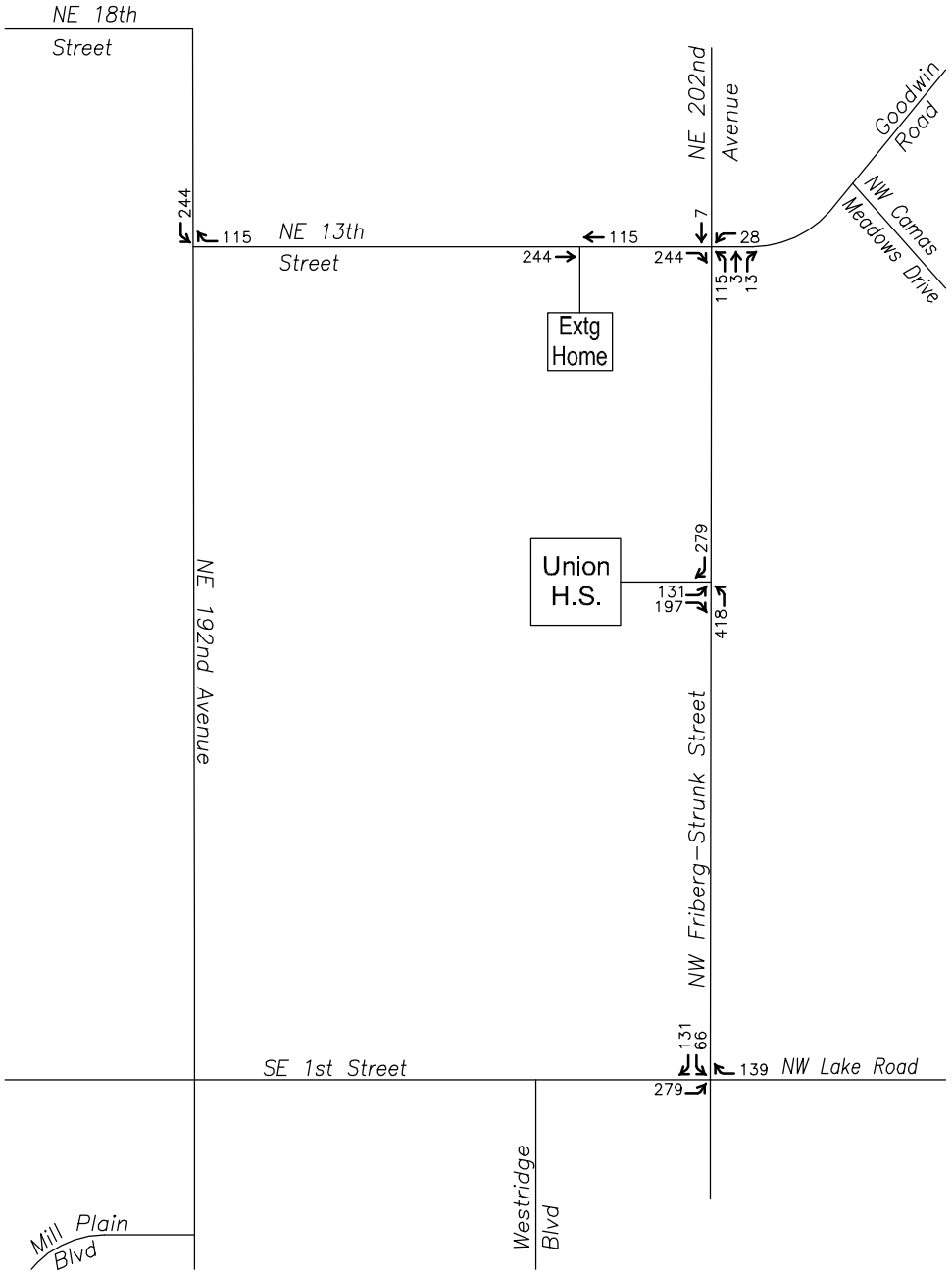


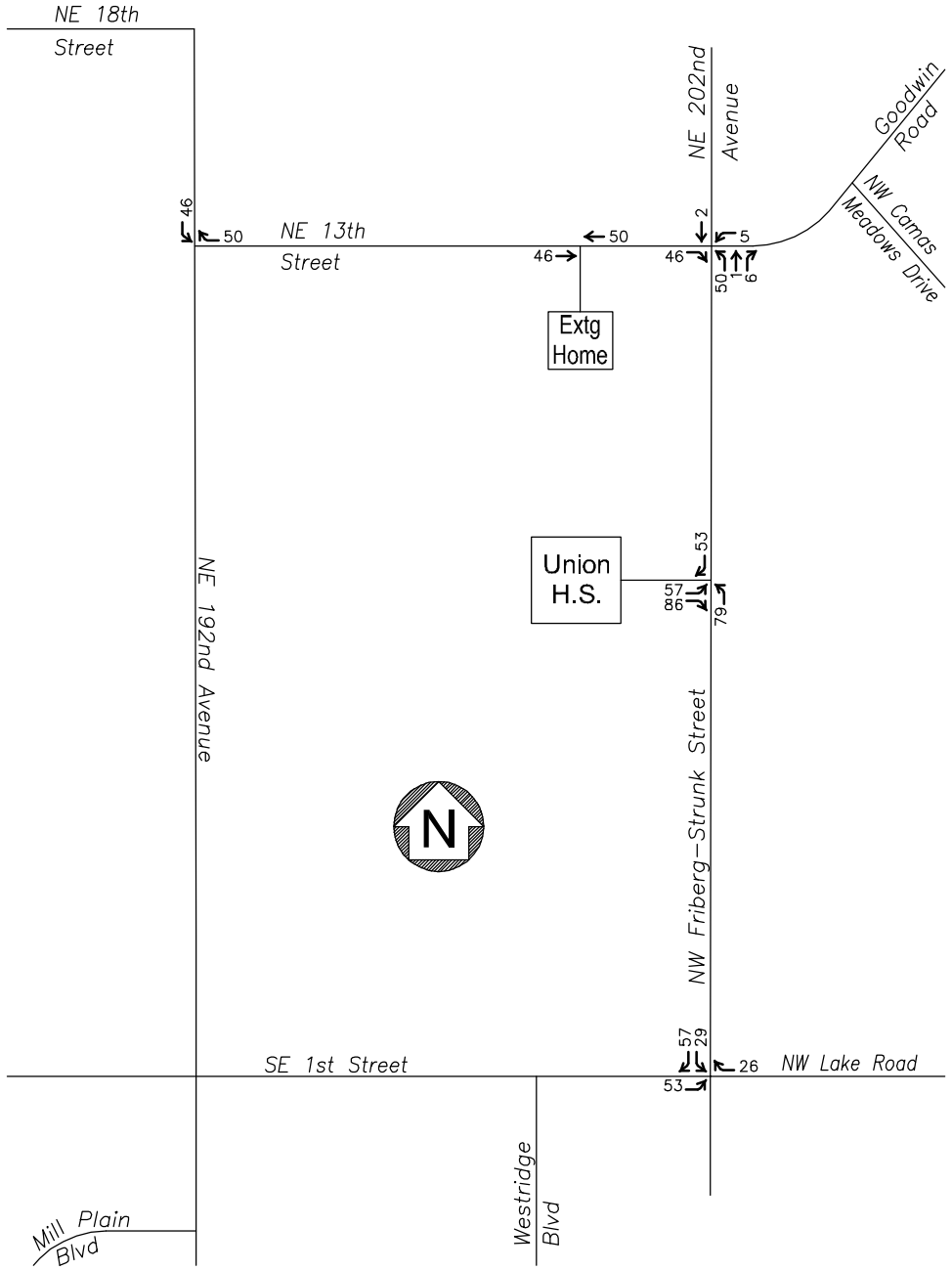
1189 CHARBONNEAU ENGINEERING LLC PROJECT: 23-24	NOTES:	2023 EXISTING TRAFFIC - WITHOUT UNION HIGH SCHOOL TRAFFIC - 13TH STREET GAS STATION

FIGURE 1

Exhibit 108 APPEAL24-1001

PLOT DATE: 09.08.23 FILE: 2324flow.dwg





1190 CHARBONNEAU ENGINEERING LLC
PROJECT: 23-24

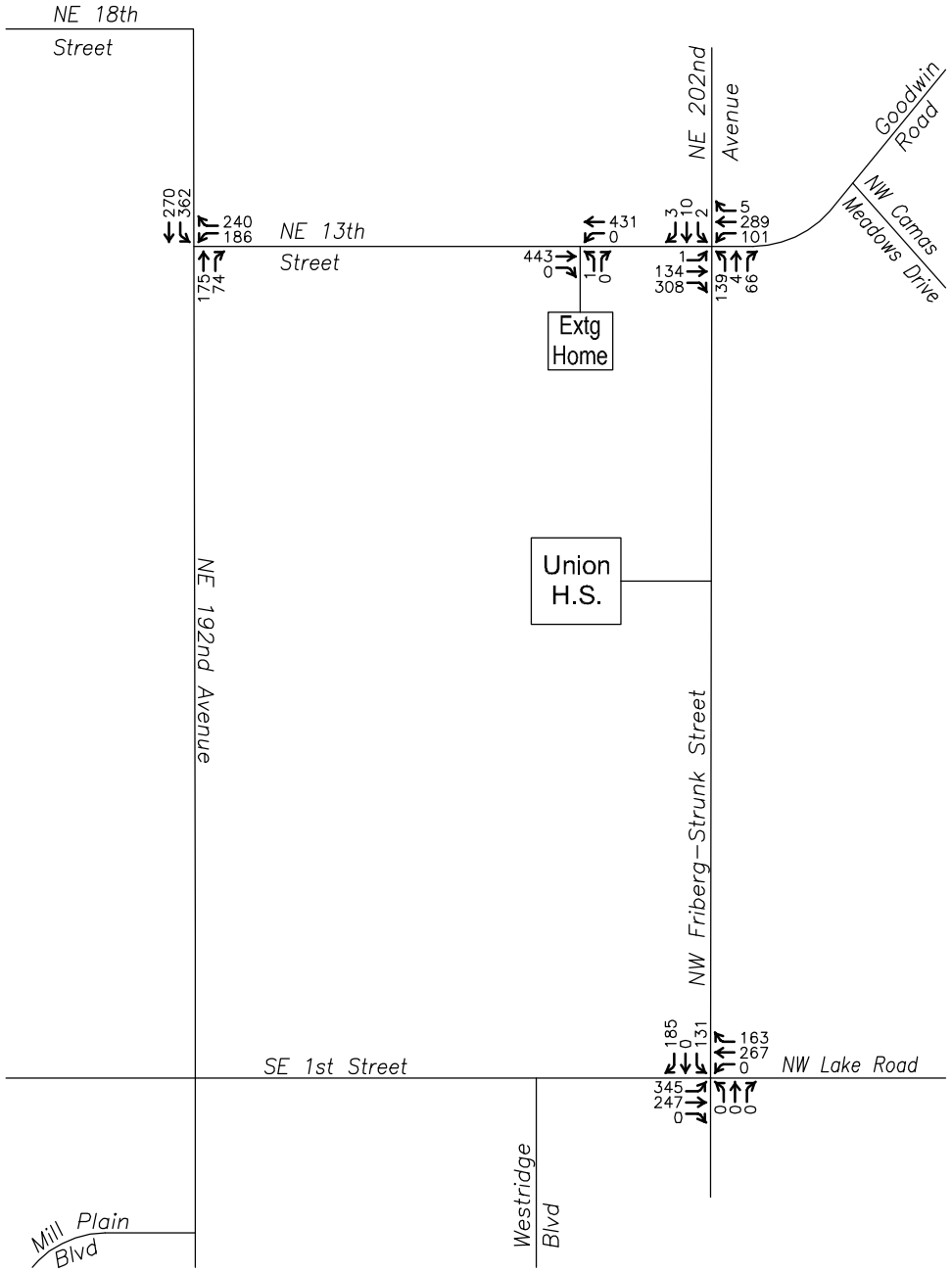
NOTES: The Union HS trip generation is based on High School (ITE 525) trip rates and an enrollment of 1,970 students.

UNION HIGH SCHOOL TRAFFIC
- MODELED -
13TH STREET GAS STATION

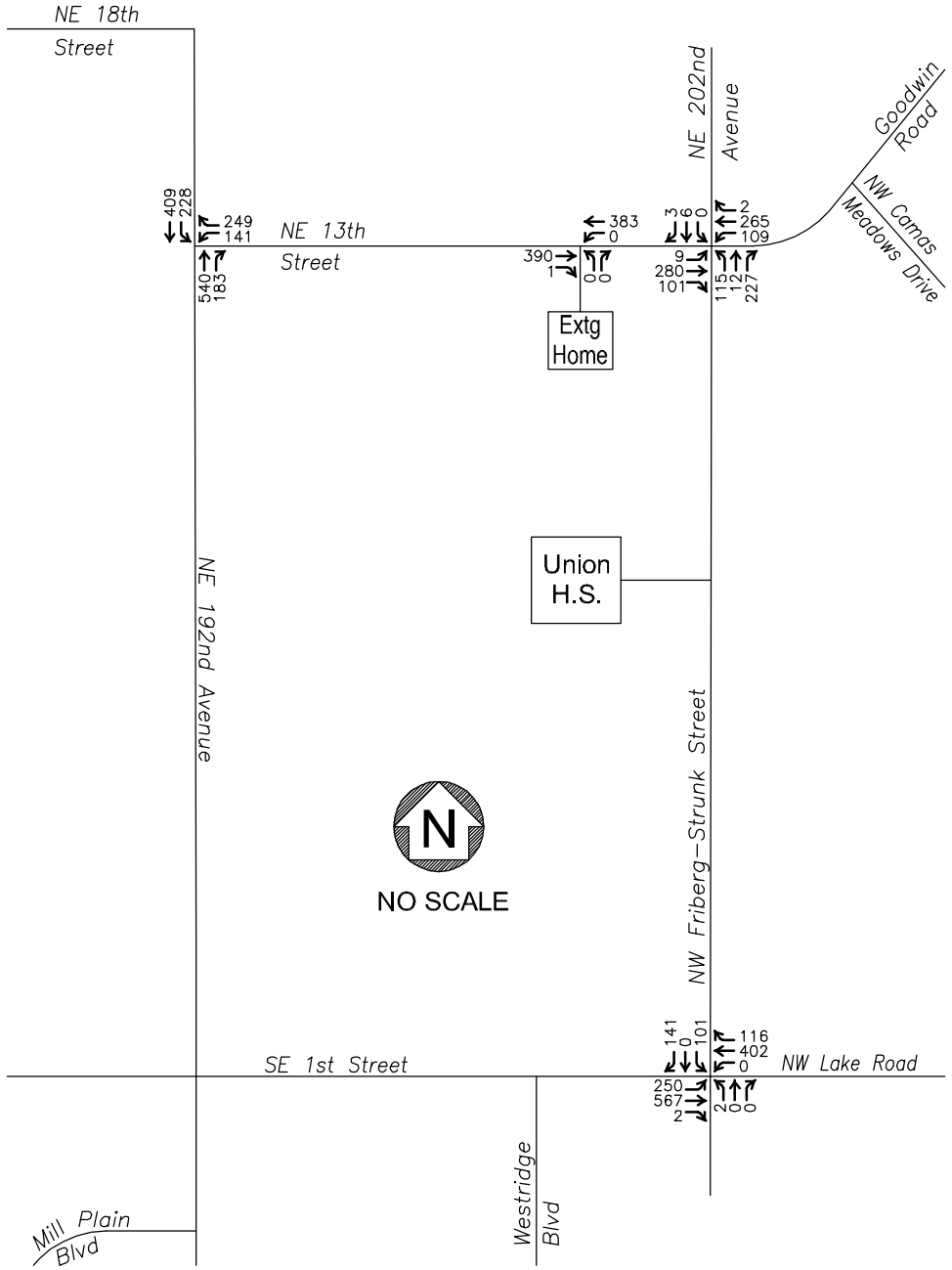
FIGURE 2

Exhibit 108 APPEAL24-1001

PLOT DATE: 09.08.23 FILE: 2324flow.dwg



AM PEAK HOUR



PM PEAK HOUR

CHARBONNEAU ENGINEERING LLC 1191

PROJECT: 23-24

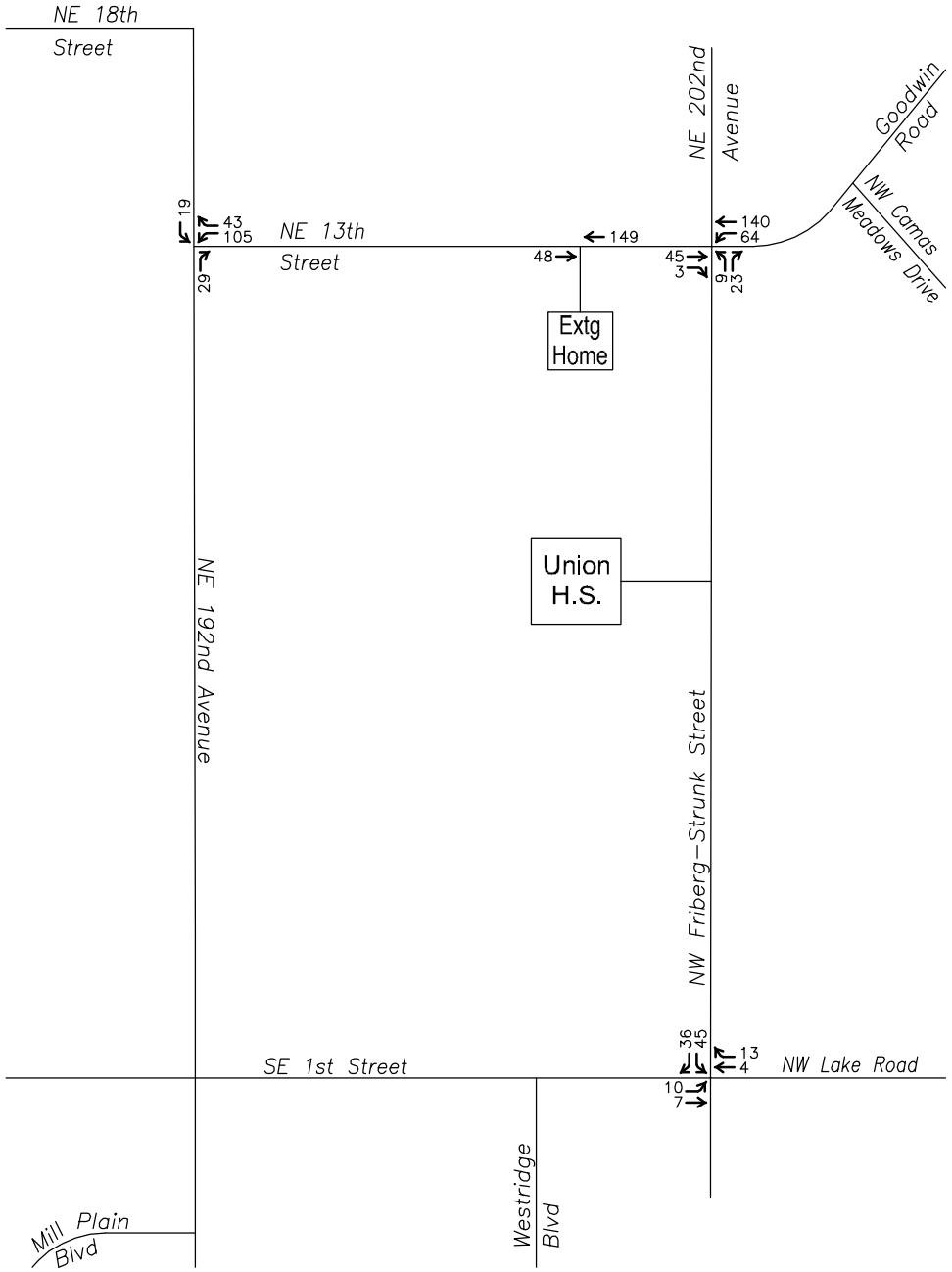
NOTES:

2023 ADJUSTED EXISTING TRAFFIC - WITH UNION HIGH SCHOOL TRAFFIC - 13TH STREET GAS STATION

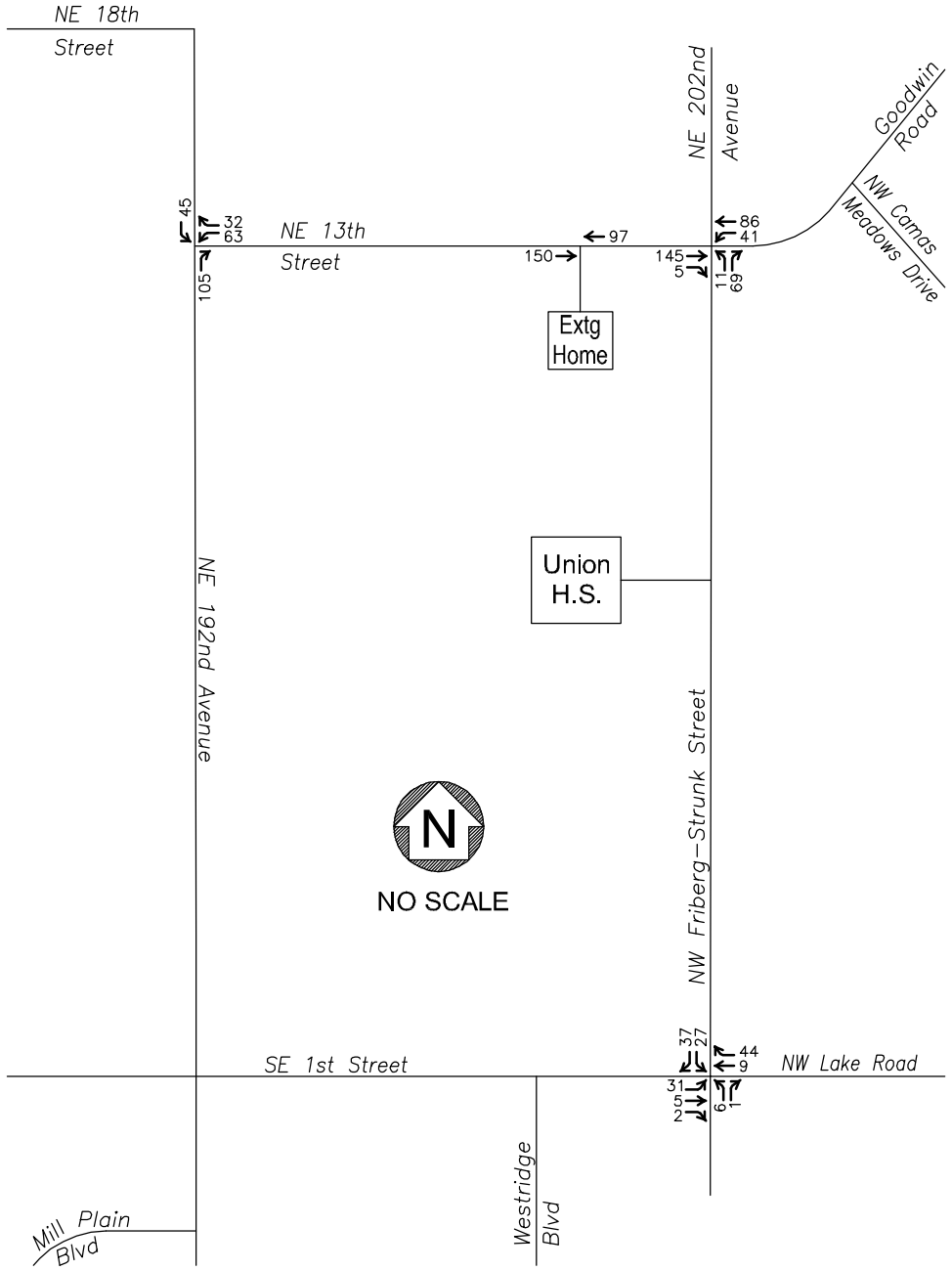
FIGURE 3

Exhibit 108 APPEAL24-1001

PLOT DATE: 09.08.23 FILE: 2324flow.dwg



AM PEAK HOUR



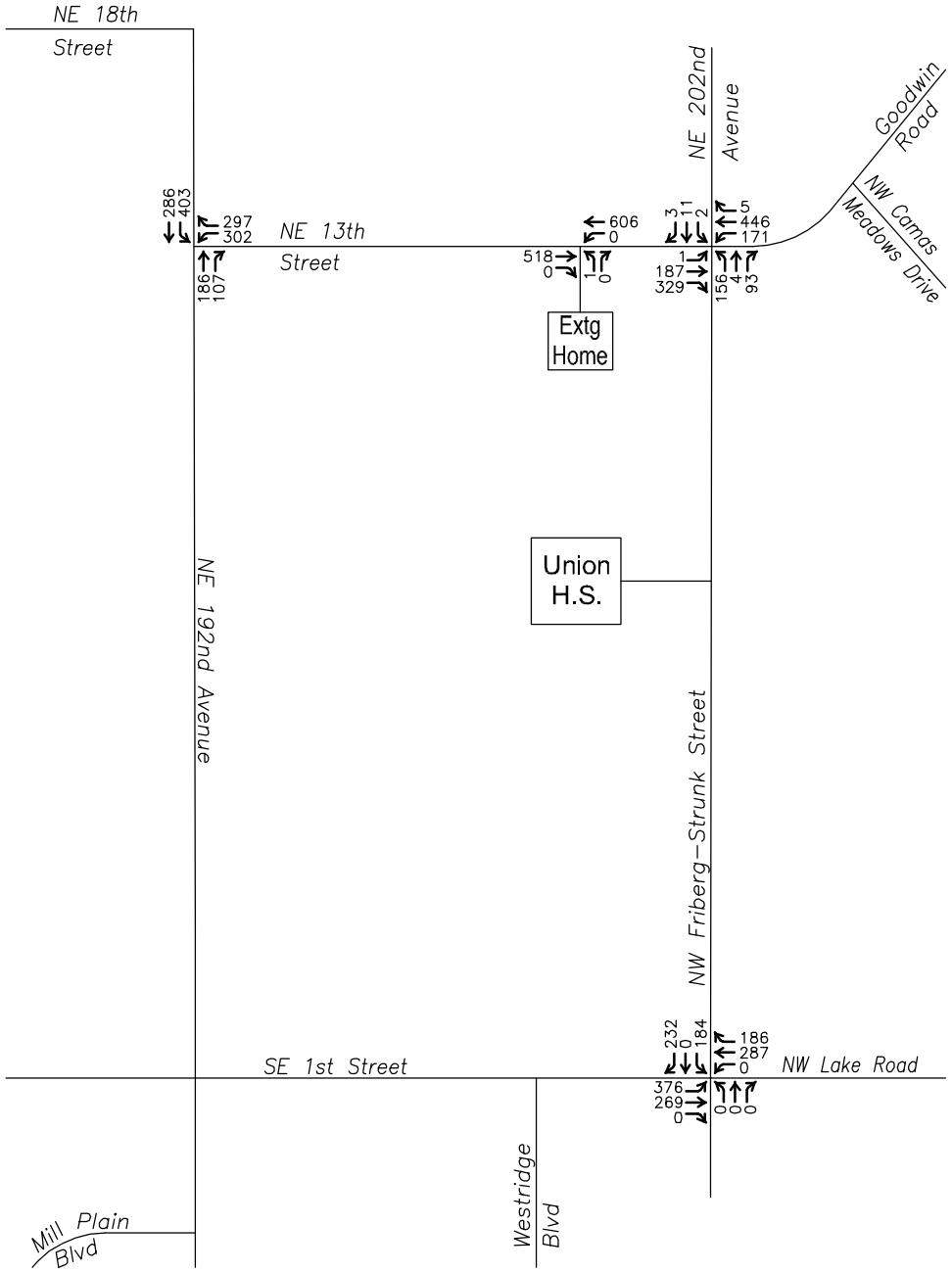
PM PEAK HOUR

CHARBONNEAU ENGINEERING LLC 1192 PROJECT: 23-24	NOTES:	IN-PROCESS TRAFFIC 13TH STREET GAS STATION

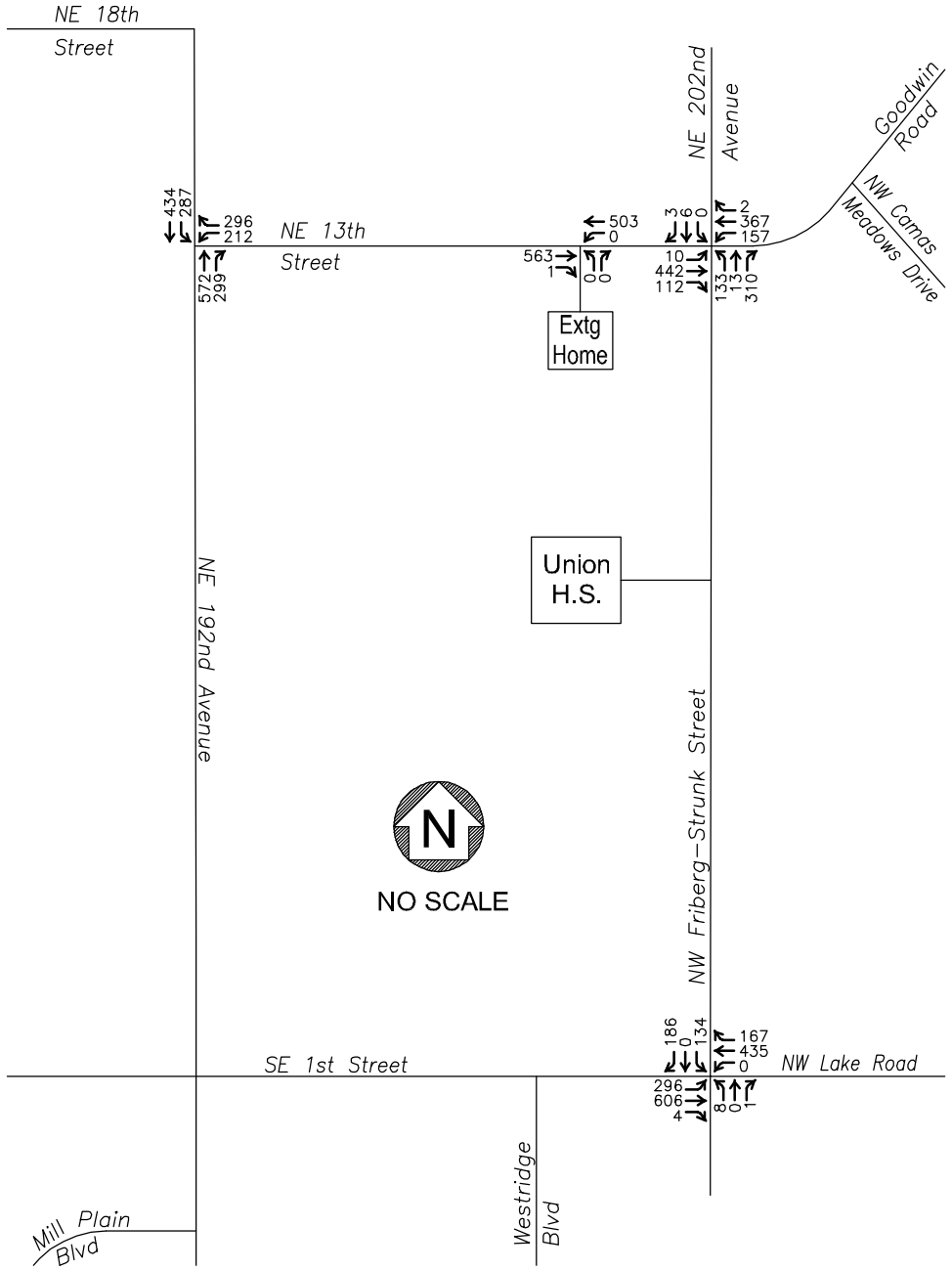
FIGURE 4

Exhibit 108 APPEAL24-1001

PLOT DATE: 09.12.23 FILE: 2324flow.dwg



AM PEAK HOUR



PM PEAK HOUR

1193 CHARBONNEAU ENGINEERING LLC

PROJECT: 23-24

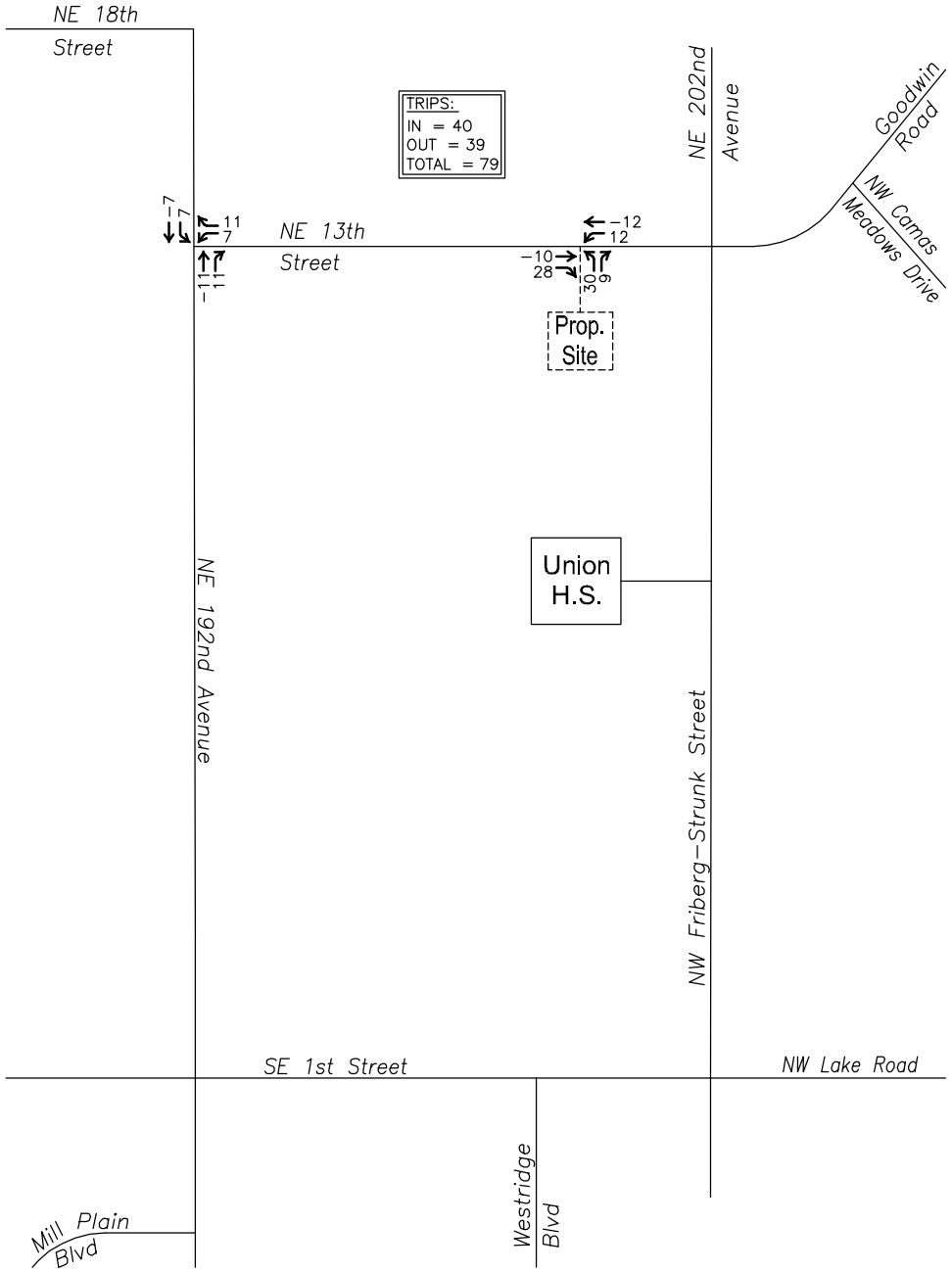
NOTES: 2026 Background Traffic = 2023 Adjusted Existing Traffic + growth (2%/yr for 3 yrs) + In-process Traffic.

2026 BACKGROUND TRAFFIC
13TH STREET GAS STATION

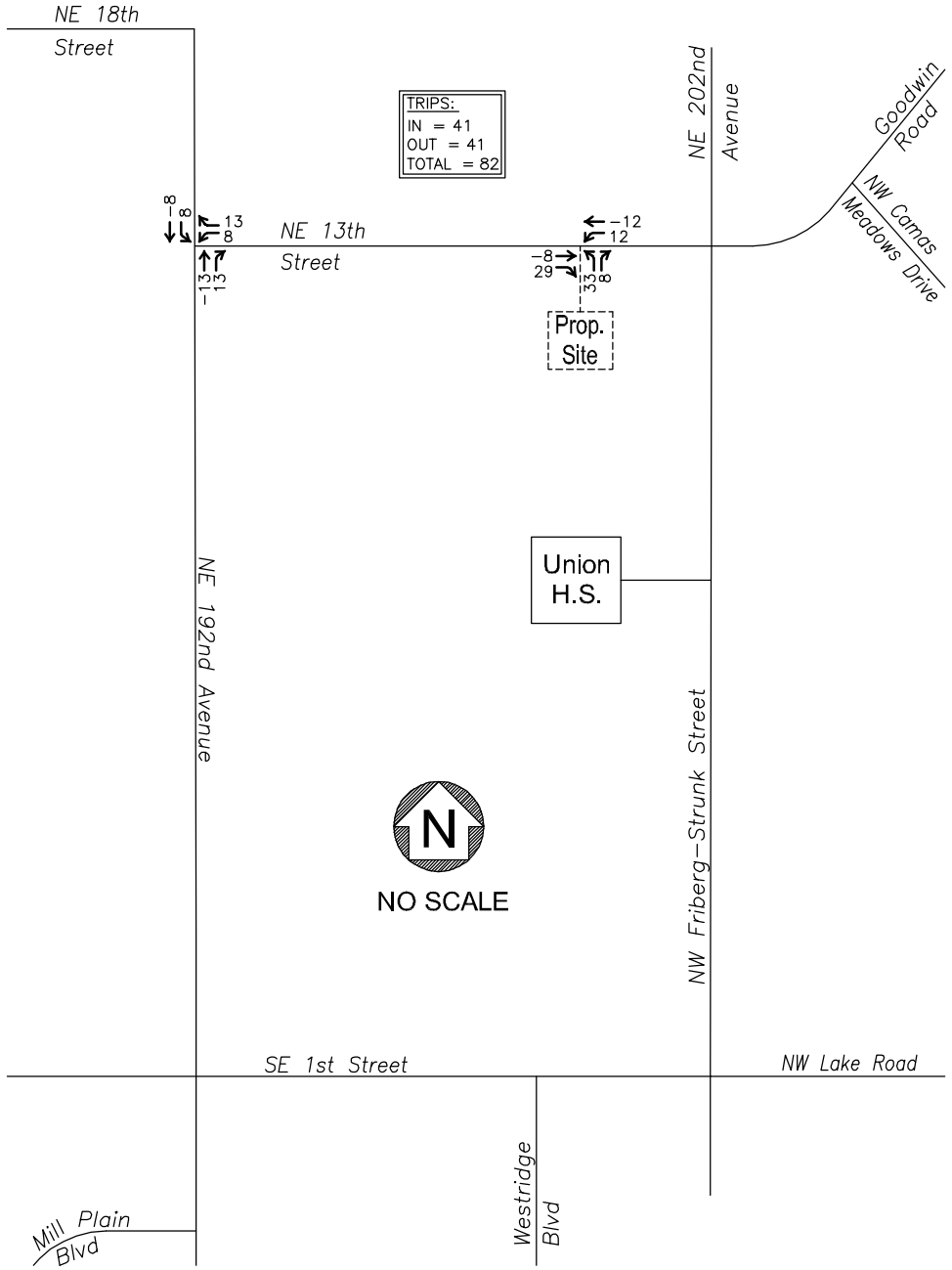
FIGURE 5

Exhibit 108 APPEAL24-1001

PLOT DATE: 09.08.23 FILE: 2324flow.dwg



AM PEAK HOUR



PM PEAK HOUR

1194 CHARBONNEAU ENGINEERING LLC

PROJECT: 23-24

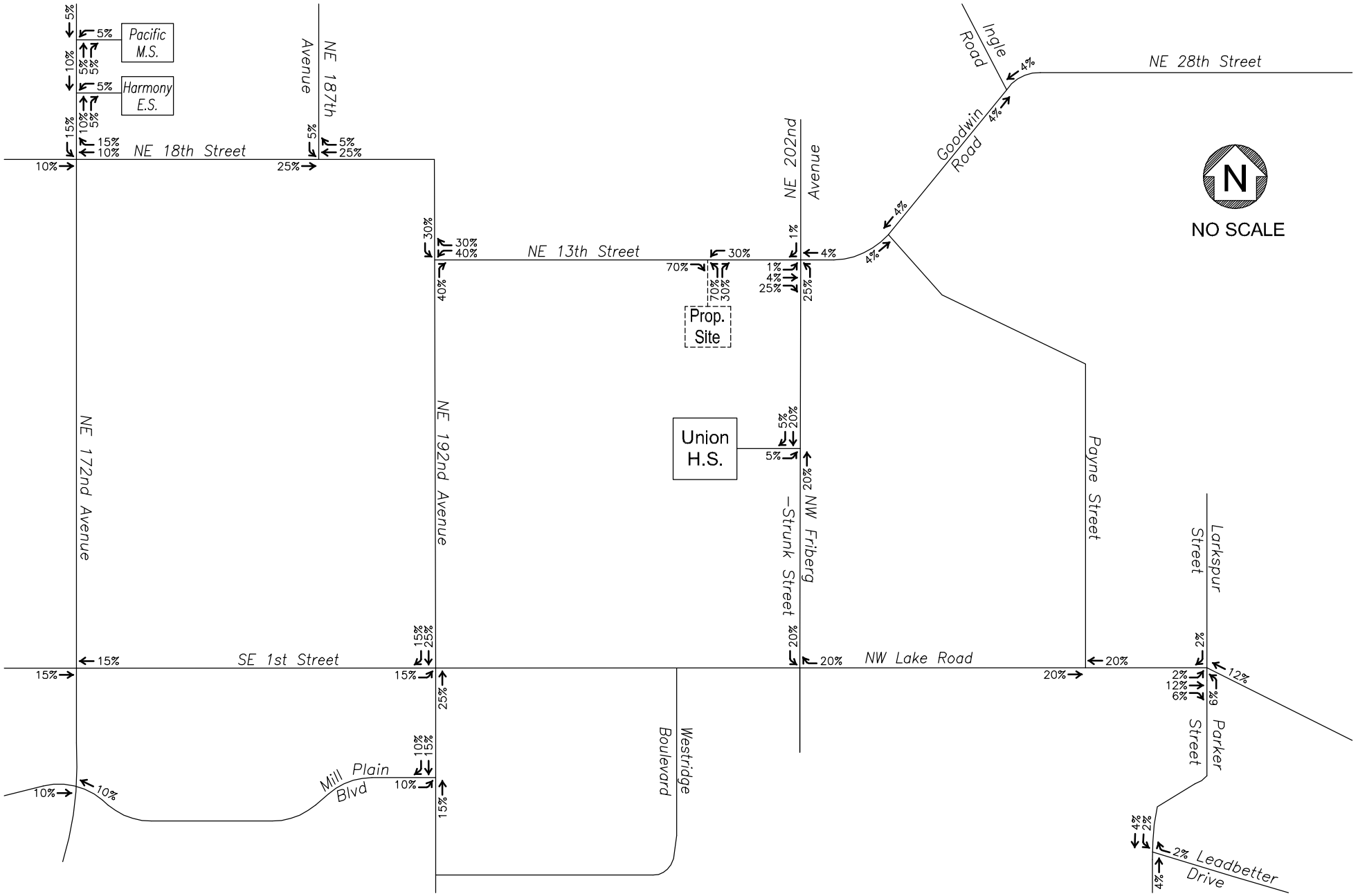
NOTES: Pass-by trips based on rates published in the *ITE Trip Generation Handbook*.

PASS-BY TRIPS
13TH STREET GAS STATION

FIGURE 6

Exhibit 108 APPEAL24-1001

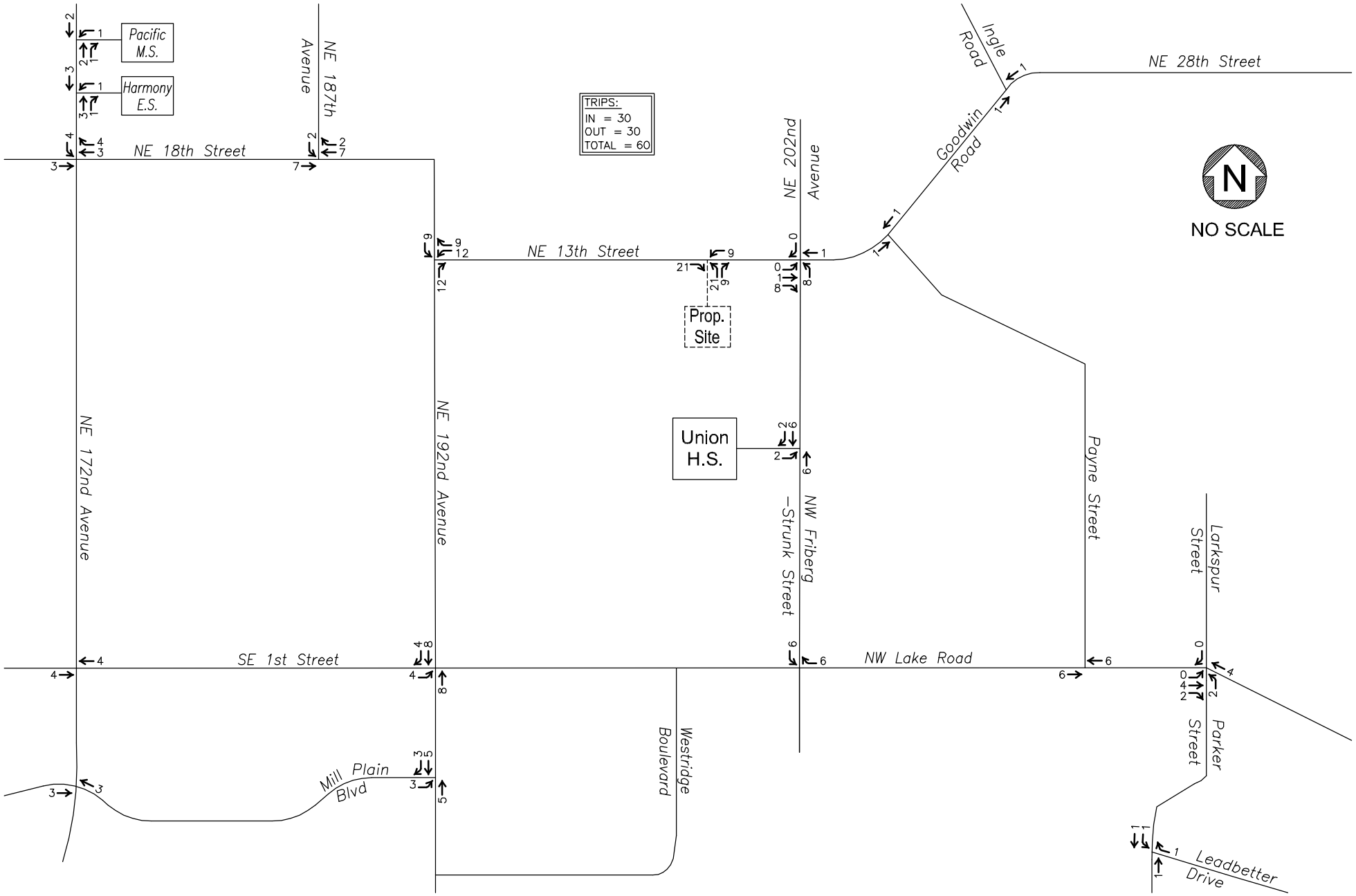
PLOT DATE: 09.08.23 FILE: 2324flow.dwg



1195 CHARBONNEAU ENGINEERING LLC PROJECT: 23-24	NOTES: The site's trip distribution is based on existing traffic patterns and engineering judgment.	NEW TRIP DISTRIBUTION AM PEAK HOUR AND PM PEAK HOUR 13TH STREET GAS STATION	FIGURE 7

Exhibit 108 APPEAL24-1001

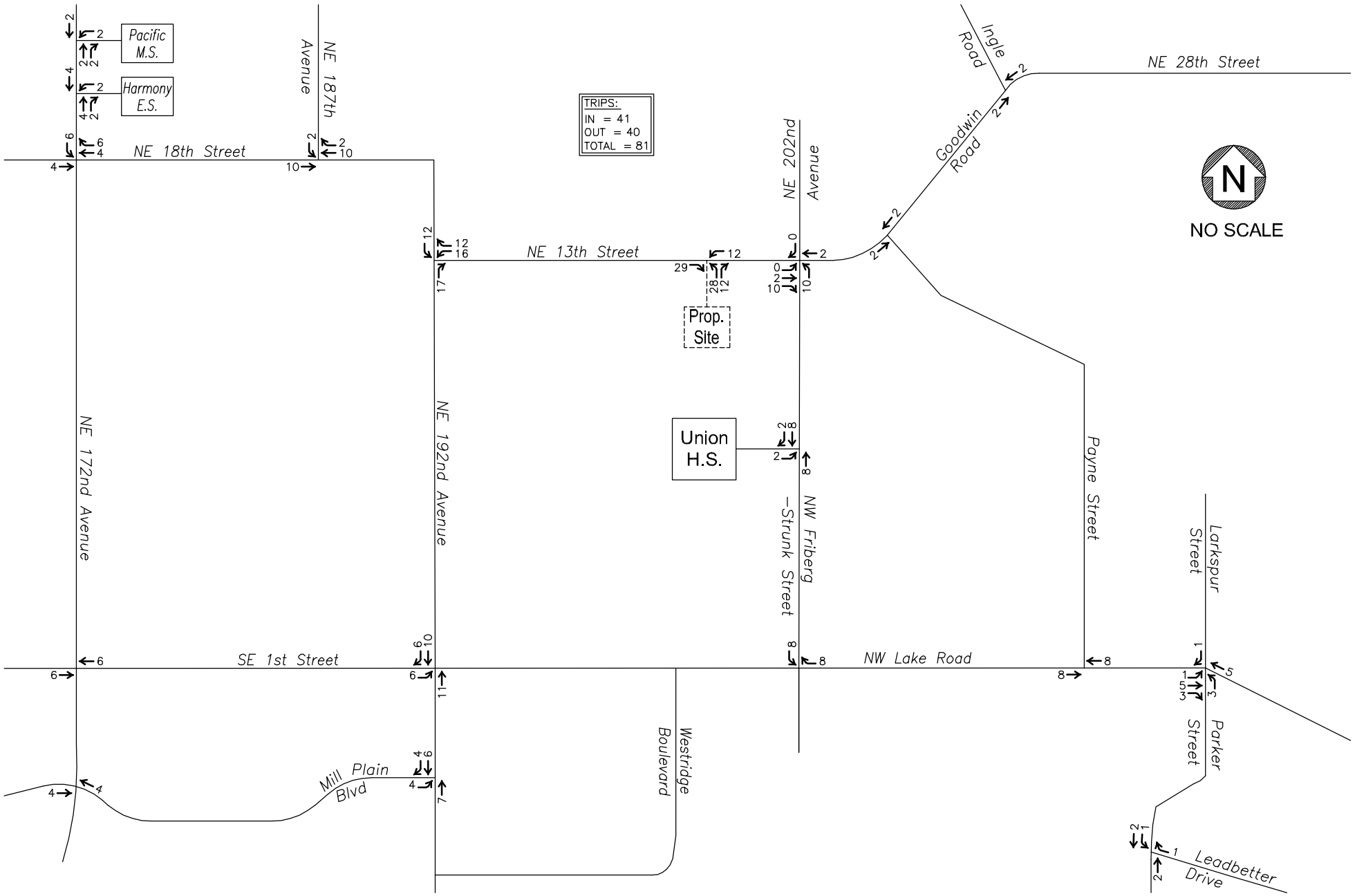
PLOT DATE: 09.08.23 FILE: 2324flow.dwg



1196 CHARBONNEAU ENGINEERING LLC PROJECT: 23-24	NOTES: The site's trip generation is based on Gas Station with Market (ITE 945) and Automated Car Wash (ITE 948) trip rates.	NEW TRIP ASSIGNMENT AM PEAK HOUR 13TH STREET GAS STATION	FIGURE 8a

Exhibit 108 APPEAL24-1001

PLOT DATE: 09.08.23 FILE: 2324flow.dwg



CHARBONNEAU ENGINEERING LLC 1197

PROJECT: 23-24

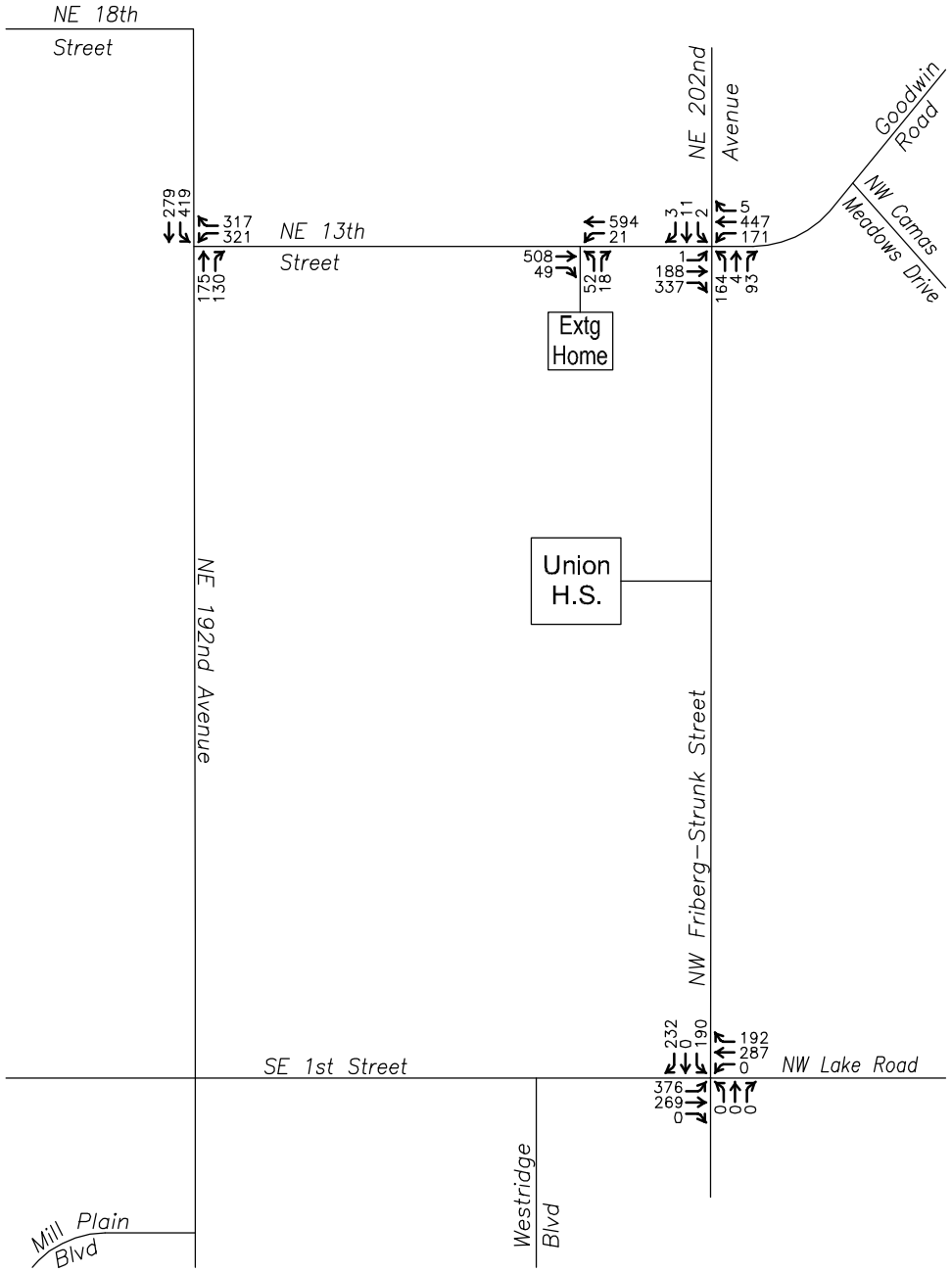
NOTES: The site's trip generation is based on Gas Station with Market (ITE 945) and Automated Car Wash (ITE 948) trip rates.

NEW TRIP ASSIGNMENT
PM PEAK HOUR
13TH STREET GAS STATION

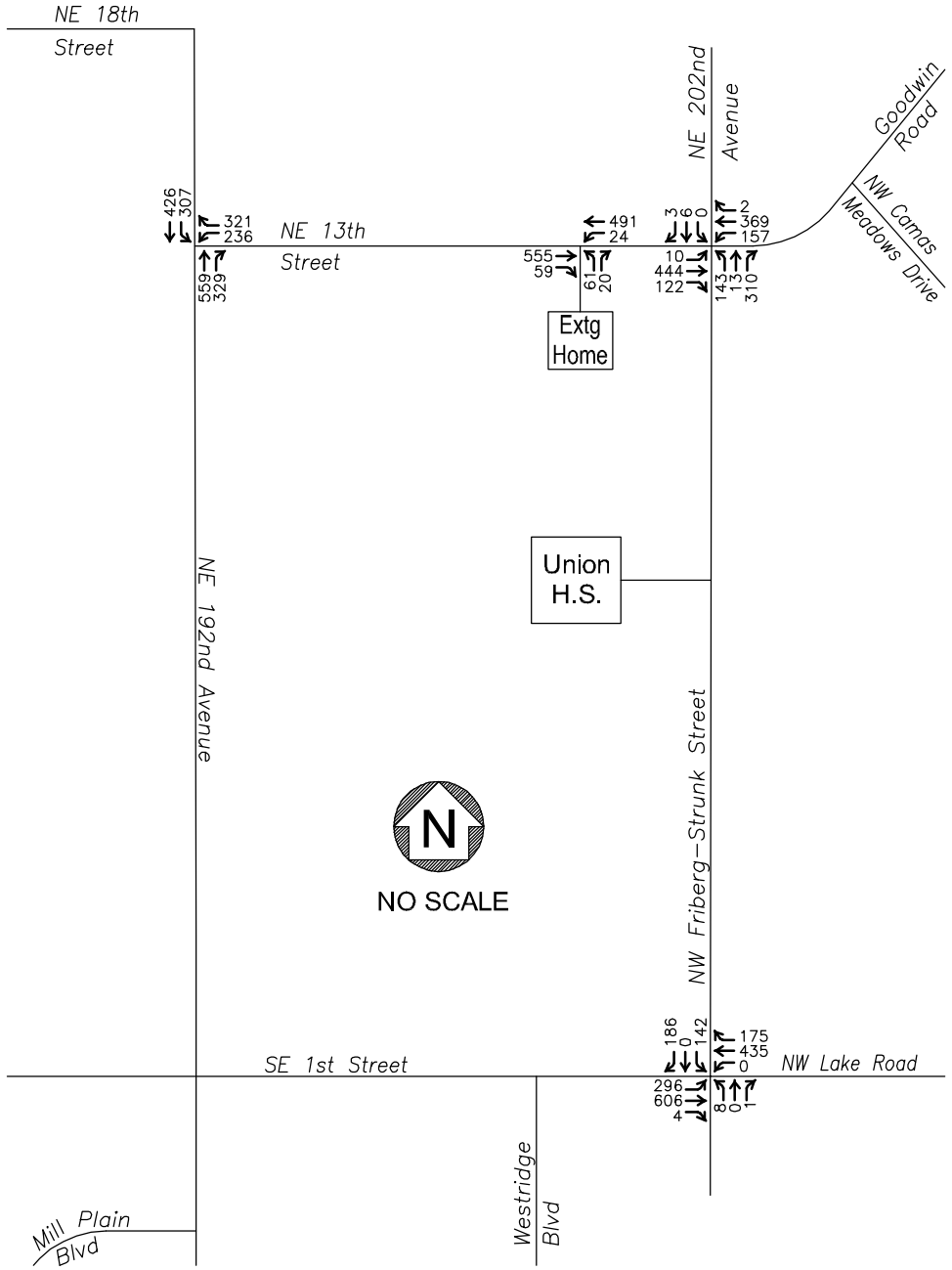
FIGURE 8b

Exhibit 108 APPEAL24-1001

PLOT DATE: 09.12.23 FILE: 2324flow.dwg



AM PEAK HOUR



PM PEAK HOUR

1198 CHARBONNEAU ENGINEERING LLC

PROJECT: 23-24

NOTES: 2026 Total Traffic = 2026 Background Traffic + Pass-by Traffic + New Trip Assignment.

2026 TOTAL TRAFFIC
13TH STREET GAS STATION

FIGURE 9

Exhibit 108 APPEAL24-1001

File Name: NE 192nd Ave at NE 13th St
Start Date: 8/1/2023
Start Time: 7:00 AM
Site Code: 1

Peak Hour: 7:55-8:55AM
Peak 15-min: 8:40-8:55AM

ALL VEHICLES	Northbound NE 192nd Ave					Southbound NE 192nd Ave					Eastbound NE 13th St					Westbound NE 13th St						
Time Period	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	5-min Total	Hourly Totals
7:00 AM	0	16	4	0	0	3	12	0	0	0	0	0	0	0	0	11	0	8	0	0	54	824
7:05 AM	0	11	1	0	0	1	17	0	0	0	0	0	0	0	0	11	0	7	0	0	48	836
7:10 AM	0	9	7	0	0	3	18	0	0	0	0	0	0	0	0	11	0	9	0	0	57	851
7:15 AM	0	11	4	0	0	4	17	0	0	0	0	0	0	0	0	6	0	10	0	0	52	882
7:20 AM	0	12	2	0	0	7	16	0	0	0	0	0	0	0	0	14	0	4	0	0	55	906
7:25 AM	0	18	6	0	0	9	19	0	0	0	0	0	0	0	0	10	0	6	0	0	68	919
7:30 AM	0	13	5	0	0	9	17	0	0	0	0	0	0	0	0	16	0	13	0	0	73	938
7:35 AM	0	22	2	0	0	17	15	0	0	0	0	0	0	0	0	10	0	14	0	0	80	935
7:40 AM	0	8	2	0	0	16	19	0	0	0	0	0	0	0	0	15	0	14	0	0	74	933
7:45 AM	0	13	4	0	0	9	24	0	0	0	0	0	0	0	0	15	0	20	0	0	85	937
7:50 AM	0	13	8	0	0	15	26	0	0	0	0	0	0	0	0	15	0	12	0	0	89	945
7:55 AM	0	14	7	0	0	15	25	0	0	0	0	0	0	0	0	15	0	13	0	0	89	948
8:00 AM	0	13	4	0	0	10	16	0	0	0	0	0	0	0	0	11	0	12	0	0	66	945
8:05 AM	0	17	4	0	0	10	17	0	0	0	0	0	0	0	0	8	0	7	0	0	63	
8:10 AM	0	15	12	0	0	9	29	0	0	0	0	0	0	0	0	13	0	10	0	0	88	
8:15 AM	0	14	7	0	0	6	17	0	0	0	0	0	0	0	0	19	0	13	0	0	76	
8:20 AM	0	16	5	0	0	4	18	0	0	0	0	0	0	0	0	16	0	9	0	0	68	
8:25 AM	0	14	11	0	0	9	27	0	0	0	0	0	0	0	0	18	0	8	0	0	87	
8:30 AM	0	11	10	0	0	5	25	0	0	0	0	0	0	0	0	16	0	3	0	0	70	
8:35 AM	0	19	3	0	0	8	21	0	0	0	0	0	0	0	0	13	0	14	0	0	78	
8:40 AM	0	15	2	0	0	8	22	0	0	0	0	0	0	0	0	18	0	13	0	0	78	
8:45 AM	0	18	3	0	0	16	27	0	0	0	0	0	0	0	0	14	0	15	0	0	93	
8:50 AM	0	9	6	0	0	18	26	0	0	0	0	0	0	0	0	25	0	8	0	0	92	
8:55 AM	0	16	7	0	0	12	17	0	0	0	0	0	0	0	0	19	0	15	0	0	86	

Time Period	NB Left	NB Thru	NB Right	NB U-Turn	NB RTOR	SB Left	SB Thru	SB Right	SB U-Turn	SB RTOR	EB Left	EB Thru	EB Right	EB U-Turn	EB RTOR	WB Left	WB Thru	WB Right	WB U-Turn	WB RTOR
Cars	0	167	72	0	0	113	248	0	0	0	0	0	0	0	0	184	0	121	0	0
Trucks	0	8	2	0	0	5	22	0	0	0	0	0	0	0	0	2	0	4	0	0
Peak Vols	0	175	74	0	0	118	270	0	0	0	0	0	0	0	0	186	0	125	0	0
Trucks %	4.0%					7.0%					0%					1.9%				
Peds	0					1					0					1				

PHF= 0.90

1199

Exhibit 108 APPEAL24-1001

File Name: NE 192nd Ave at NE 13th St
Start Date: 8/1/2023
Start Time: 4:00 PM
Site Code: 1

Peak Hour: 4:30-5:30PM
Peak 15-min: 4:45-5:00PM

ALL VEHICLES	Northbound NE 192nd Ave					Southbound NE 192nd Ave					Eastbound NE 13th St					Westbound NE 13th St						
Time Period	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	5-min Total	Hourly Totals
4:00 PM	0	40	12	0	0	4	28	0	0	0	0	0	0	0	0	7	0	14	0	0	105	1547
4:05 PM	0	36	10	0	0	12	21	0	0	0	0	0	0	0	0	19	0	10	0	0	108	1577
4:10 PM	0	22	11	0	0	18	43	0	0	0	0	0	0	0	0	21	0	13	0	0	128	1601
4:15 PM	0	51	16	0	0	10	24	0	0	0	0	0	0	0	0	19	0	9	0	0	129	1611
4:20 PM	0	43	11	0	0	19	23	0	0	0	0	0	0	0	0	10	0	11	0	0	117	1629
4:25 PM	0	44	9	0	0	12	29	0	0	0	0	0	0	0	0	7	0	13	0	0	114	1648
4:30 PM	0	46	15	0	0	16	27	0	0	0	0	0	0	0	0	9	0	14	0	0	127	1654
4:35 PM	0	47	12	0	0	20	28	0	0	0	0	0	0	0	0	8	0	15	0	0	130	1643
4:40 PM	0	37	19	0	0	13	33	0	0	0	0	0	0	0	0	12	0	18	0	0	132	1642
4:45 PM	0	38	21	0	0	21	32	0	0	0	0	0	0	0	0	13	0	20	0	0	145	1650
4:50 PM	0	45	15	0	0	10	30	0	0	0	0	0	0	0	0	12	0	27	0	0	139	1630
4:55 PM	0	50	19	0	0	16	57	0	0	0	0	0	0	0	0	10	0	21	0	0	173	1600
5:00 PM	0	47	9	0	0	14	36	0	0	0	0	0	0	0	0	13	0	16	0	0	135	1546
5:05 PM	0	50	17	0	0	8	42	0	0	0	0	0	0	0	0	8	0	7	0	0	132	
5:10 PM	0	41	17	0	0	19	36	0	0	0	0	0	0	0	0	12	0	13	0	0	138	
5:15 PM	0	37	11	0	0	22	38	0	0	0	0	0	0	0	0	22	0	17	0	0	147	
5:20 PM	0	51	15	0	0	11	27	0	0	0	0	0	0	0	0	12	0	20	0	0	136	
5:25 PM	0	51	13	0	0	12	23	0	0	0	0	0	0	0	0	10	0	11	0	0	120	
5:30 PM	0	37	13	0	0	14	25	0	0	0	0	0	0	0	0	10	0	17	0	0	116	
5:35 PM	0	50	16	0	0	16	28	0	0	0	0	0	0	0	0	13	0	6	0	0	129	
5:40 PM	0	42	12	0	0	19	33	0	0	0	0	0	0	0	0	15	0	19	0	0	140	
5:45 PM	0	44	14	0	0	15	35	0	0	0	0	0	0	0	0	10	0	7	0	0	125	
5:50 PM	0	33	10	0	0	16	31	0	0	0	0	0	0	0	0	7	0	12	0	0	109	
5:55 PM	0	41	14	0	0	11	26	0	0	0	0	0	0	0	0	12	0	15	0	0	119	

Time Period	NB Left	NB Thru	NB Right	NB U-Turn	NB RTOR	SB Left	SB Thru	SB Right	SB U-Turn	SB RTOR	EB Left	EB Thru	EB Right	EB U-Turn	EB RTOR	WB Left	WB Thru	WB Right	WB U-Turn	WB RTOR
Cars	0	540	174	0	0	182	405	0	0	0	0	0	0	0	0	139	0	197	0	0
Trucks	0	0	9	0	0	0	4	0	0	0	0	0	0	0	0	2	0	2	0	0
Peak Vols	0	540	183	0	0	182	409	0	0	0	0	0	0	0	0	141	0	199	0	0
Trucks %	1.2%					0.7%					0%					1.2%				
Peds	0					0					0					0				

PHF= 0.90

1200

Exhibit 108 APPEAL24-1001

File Name: NW Friberg-Strunk St at NE 13th St
Start Date: 8/1/2023
Start Time: 7:00 AM
Site Code: 2

Peak Hour: 7:30-8:30AM
Peak 15-min: 7:35-7:50AM

ALL VEHICLES	Northbound NE Friberg-Strunk St					Southbound NE 202nd Ave					Eastbound NE 13th St					Westbound NE Goodwin Rd						
Time Period	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	5-min Total	Hourly Totals
7:00 AM	4	0	3	0	0	0	0	1	0	0	0	6	1	0	0	4	12	1	0	0	32	571
7:05 AM	1	0	4	0	0	0	0	1	0	0	0	2	0	0	0	0	18	0	0	0	26	592
7:10 AM	2	0	4	0	0	0	0	0	0	0	0	5	2	0	0	7	16	0	0	0	36	601
7:15 AM	2	0	6	0	0	0	0	1	0	0	0	11	2	0	0	3	12	0	0	0	37	622
7:20 AM	1	0	4	0	0	0	0	0	0	0	0	6	4	0	0	12	15	0	0	0	42	636
7:25 AM	0	0	2	0	0	0	0	2	0	0	0	8	2	0	0	6	18	0	0	0	38	635
7:30 AM	2	0	3	0	0	0	0	1	0	0	0	8	8	0	0	4	24	0	0	0	50	652
7:35 AM	4	0	5	0	0	0	1	0	0	0	0	8	9	0	0	4	19	1	0	0	51	652
7:40 AM	0	0	5	0	0	0	1	0	0	0	0	10	13	0	0	8	31	1	0	0	69	647
7:45 AM	5	0	8	0	0	0	0	0	0	0	0	10	5	0	0	9	35	0	0	0	72	634
7:50 AM	2	0	7	0	0	0	1	0	0	0	0	13	5	0	0	4	18	1	0	0	51	625
7:55 AM	4	0	5	0	0	1	0	1	0	0	0	16	7	0	0	8	25	0	0	0	67	632
8:00 AM	2	0	4	0	0	0	0	1	0	0	0	10	4	0	0	12	20	0	0	0	53	628
8:05 AM	2	0	2	0	0	0	0	0	0	0	0	7	3	0	0	4	17	0	0	0	35	
8:10 AM	1	1	5	0	0	0	0	0	0	0	0	16	6	0	0	7	21	0	0	0	57	
8:15 AM	0	0	2	0	0	0	0	0	0	0	0	11	1	0	0	5	32	0	0	0	51	
8:20 AM	0	0	4	0	0	1	0	0	0	0	0	10	2	0	0	2	21	1	0	0	41	
8:25 AM	2	0	3	0	0	0	0	0	0	0	1	15	1	0	0	6	26	1	0	0	55	
8:30 AM	0	1	4	0	0	1	0	1	0	0	0	17	3	0	0	3	19	1	0	0	50	
8:35 AM	6	0	4	0	0	0	0	0	0	0	0	10	2	0	0	7	17	0	0	0	46	
8:40 AM	1	0	6	0	0	0	0	0	0	0	0	7	2	0	0	9	31	0	0	0	56	
8:45 AM	2	0	1	0	0	2	1	0	0	0	1	11	7	0	0	5	33	0	0	0	63	
8:50 AM	2	0	1	0	0	0	0	0	0	0	0	14	6	0	0	10	25	0	0	0	58	
8:55 AM	2	0	5	0	0	1	0	1	0	0	0	8	10	0	0	6	29	1	0	0	63	

Time Period	NB Left	NB Thru	NB Right	NB U-Turn	NB RTOR	SB Left	SB Thru	SB Right	SB U-Turn	SB RTOR	EB Left	EB Thru	EB Right	EB U-Turn	EB RTOR	WB Left	WB Thru	WB Right	WB U-Turn	WB RTOR
Cars	24	1	51	0	0	2	3	3	0	0	1	127	62	0	0	70	286	5	0	0
Trucks	0	0	2	0	0	0	0	0	0	0	0	7	2	0	0	3	3	0	0	0
Peak Vols	24	1	53	0	0	2	3	3	0	0	1	134	64	0	0	73	289	5	0	0
Trucks %	2.6%					0.0%					4.5%					1.6%				
Peds	0					0					0					0				

PHF= 0.85

1201

Exhibit 108 APPEAL24-1001

File Name: NW Friberg-Strunk St at NE 13th St
Start Date: 8/1/2023
Start Time: 4:00 PM
Site Code: 2

Peak Hour: 4:40-5:40PM
Peak 15-min: 4:40-4:55PM

ALL VEHICLES	Northbound NE 192nd Ave					Southbound NE 192nd Ave					Eastbound NE 13th St					Westbound NE 13th St						
Time Period	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	5-min Total	Hourly Totals
4:00 PM	8	0	16	0	0	0	0	0	0	0	0	15	2	0	0	5	16	0	0	0	62	982
4:05 PM	4	0	18	0	0	0	0	0	0	0	2	16	2	0	0	7	24	0	0	0	73	988
4:10 PM	2	2	26	0	0	0	0	0	0	0	0	20	4	0	0	5	26	0	0	0	85	997
4:15 PM	13	0	18	0	0	0	0	0	0	0	1	21	6	0	0	4	40	0	0	0	103	992
4:20 PM	1	0	22	0	0	0	1	0	0	0	0	28	0	0	0	8	15	0	0	0	75	977
4:25 PM	3	1	19	0	0	0	0	0	0	0	0	19	4	0	0	4	17	0	0	0	67	982
4:30 PM	6	0	15	0	0	0	0	0	0	0	0	28	4	0	0	3	22	0	0	0	78	1016
4:35 PM	6	1	9	0	0	0	0	0	0	0	0	23	2	0	0	13	20	0	0	0	74	1001
4:40 PM	8	1	25	0	0	0	0	0	0	0	0	26	6	0	0	7	21	0	0	0	94	1019
4:45 PM	11	0	19	0	0	0	0	0	0	0	0	31	6	0	0	11	26	0	0	0	104	1008
4:50 PM	4	0	15	0	0	0	0	0	0	0	0	27	6	0	0	6	30	0	0	0	88	982
4:55 PM	3	0	12	0	0	0	0	0	0	0	1	22	3	0	0	11	27	0	0	0	79	970
5:00 PM	4	0	20	0	0	0	0	1	0	0	0	23	3	0	0	5	12	0	0	0	68	969
5:05 PM	3	3	21	0	0	0	1	0	0	0	0	20	3	0	0	8	23	0	0	0	82	
5:10 PM	5	5	14	0	0	0	0	0	0	0	0	20	3	0	0	8	25	0	0	0	80	
5:15 PM	7	1	15	0	0	0	0	0	0	0	1	25	6	0	0	6	25	2	0	0	88	
5:20 PM	6	1	19	0	0	0	1	0	0	0	4	18	4	0	0	7	20	0	0	0	80	
5:25 PM	6	0	26	0	0	0	0	0	0	0	2	23	7	0	0	11	26	0	0	0	101	
5:30 PM	3	0	16	0	0	0	1	1	0	0	1	11	5	0	0	9	16	0	0	0	63	
5:35 PM	5	0	19	0	0	0	1	1	0	0	0	34	3	0	0	15	14	0	0	0	92	
5:40 PM	7	1	16	0	0	0	0	4	0	0	0	25	6	0	0	7	17	0	0	0	83	
5:45 PM	3	0	17	0	0	1	4	1	0	0	0	21	4	0	0	12	15	0	0	0	78	
5:50 PM	5	0	14	0	0	1	1	0	0	0	0	25	3	0	0	8	19	0	0	0	76	
5:55 PM	2	0	20	0	0	0	0	1	0	0	0	25	4	0	0	8	18	0	0	0	78	

Time Period	NB Left	NB Thru	NB Right	NB U-Turn	NB RTOR	SB Left	SB Thru	SB Right	SB U-Turn	SB RTOR	EB Left	EB Thru	EB Right	EB U-Turn	EB RTOR	WB Left	WB Thru	WB Right	WB U-Turn	WB RTOR
Cars	65	11	219	0	0	0	4	3	0	0	9	280	55	0	0	104	262	2	0	0
Trucks	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
Peak Vols	65	11	221	0	0	0	4	3	0	0	9	280	55	0	0	104	265	2	0	0
Trucks %	0.7%					0.0%					0.0%					0.8%				
Peds	4					4					1					3				

PHF= 0.89

1202

Exhibit 108 APPEAL24-1001

File Name: NW Friberg-Strunk St at SE 1st St
Start Date: 8/1/2023
Start Time: 4:00 PM
Site Code: 3

Peak Hour: 7:35-8:35AM
Peak 15-min: 7:45-8:00AM

	Northbound N/A					Southbound NE Friberg-Strunk St					Eastbound SE 1st St					Westbound NW Lake Rd						
Time Period	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	5-min Total	Hourly Totals
7:00 AM	0	0	0	0	0	3	0	2	0	0	2	12	0	0	0	0	15	4	0	0	38	637
7:05 AM	0	0	0	0	0	1	0	1	0	0	5	13	0	0	0	0	18	1	0	0	39	674
7:10 AM	0	0	0	0	0	3	0	1	0	0	2	14	0	0	0	0	15	3	0	0	38	692
7:15 AM	0	0	0	0	0	5	0	2	0	0	7	13	0	0	0	0	10	4	0	0	41	705
7:20 AM	0	0	0	0	0	5	0	4	0	0	2	17	0	0	0	0	22	2	0	0	52	708
7:25 AM	0	0	0	0	0	5	0	8	0	0	4	9	0	0	0	0	13	0	0	0	39	710
7:30 AM	1	0	0	0	0	5	0	2	0	0	2	12	0	0	0	0	13	3	0	0	38	713
7:35 AM	0	0	0	0	0	6	0	3	0	0	5	16	0	0	0	0	18	3	0	0	51	723
7:40 AM	0	0	0	0	0	9	0	6	0	0	9	15	0	0	0	0	26	0	0	0	65	711
7:45 AM	0	0	0	0	0	5	0	7	0	0	9	23	0	0	0	0	26	5	0	0	75	701
7:50 AM	0	0	0	0	0	5	0	8	0	0	7	25	0	0	0	0	25	2	0	0	72	685
7:55 AM	0	0	0	0	0	7	0	4	0	0	7	32	0	0	0	0	37	2	0	0	89	678
8:00 AM	0	0	0	0	0	7	0	5	0	0	3	32	0	0	0	0	26	2	0	0	75	672
8:05 AM	0	0	0	0	0	9	0	5	0	0	2	18	0	0	0	0	21	2	0	0	57	
8:10 AM	0	0	0	0	0	6	0	2	0	0	5	12	0	0	0	0	22	4	0	0	51	
8:15 AM	0	0	0	0	0	5	0	5	0	0	2	16	0	0	0	0	16	0	0	0	44	
8:20 AM	0	0	0	0	0	2	0	3	0	0	5	21	0	0	0	0	21	2	0	0	54	
8:25 AM	0	0	0	0	0	3	0	2	0	0	5	16	0	0	0	0	14	2	0	0	42	
8:30 AM	0	0	0	0	0	1	0	4	0	0	7	21	0	0	0	0	15	0	0	0	48	
8:35 AM	0	0	0	0	0	2	0	3	0	0	2	15	0	0	0	0	11	6	0	0	39	
8:40 AM	1	0	0	0	0	3	0	6	0	0	7	16	0	0	0	1	19	2	0	0	55	
8:45 AM	0	0	0	0	0	2	0	6	0	0	5	21	0	0	0	0	24	1	0	0	59	
8:50 AM	1	0	0	0	0	4	0	14	0	0	2	23	0	0	0	0	18	3	0	0	65	
8:55 AM	0	0	0	0	0	4	0	7	0	0	11	28	0	0	0	0	26	7	0	0	83	

Time Period	NB Left	NB Thru	NB Right	NB U-Turn	NB RTOR	SB Left	SB Thru	SB Right	SB U-Turn	SB RTOR	EB Left	EB Thru	EB Right	EB U-Turn	EB RTOR	WB Left	WB Thru	WB Right	WB U-Turn	WB RTOR
Cars	0	0	0	0	0	63	0	53	0	0	64	240	0	0	0	0	265	24	0	0
Trucks	0	0	0	0	0	2	0	1	0	0	2	7	0	0	0	0	2	0	0	0
Peak Vols	0	0	0	0	0	65	0	54	0	0	66	247	0	0	0	0	267	24	0	0
Trucks %	0%					2.5%					2.9%					0.7%				
Peds	0					7					2					1				

PHF= 0.77

1203

Exhibit 108 APPEAL24-1001

File Name: NW Friberg-Strunk St at SE 1st St
Start Date: 8/1/2023
Start Time: 4:00 PM
Site Code: 3

Peak Hour: 4:45-5:45PM
Peak 15-min: 5:10-5:25PM

ALL VEHICLES	Northbound N/A					Southbound NE Friberg-Strunk St					Eastbound SE 1st St					Westbound NW Lake Rd						
Time Period	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	Left	Thru	Right	U-Turn	RTOR	5-min Total	Hourly Totals
4:00 PM	0	0	0	0	0	2	0	3	0	0	15	53	0	0	0	0	46	10	0	0	129	1294
4:05 PM	1	0	0	0	0	2	0	6	0	0	15	34	0	0	0	0	29	4	0	0	91	1277
4:10 PM	0	0	0	0	0	1	0	7	0	0	25	31	1	0	0	0	28	3	0	0	96	1308
4:15 PM	0	0	0	0	0	1	0	7	0	0	17	54	1	0	0	0	24	7	0	0	111	1343
4:20 PM	0	0	0	0	0	7	0	6	0	0	16	47	0	0	0	0	28	5	0	0	109	1356
4:25 PM	0	0	0	0	0	5	0	5	0	0	21	42	0	0	0	0	36	7	0	0	116	1373
4:30 PM	0	0	0	0	0	1	0	3	0	0	15	35	0	0	0	0	26	6	0	0	86	1386
4:35 PM	0	0	0	0	0	10	0	8	0	0	14	37	0	0	0	0	33	10	0	0	112	1415
4:40 PM	0	0	0	0	0	6	0	7	0	0	22	42	0	0	0	0	35	6	0	0	118	1401
4:45 PM	0	0	0	0	0	6	0	12	0	0	17	48	1	0	0	0	36	11	0	0	131	1416
4:50 PM	0	0	0	0	0	8	0	6	0	0	15	39	0	0	0	0	22	5	0	0	95	1399
4:55 PM	0	0	0	0	0	7	0	4	0	0	12	38	0	0	0	0	34	5	0	0	100	1401
5:00 PM	0	0	0	0	0	3	0	8	0	0	11	33	0	0	0	0	49	8	0	0	112	1409
5:05 PM	0	0	0	0	0	4	0	6	0	0	20	45	0	0	0	0	39	8	0	0	122	
5:10 PM	2	0	0	0	0	4	0	10	0	0	18	44	0	0	0	0	43	10	0	0	131	
5:15 PM	0	0	0	0	0	4	0	8	0	0	15	56	0	0	0	0	35	6	0	0	124	
5:20 PM	0	0	0	0	0	9	0	7	0	0	15	53	1	0	0	0	35	6	0	0	126	
5:25 PM	0	0	0	0	0	9	0	5	0	0	26	49	0	0	0	0	29	11	0	0	129	
5:30 PM	0	0	0	0	0	4	0	4	0	0	19	57	0	0	0	0	24	7	0	0	115	
5:35 PM	0	0	0	0	0	7	0	5	0	0	11	41	0	0	0	0	26	8	0	0	98	
5:40 PM	0	0	0	0	0	7	0	9	0	0	18	64	0	0	0	0	30	5	0	0	133	
5:45 PM	0	0	0	0	0	6	0	10	0	0	15	48	0	0	0	0	30	5	0	0	114	
5:50 PM	0	0	0	0	0	5	0	10	0	0	16	36	0	0	0	0	23	7	0	0	97	
5:55 PM	0	0	0	0	0	5	0	7	0	0	20	45	0	0	0	0	27	4	0	0	108	

Time Period	NB Left	NB Thru	NB Right	NB U-Turn	NB RTOR	SB Left	SB Thru	SB Right	SB U-Turn	SB RTOR	EB Left	EB Thru	EB Right	EB U-Turn	EB RTOR	WB Left	WB Thru	WB Right	WB U-Turn	WB RTOR
Cars	2	0	0	0	0	72	0	84	0	0	197	565	2	0	0	0	400	90	0	0
Trucks	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0
Peak Vols	2	0	0	0	0	72	0	84	0	0	197	567	2	0	0	0	402	90	0	0
Trucks %	0.0%					0.0%					0.3%					0.4%				
Peds	0					0					0					0				

PHF= 0.93

1204

Exhibit 108 APPEAL24-1001

TRAFFIC VOLUMES

Year 2023 Background Conditions

AM & PM Peak Hours

Figure 5

Camas Heights

10/22/2021

0% Build-Out Camas Heights Subdivision - 8/24/23

0% Build-Out Camas Heights Subdivision - 8/24/23

lancaster mobley

TRAFFIC VOLUMES

Year 2023 Buildout Conditions

AM & PM Peak Hours

Figure 6

Camas Heights

10/22/2021

CURRENT PROPOSED DEVELOPMENT PLAN

The B1 South Phase consists of 124 attached units and 2 single-family detached homes and is expected to be completed by 2020. It is located in the southwest portion of the overall site, directly south of Phase 1. Access will be provided via the neighborhood collector built with Phase 1, which connects to NE Ingle Road. In the future, this neighborhood collector will connect to Phase 3 of the site.

Trip Generation

Trip generation estimates for the proposed development were generated based on information provided in the standard reference manual *Trip Generation, 9th Edition* published by the Institute of Transportation Engineers (ITE – Reference 2). Table 1 summarizes the daily, weekday AM, and weekday PM peak-hour trips for the B1 South Phase assumed development.

Table 1: Trip Generation Estimate – B1 South Phase

Land Use	ITE Code	Size	Daily	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Residential Condominium/ Townhouse	230	124 units	720	55	9	46	65	43	22
Single-Family Detached Housing	210	2 units	20	2	1	1	2	1	1
Total Residential (126 units)			**740**	**57**	**10**	**47**	**67**	**44**	**23**

Table 2 summarizes the overall master plan trip generation and then deducts for the cumulative Phase 1[1], Phase 2[1] Phase 3, and B1 South Phase trips to summarize the number of net new trips that will remain vested.

[1] While previous traffic analysis assumed 215 units in Phase 1, Phase 1 as platted consists of 201 units. While previous traffic analysis assumed 230 units in Phase 2, Phase 2 is now platted for 228 units. The updated trip totals are shown in Table 2.

Exhibit 108 APPEAL24-1001

Table 2: Master Plan Trip Generation and Build-out Debiting (Includes Phase 1, 2 and 3)

Land Use	ITE Code	Size	Daily	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Apartment	220	536 units	3,570	275	55	220	330	215	115
Single-Family Detached Housing	210	764 units	7,270	575	145	430	765	480	285
Total Residential (1,300 units)			**10,840**	**850**	200	650	1,095	695	400
Internalization (6% Daily,54% PM)			630	0	0	0	60	30	30
Shopping Center	820	90,000 square feet	6,340	145	90	55	560	270	290
Internalization (10% Daily, 11% PM)			*630*	*0*	*0*	*0*	*60*	*30*	*30*
Pass-By Trips (34%)			*1,940*	*50*	*25*	*25*	*170*	*85*	*85*
Total Vested Trips			17,180	995	290	705	1,655	965	690
Less Internalization			*1,260*	*0*	*0*	*0*	*120*	*60*	*60*
Less Pass-by trips			*1,940*	*50*	*25*	*25*	*170*	*85*	*85*
Vested Net New Trips for Full Build-out			***13,980***	***945***	***265***	***680***	***1,365***	***820***	***545***
Deduct for Net New Trips for Phase 1			*1,914*	*150*	*40*	*110*	*200*	*125*	*75*
Deduct for Net New Trips for Phase 2			*2,170*	*170*	*40*	*130*	*230*	*145*	*85*
Deduct for Net New Trips for Phase 3			*1,514*	*120*	*30*	*90*	*160*	*100*	*60*
Deduct for Net New Trips for B1 South Phase[1]			*740*	*55*	*10*	*45*	*70*	*45*	*25*
Remaining Trips			**7,642**	**450**	**145**	**305**	**705**	**405**	**300**

[1]Consistent with the accounting for the other phases, peak hour trips have been rounded to the nearest five trips for the overall trip generation debiting.

As seen in Table 2, after accounting for Phase 1, Phase 2, Phase 3 and B1 South Phase development, a total of 7,642 daily; 450 weekday AM peak hour; and 705 weekday PM peak hour trips remain in the master plan approval.

Trip Distribution and Assignment

The distribution of site-generated trips onto the study area roadway system was estimated utilizing the trip distribution provided in the Master Plan TIA. *Appendix C* illustrates the trip assignment.

EVALUATION OF OUTSTANDING MITIGATION NEEDS

The Master Plan TIA identified recommended mitigations for intersections not meeting standards under background and/or total traffic conditions. As part of each phase's transportation compliance letter, the TIA recommended evaluation of the following:

- Need for an eastbound right-turn lane at NE 199th Avenue/NE 58th Street (SR 500). As part of the Phase 3 Transportation Compliance Letter, this recommendation was adapted to provide a proportionate share contribution to a future roundabout, per direction from WSDOT.
- NE Ingle Road/NE Goodwin Road operations (including traffic signal warrant analysis).

Exhibit 108 APPEAL24-1001

- Assessment of proportionate share contribution at NE 192nd Avenue/NE 13th Street.

NE 199th Avenue/NE 58th Street (SR 500)

The Master Plan TIA recommended that future subdivision applications provide an updated assessment as to the potential need for providing a right-turn taper or lane at NE 199th Avenue/NE 58th Street (SR 500), considering both the need for a right-turn taper or lane and delay with the northbound left-turn. Based on subsequent discussions with WSDOT and Clark County staff, WSDOT has identified a single-lane roundabout as the preferred mitigation at the intersection in lieu of installation of a westbound right-turn lane. Recognizing the cost of designing and constructing a roundabout exceeds the impacts associated with the Green Mountain Master Plan and represents an "ultimate" long-term improvement need, WSDOT and Clark County will coordinate to administer a proportionate share impact mitigation methodology.

Payment of proportionate share mitigation towards the future roundabout will allow Green Mountain Master Plan development (as well as other subsequent development) a basis to satisfy transportation concurrency while providing a funding mechanism to allow the public agencies to advance intersection improvements. The proportionate cost share of intersection improvements attributable to Green Mountain B1 South Phase will be based on weekday PM peak hour trips through the intersection. The B1 South Phase is projected to add 14 site-generated trips to the intersection during the weekday PM peak hour (refer to Appendix C).

NE Ingle Road/NE Goodwin Road

In the Master Plan TIA, the intersection of NE Ingle Road/NE Goodwin Road was projected to not meet City of Camas intersection operating standards in the 2029 background conditions during the weekday PM peak hour and the 2029 total traffic conditions during both the weekday AM and PM peak hours. Therefore, the following series of mitigations were recommended in conjunction with the Master Plan development:

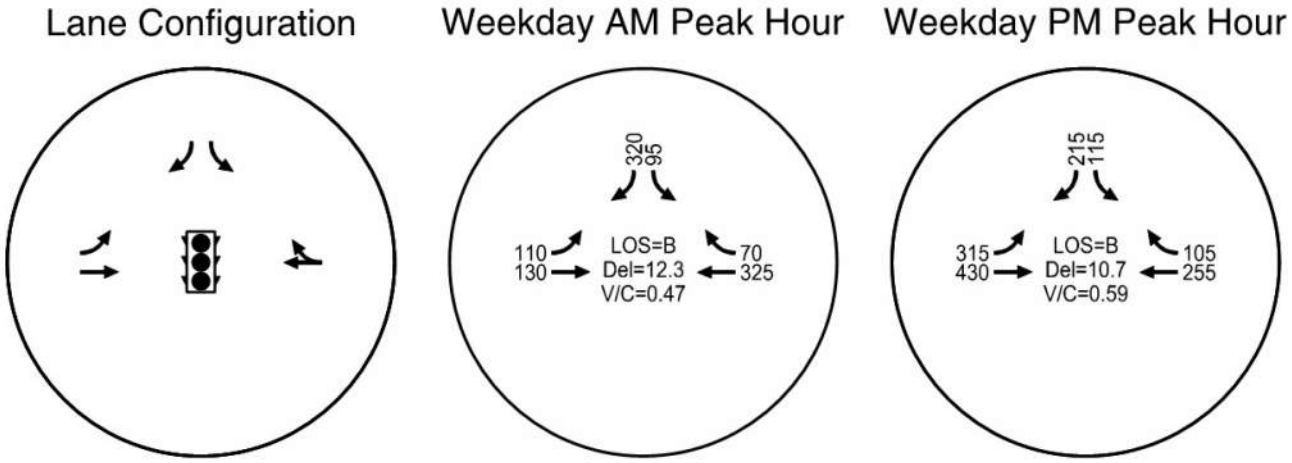
- Construct an eastbound left-turn lane on NE Goodwin Road at NE Ingle Road with the first Phase 1 trip *(completed)*.
- Construct a westbound right-turn lane on NE Goodwin Road at NE Ingle Road with the 203rd Phase 1 trip (prior to occupancy of 203rd single family home on site). The right-turn lane should provide at least 100 feet of storage *(this improvement was reprioritized after signalization of NE Goodwin Road at NE Ingle Road. It is anticipated that the right-turn lane will be constructed prior to or in-conjunction with completion of the phase that fronts Goodwin Road in the turn-lane area)*.

Exhibit 108 APPEAL24-1001

- Construct a three-lane roadway section (with center two-way left-turn lane) on NE Goodwin Road along the site frontage in conjunction with standard frontage improvements as adjacent development occurs *(will be constructed with Phase 2 development)*.
- Upon completion of Phase 1 site development (including construction of the eastbound left-turn lane on NE Goodwin Road at NE Ingle Road with Phase 1), the developer shall monitor the need for installation of a traffic signal with each future subdivision application at the intersection and construct a traffic signal when the intersection no longer satisfies City of Camas performance standard (LOS "D" and v/c of 0.90 or better) *and* the intersection volumes meet traffic signal warrants (subject to direction from the City of Camas) *(recommended with Phase 3 site development)*.

Signalized intersection operations are provided in Exhibit 1 assuming Phase 1, Phase 2, Phase 3 and B1 South Phase site development as well as approved background traffic. Given ongoing construction activity in the area, traffic counts previously collected in October 2016 for the Phase 2 TCL were used with four years of growth added[2] to inform an updated operations analysis. The count sheets are provided in *Appendix D*. *Appendix E* contains the 2020 total traffic conditions traffic operations worksheets.

Exhibit 1: NE Ingle Road/NE Goodwin Road 2020 Total Traffic Lane Configuration and Operations



As seen in Exhibit 1, with buildout of the B1 South Phase and the prior approved master plan development phases, the intersection is projected to satisfy City of Camas performance standard (LOS "D" and v/c of 0.90 or better).

[2] Based on direction provided in the original traffic study, a 1% growth was applied to City of Camas roadways.

Exhibit 108 APPEAL24-1001

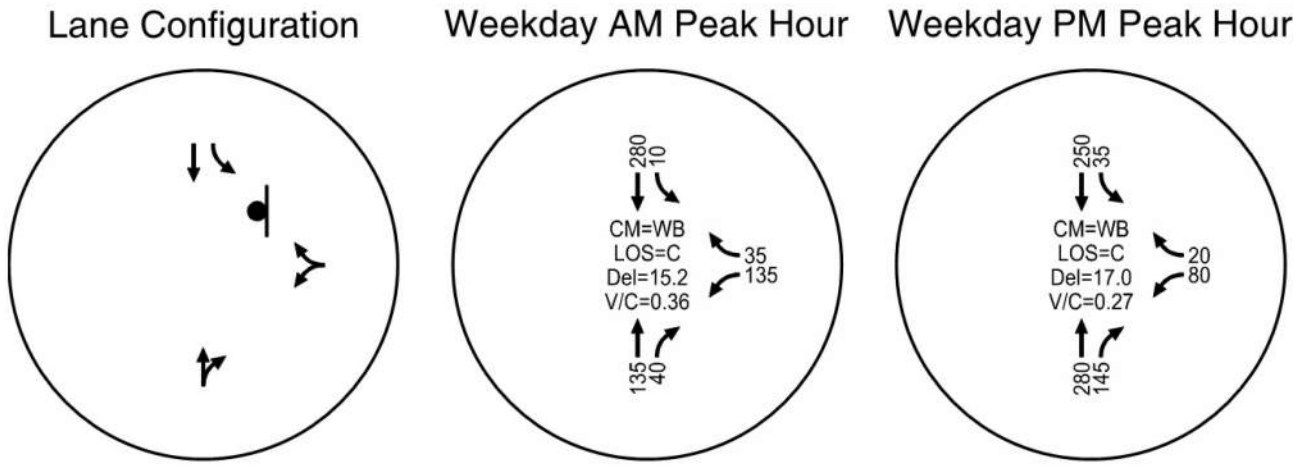
NE 192nd Avenue/NE 13th Street

The Master Plan TIA identified a proportionate cost sharing methodology to fund future construction of a northbound right-turn lane and a westbound right-turn lane on NE 13th Avenue at NE 192nd Avenue, provided in *Appendix F*. Under this methodology, each weekday PM peak hour trip would be assessed a fee of $391. Based on the B1 South Phase trip assignment (refer to *Appendix C*), the B1 South Phase adds 31 trips to the intersection of NE 192nd Avenue/NE 13th Street and therefore should be responsible for contributing $12,121 towards future improvements at the intersection.

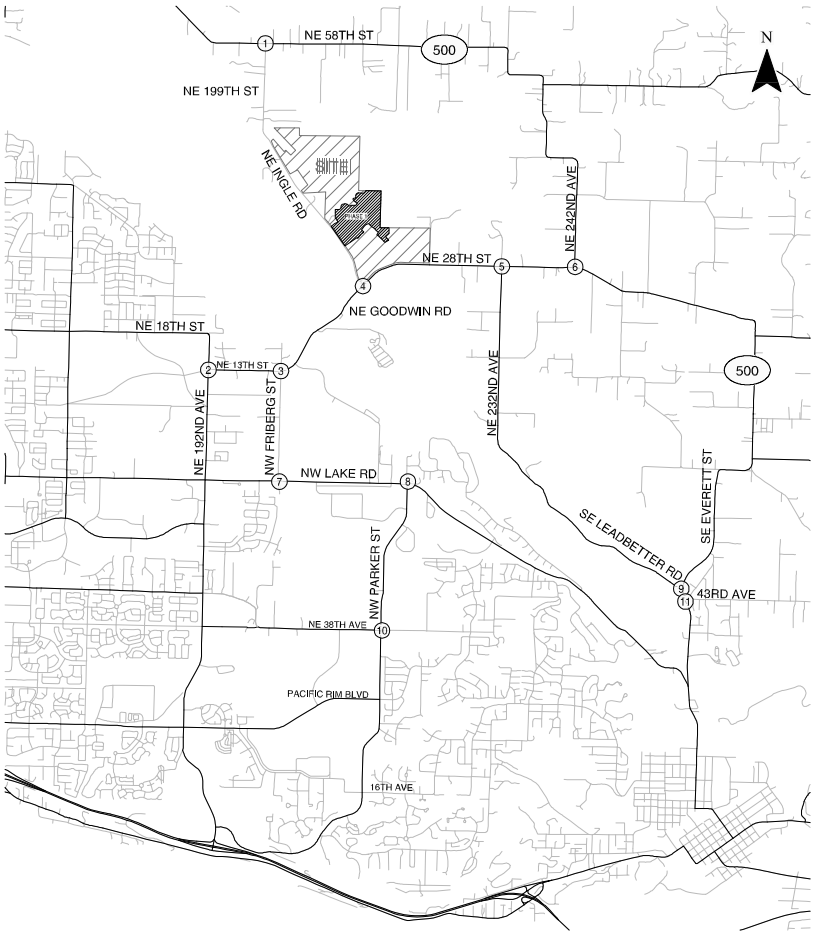
ON-SITE CIRCULATION AND OPERATIONS

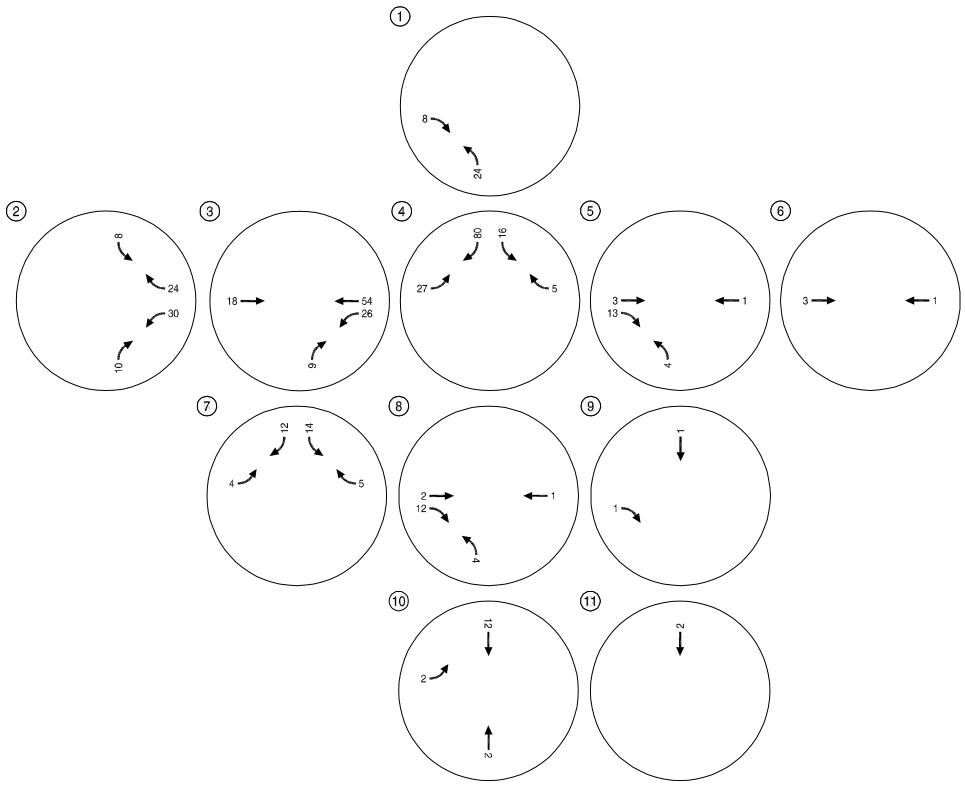
As seen in Figure 2, the B1 South Phase is located in the southwest portion of the overall site, immediately south of Phase 1. Access will be provided via a local roadway off the neighborhood circulator that connects to NE Ingle Road, developed with Phase 1. The neighborhood circulator will be located along the east edge of the B1 South Phase and connect to Phase 2 and NE 28th Street in the future. All trips were assumed to utilize the neighborhood circulator access on NE Ingle Road developed with Phase 1. The Phase 1 access was analyzed in the April 2015 memorandum *Phase 1 Access Assessment*, provided in *Appendix G*. Operations were reassessed with the additional B1 South Phase trips, as well as through trips on NE Ingle Road associated with prior approved phases and background growth. The weekday AM and PM peak hour operations are shown in Exhibit 2. *Appendix E* contains the traffic operations worksheets.

Exhibit 2: NE Ingle Road Neighborhood Circulator Site Access – 2020 Total Traffic Lane Configuration and Operations



As seen in the exhibit, the access is projected to operate acceptably during both the weekday AM and PM peak hours. The anticipated 95th percentile queueing is provided in Table 3. Queues are rounded up to the nearest 25 feet.





Total Estimated Trip Assignment - Phase 1
Weekday AM Peak Hour
Camas, Washington

Figure 7

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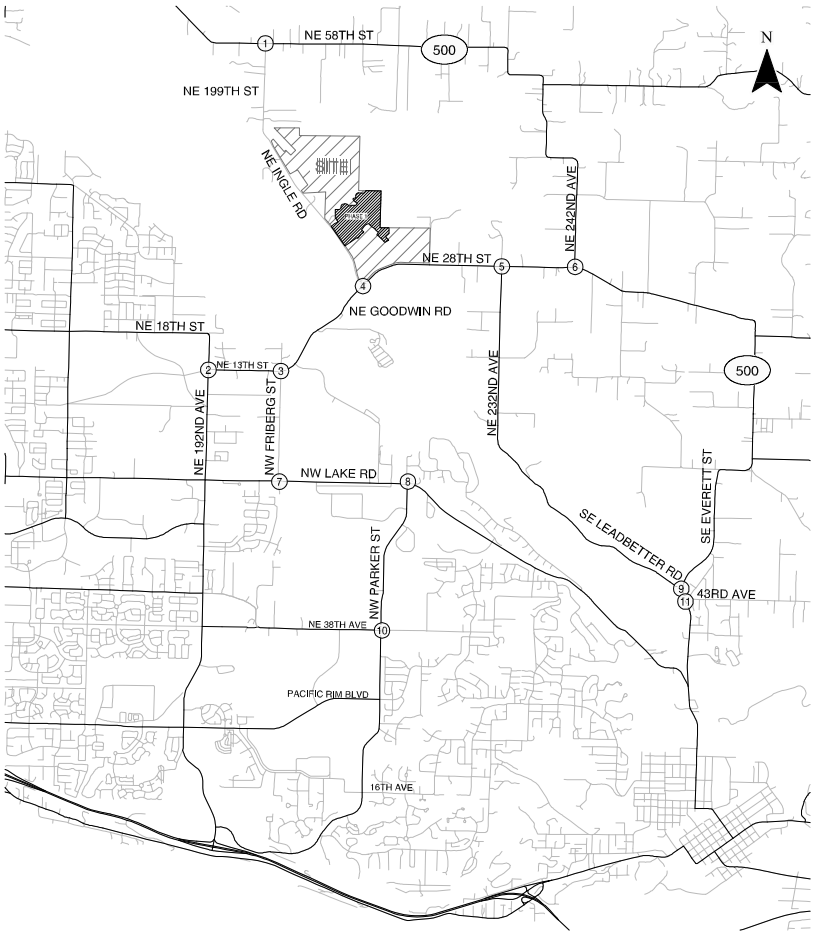
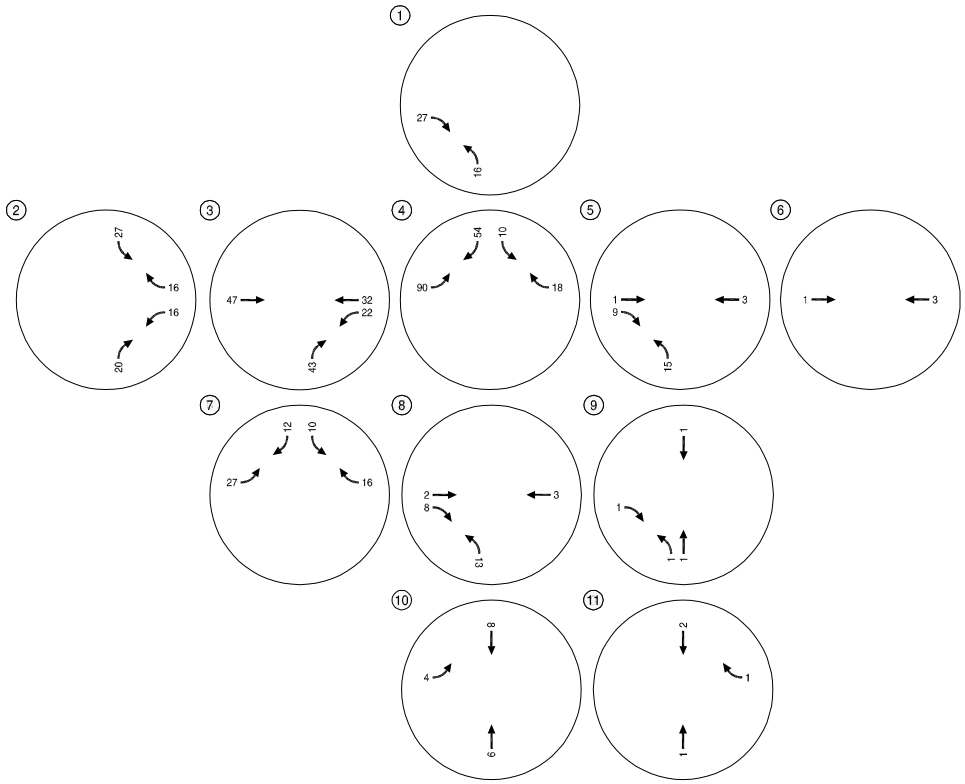
Exhibit 108 APPEAL24-1001





Total Estimated Trip Assignment - Phase 1
Weekday PM Peak Hour
Camas, Washington

Figure 8

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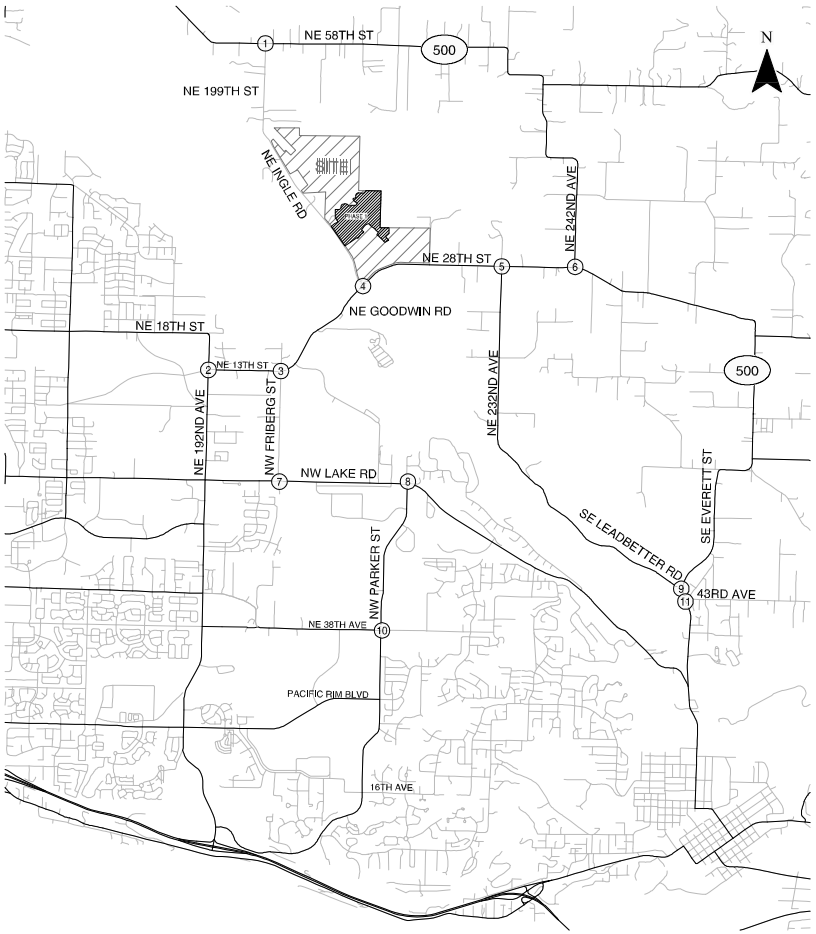
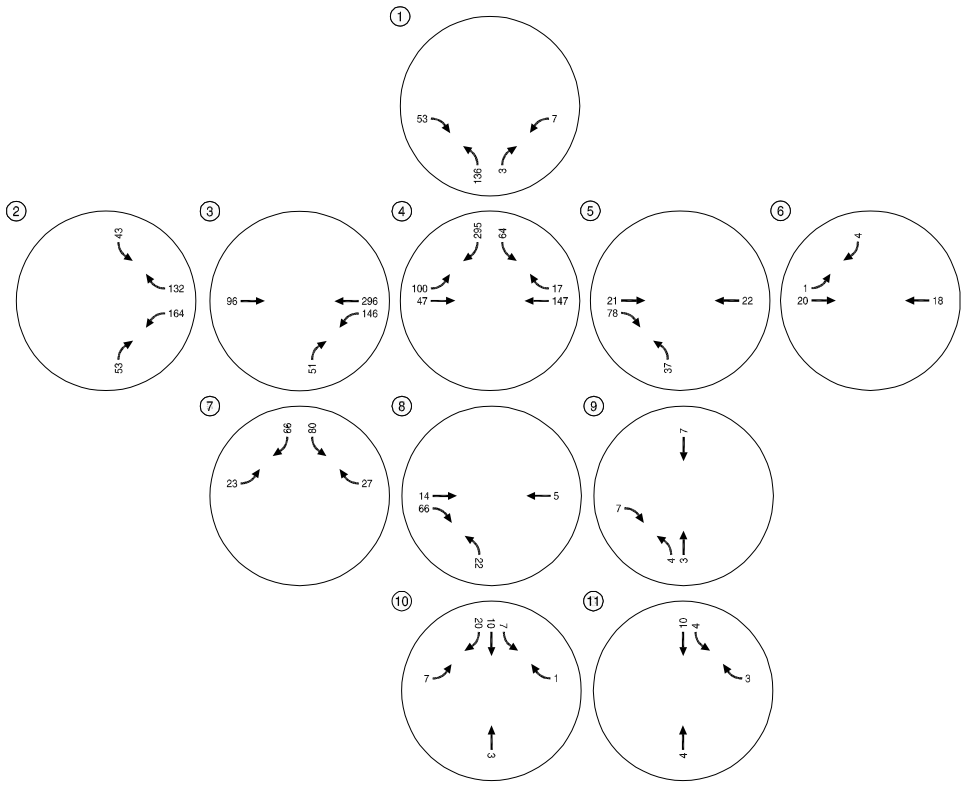
Exhibit 108 APPEAL24-1001





Total Estimated Trip Assignment - Full Build-Out
Weekday AM Peak Hour
Camas, Washington

Figure 9

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

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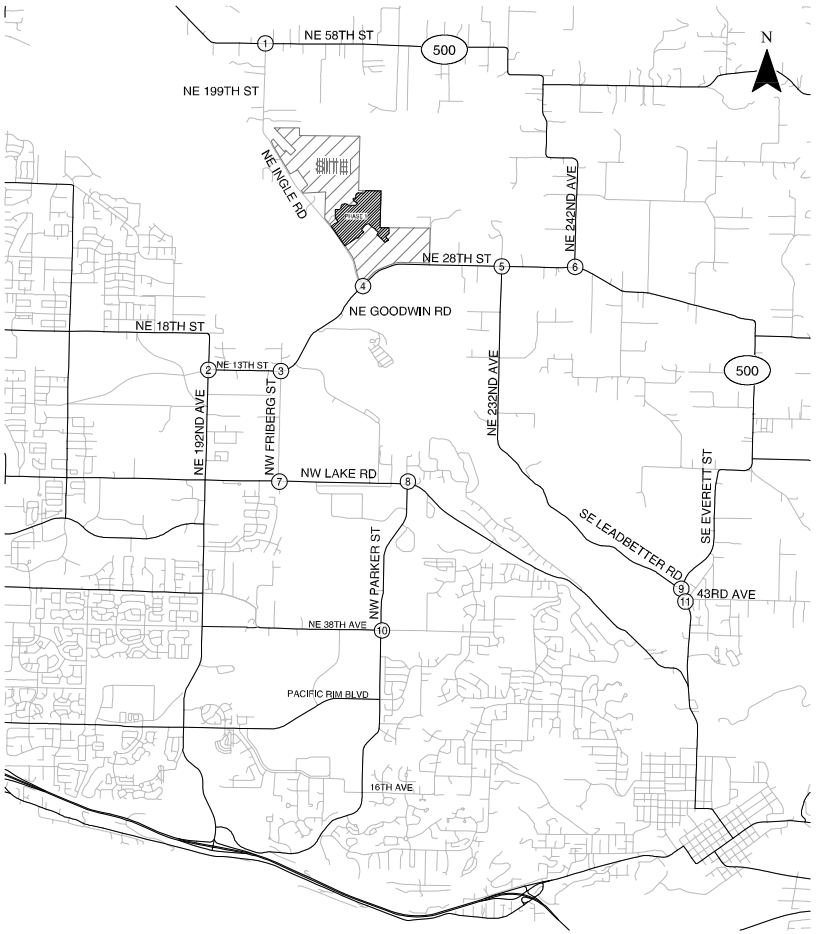
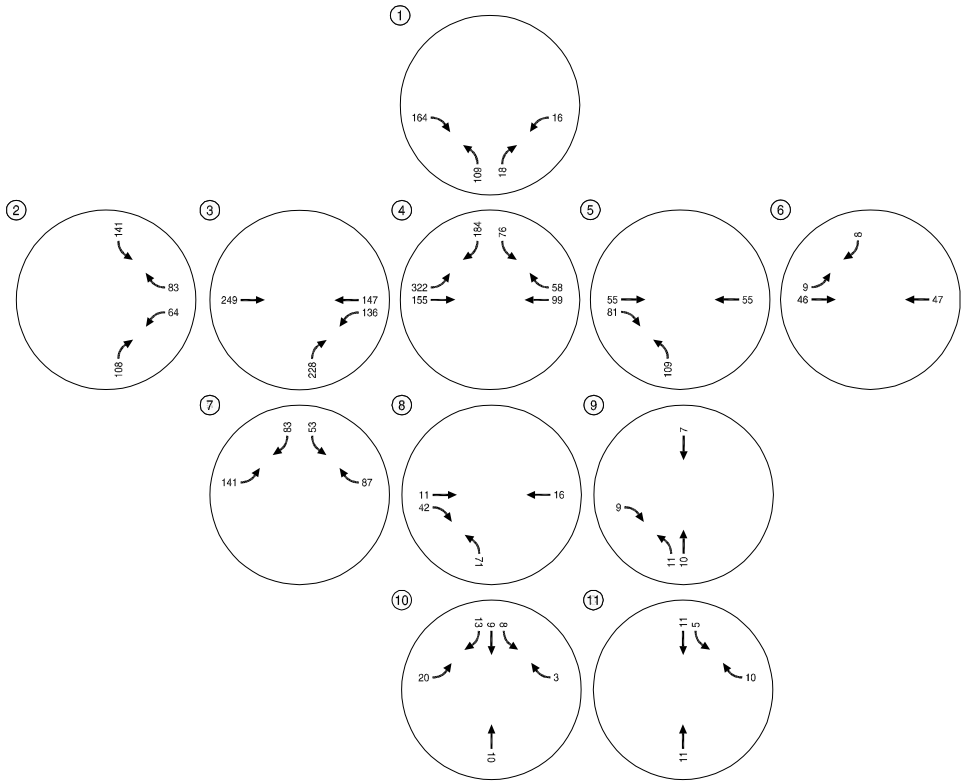
Exhibit 108 APPEAL24-1001

90% Build-Out Green Mountain PRD Phase 1 8/24/23





Total Estimated Trip Assignment - Full Build-Out
Weekday PM Peak Hour
Camas, Washington

Figure 10

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

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Exhibit 108 APPEAL24-1001

40% Build-Out 8/24/23

Lacamas Tech Center
Camas, WA

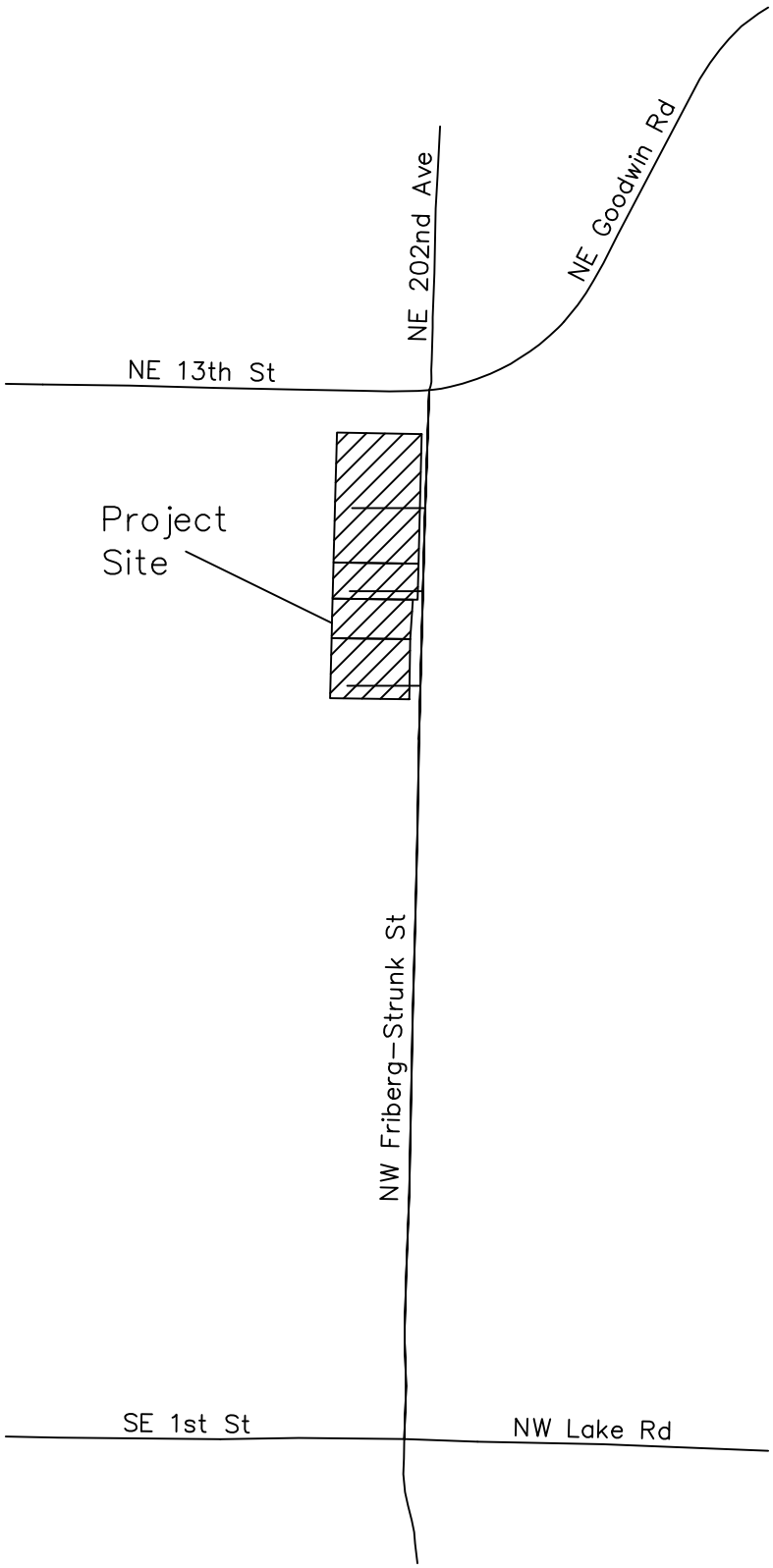


FIGURE 1
Site Vicinity Map

NOT TO SCALE

1216

18047_Figures.Dwg

Lacamas Tech Center
Camas, WA

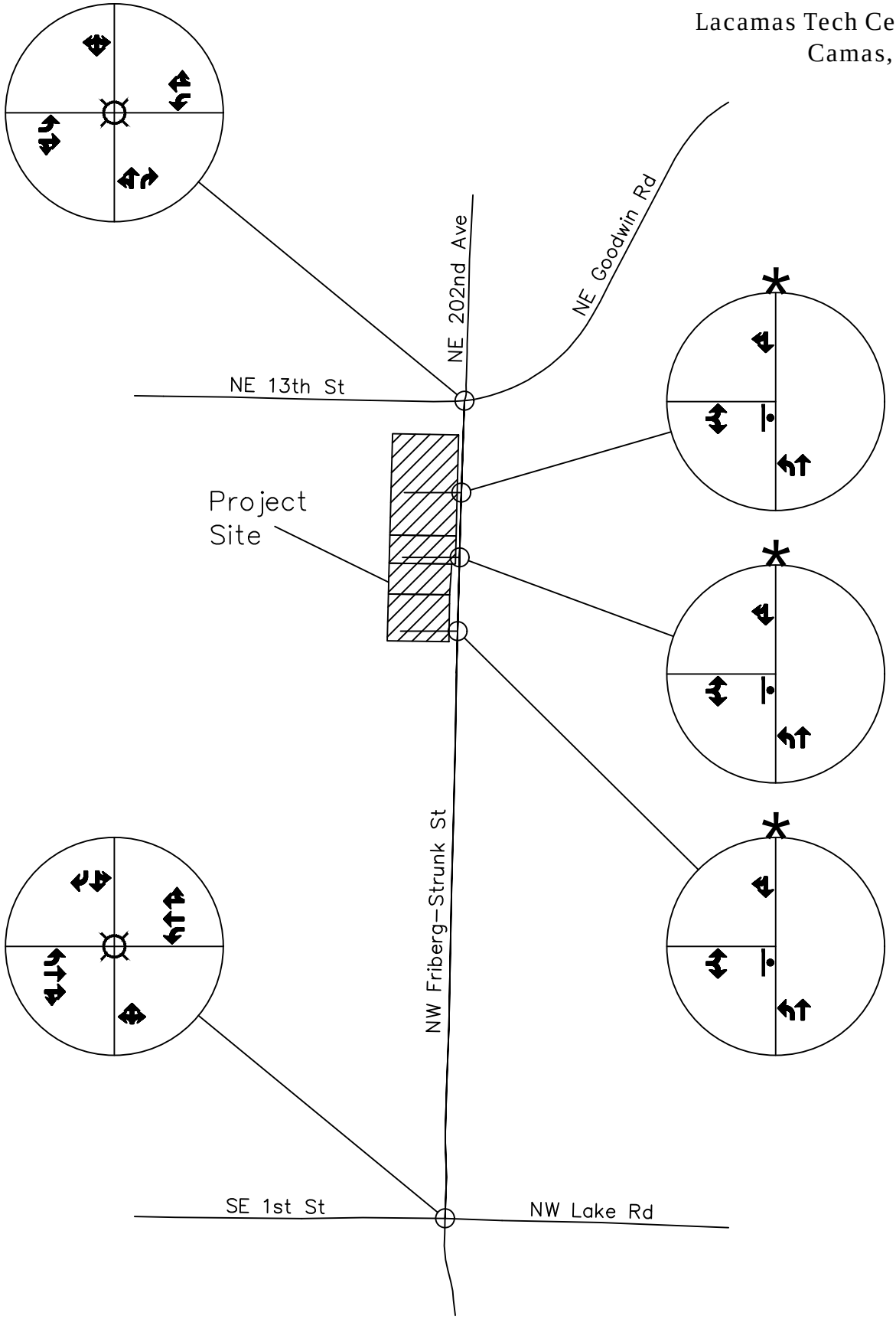


FIGURE 3
Existing Lane Configuration and Traffic Control

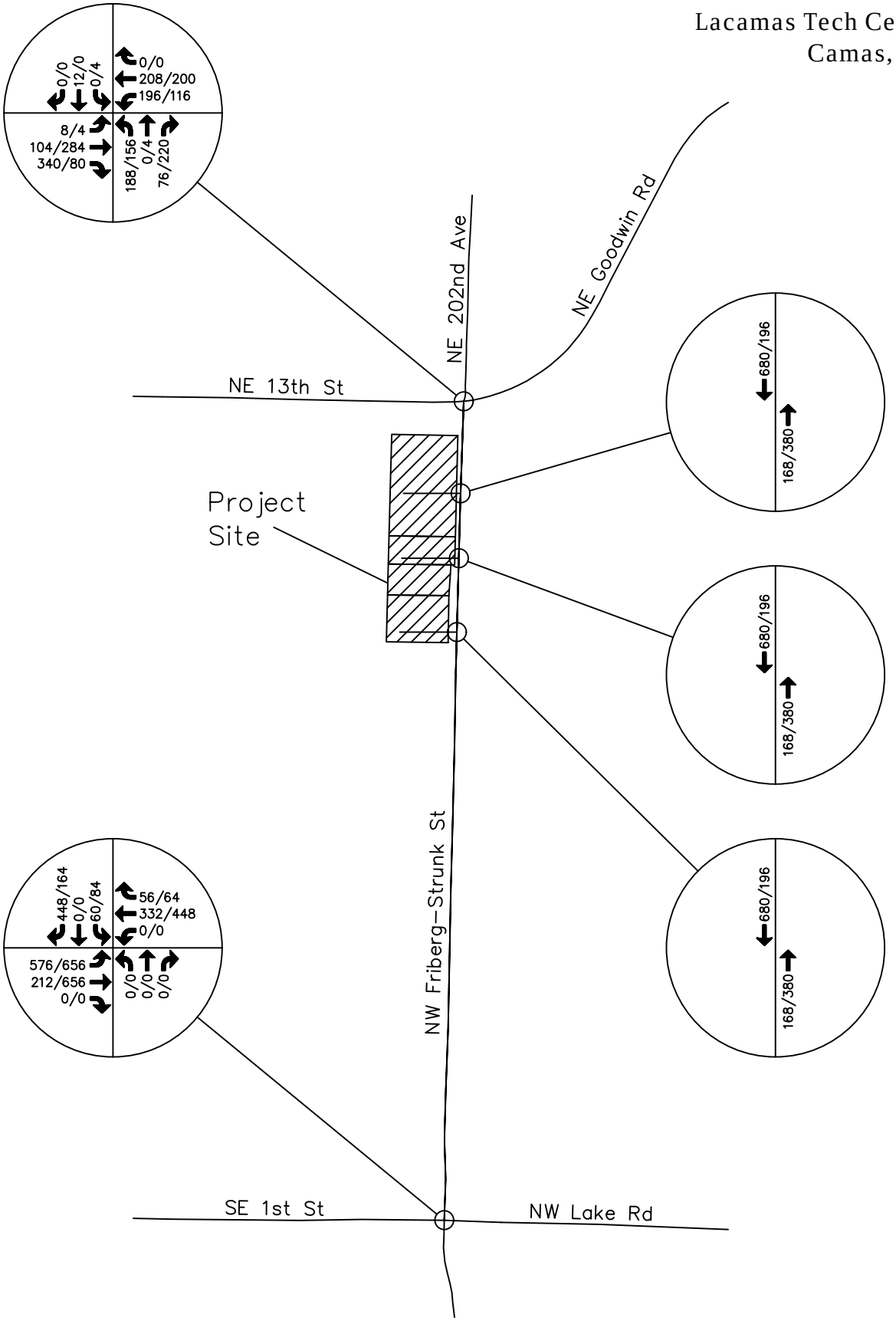
LEGEND

Lane Usage
Traffic Signal
Stop Sign
2025 "With Project" Lane Configuration and Traffic Control

NOT TO SCALE

18047_Figures.Dwg

Lacamas Tech Center
Camas, WA



LEGEND

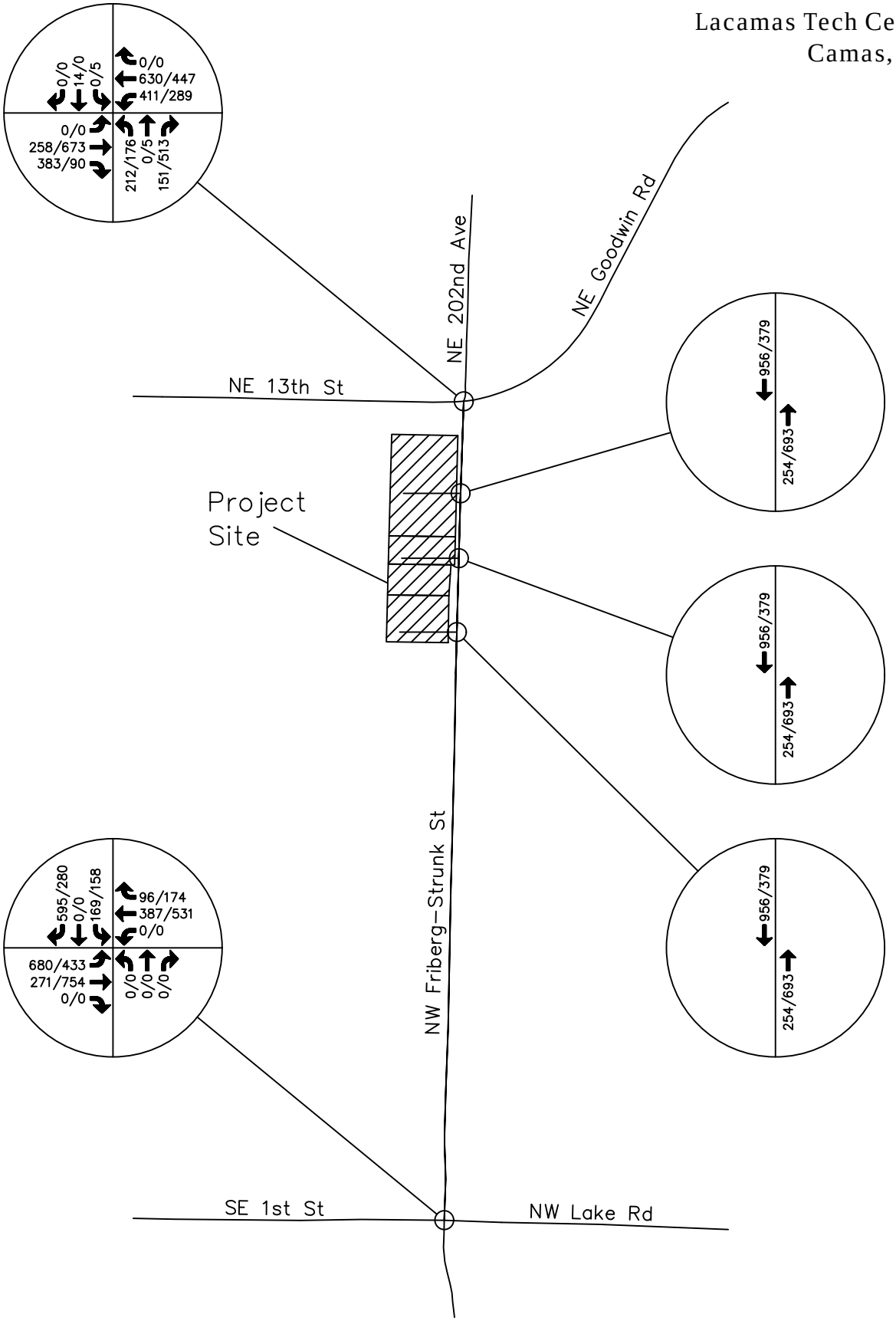
128/200 A.M./P.M. Peak Hour Traffic Volume

NOT TO SCALE

FIGURE 4
Existing A.M. and P.M. Peak Hour Traffic Volumes

18047_Figures.Dwg

Lacamas Tech Center
Camas, WA



LEGEND

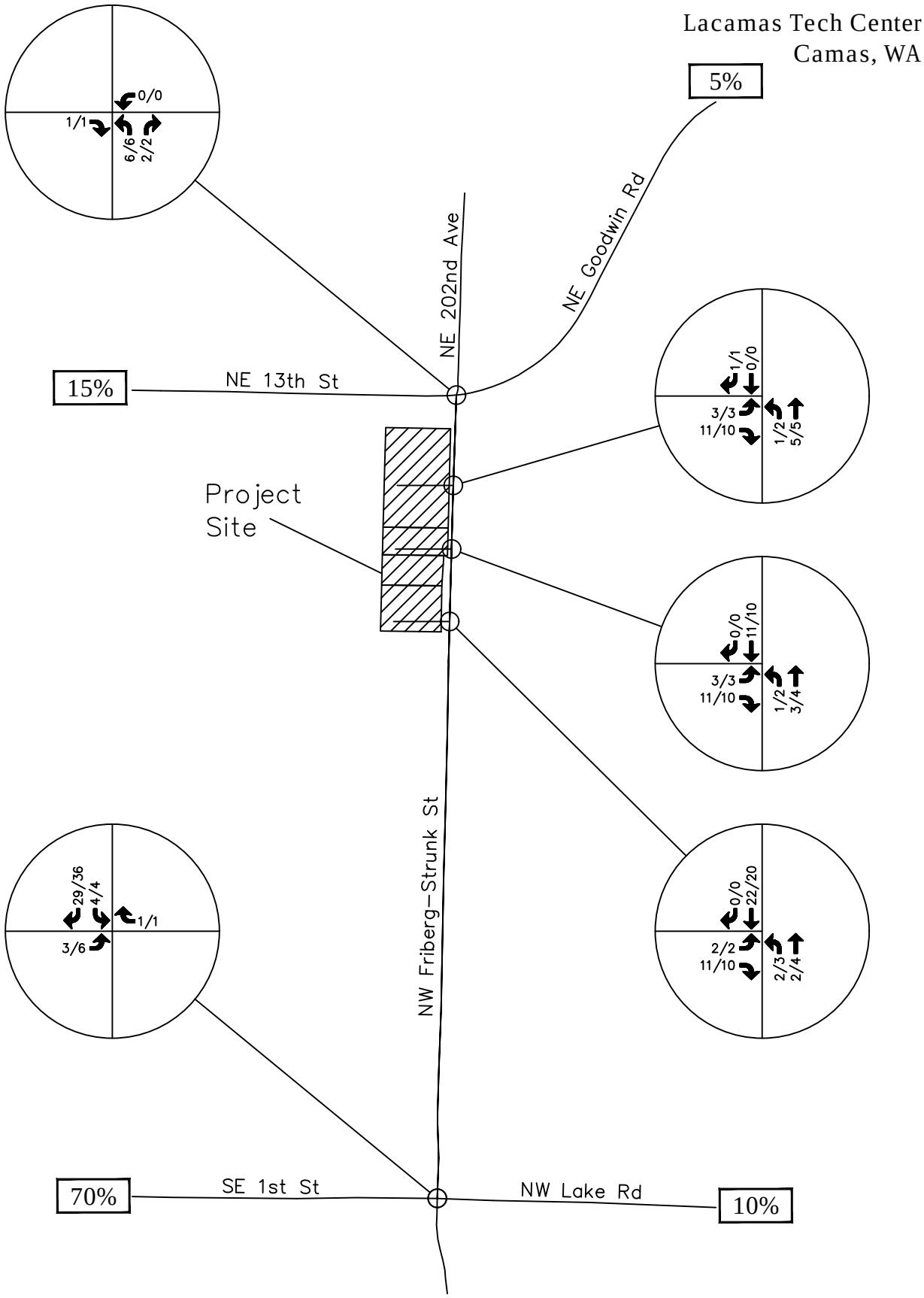
128/200 A.M./P.M. Peak Hour Traffic Volume

NOT TO SCALE

FIGURE 5
2025 "Without Project"
A.M. and P.M. Peak Hour Traffic Volumes

18047_Figures.Dwg

Lacamas Tech Center
Camas, WA



LEGEND

128/200 A.M./P.M. Peak Hour Traffic Volume

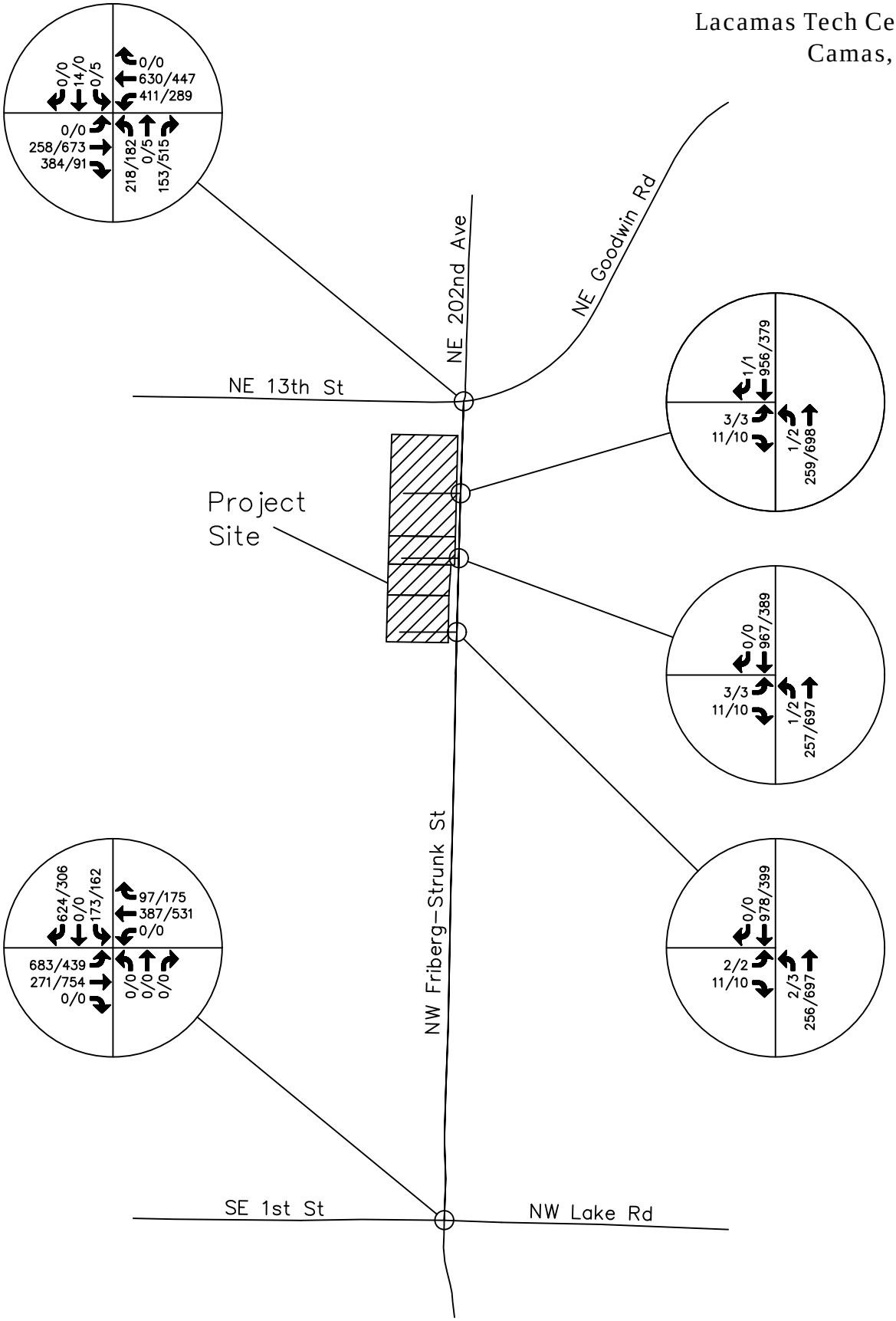
10% Peak Hour Trip Distribution

NOT TO SCALE

FIGURE 6
Trip Distribution and Assignment
Traffic Volumes

18047_Figures.Dwg

Lacamas Tech Center
Camas, WA



LEGEND

128/200 A.M./P.M. Peak Hour Traffic Volume

NOT TO SCALE

FIGURE 7
2022 "With Project"
A.M. and P.M. Peak Hour Traffic Volumes

18047_Figures.Dwg

0% Build-Out 8/24/23

Oak Tree Station TIA
Camas, WA

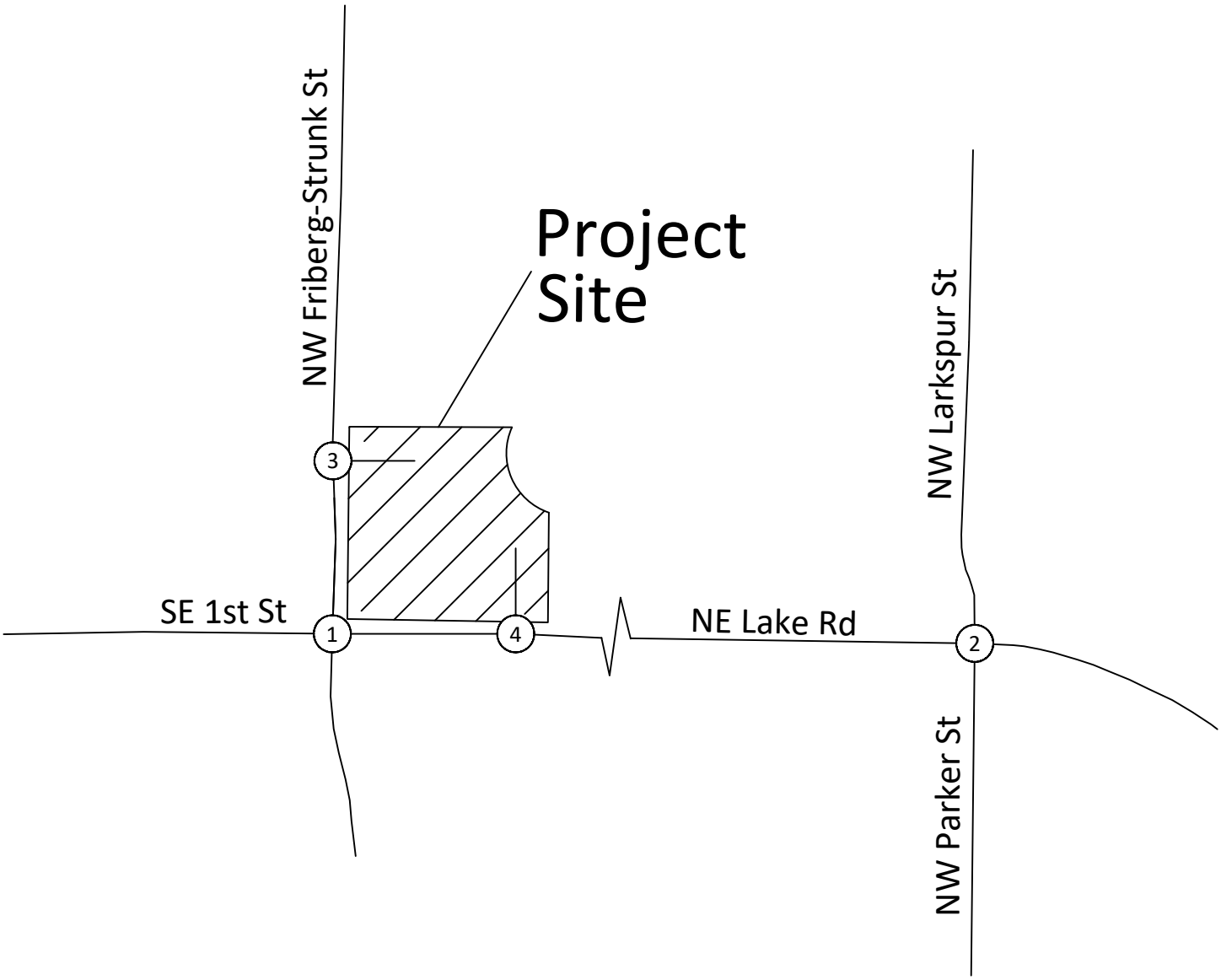
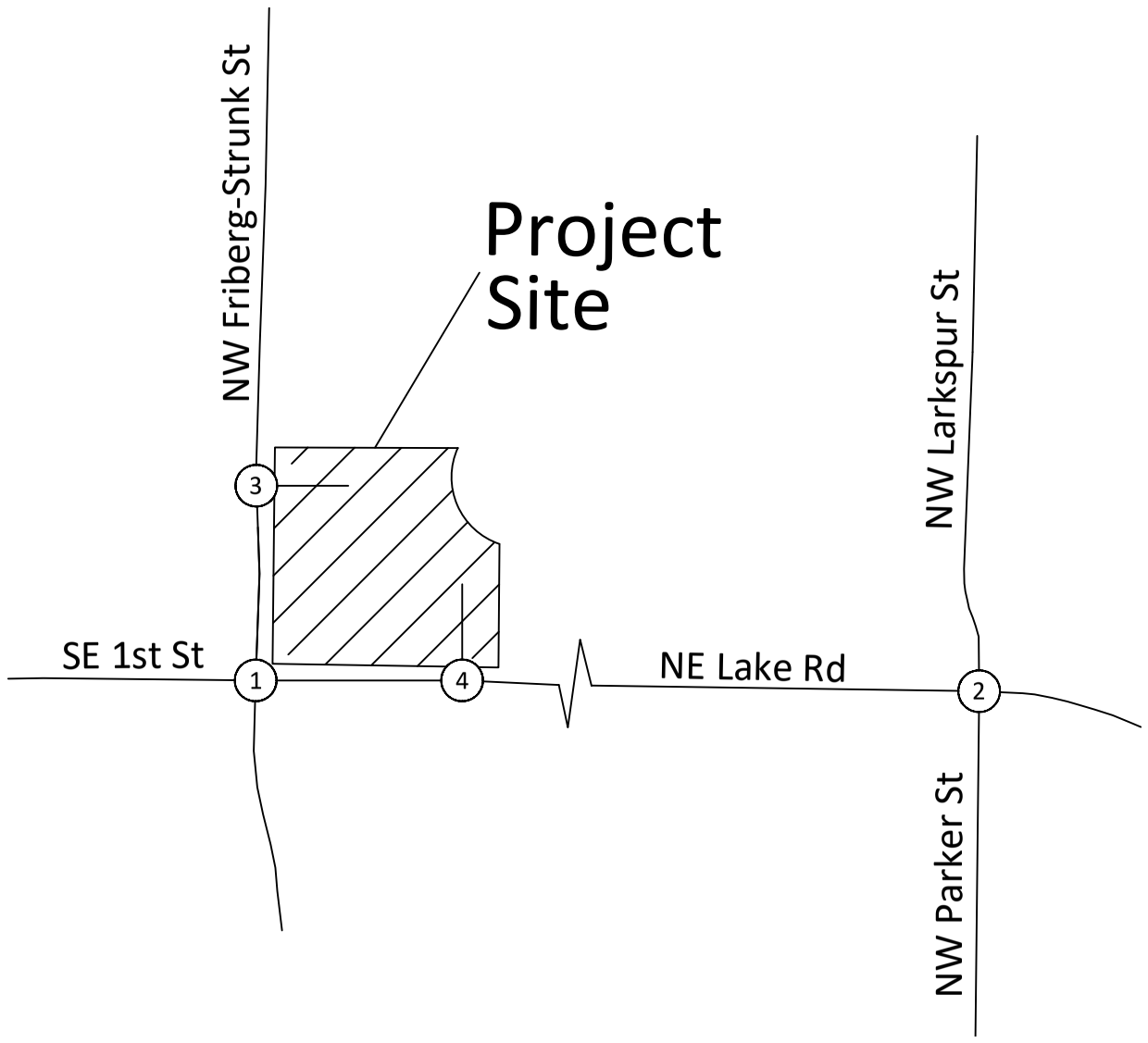


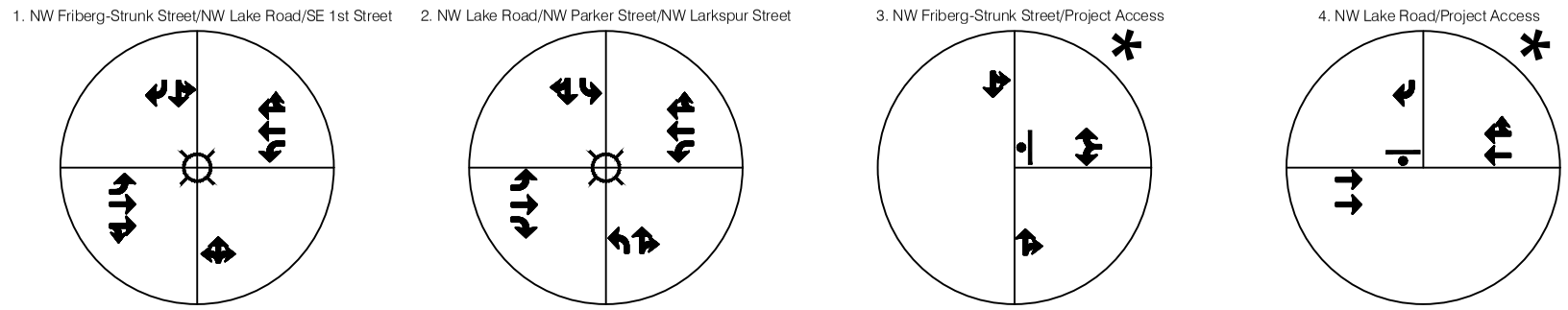
FIGURE 1
Vicinity Map

NOT TO SCALE

1222

22047_Figures.Dwg





LEGEND

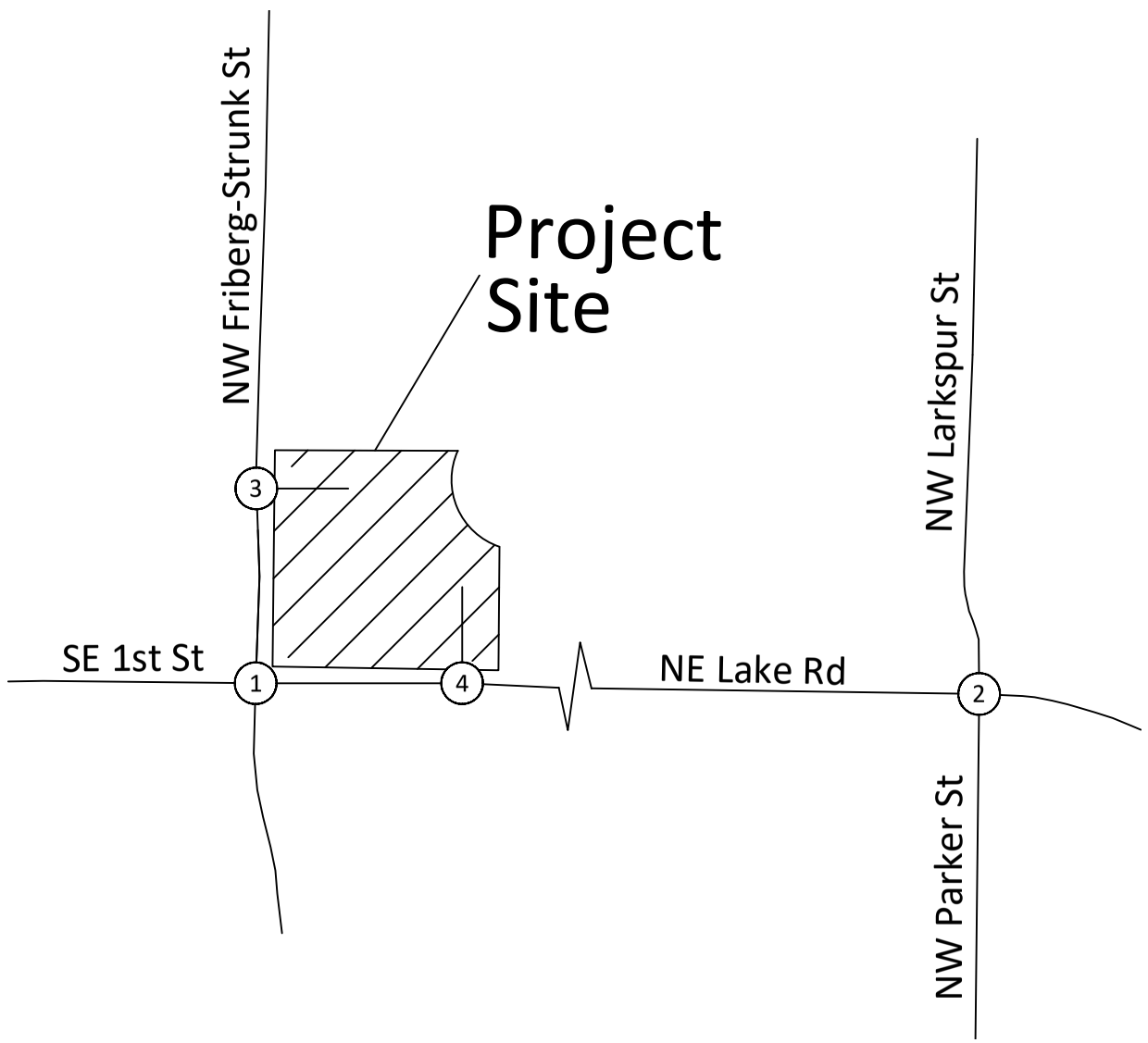
- Lane Usage
- Traffic Signal
- Stop Sign
- Roundabout
- * 2027 "With Project" Lane Configuration

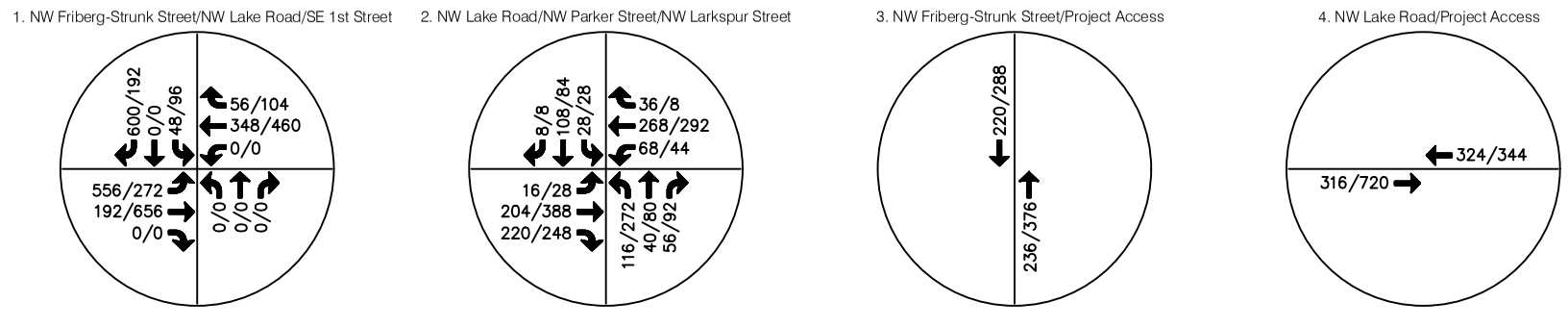
NOT TO SCALE

FIGURE 3
Existing Lane Configuration and Traffic Control

22047_Figures.Dwg

Exhibit 108 APPEAL24-1001





LEGEND

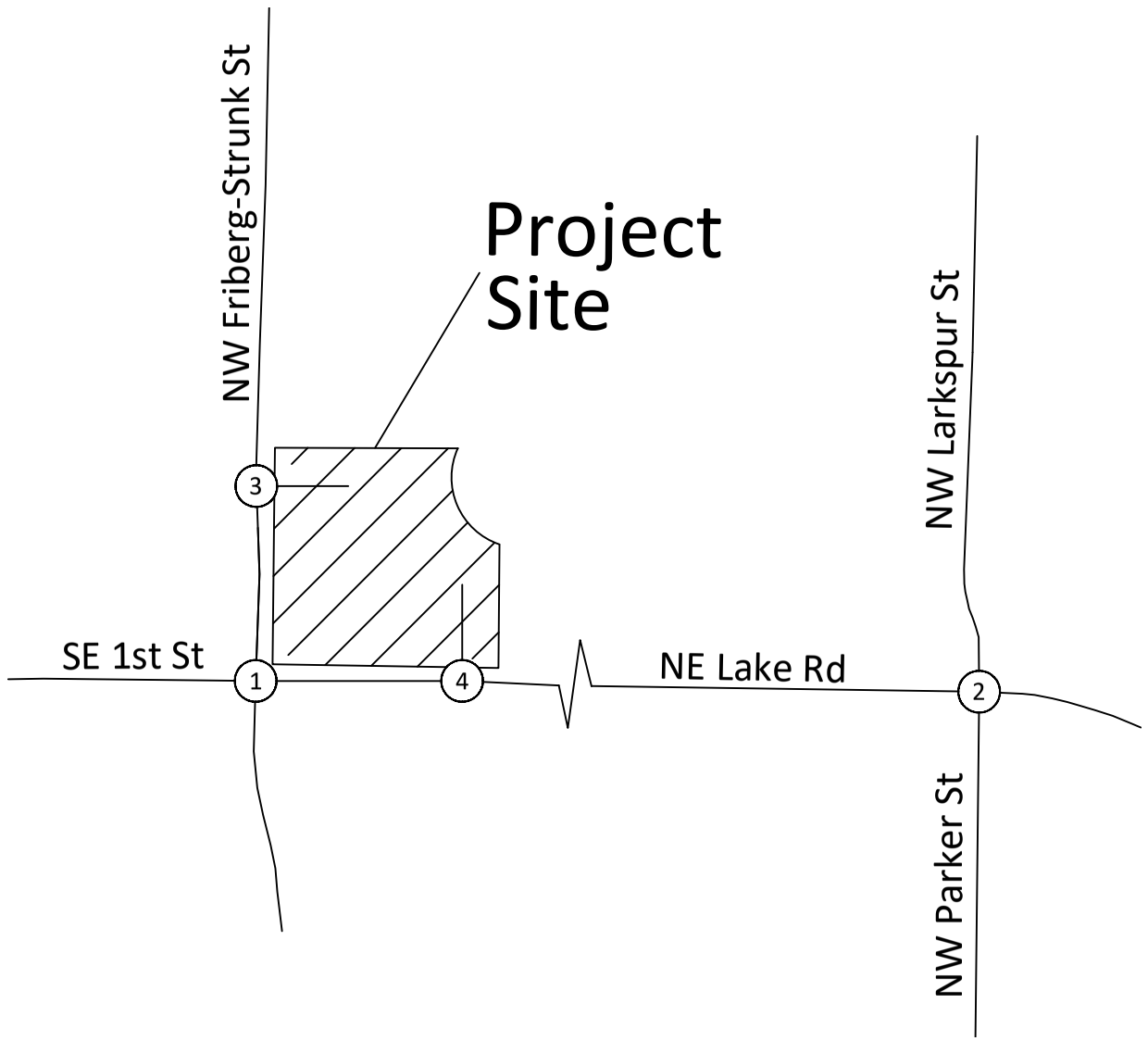
128/200 A.M./P.M. Peak Hour Traffic Volume

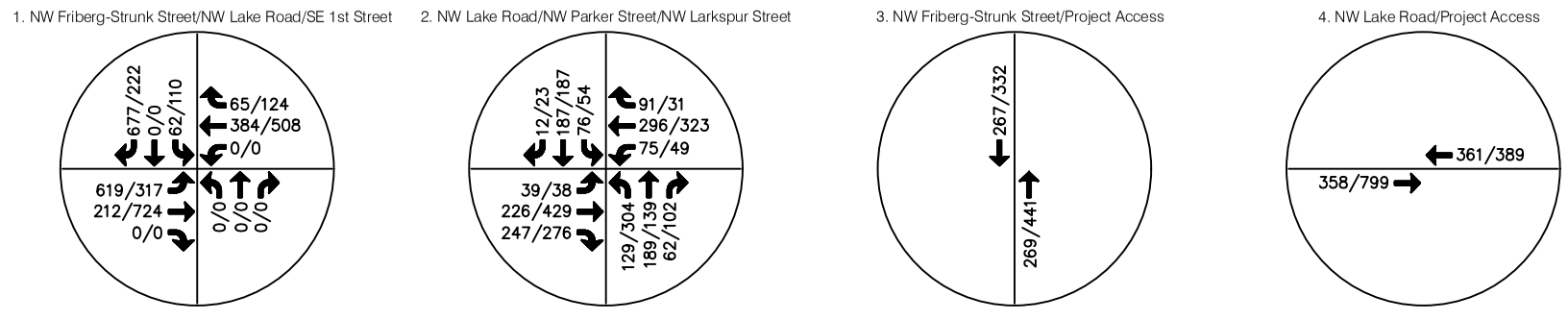
NOT TO SCALE

FIGURE 4
Existing A.M. and P.M.
Peak Hour Traffic Volumes

22047_Figures.Dwg

Exhibit 108 APPEAL24-1001





LEGEND

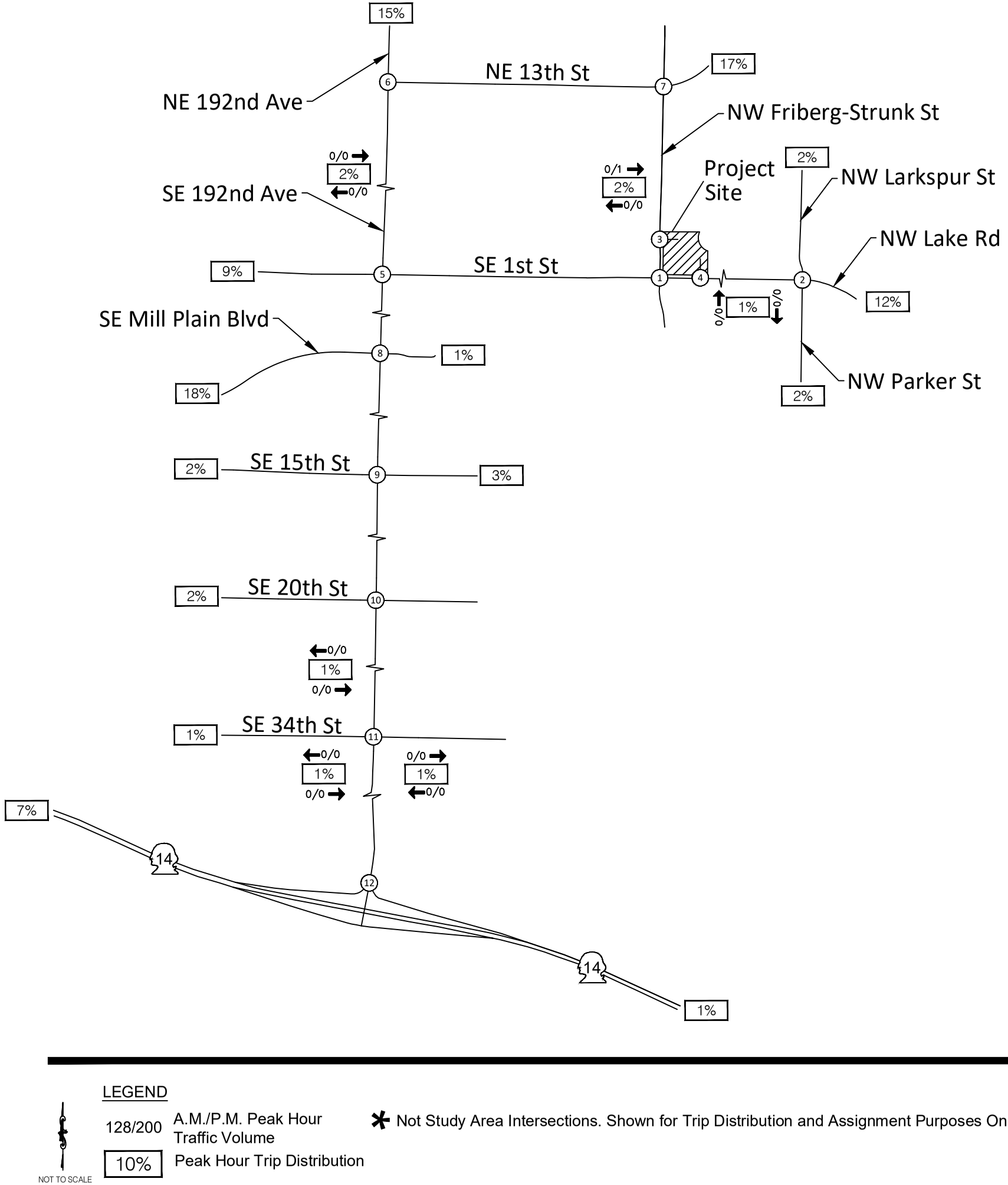
128/200 A.M./P.M. Peak Hour Traffic Volume

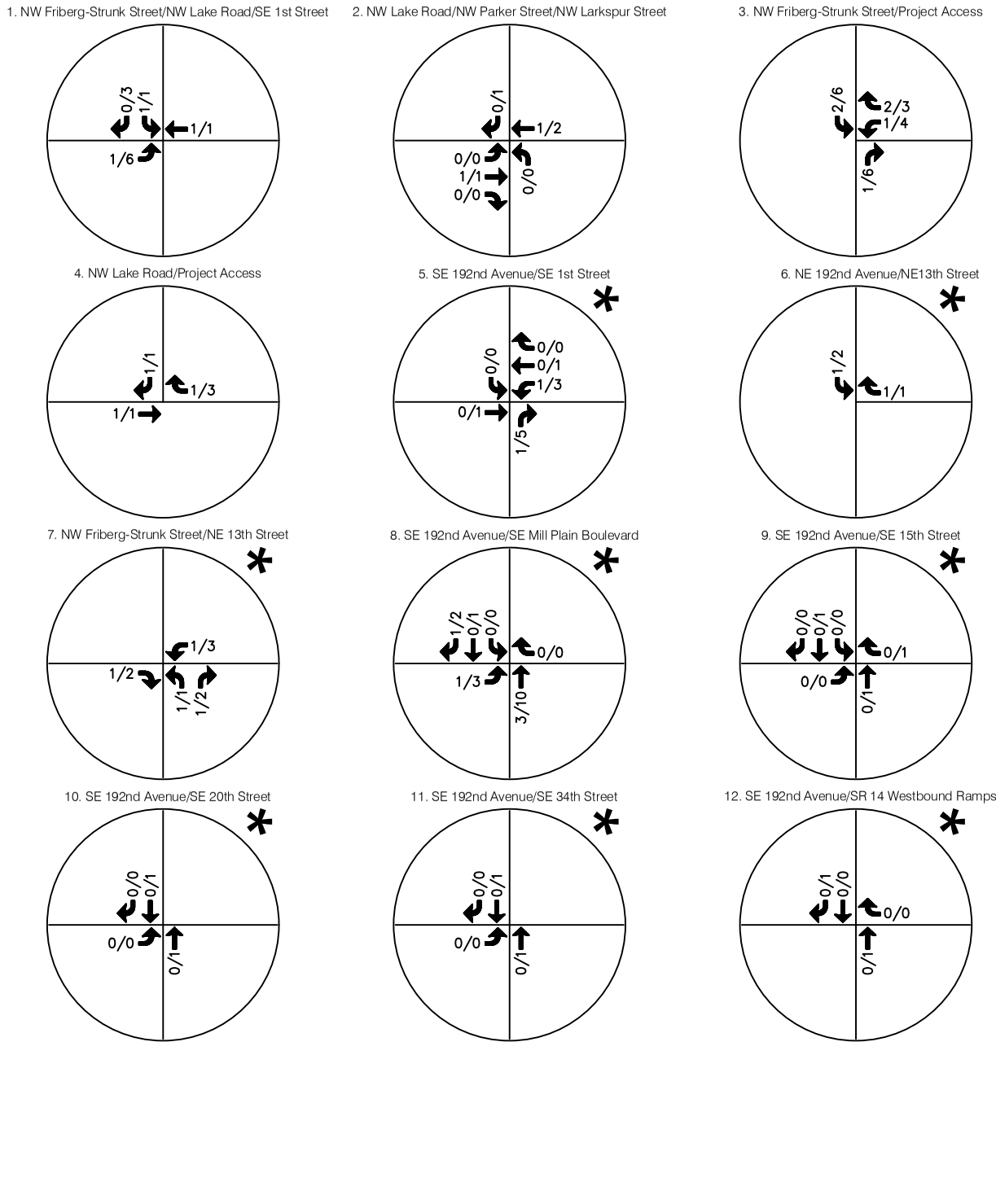
NOT TO SCALE

FIGURE 5
2027 "Without Project"
A.M. and P.M. Peak Hour Traffic Volumes

22047_Figures.Dwg

Exhibit 108 APPEAL24-1001





LEGEND

128/200 A.M./P.M. Peak Hour Traffic Volume

10% Peak Hour Trip Distribution

* Not Study Area Intersections. Shown for Trip Distribution and Assignment Purposes Only

NOT TO SCALE

FIGURE 6a
Phase 1
Trip Distribution and Assignment
Net Traffic Volumes

22047_Figures.Dwg

Exhibit 108 APPEAL24-1001

Oak Tree Station TIA
Camas, WA

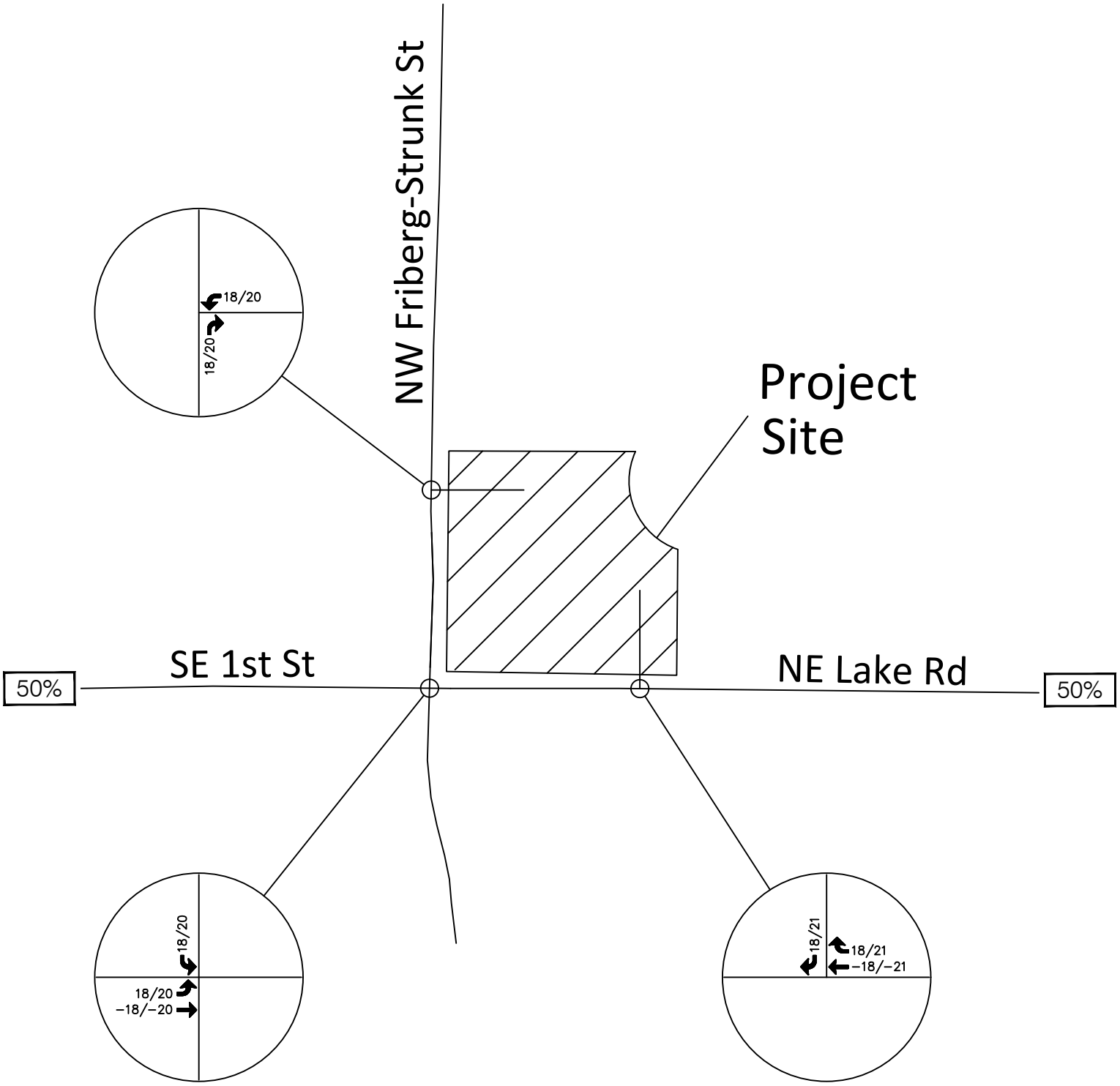
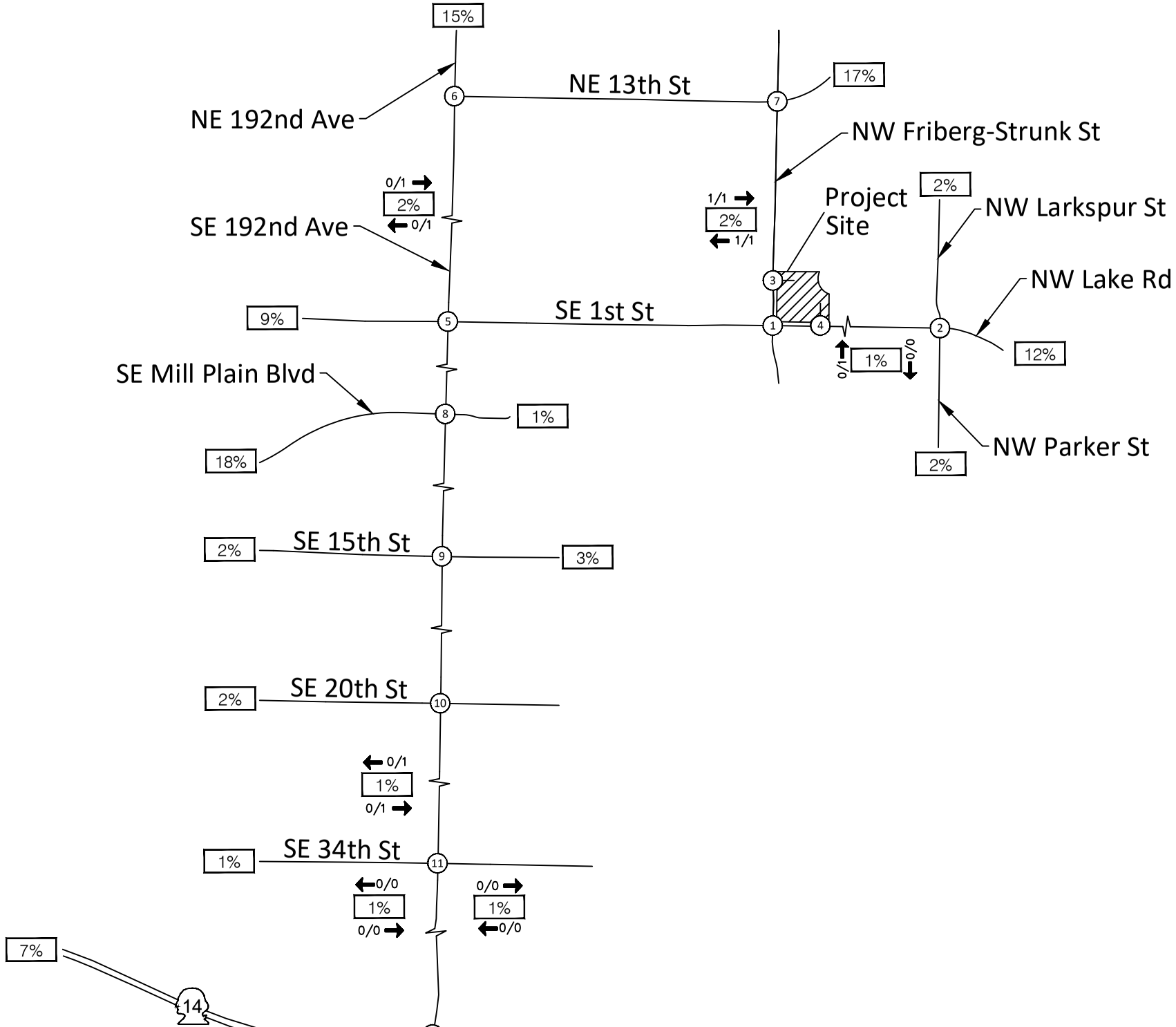


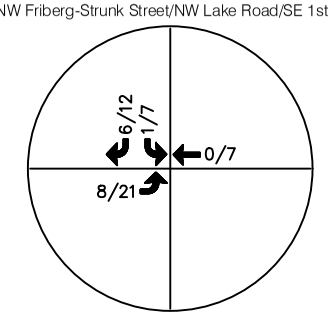
FIGURE 6b
Phase 1 Pass-By/Diverted Trips
Trip Distribution and Assignment
Net Traffic Volumes

NOT TO SCALE

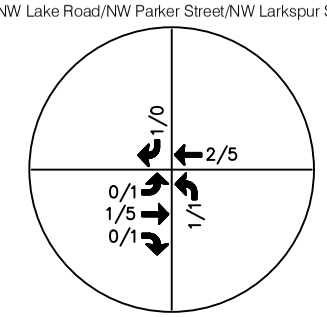
22047_Figures.Dwg



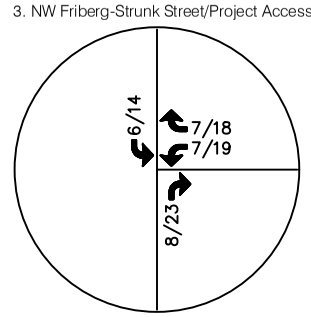
1. NW Friberg-Strunk Street/NW Lake Road/SE 1st Street



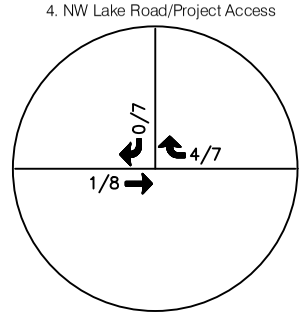
2. NW Lake Road/NW Parker Street/NW Larkspur Street



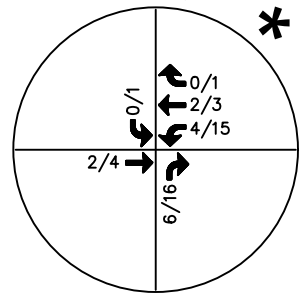
3. NW Friberg-Strunk Street/Project Access



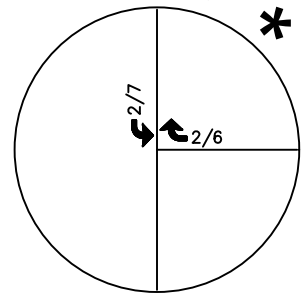
4. NW Lake Road/Project Access



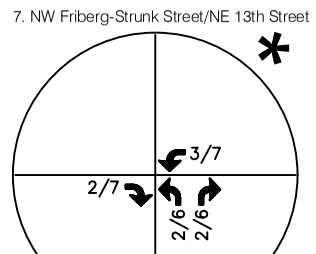
5. SE 192nd Avenue/SE 1st Street



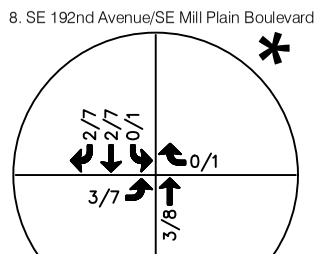
6. NE 192nd Avenue/NE13th Street



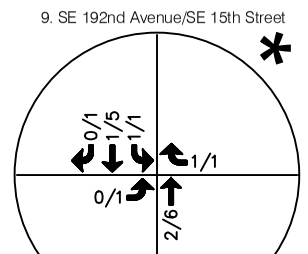
7. NW Friberg-Strunk Street/NE 13th Street



8. SE 192nd Avenue/SE Mill Plain Boulevard



9. SE 192nd Avenue/SE 15th Street



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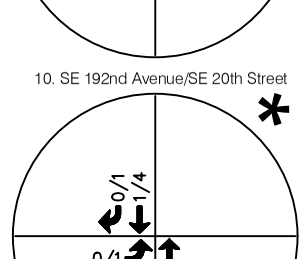
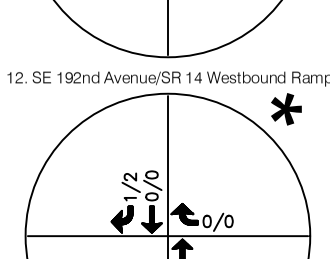


11. SE 192nd Avenue/SE 34th Street

12. SE 192nd Avenue/SR 14 Westbound Ramps



LEGEND

128/200 A.M./P.M. Peak Hour Traffic Volume

10% Peak Hour Trip Distribution

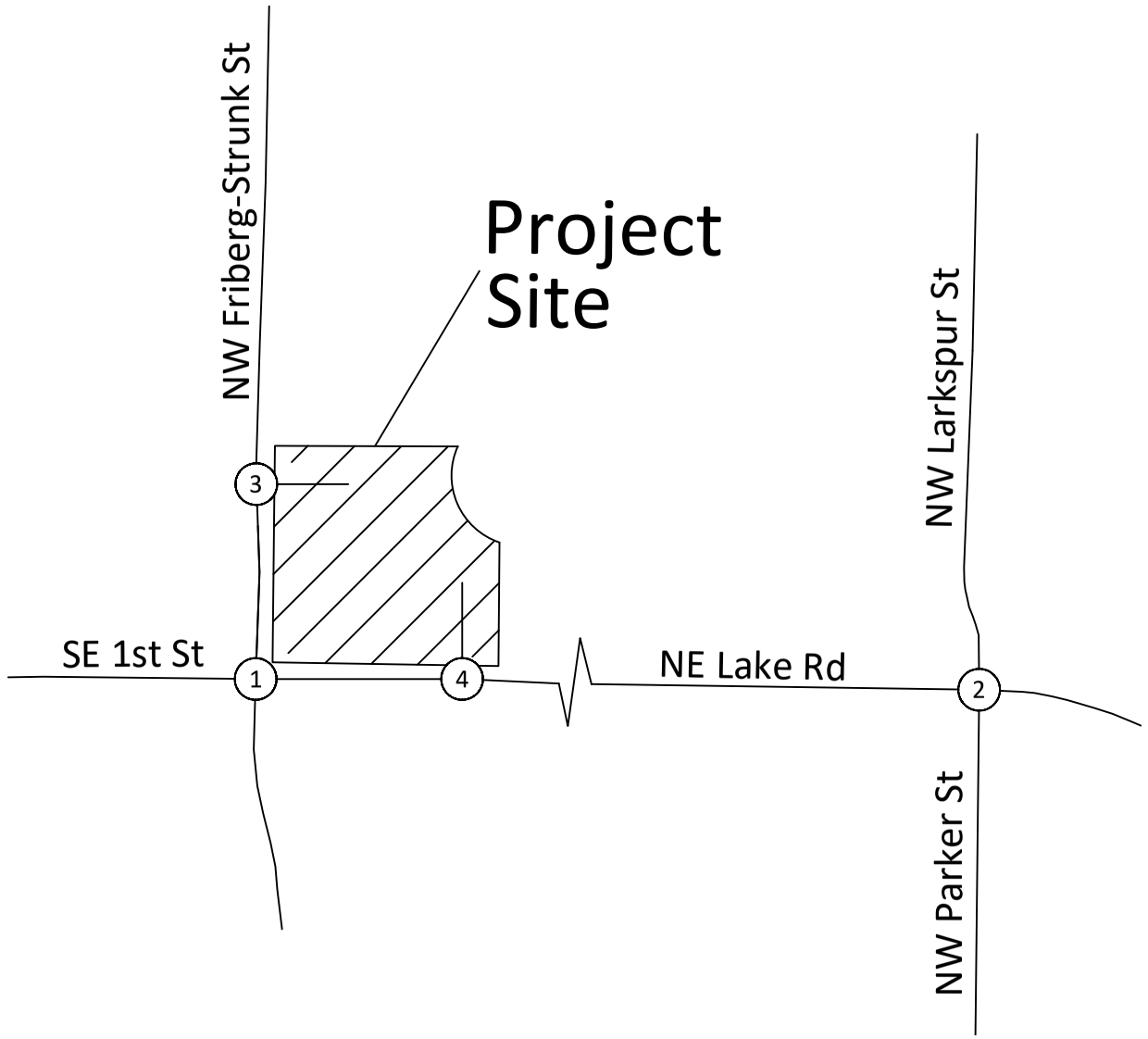
* Not Study Area Intersections. Shown for Trip Distribution and Assignment Purposes Only

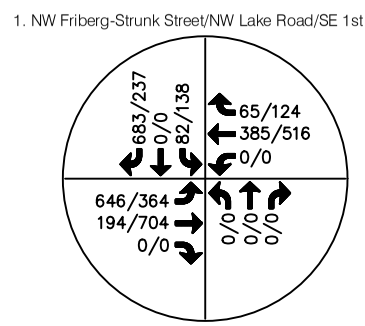
NOT TO SCALE

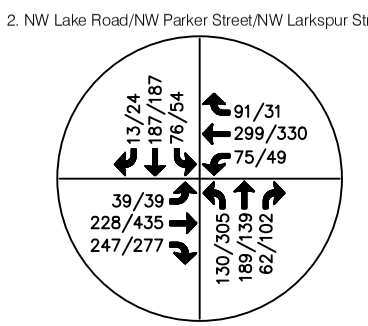
FIGURE 6c
Phase 2
Trip Distribution and Assignment
Traffic Volumes

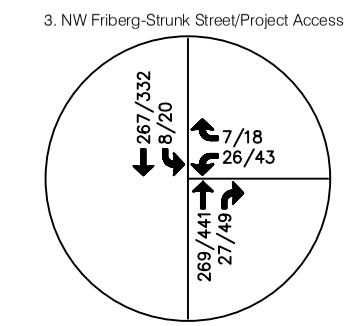
22047_Figures.Dwg

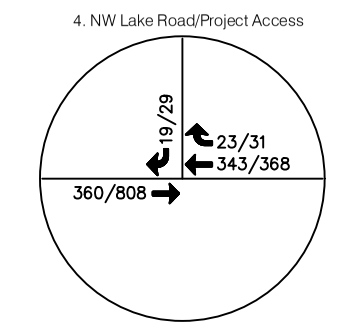
Exhibit 108 APPEAL24-1001











LEGEND

128/200 A.M./P.M. Peak Hour Traffic Volume

NOT TO SCALE

FIGURE 7
2027 "With Project"
A.M. and P.M. Peak Hour Traffic Volumes

22047_Figures.Dwg

Exhibit 108 APPEAL24-1001

0% Build-Out 8/24/23

GOODWIN ROAD INDUSTRIAL
TRAFFIC IMPACT ANALYSIS

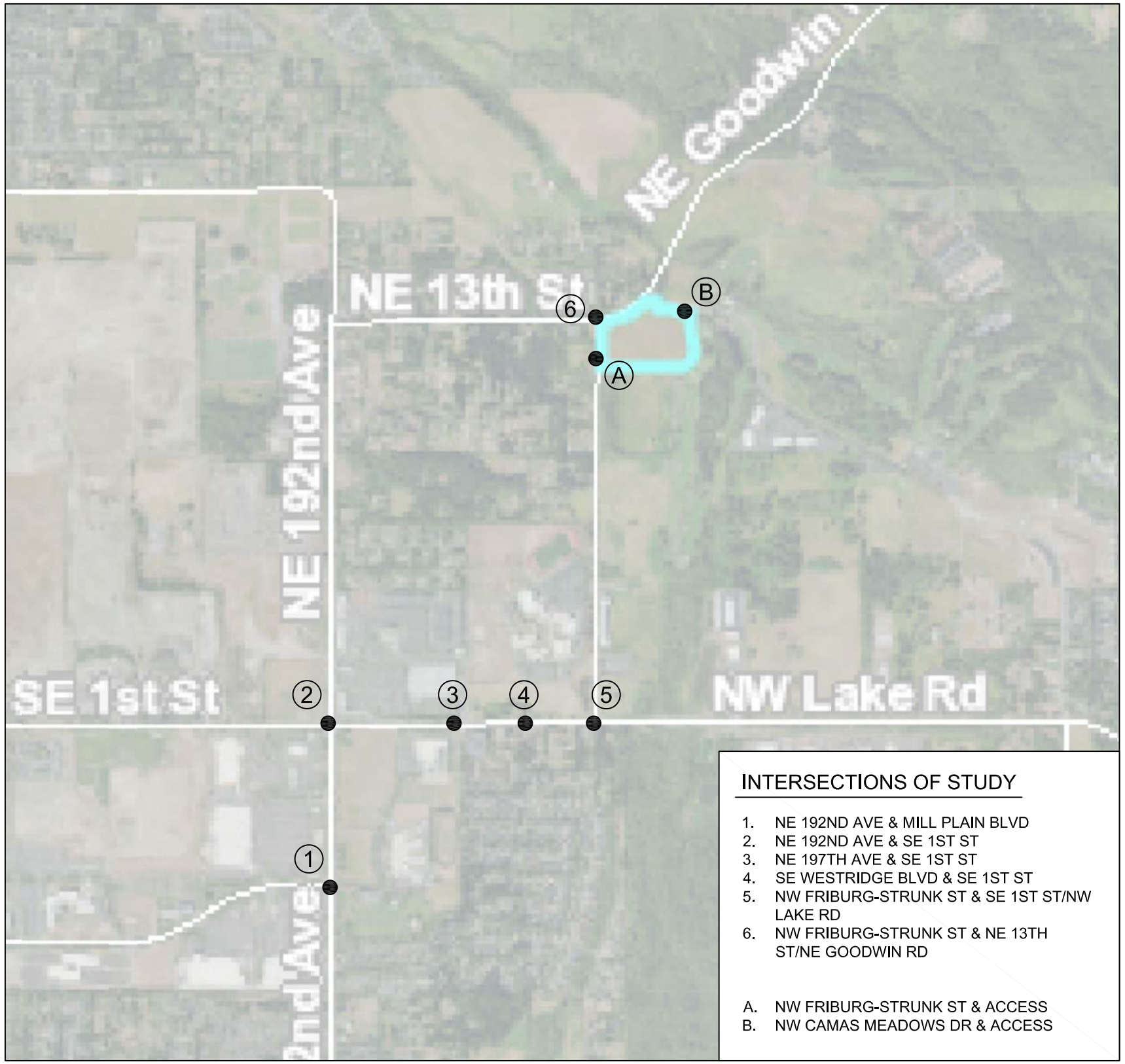
1. INTRODUCTION

The main goals of this study focus on the analysis of existing roadway conditions and forecasts of newly generated project traffic. The first task includes the review of general roadway information on the adjacent street system, baseline vehicular volumes, and entering sight distance data. Forecasts of future traffic and dispersion patterns on the street system are then determined using established trip generation and distribution techniques. As a final step, appropriate conclusions and mitigation measures are defined.

2. PROJECT DESCRIPTION

The Goodwin Road Industrial project is a proposed warehouse facility comprising up to 185,000 square feet. The subject site, located in the city of Camas, is bordered to the west by NW Friburg-Strunk Street and is located on the southern corner of the NE Goodwin Road & NW Camas Meadows Drive intersection. The site is comprised within 11.14-acre tax parcel #: 172974000. Access to and from the site is proposed via one driveway extending east from NW Friburg-Strunk Street and one driveway extending south from NW Camas Meadows Drive. Figure 1 below shows the vicinity map and adjacent street system. A conceptual site plan illustrating the proposed site layout is presented in Figure 2.

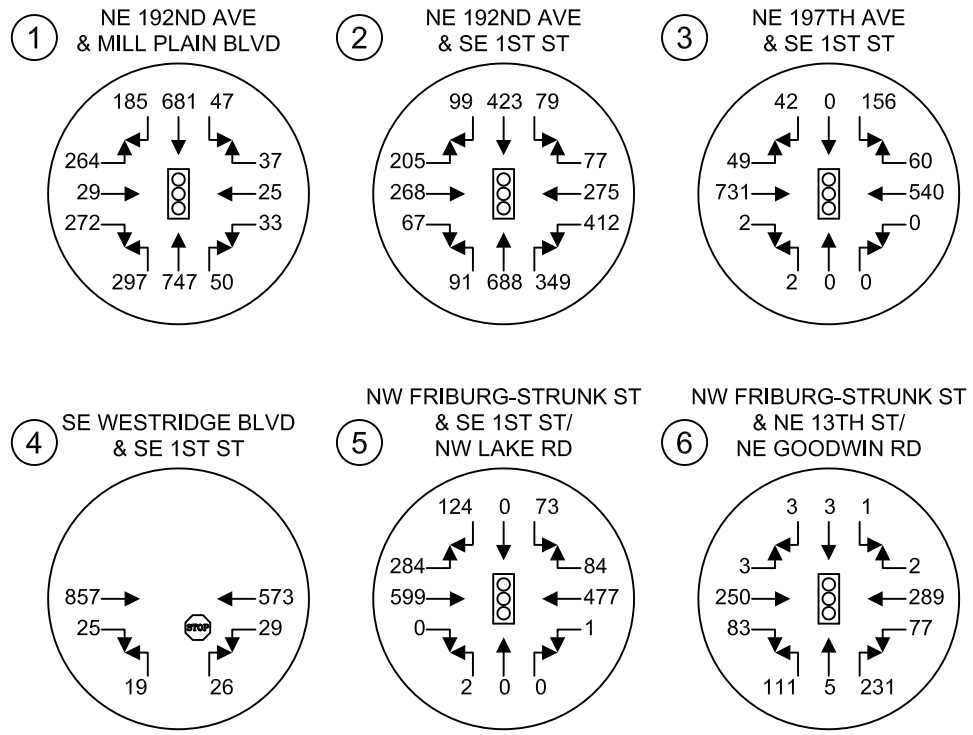
N

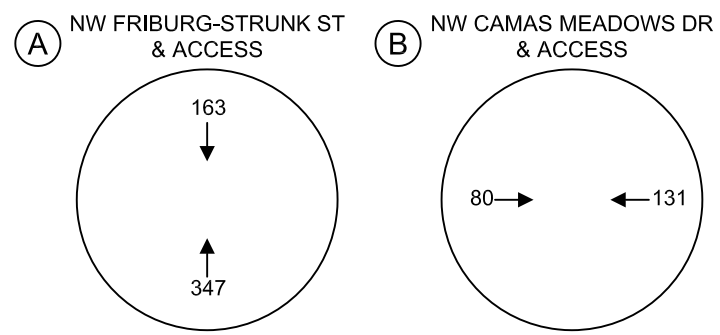


INTERSECTIONS OF STUDY

1. NE 192ND AVE & MILL PLAIN BLVD
2. NE 192ND AVE & SE 1ST ST
3. NE 197TH AVE & SE 1ST ST
4. SE WESTRIDGE BLVD & SE 1ST ST
5. NW FRIBURG-STRUNK ST & SE 1ST ST/NW LAKE RD
6. NW FRIBURG-STRUNK ST & NE 13TH ST/NE GOODWIN RD

A. NW FRIBURG-STRUNK ST & ACCESS
B. NW CAMAS MEADOWS DR & ACCESS





HEATH & ASSOCIATES
TRAFFIC AND CIVIL ENGINEERING

GOODWIN INDUSTRIAL
EXISTING PM PEAK HOUR VOLULMES
FIGURE 3

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N

INTERSECTIONS OF STUDY

1. NE 192ND AVE & MILL PLAIN BLVD
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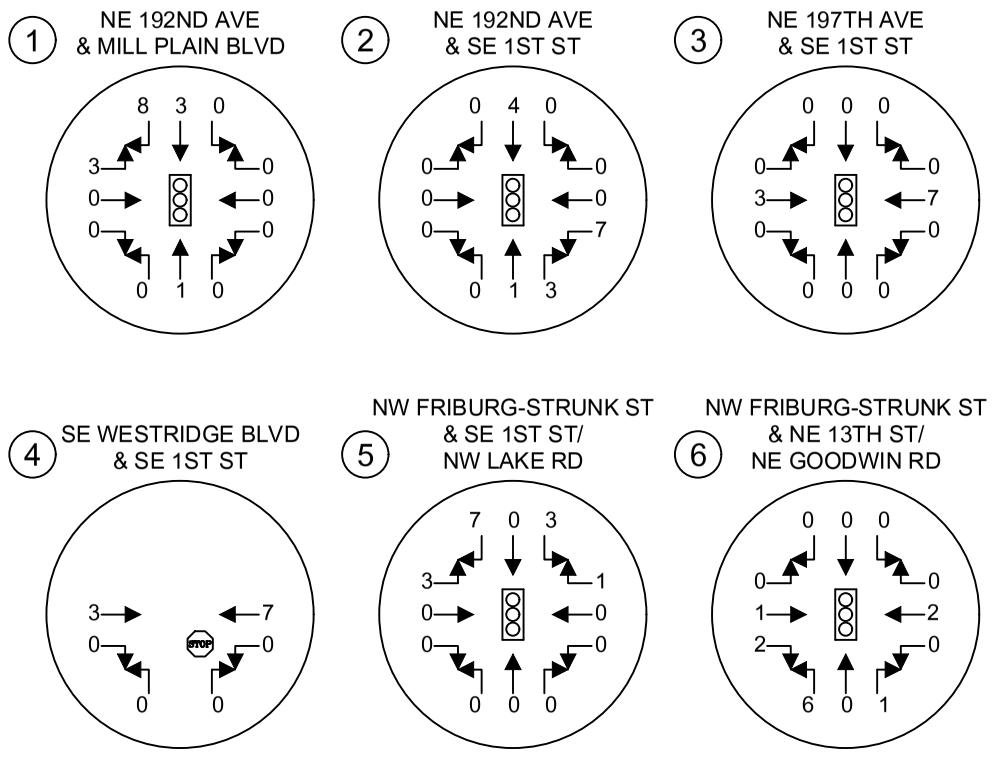
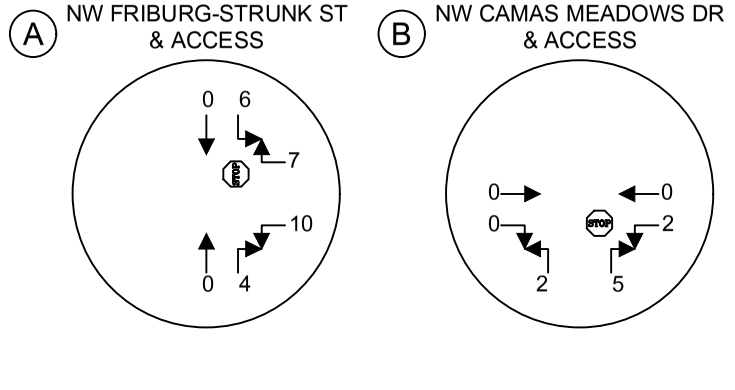
3. NE 197TH AVE & SE 1ST ST
4. SE WESTRIDGE BLVD & SE 1ST ST
5. NW FRIBURG-STRUNK ST & SE 1ST ST/NW LAKE RD
6. NW FRIBURG-STRUNK ST & NE 13TH ST/NE GOODWIN RD

A. NW FRIBURG-STRUNK ST & ACCESS
B. NW CAMAS MEADOWS DR & ACCESS





HEATH & ASSOCIATES
TRAFFIC AND CIVIL ENGINEERING

GOODWIN INDUSTRIAL
PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT
FIGURE 4

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Exhibit 108 APPEAL24-1001

N

INTERSECTIONS OF STUDY

1. NE 192ND AVE & MILL PLAIN BLVD
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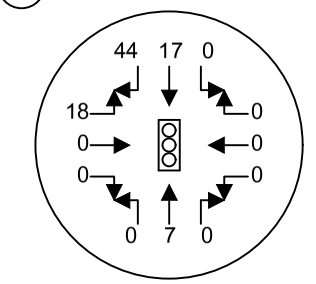
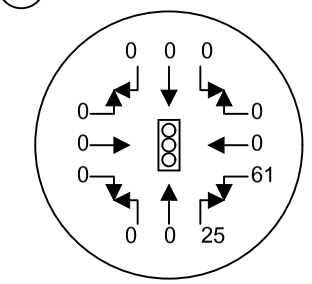
6. NW FRIBURG-STRUNK ST & NE 13TH ST/NE GOODWIN RD

A. NW FRIBURG-STRUNK ST & ACCESS
B. NW CAMAS MEADOWS DR & ACCESS

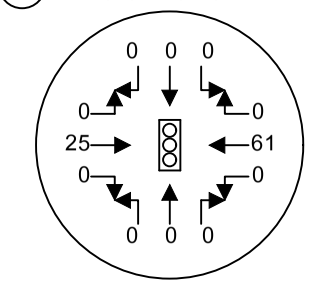
1 NE 192ND AVE & MILL PLAIN BLVD



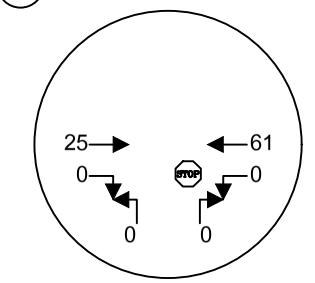
2 NE 192ND AVE & SE 1ST ST



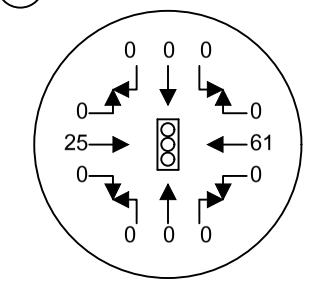
3 NE 197TH AVE & SE 1ST ST



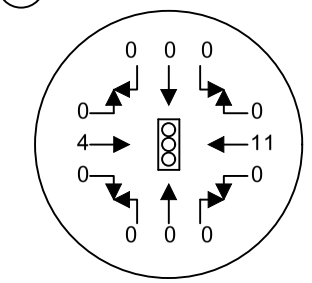
4 SE WESTRIDGE BLVD & SE 1ST ST



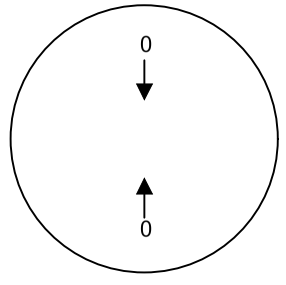
5 NW FRIBURG-STRUNK ST & SE 1ST ST/ NW LAKE RD



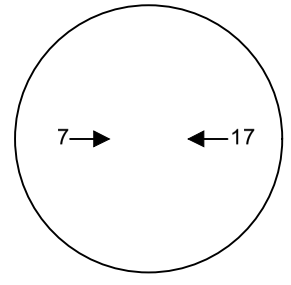
6 NW FRIBURG-STRUNK ST & NE 13TH ST/ NE GOODWIN RD



A NW FRIBURG-STRUNK ST & ACCESS



B NW CAMAS MEADOWS DR & ACCESS



HEATH & ASSOCIATES
TRAFFIC AND CIVIL ENGINEERING

GOODWIN INDUSTRIAL
PM PEAK HOUR PIPELINE VOLUMES
FIGURE 5

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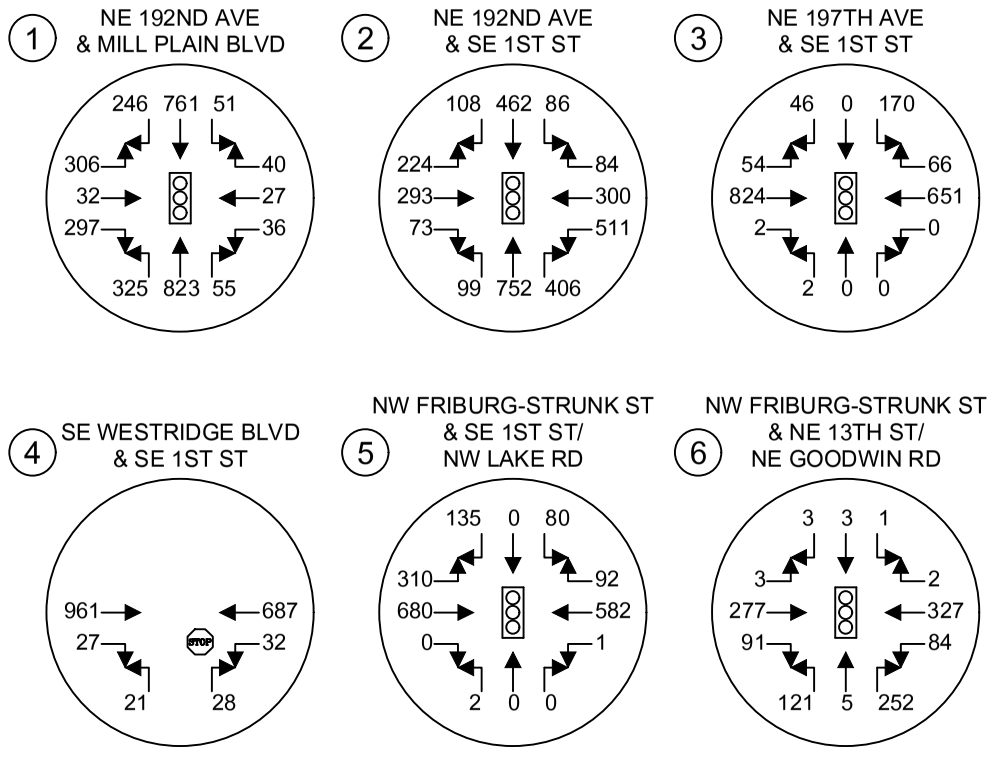
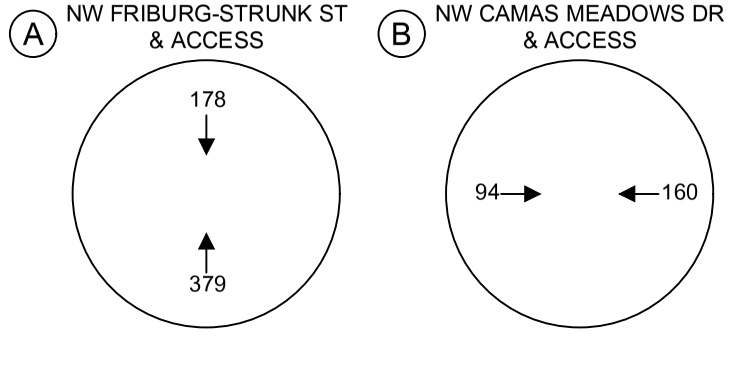
INTERSECTIONS OF STUDY

1. NE 192ND AVE & MILL PLAIN BLVD
2. NE 192ND AVE & SE 1ST ST
3. NE 197TH AVE & SE 1ST ST
4. SE WESTRIDGE BLVD & SE 1ST ST
5. NW FRIBURG-STRUNK ST & SE 1ST ST/NW LAKE RD
6. NW FRIBURG-STRUNK ST & NE 13TH ST/NE GOODWIN RD

A. NW FRIBURG-STRUNK ST & ACCESS
B. NW CAMAS MEADOWS DR & ACCESS





HEATH & ASSOCIATES
TRAFFIC AND CIVIL ENGINEERING

GOODWIN INDUSTRIAL

FORECAST 2025 PM PEAK HOUR BACKGROUND VOLUMES
FIGURE 6

PO Box 397 Puyallup, WA 98371 (253) 770 1401 heathtraffic.com

Exhibit 108 APPEAL24-1001

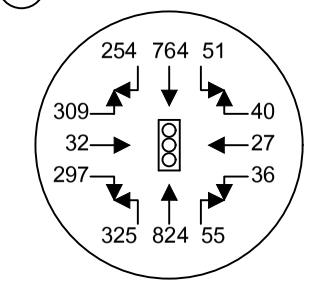
N

INTERSECTIONS OF STUDY

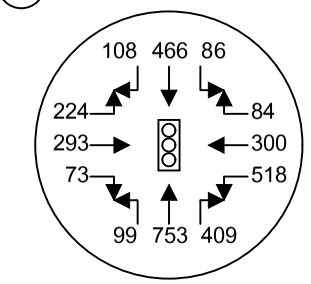
1. NE 192ND AVE & MILL PLAIN BLVD
2. NE 192ND AVE & SE 1ST ST
3. NE 197TH AVE & SE 1ST ST
4. SE WESTRIDGE BLVD & SE 1ST ST
5. NW FRIBURG-STRUNK ST & SE 1ST ST/NW LAKE RD
6. NW FRIBURG-STRUNK ST & NE 13TH ST/NE GOODWIN RD

A. NW FRIBURG-STRUNK ST & ACCESS
B. NW CAMAS MEADOWS DR & ACCESS

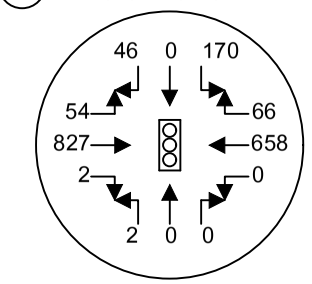
1 NE 192ND AVE & MILL PLAIN BLVD



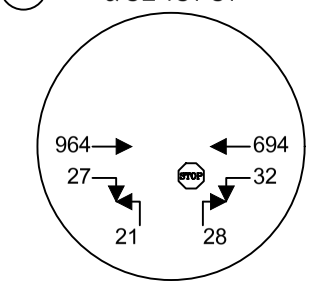
2 NE 192ND AVE & SE 1ST ST



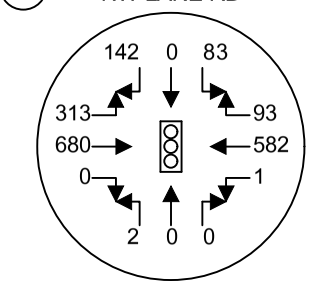
3 NE 197TH AVE & SE 1ST ST



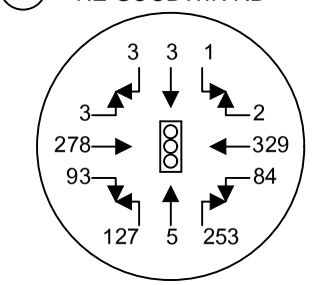
4 SE WESTRIDGE BLVD & SE 1ST ST



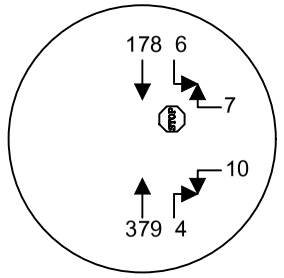
5 NW FRIBURG-STRUNK ST & SE 1ST ST/ NW LAKE RD



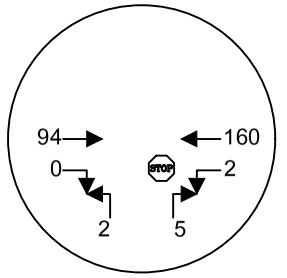
6 NW FRIBURG-STRUNK ST & NE 13TH ST/ NE GOODWIN RD



A NW FRIBURG-STRUNK ST & ACCESS



B NW CAMAS MEADOWS DR & ACCESS



HEATH & ASSOCIATES
TRAFFIC AND CIVIL ENGINEERING

GOODWIN INDUSTRIAL
FORECAST 2025 PM PEAK HOUR VOLUMES WITH PROJECT
FIGURE 7

PO Box 397 Puyallup, WA 98371 (253) 770 1401 heathtraffic.com

Exhibit 108 APPEAL24-1001

80% Build-Out 8/24/23

Parklands at Camas Meadows TIA
Camas, WA

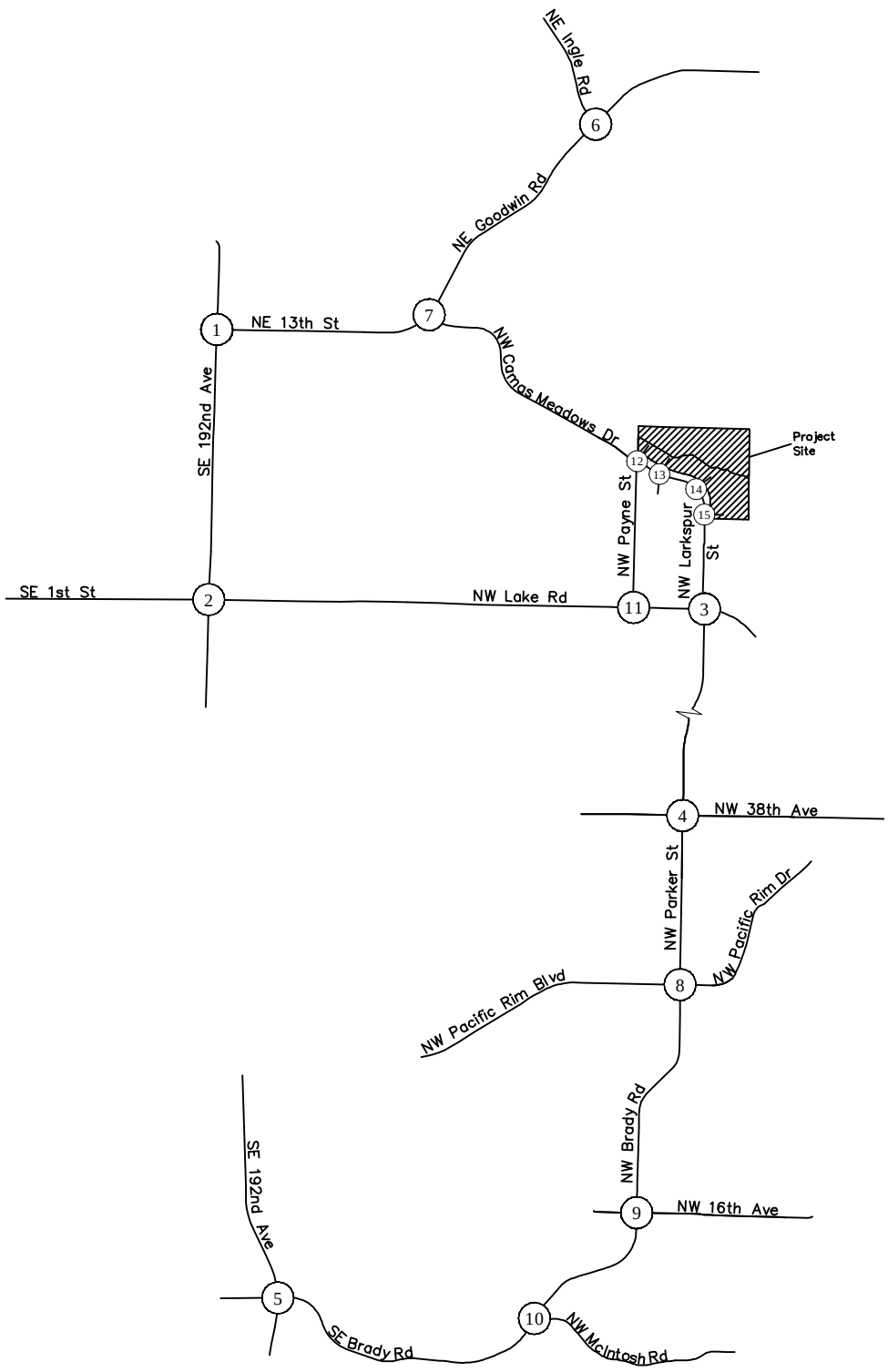
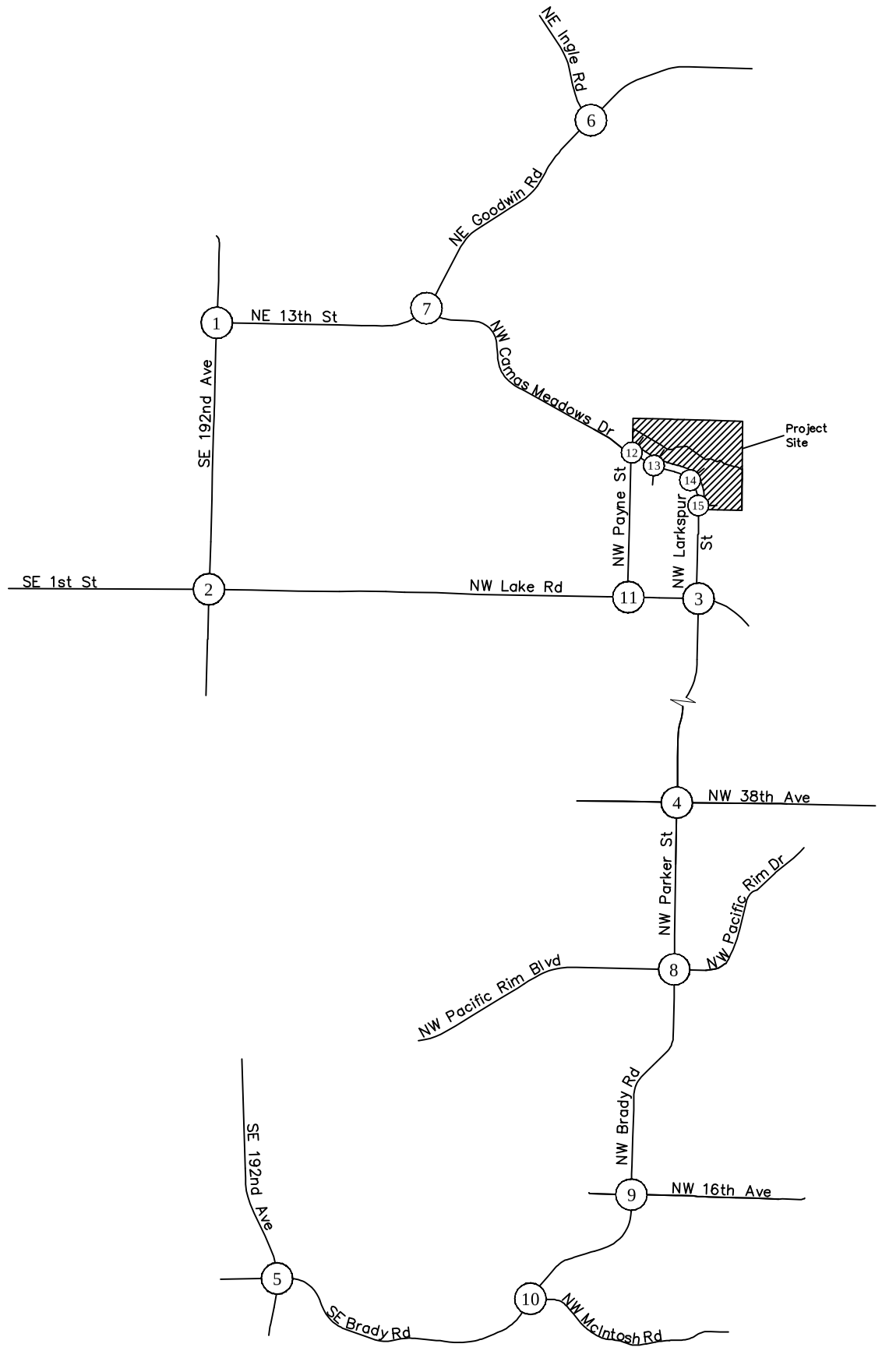


FIGURE 1
Site Vicinity Map

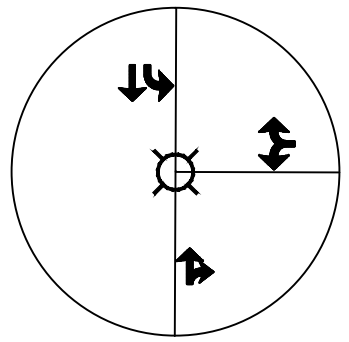
NOT TO SCALE

1236

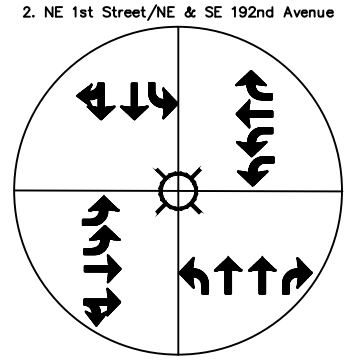
315021.0Figures.Dwg



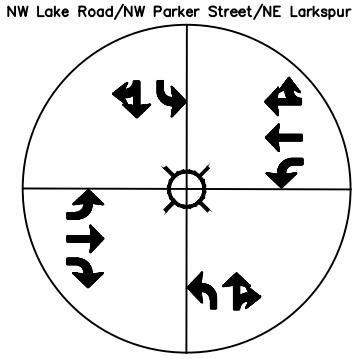
1. NE 13th Street/NE 192nd Avenue



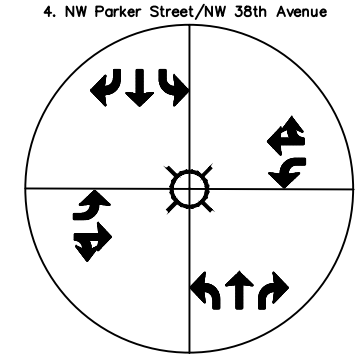
2. NE 1st Street/NE & SE 192nd Avenue



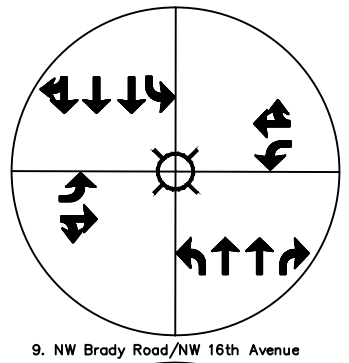
3. NW Lake Road/NW Parker Street/NE Larkspur Street



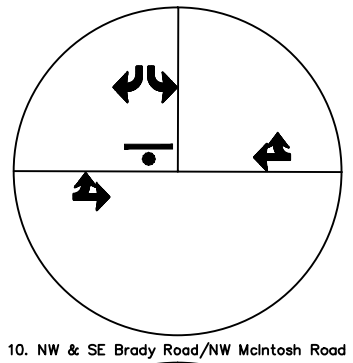
4. NW Parker Street/NW 38th Avenue



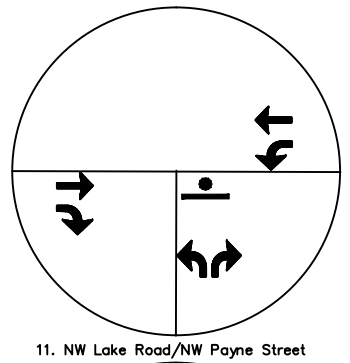
5. SE Brady Road/SE 192nd Avenue



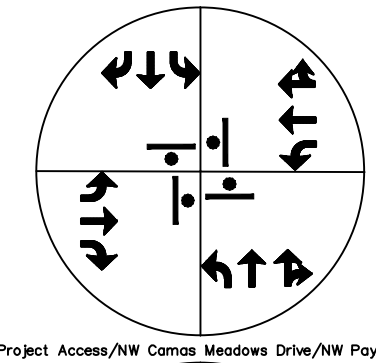
6. NE Goodwin Road/NE Ingle Road



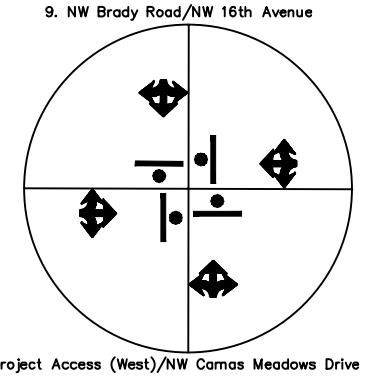
7. NE Goodwin Road/NW Camas Meadows Drive



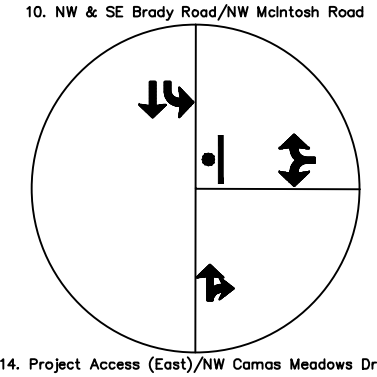
8. NW Parker Street/NW Pacific Rim Boulevard/NW Pacific Rim Drive



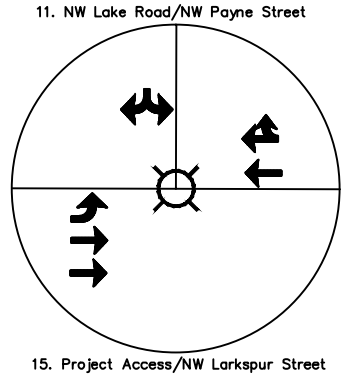
9. NW Brady Road/NW 16th Avenue



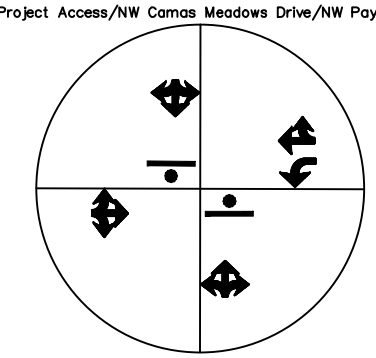
10. NW & SE Brady Road/NW McIntosh Road



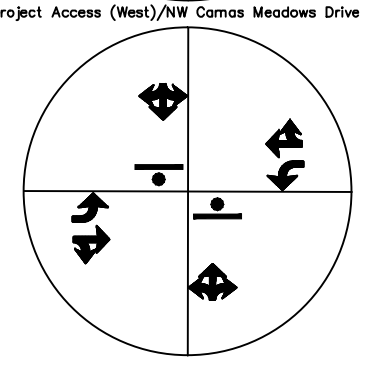
11. NW Lake Road/NW Payne Street



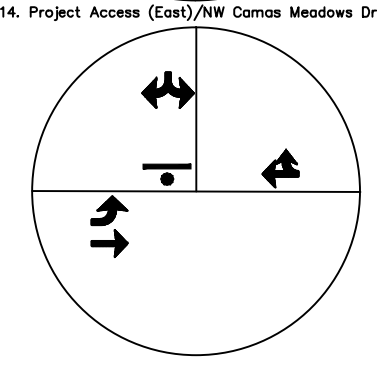
12. Project Access/NW Camas Meadows Drive/NW Payne Street



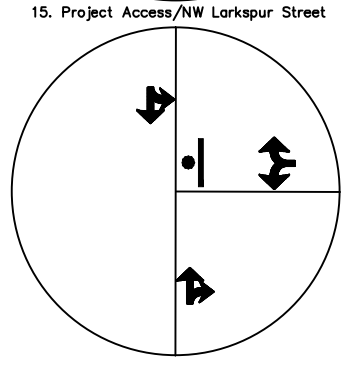
13. Project Access (West)/NW Camas Meadows Drive



14. Project Access (East)/NW Camas Meadows Drive



15. Project Access/NW Larkspur Street



NOT TO SCALE

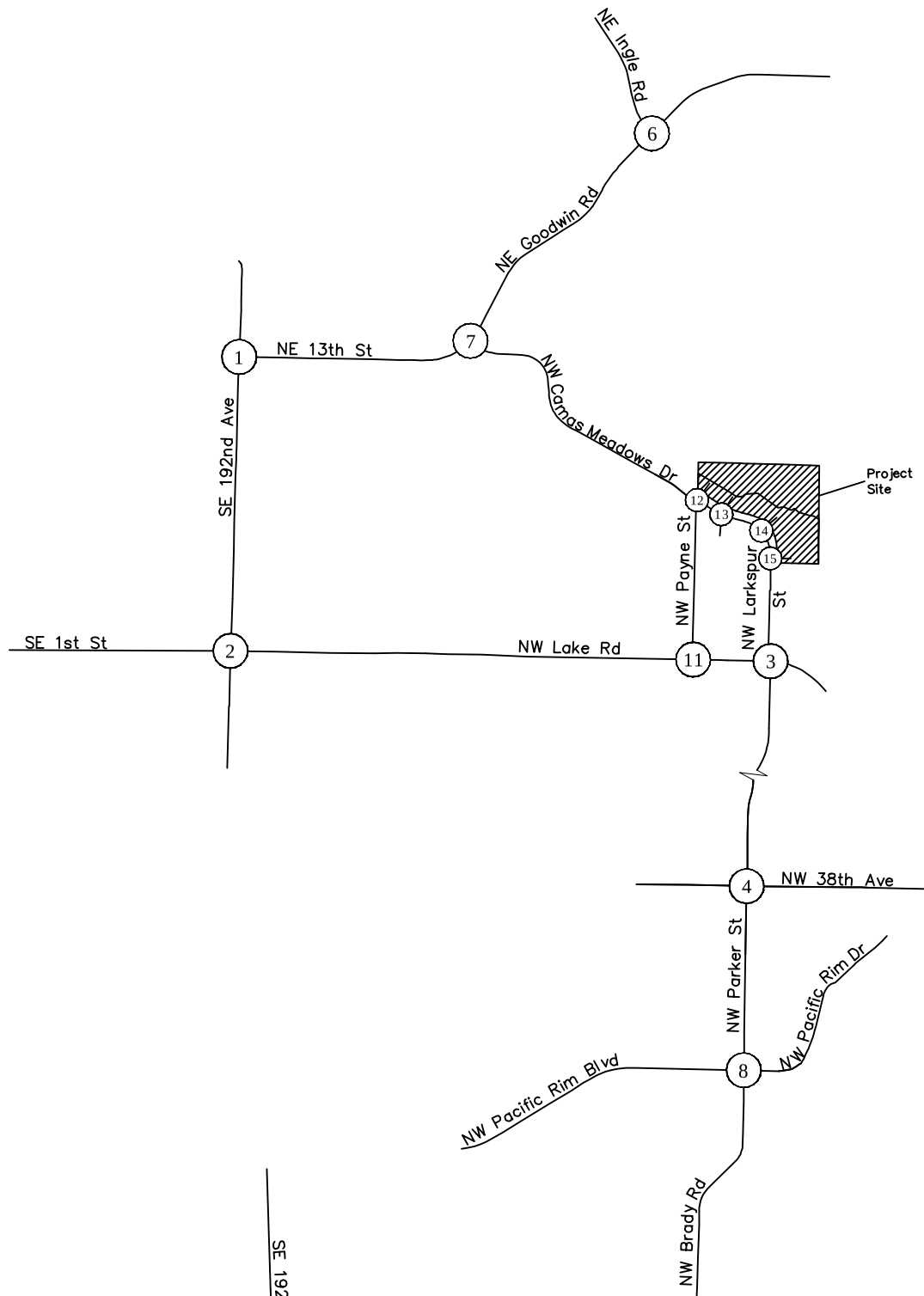
LEGEND

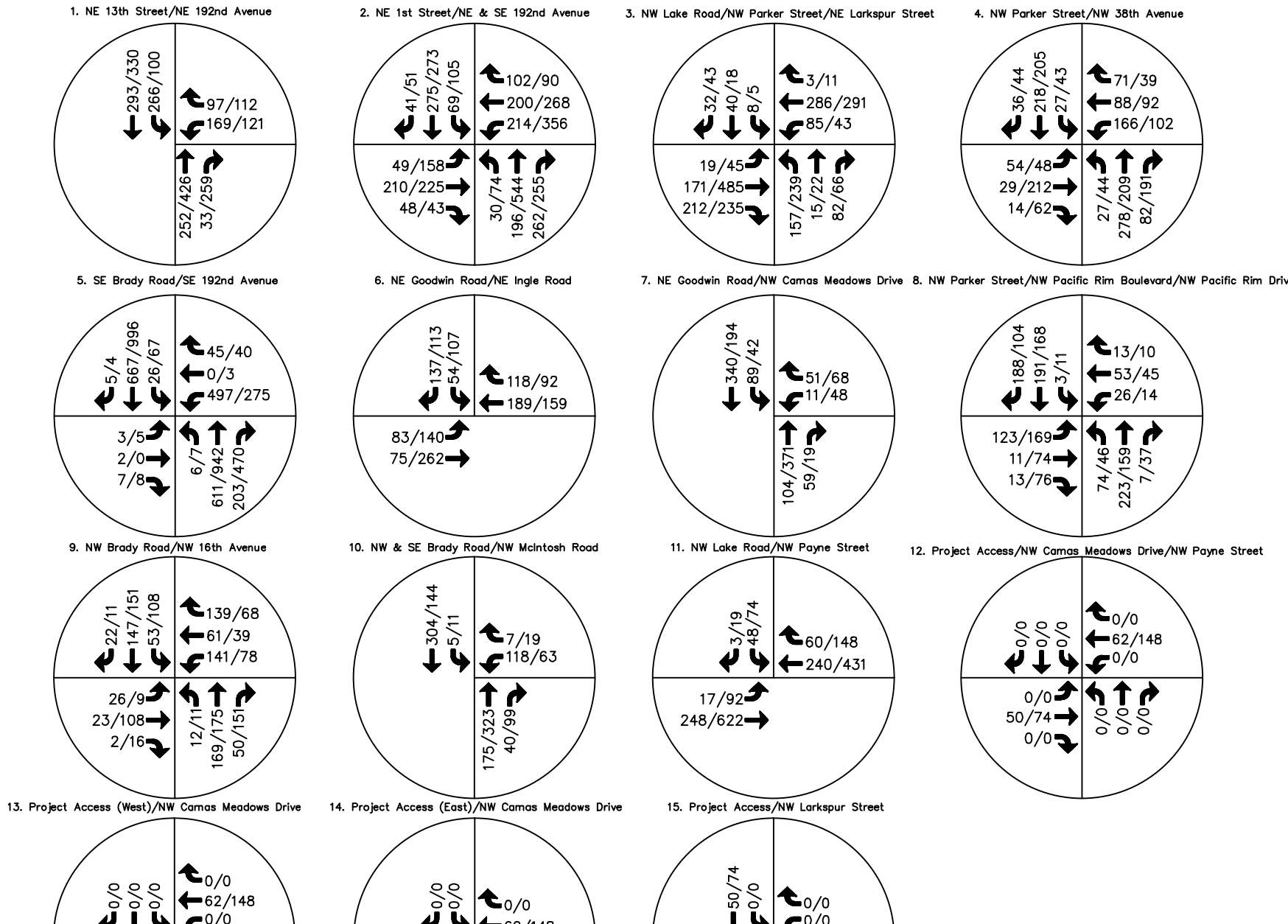
- Lane Usage
- Traffic Signal
- Stop Sign

FIGURE 3
Existing Lane Configuration and Traffic Control

315021.0Figures.Dwg

Exhibit 108 APPEAL24-1001





LEGEND

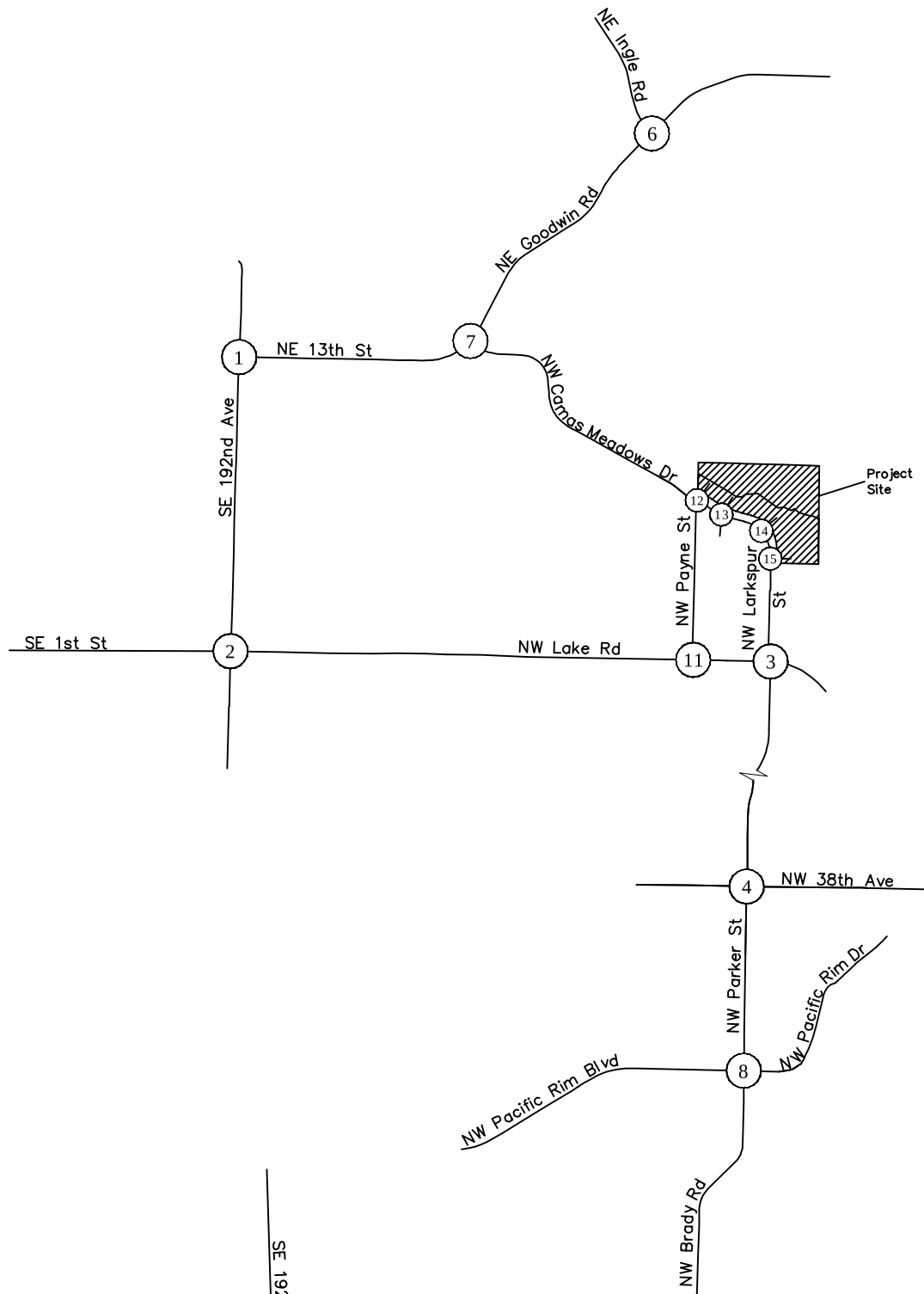
128/200 A.M./P.M. Peak Hour Traffic Volume

NOT TO SCALE

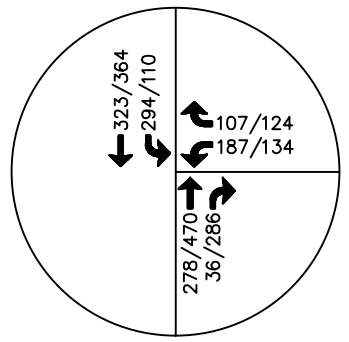
FIGURE 4
2015 Existing A.M. and P.M. Peak Hour Traffic Volumes

315021.0Figures.Dwg

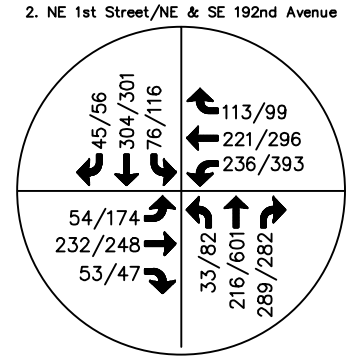
Exhibit 108 APPEAL24-1001



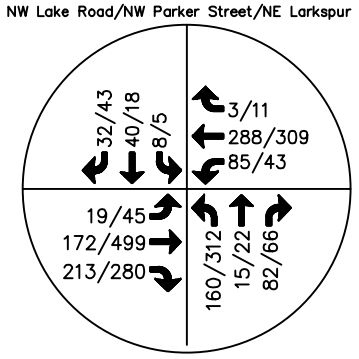
1. NE 13th Street/NE 192nd Avenue



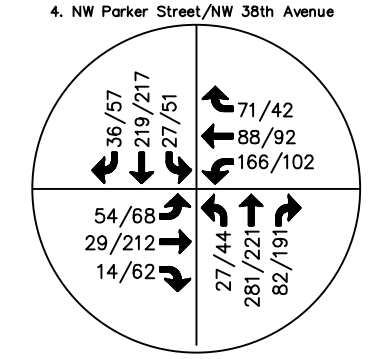
2. NE 1st Street/NE & SE 192nd Avenue



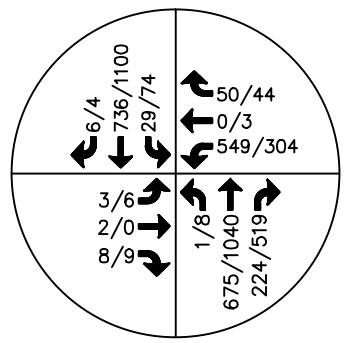
3. NW Lake Road/NW Parker Street/NE Larkspur Street



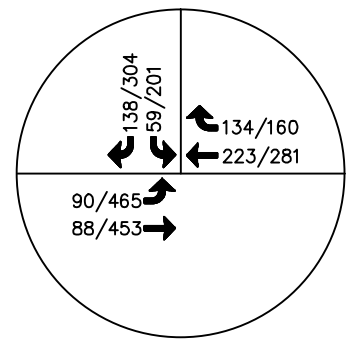
4. NW Parker Street/NW 38th Avenue



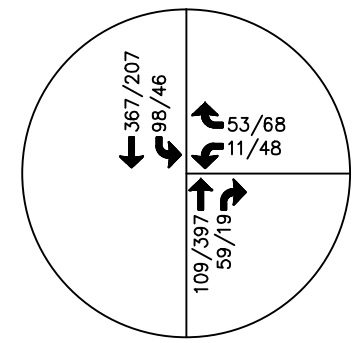
5. SE Brady Road/SE 192nd Avenue



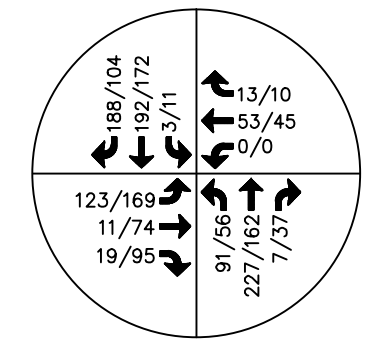
6. NE Goodwin Road/NE Ingle Road



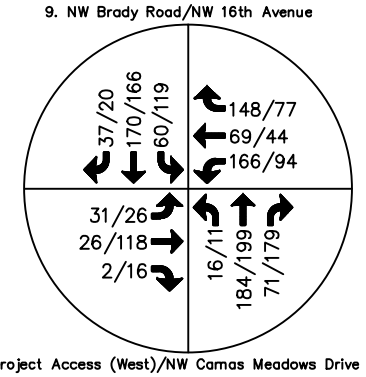
7. NE Goodwin Road/NW Camas Meadows Drive



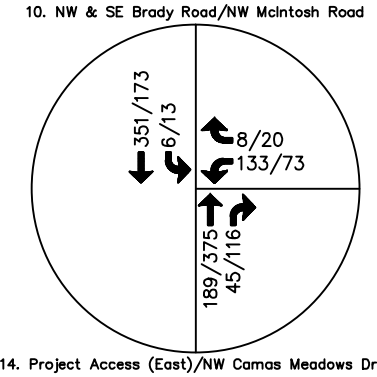
8. NW Parker Street/NW Pacific Rim Boulevard/NW Pacific Rim Drive



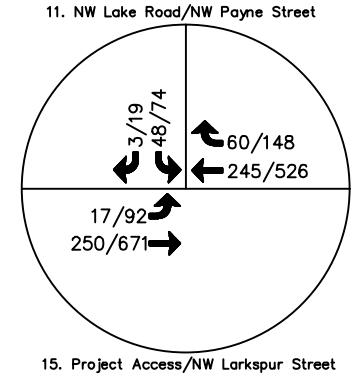
9. NW Brady Road/NW 16th Avenue



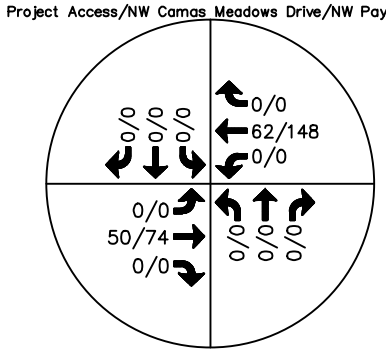
10. NW & SE Brady Road/NW McIntosh Road



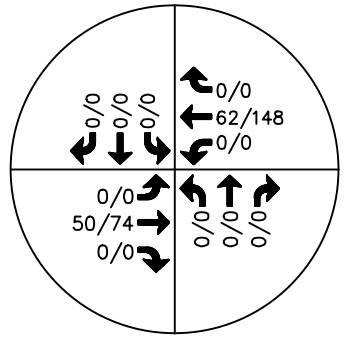
11. NW Lake Road/NW Payne Street



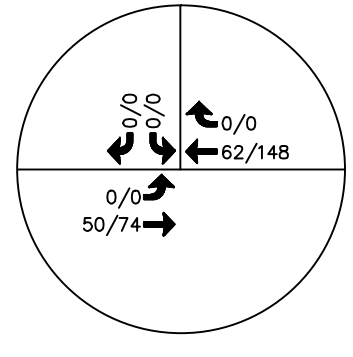
12. Project Access/NW Camas Meadows Drive/NW Payne Street



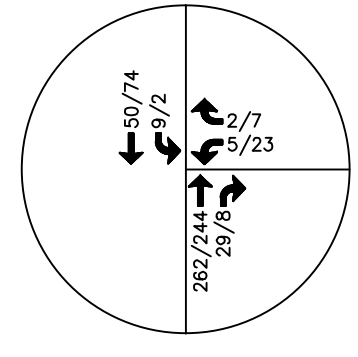
13. Project Access (West)/NW Camas Meadows Drive



14. Project Access (East)/NW Camas Meadows Drive



15. Project Access/NW Larkspur Street



LEGEND

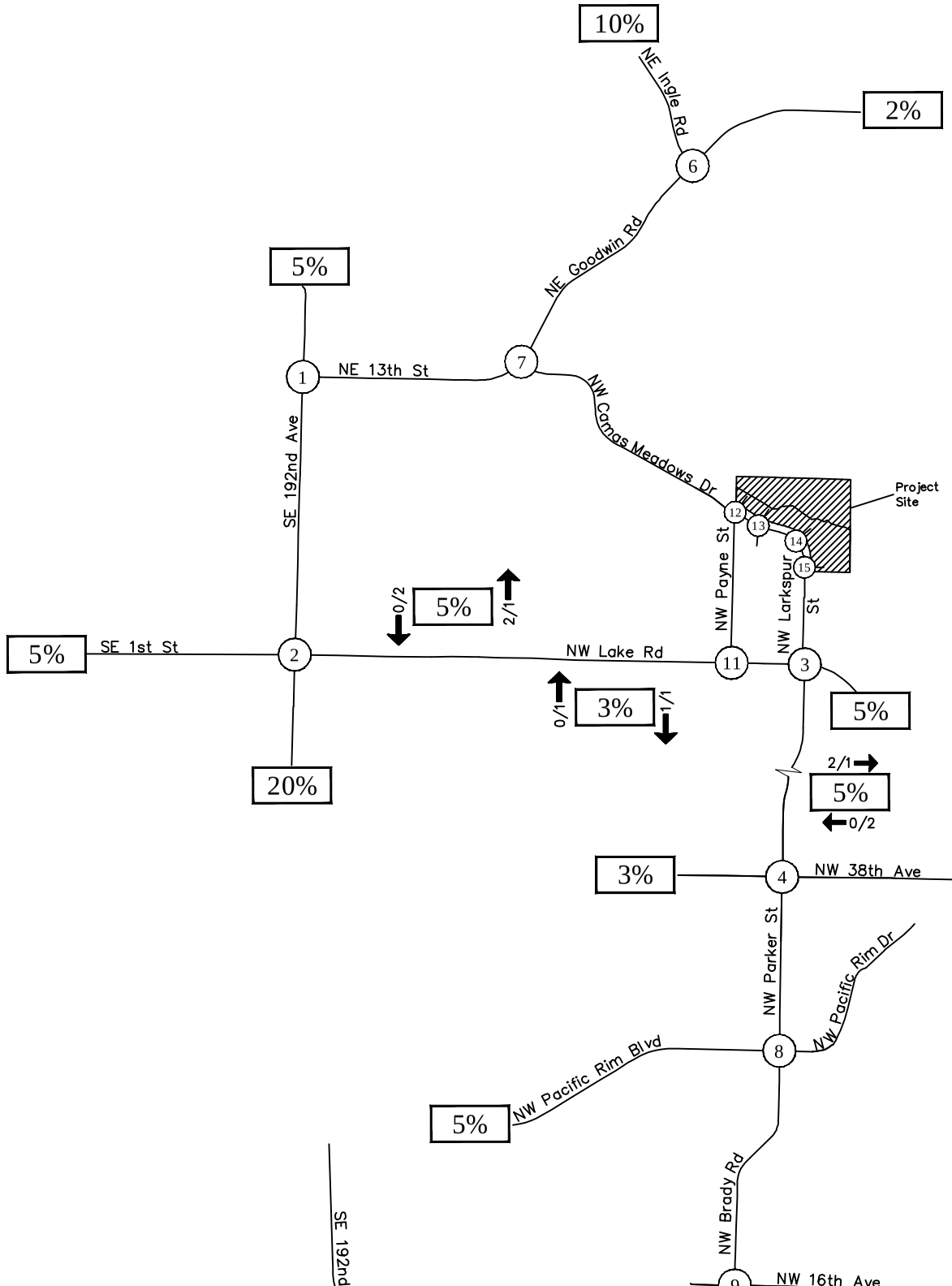
128/200 A.M./P.M. Peak Hour Traffic Volume

NOT TO SCALE

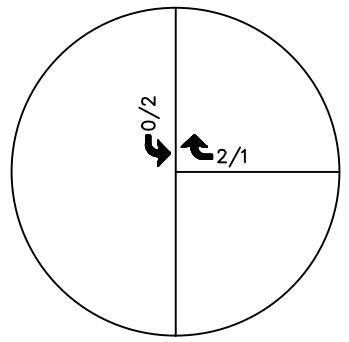
FIGURE 5
2020 "Without Project"
A.M. and P.M. Peak Hour Traffic Volumes

315021.0Figures.Dwg

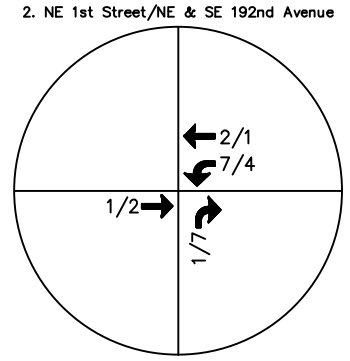
Exhibit 108 APPEAL24-1001



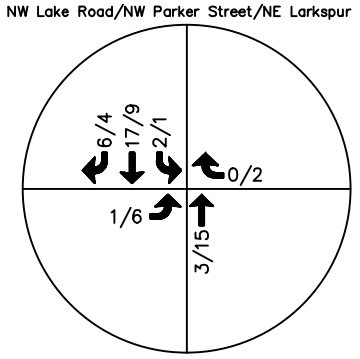
1. NE 13th Street/NE 192nd Avenue



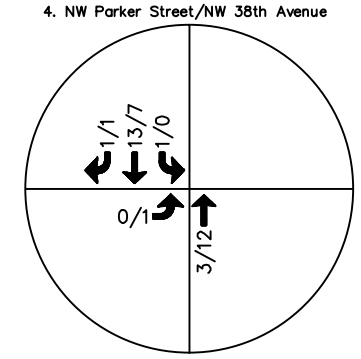
2. NE 1st Street/NE & SE 192nd Avenue



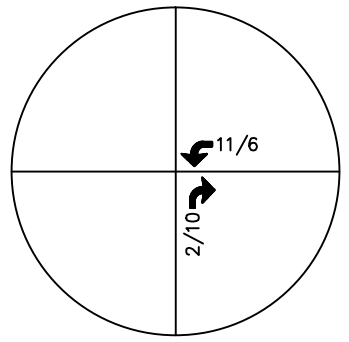
3. NW Lake Road/NW Parker Street/NE Larkspur Street



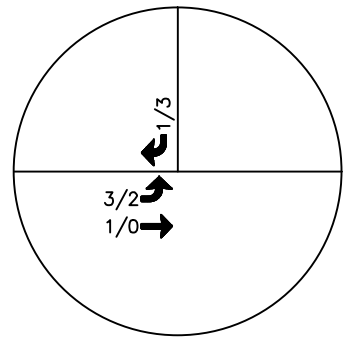
4. NW Parker Street/NW 38th Avenue



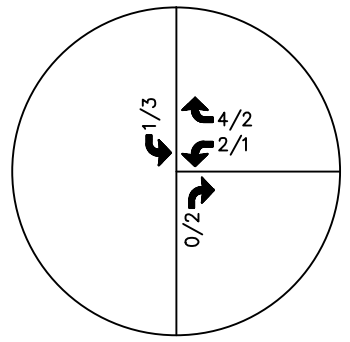
5. SE Brady Road/SE 192nd Avenue



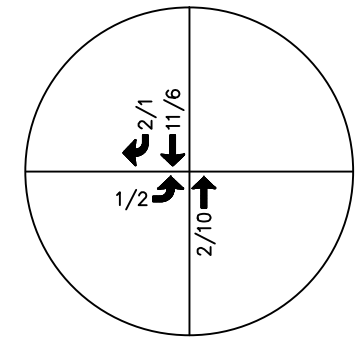
6. NE Goodwin Road/NE Ingle Road



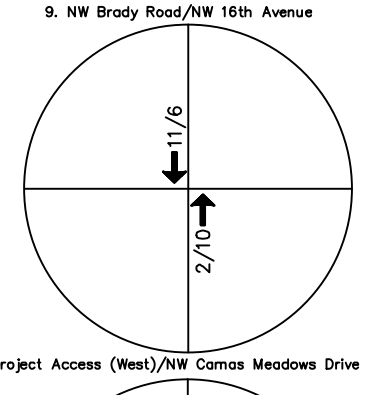
7. NE Goodwin Road/NW Camas Meadows Drive



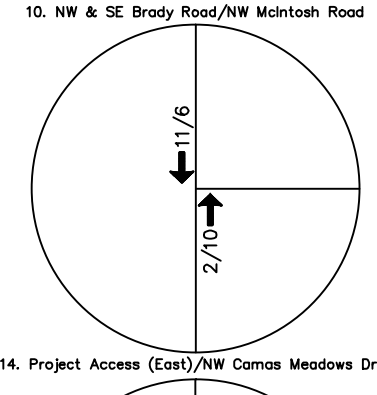
8. NW Parker Street/NW Pacific Rim Boulevard/NW Pacific Rim Drive



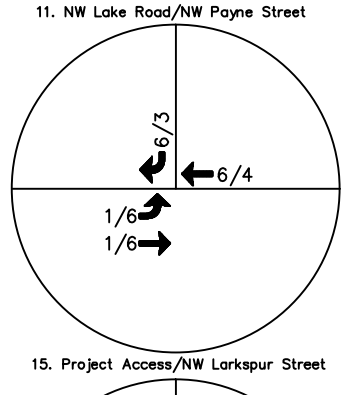
9. NW Brady Road/NW 16th Avenue



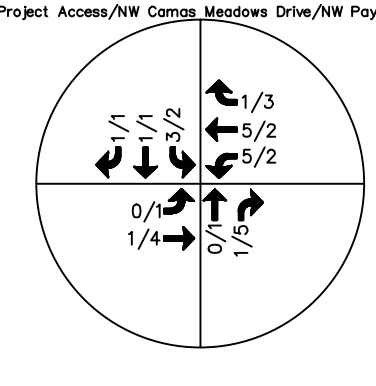
10. NW & SE Brady Road/NW McIntosh Road



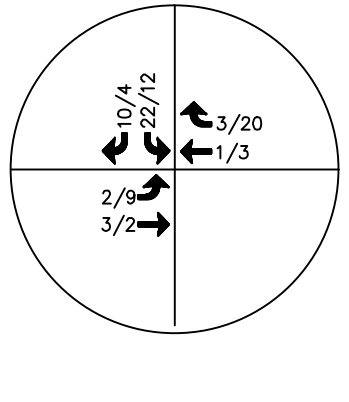
11. NW Lake Road/NW Payne Street



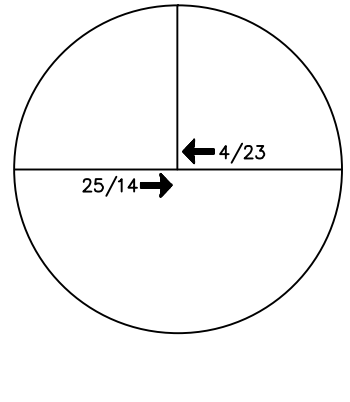
12. Project Access/NW Camas Meadows Drive/NW Payne Street



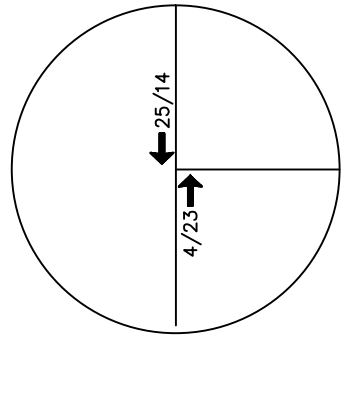
13. Project Access (West)/NW Camas Meadows Drive



14. Project Access (East)/NW Camas Meadows Drive



15. Project Access/NW Larkspur Street



NOT TO SCALE

LEGEND

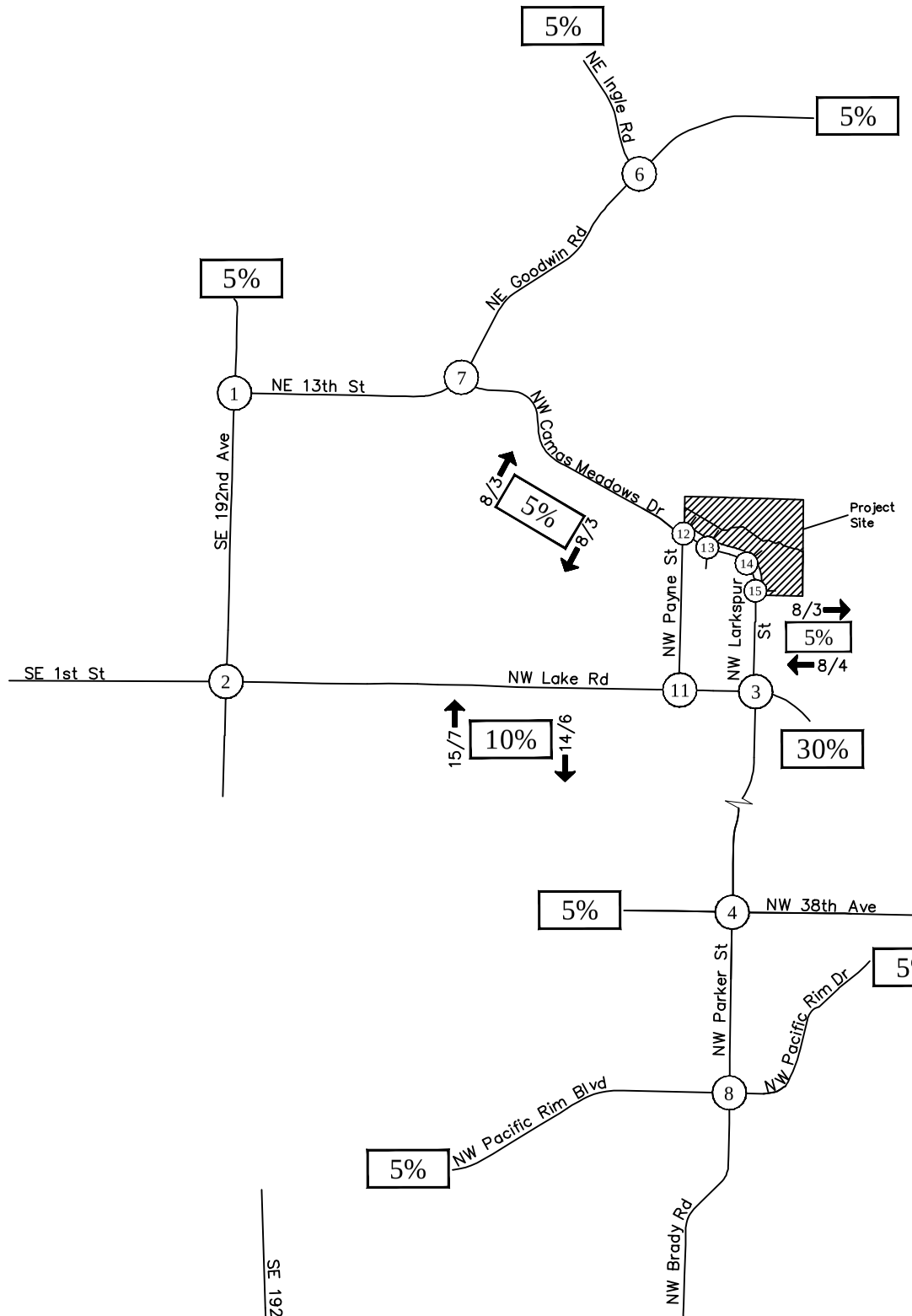
128/200 A.M./P.M. Peak Hour Traffic Volume

10% A.M. and P.M. Peak Hour Trip Distribution

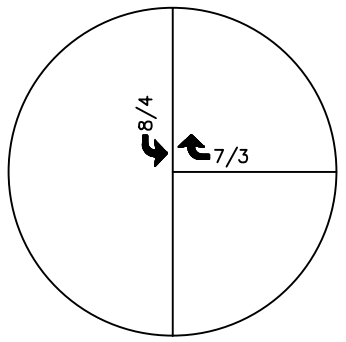
FIGURE 6a
"Residential"
Trip Distribution and Assignment
Traffic Volumes

315021.0Figures.Dwg

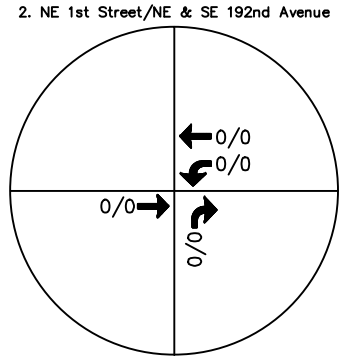
Exhibit 108 APPEAL24-1001



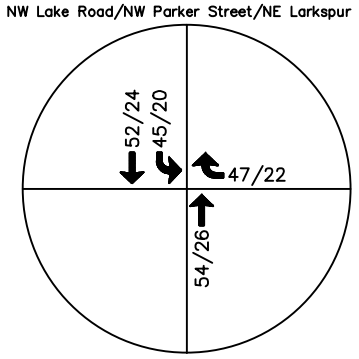
1. NE 13th Street/NE 192nd Avenue



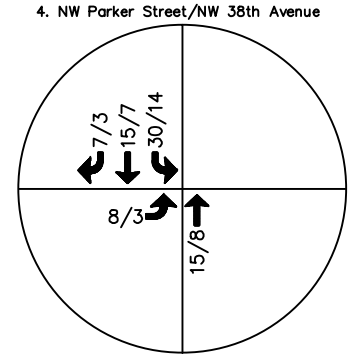
2. NE 1st Street/NE & SE 192nd Avenue



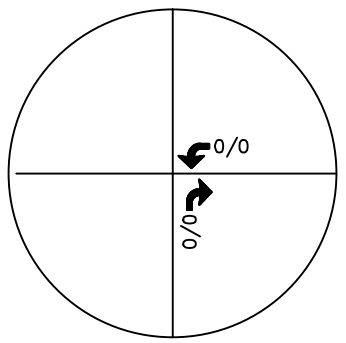
3. NW Lake Road/NW Parker Street/NE Larkspur Street



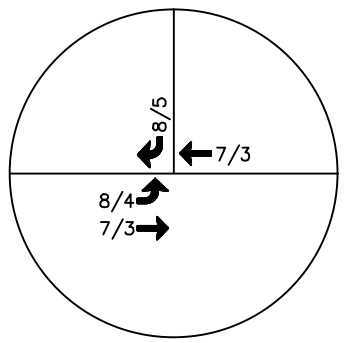
4. NW Parker Street/NW 38th Avenue



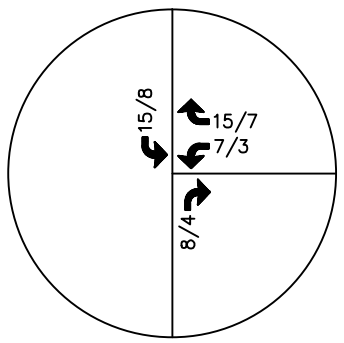
5. SE Brady Road/SE 192nd Avenue



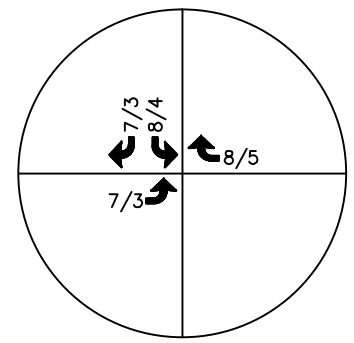
6. NE Goodwin Road/NE Ingle Road



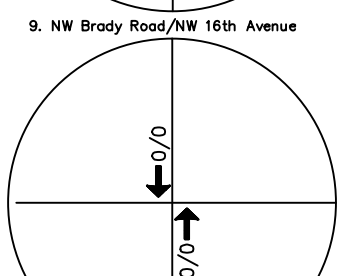
7. NE Goodwin Road/NW Camas Meadows Drive



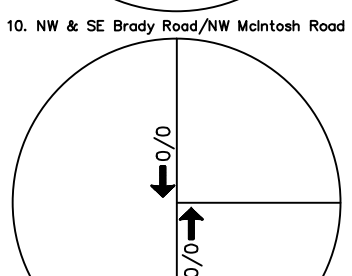
8. NW Parker Street/NW Pacific Rim Boulevard/NW Pacific Rim Drive



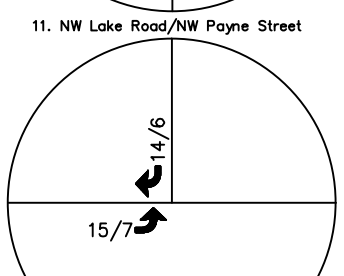
9. NW Brady Road/NW 16th Avenue



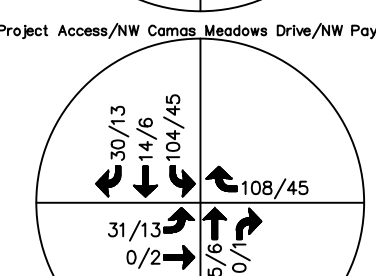
10. NW & SE Brady Road/NW McIntosh Road



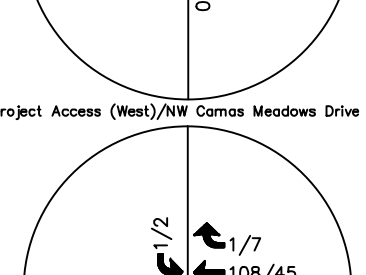
11. NW Lake Road/NW Payne Street



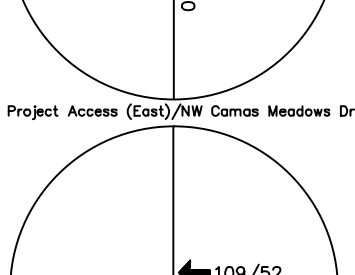
12. Project Access/NW Camas Meadows Drive/NW Payne Street



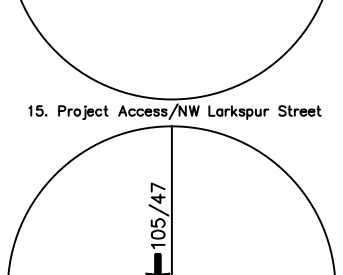
13. Project Access (West)/NW Camas Meadows Drive



14. Project Access (East)/NW Camas Meadows Drive



15. Project Access/NW Larkspur Street



NOT TO SCALE

LEGEND

100/128 A.M./P.M. Peak Hour Traffic Volumes

10% A.M. and P.M. Peak Hour Trip Distribution

FIGURE 6b
"Coffee Shop/Quality Restaurant"
Trip Distribution and Assignment
Traffic Volumes

315021.0Figures.Dwg

Exhibit 108 APPEAL24-1001

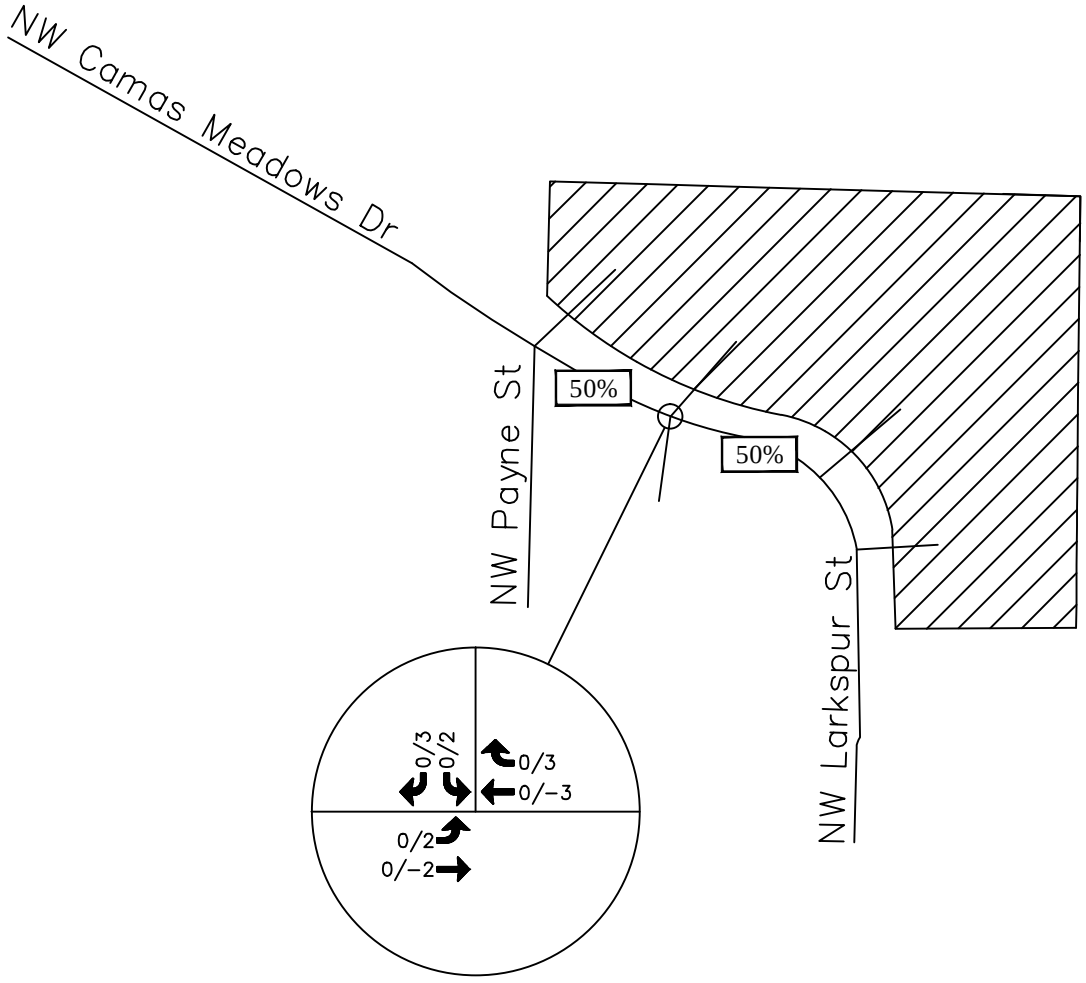
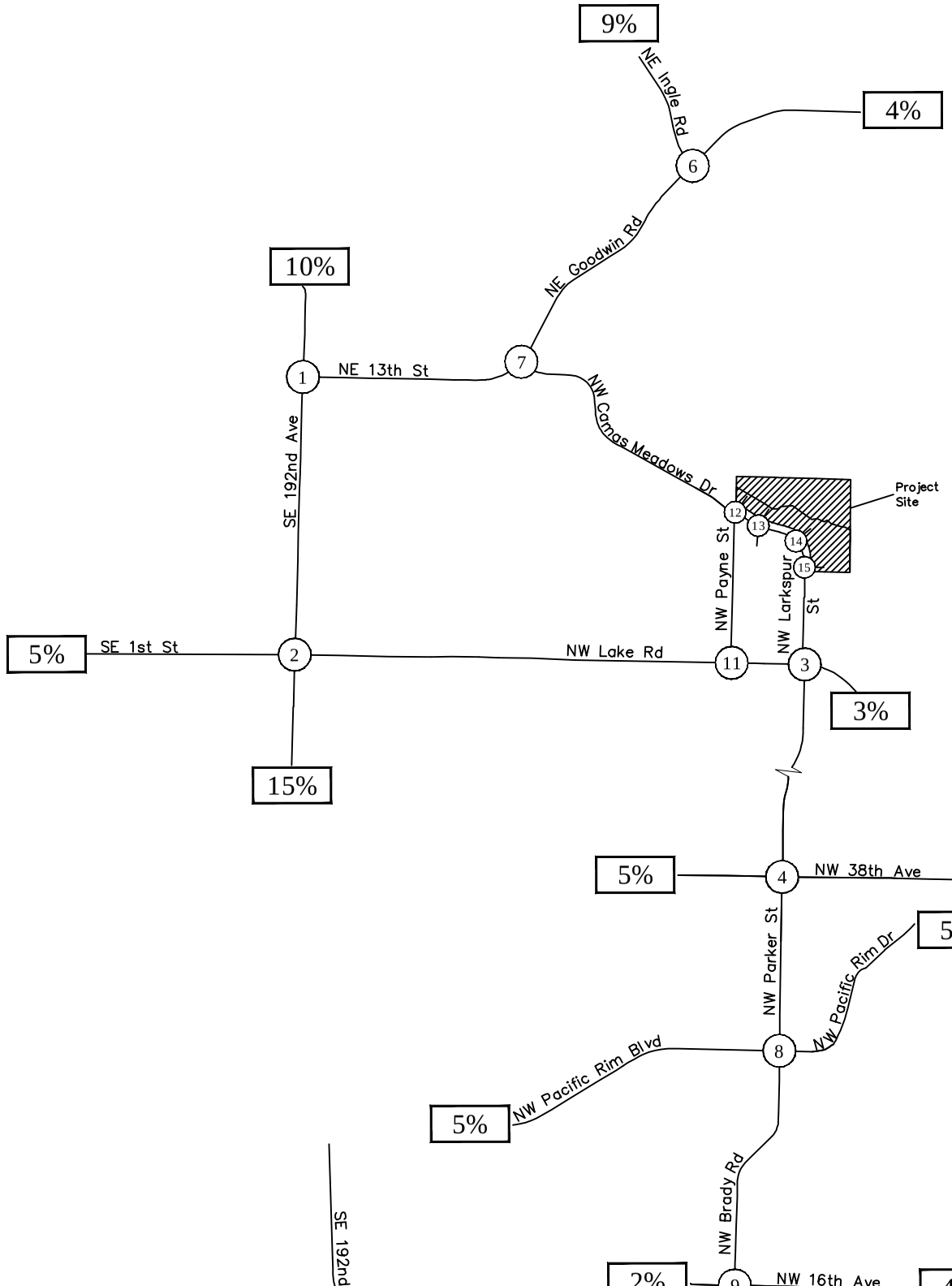
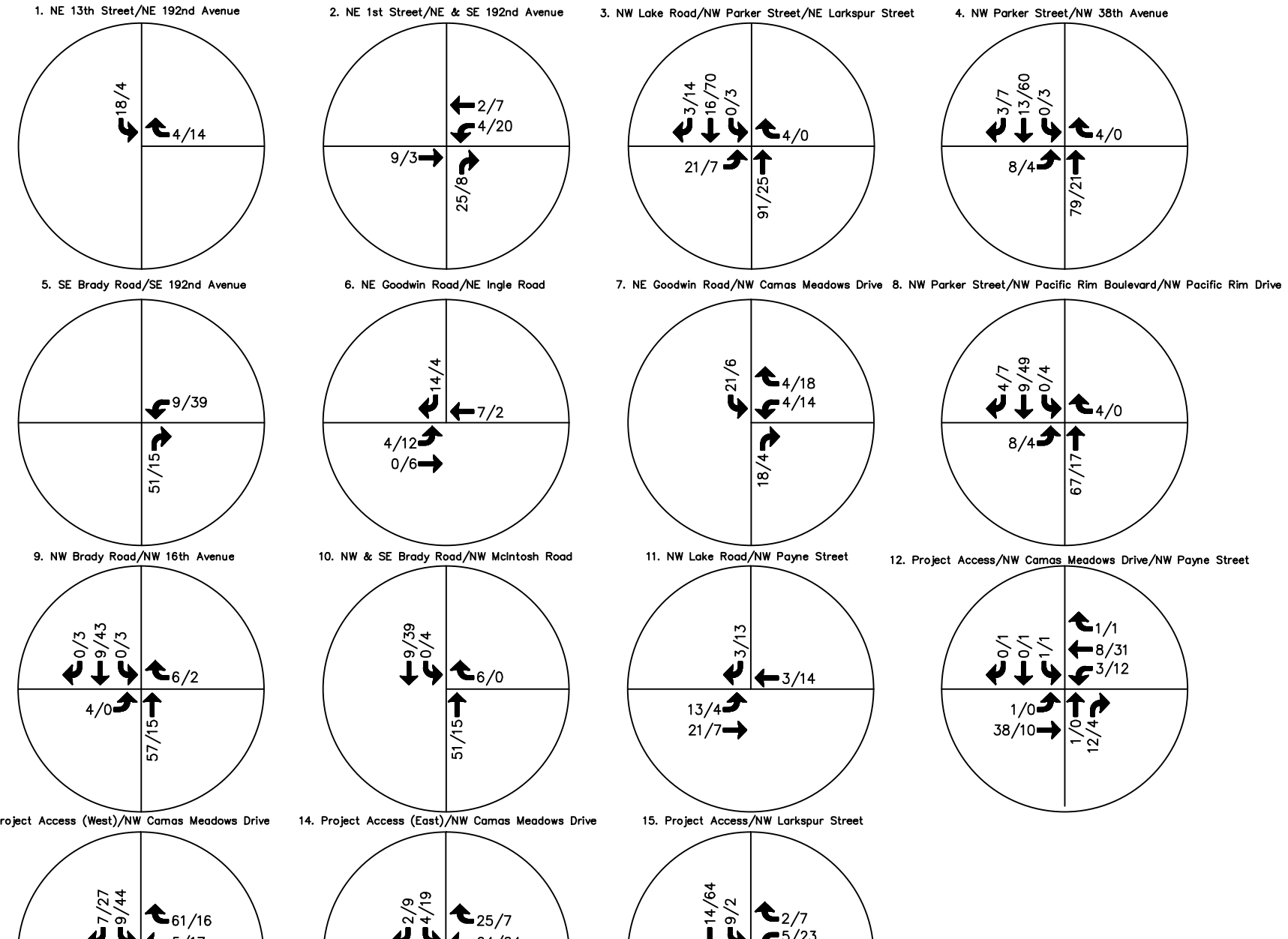


FIGURE 6c
"Quality Restaurant"
Pass-By Trips
Traffic Volumes

NOT TO SCALE

315021.0Figures.Dwg





NOT TO SCALE

LEGEND

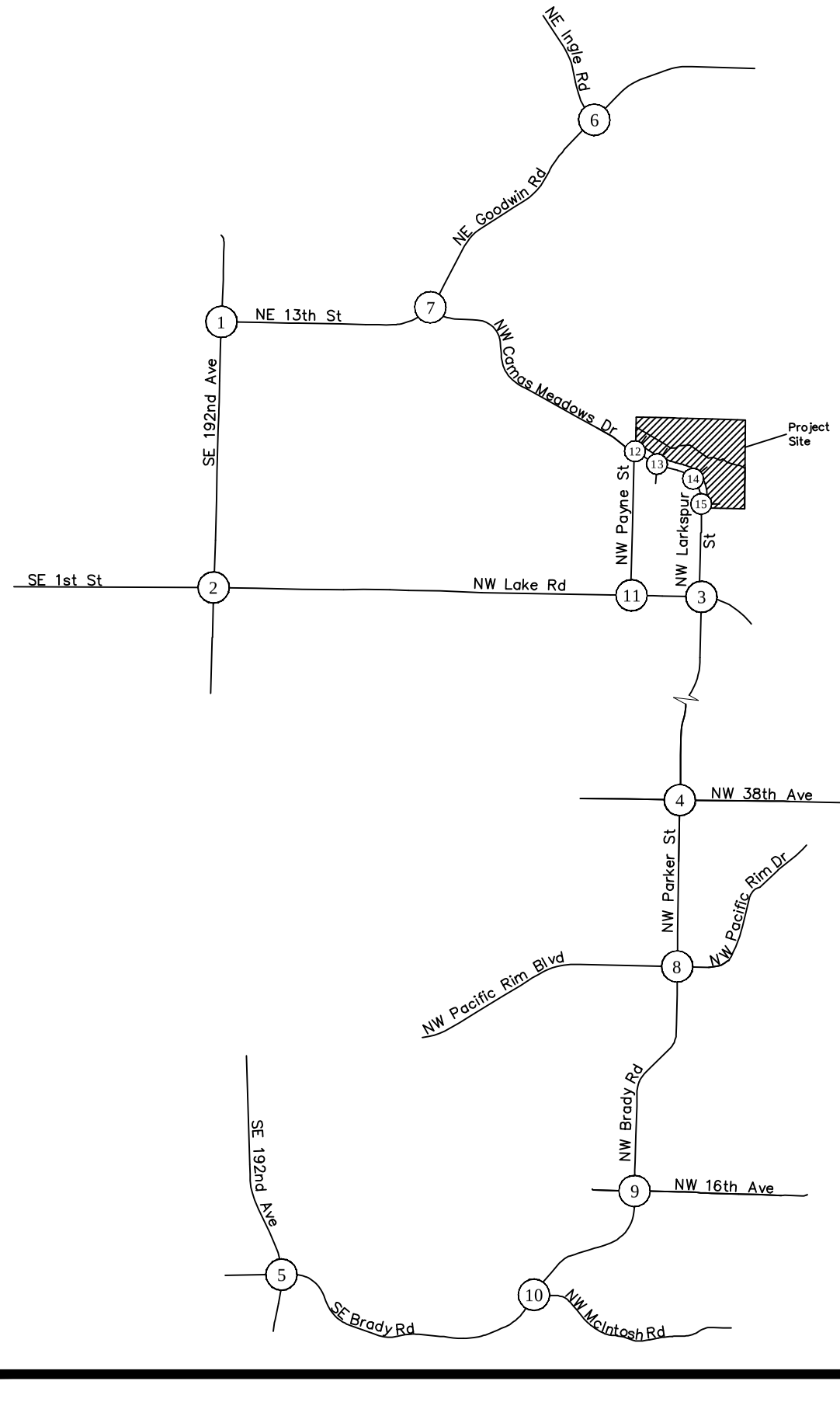
100/128 A.M./P.M. Peak Hour Traffic Volumes

10% A.M. and P.M. Peak Hour Trip Distribution

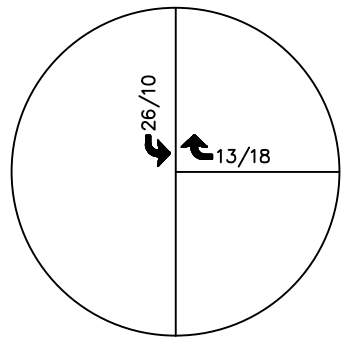
FIGURE 6d
"Business Park"
Trip Distribution and Assignment
Traffic Volumes

315021.0Figures.Dwg

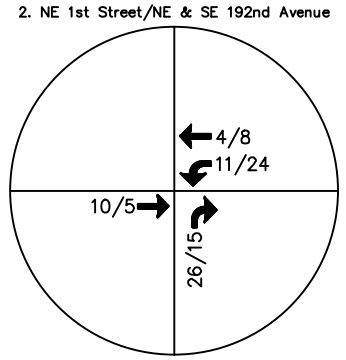
Exhibit 108 APPEAL24-1001



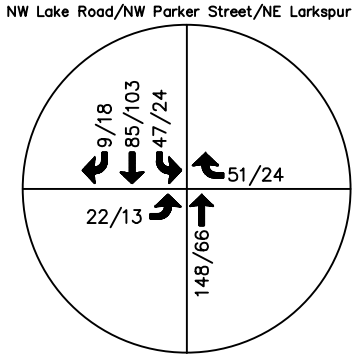
1. NE 13th Street/NE 192nd Avenue



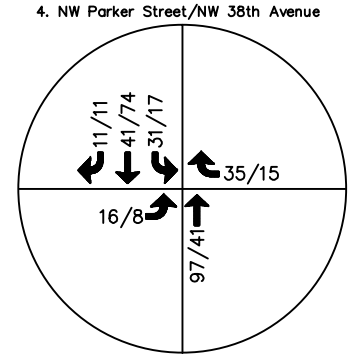
2. NE 1st Street/NE & SE 192nd Avenue



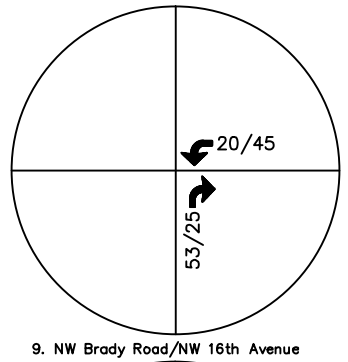
3. NW Lake Road/NW Parker Street/NE Larkspur Street



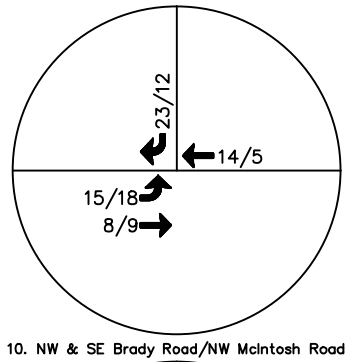
4. NW Parker Street/NW 38th Avenue



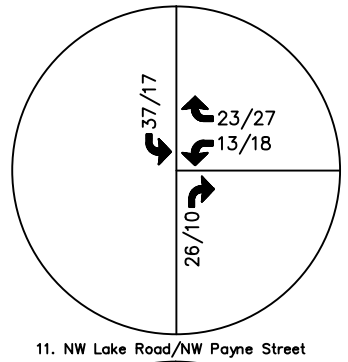
5. SE Brady Road/SE 192nd Avenue



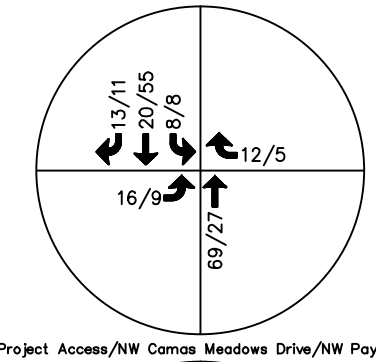
6. NE Goodwin Road/NE Ingle Road



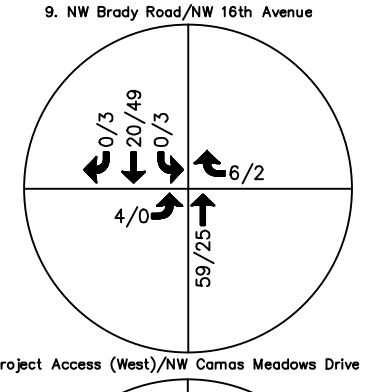
7. NE Goodwin Road/NW Camas Meadows Drive



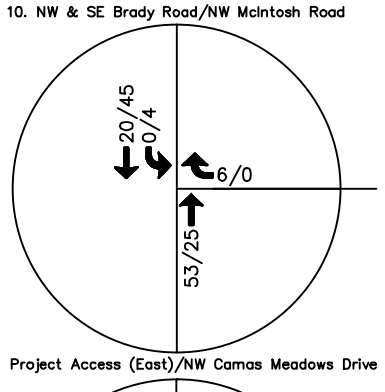
8. NW Parker Street/NW Pacific Rim Boulevard/NW Pacific Rim Drive



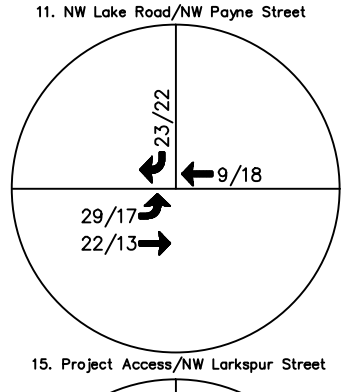
9. NW Brady Road/NW 16th Avenue



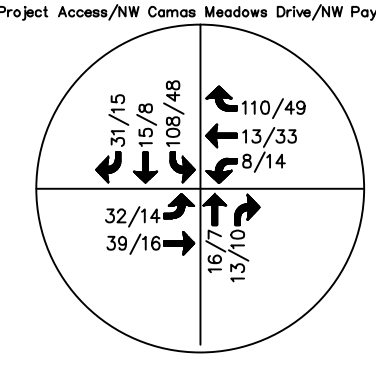
10. NW & SE Brady Road/NW McIntosh Road



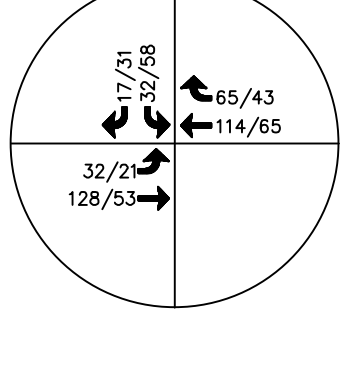
11. NW Lake Road/NW Payne Street



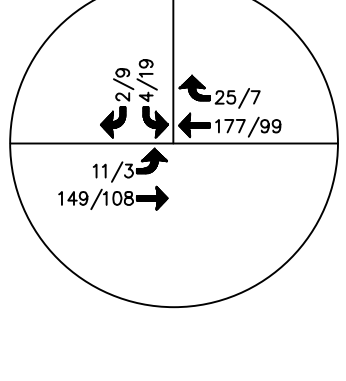
12. Project Access/NW Camas Meadows Drive/NW Payne Street



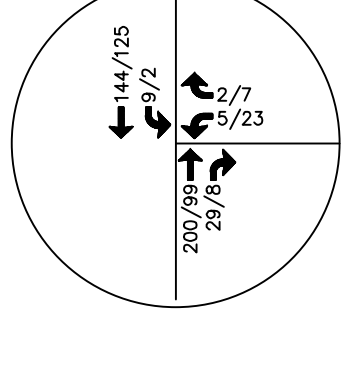
13. Project Access (West)/NW Camas Meadows Drive



14. Project Access (East)/NW Camas Meadows Drive



15. Project Access/NW Larkspur Street



LEGEND

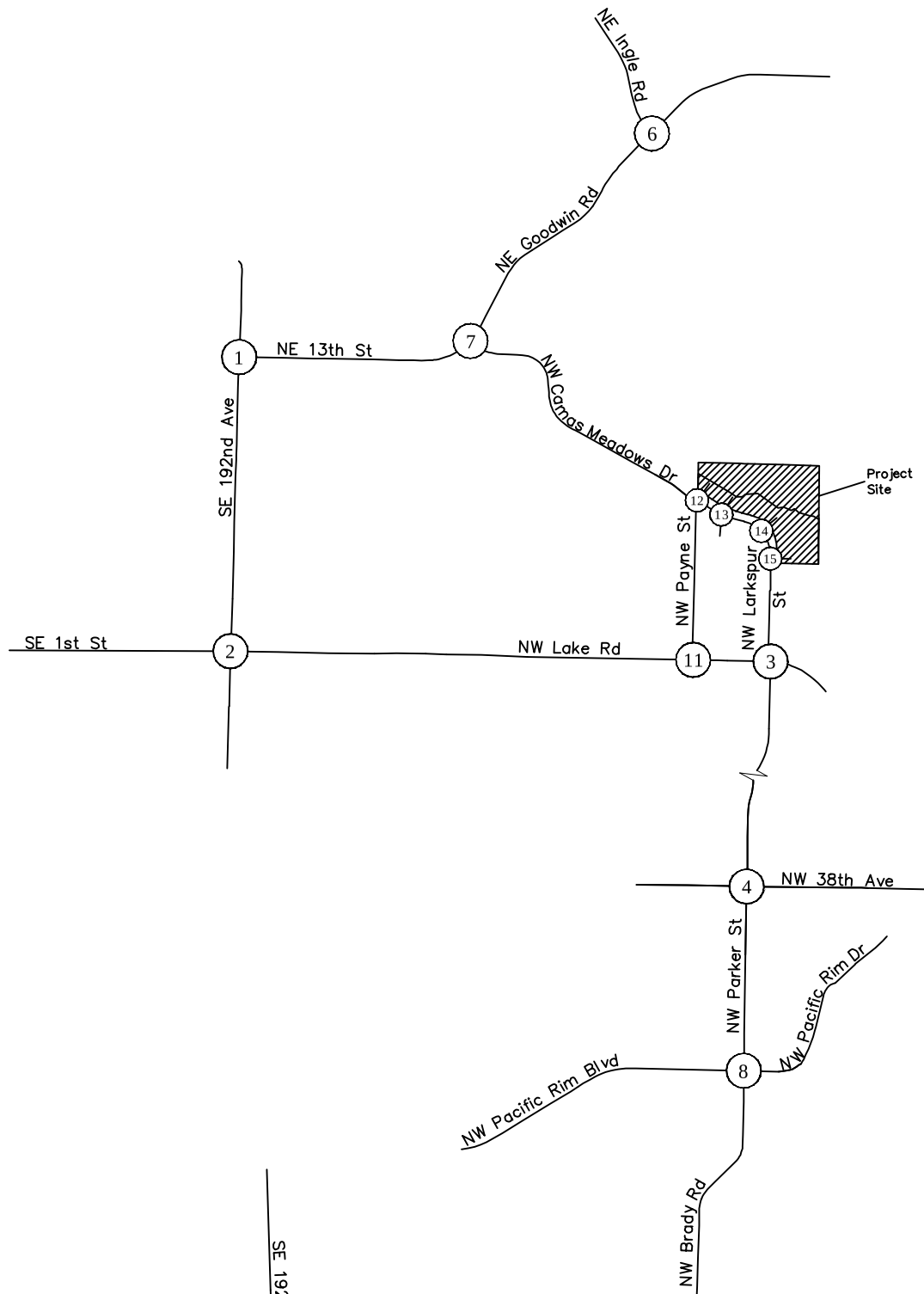
100/128 A.M./P.M. Peak Hour Traffic Volumes

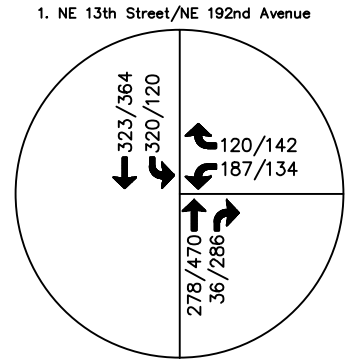
NOT TO SCALE

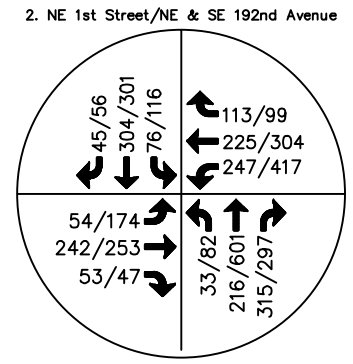
FIGURE 6e
"Combined Use"
Trip Distribution and Assignment
Traffic Volumes

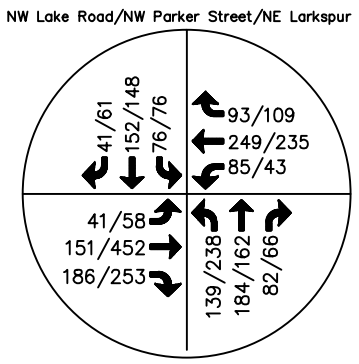
315021.0Figures.Dwg

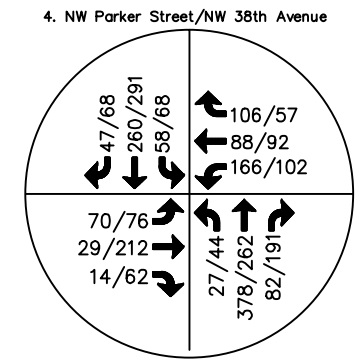
Exhibit 108 APPEAL24-1001

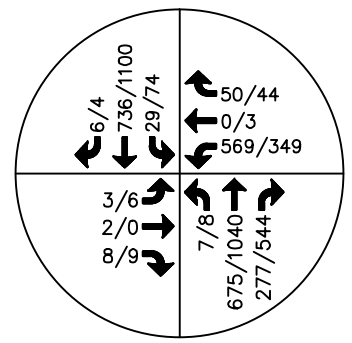


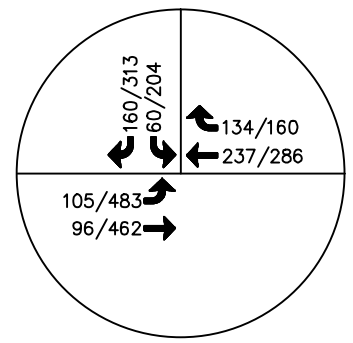


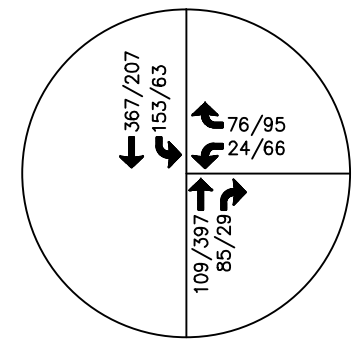


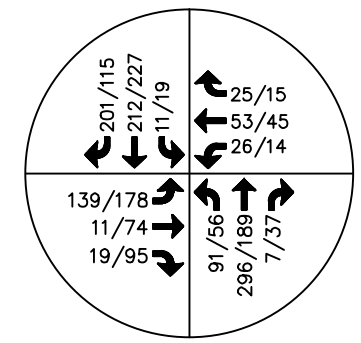


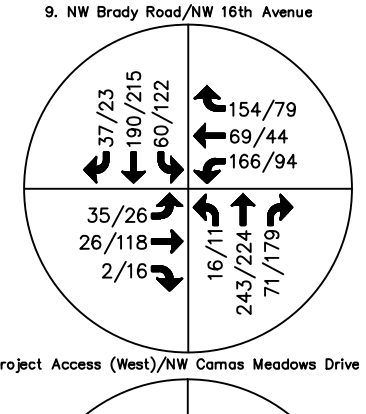


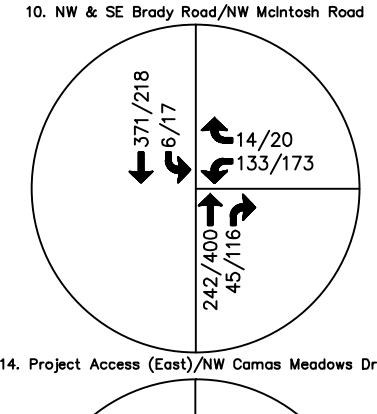


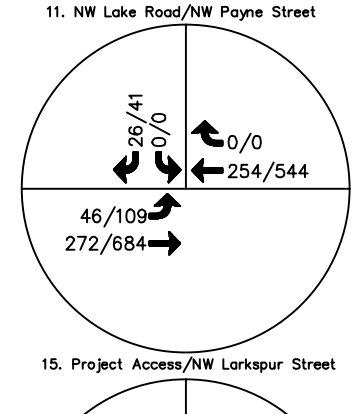


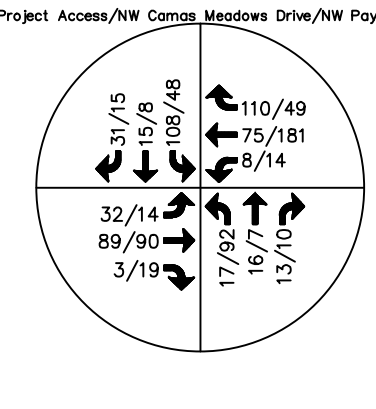


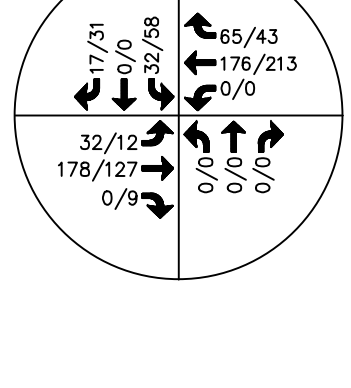


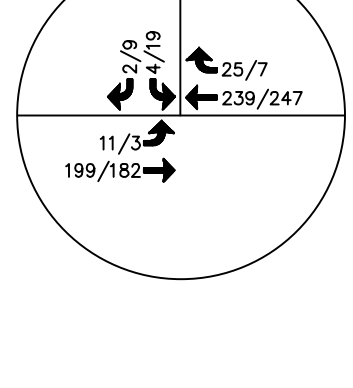


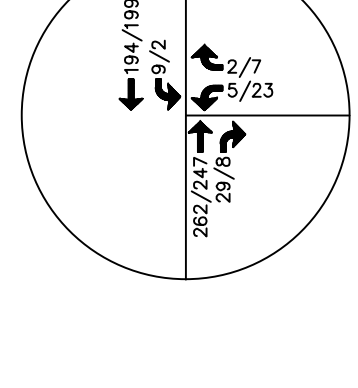












LEGEND

128/200 AM/PM Peak Hour Traffic Volume

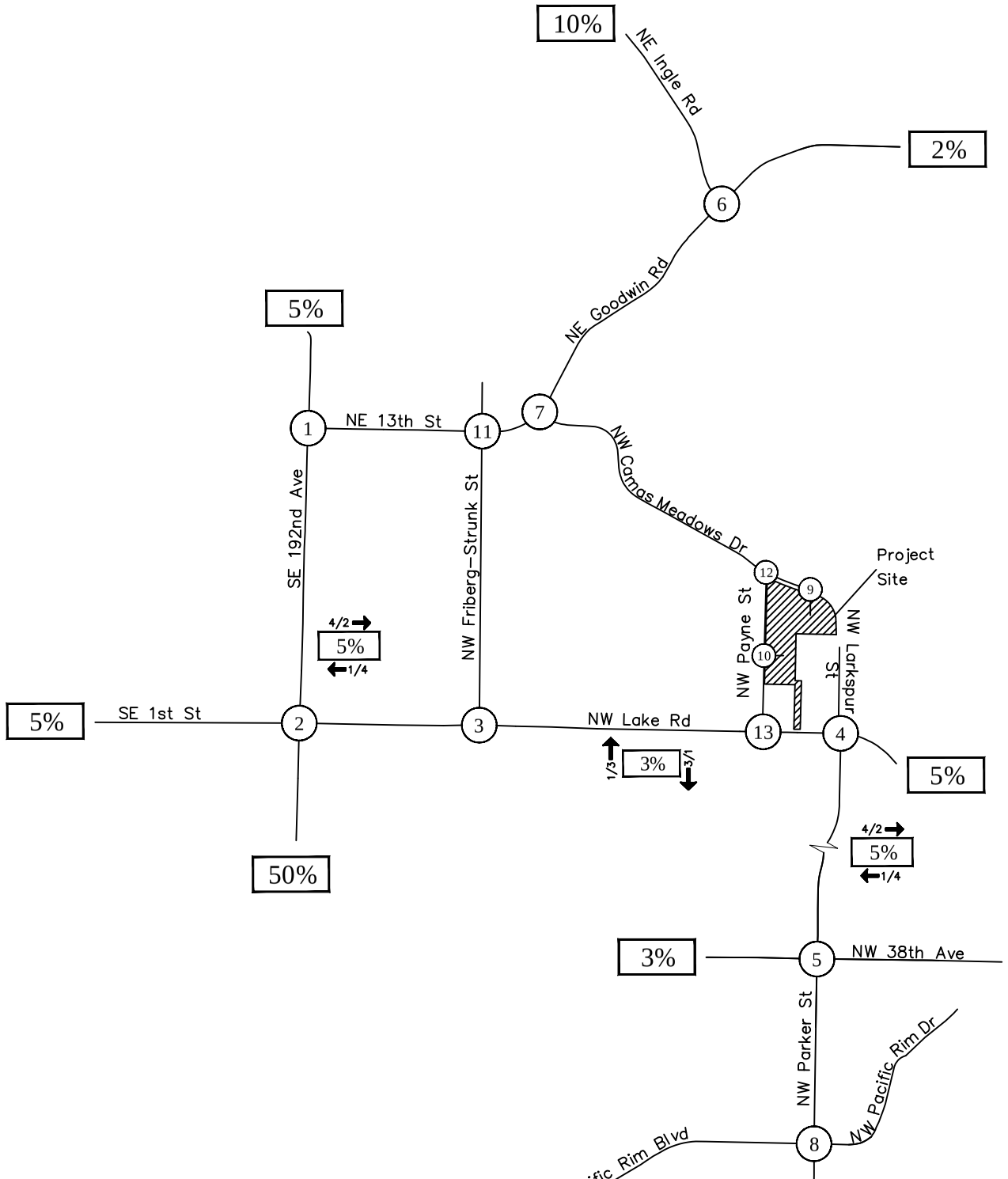
NOT TO SCALE

FIGURE 7
2020 "With Project"
A.M. and P.M. Peak Hour Traffic Volumes

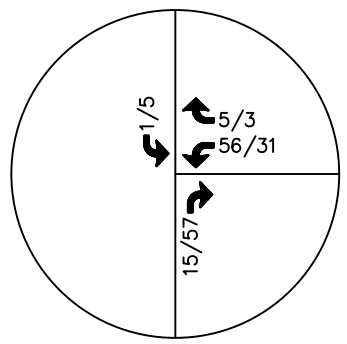
315021.0Figures.Dwg

Exhibit 108 APPEAL24-1001

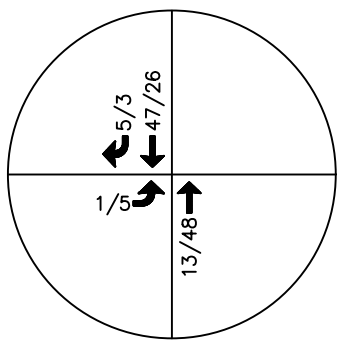
Village at Camas Meadows TIA
Camas, WA



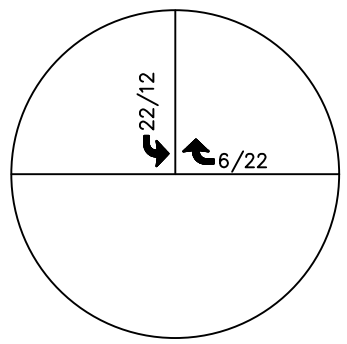
1. NE 13th Street/NE 192nd Avenue



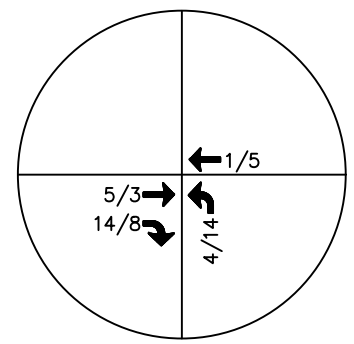
2. NE 1st Street/NE & SE 192nd Avenue



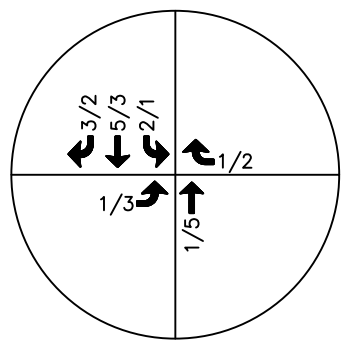
3. NW Lake Road/NW Friberg–Strunk Street



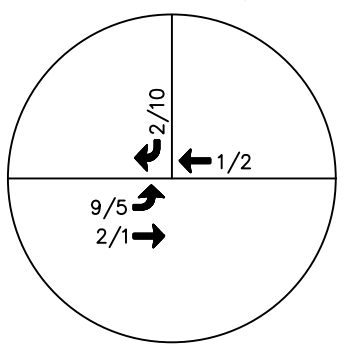
4. NW Lake Road/NW Parker Street/NE Larkspur Street



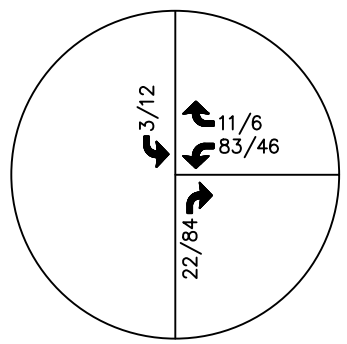
5. NW Parker Street/NW 38th Avenue



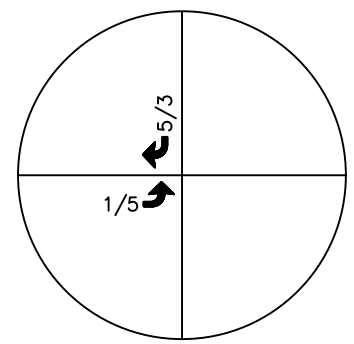
6. NE Goodwin Road/NE Ingle Road



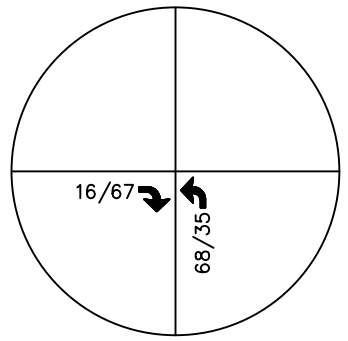
7. NE Goodwin Road/NW Camas Meadows Drive



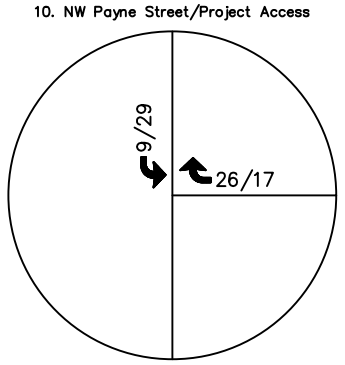
8. NW Parker Street/NW Pacific Rim Boulevard/NW Pacific Rim Drive



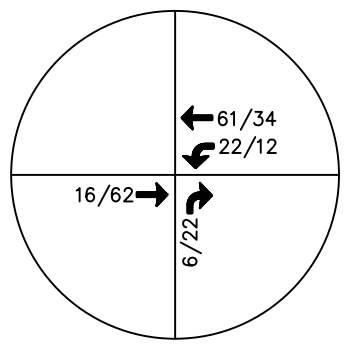
9. NW Camas Meadows Drive/Project Access



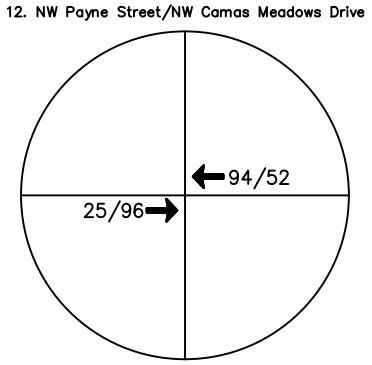
10. NW Payne Street/Project Access



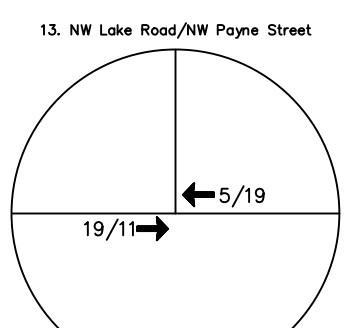
11. NW Friberg–Strunk Street/NE 13th Street/NE Goodwin Road



12. NW Payne Street/NW Camas Meadows Drive



13. NW Lake Road/NW Payne Street



LEGEND

128/200 A.M./P.M. Peak Hour Traffic Volume

10% A.M. and P.M. Peak Hour Trip Distribution

NOT TO SCALE

FIGURE 6
Trip Distribution and Assignment
Traffic Volumes

16025_Figures.Dwg

Exhibit 108 APPEAL24-1001

Exhibit 108 APPEAL24-1001

CURRENT PROPOSED DEVELOPMENT PLAN

The B1 South Phase consists of 124 attached units and 2 single-family detached homes and is expected to be completed by 2020. It is located in the southwest portion of the overall site, directly south of Phase 1. Access will be provided via the neighborhood collector built with Phase 1, which connects to NE Ingle Road. In the future, this neighborhood collector will connect to Phase 3 of the site.

Trip Generation

Trip generation estimates for the proposed development were generated based on information provided in the standard reference manual *Trip Generation, 9th Edition* published by the Institute of Transportation Engineers (ITE – Reference 2). Table 1 summarizes the daily, weekday AM, and weekday PM peak-hour trips for the B1 South Phase assumed development.

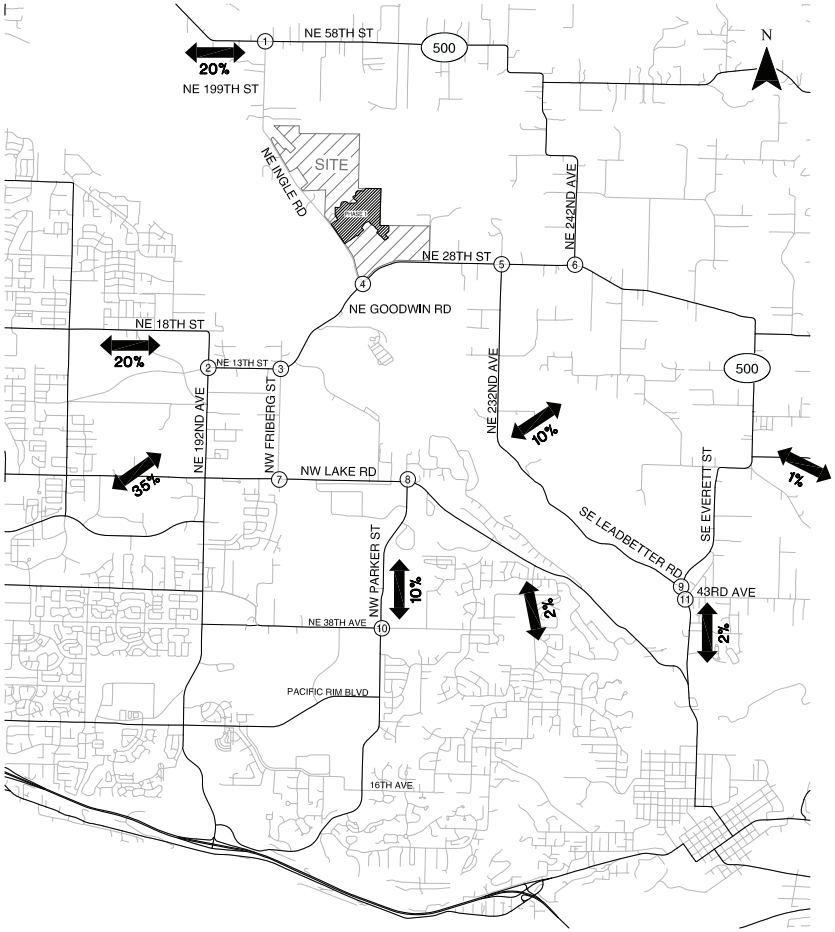
Table 1: Trip Generation Estimate – B1 South Phase

Land Use	ITE Code	Size	Daily	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Residential Condominium/ Townhouse	230	124 units	720	55	9	46	65	43	22
Single-Family Detached Housing	210	2 units	20	2	1	1	2	1	1
Total Residential (126 units)			**740**	**57**	**10**	**47**	**67**	**44**	**23**

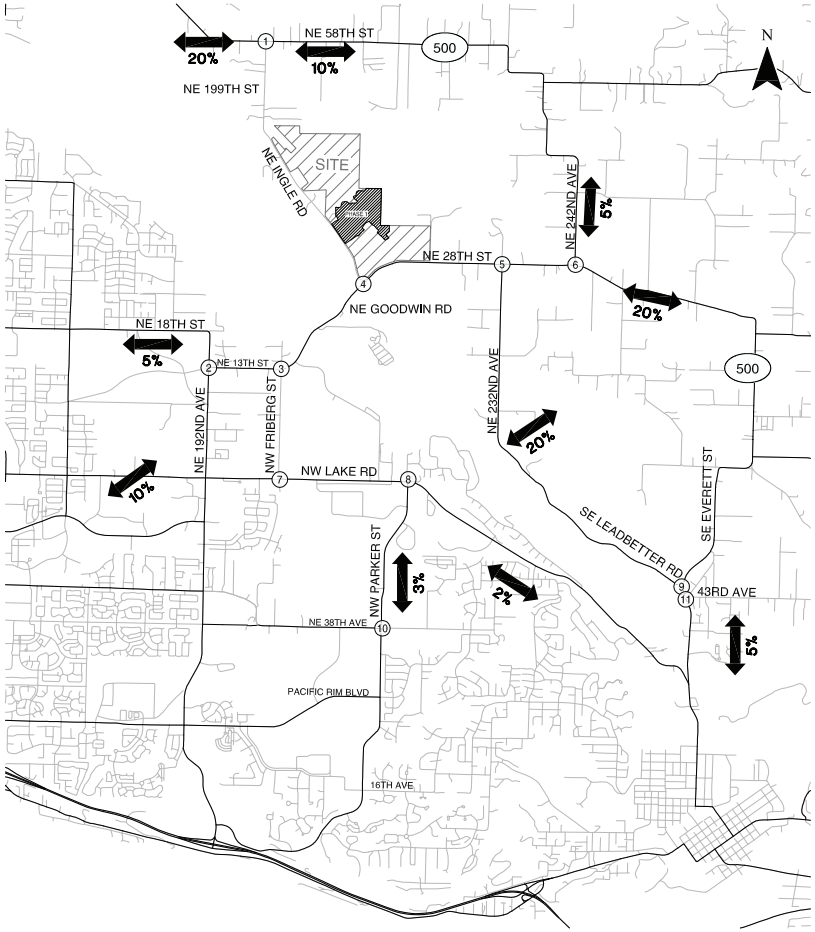
Table 2 summarizes the overall master plan trip generation and then deducts for the cumulative Phase 1[1], Phase 2[1] Phase 3, and B1 South Phase trips to summarize the number of net new trips that will remain vested.

[1] While previous traffic analysis assumed 215 units in Phase 1, Phase 1 as platted consists of 201 units. While previous traffic analysis assumed 230 units in Phase 2, Phase 2 is now platted for 228 units. The updated trip totals are shown in Table 2.

RESIDENTIAL DISTRIBUTION:



RETAIL DISTRIBUTION:



Estimated Trip Distribution Pattern
Camas, Washington

Figure 6

H:\proj\tin13865 - Green Mountain Master Plan\dwg\fig\tin13865_traffic study -Nov update.dwg Nov 20, 2014 - 2:27pm - klaustsen Layout Tab: 6_Dist

Exhibit 108 APPEAL24-1001

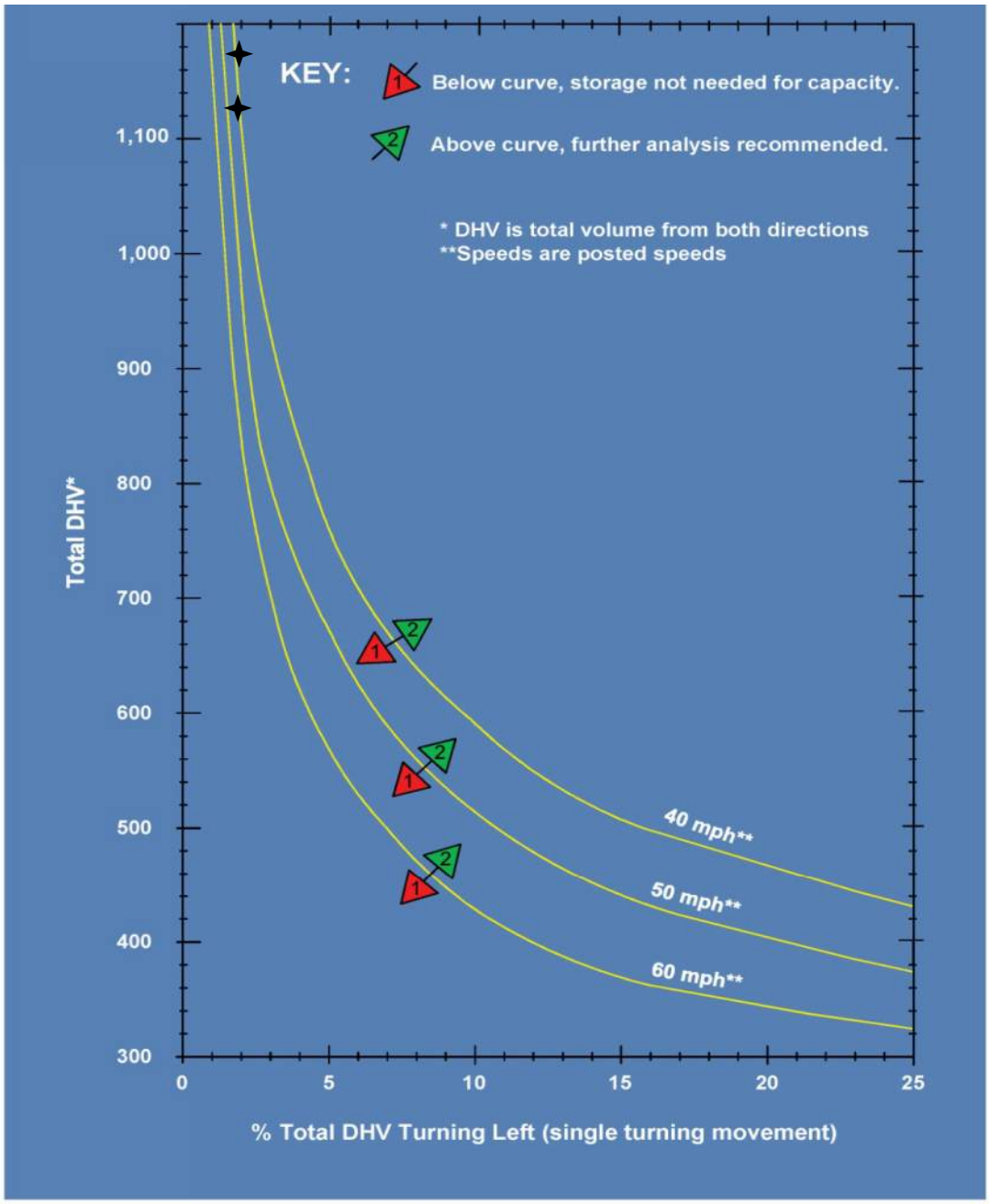


Exhibit 1310-7a. Left-turn Storage Guidelines-: Two-Lane, Unsignalized.

Storage requirements for critical left-turn movements at unsignalized intersections on 2-lane highways.

Intersection	Mov't	Analysis Period	Speed V (mph)	Left Turns in Advancing Volume (vph)	Advancing Volume V_A (vph)	Opposing Volume V_O (vph)	Total DHV	% Left Turns in DHV L	Storage Req'd (ft)
Site Access and NE 13th Street	WB LT	2026 Total Traffic-AM Peak	35	21	615	557	1,172	2%	100 ft
		2026 Total Traffic-PM Peak		24	515	614	1,129	2%	None

Source: WSDOT Design Guide, February 2019.

Exhibit 1310-8a Left-Turn Storage Length: Two-Lane, Unsignalized (40mph)

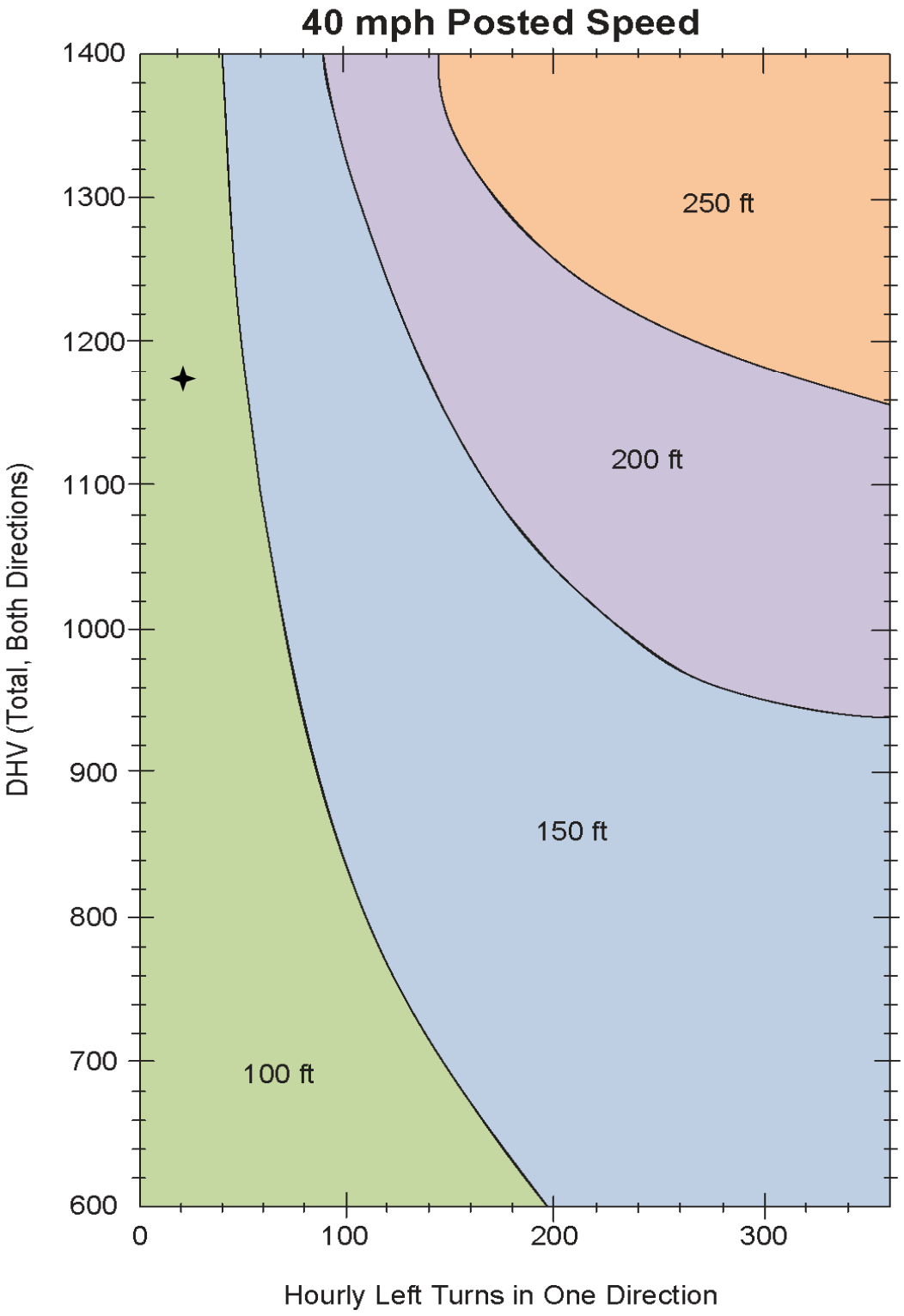
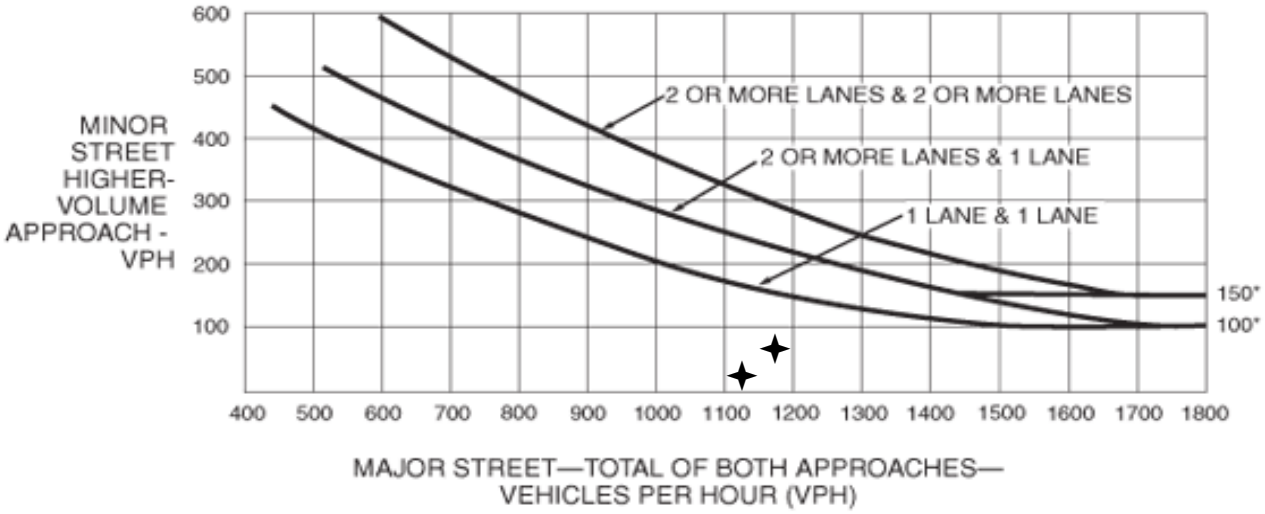


Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Table for Figure 4C-3

One lane and one lane		Two or more lanes and one lane		Two or more lanes and two or more lanes	
VPH on the major street (Total of both approaches)	VPH on the minor street (Higher volume approach)	VPH on the major street (Total of both approaches)	VPH on the minor street (Higher volume approach)	VPH on the major street (Total of both approaches)	VPH on the minor street (Higher volume approach)
1800	100	1800	100 or 150*	1800	150
1700	100	1700	100 or 150*	1700	150
1600	100	1600	120 or 150*	1600	170
1500	100	1500	145 or 150*	1500	180
1400	120	1400	155	1400	220
1300	130	1300	190	1300	250
1200	150	1200	220	1200	285
1100	175	1100	250	1100	340
1000	200	1000	285	1000	370
900	245	900	325	900	425
800	285	800	360	800	475
700	325	700	420	700	540
600	360	600	460	600	590
500	420	500	Not available	500	Not available

* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Peak hour volume warrant for signalization data.

Intersection	Analysis Period	Major Street Speed (mph)	Major Street		Minor Street High Volume Approach		Signal Warranted?
			Volume (vph)	Lanes (#)	Volume (vph)	Lanes (#)	
Site Access and NE 13th Street	2026 Total Traffic - AM Peak	35	1,172	1	70	1	No
	2026 Total Traffic - PM Peak		1,129		81		No

Source: *Manual on Uniform Traffic Control Devices (MUTCD)*, 2009 Edition.

OFFICER REPORTED CRASHES THAT OCCURRED *at* OR *in the vicinity of* MULTIPLE INTERSECTIONS IN THE CITIES OF CAMAS & VANCOUVER

01/01/2018 - Avail 2023 (04/04/23) *See 2nd tab below for road info*

Under 23 U.S. Code § 148 and 23 U.S. Code § 407, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

Indexed Primary Trafficway	BLOCK NUMBER	INTERSECTING TRAFFICWAY	DIST FROM REF POINT	MI or FT	COMP DIR FROM REF POINT	REFERENCE POINT NAME	REPORT NUMBER	DATE	# INJ	# FAT	# VEH	# PEDS	# BIKES	VEH 1 COMPASS DIR FROM	VEH 1 COMPASS DIR TO	VEH 2 COMPASS DIR FROM	VEH 2 COMPASS DIR TO
NE GOODWIN RD	7801	NW FRIBERG STRUNK ST				NE 13TH ST	EC42777	05/02/2022	0	0	1	0	0	East	West		
NE GOODWIN RD	7800		108	F	E	NE 13TH ST	E853679	10/20/2018	0	0	1	0	0	West	East		
NW FRIBERG STRUNK ST	0	NE 13TH ST					E914095	04/23/2019	0	0	1	0	0	South	Northwest		
NE 13TH ST	0	NE 192ND AVE					EA33917	05/09/2020	0	0	1	0	0	West	North		
NE 13TH ST	19409	NE 192ND AVE					EC40931	04/20/2022	1	0	2	0	0	East	West	e Stopped	e Stopped
NE 13TH ST	19200		75	F	E	NE 192ND AVE	E891662	02/09/2019	1	0	2	0	0	East	West	e Stopped	e Stopped
NE 13TH ST	19200		33	F	E	NE 192ND AVE	EC66129	07/18/2022	0	0	2	0	0	South	East	e Stopped	e Stopped
NE 192ND AVE	1190	NE 13TH ST					EC64739	07/14/2022	0	0	2	0	0	North	East	e Stopped	e Stopped
NE 192ND AVE	1168	NE 13TH ST					EB73778	09/24/2021	0	0	2	0	0	North	East	South	North
NE 192ND AVE	0	NE 13TH ST					E974878	10/18/2019	0	0	2	0	0	East	North	South	North
NE 192ND AVE	1200		181	F	S	NE 13TH ST	EC53185	06/06/2022	1	0	3	0	0	South	North	e Stopped	e Stopped
NE 192ND AVE	1200		50	F	S	NE 13TH ST	EC31583	03/24/2022	0	0	3	0	0	South	North	e Stopped	e Stopped
NW FRIBERG STRUNK ST	200		112	F	N	NW LAKE RD	E869653	12/06/2018	2	0	4	0	0	North	South	e Stopped	e Stopped
NW LAKE RD	9900	NW FRIBERG STRUNK ST					E774352	02/20/2018	0	0	2	0	0	East	East	West	East
SE 1ST ST	0	NW FRIBERG STRUNK ST					EA42305	06/22/2020	1	0	2	0	0	East	West	West	North
SE 1ST ST	20199	NW FRIBERG STRUNK ST					ED49006	04/04/2023	0	0	2	0	0	West	East	West	East
SE 1ST ST	0	NW FRIBERG STRUNK ST					E846435	10/08/2018	0	0	2	0	0	West	North	East	West

Exhibit 108 APPEAL24-1001

Exhibit 1A. Trip Distribution for Corridor Intersections.

Corridor: Andresen Road	Limits: Mill Plain Boulevard to SR-500											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Mill Plain Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
E. 18th Street/N.E. 18th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 25th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fourth Plain Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
SR-500	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Corridor: Andresen Road	Limits: SR-500 to NE 78th Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
SR-500	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 40th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Vancouver Mall Drive	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 58th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Minnehaha/NE 63rd Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 78th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Corridor: Fourth Plain Boulevard	Limits: Mill Plain Boulevard to I-5											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Mill Plain Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fruit Valley Road/Kotobuki Way	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Kauffman Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Main Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
I-5 southbound off-/on-ramps	0%	----	0%	0%	0%	----	----	----	----	----	0%	0%
I-5 northbound off-/on-ramps	----	----	----	0%	0%	----	0%	0%	0%	----	0%	0%

Corridor: Fourth Plain Boulevard	Limits: I-5 to Andresen Road											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
I-5 northbound off-/on-ramps	----	----	----	0%	0%	----	0%	0%	0%	----	0%	0%
St. Johns Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fort Vancouver Way	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Grand Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Falk Road	0%	----	0%	0%	0%	----	----	----	----	----	0%	0%
Stapleton Road	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Andresen Road	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Exhibit 1A. Trip Distribution for Corridor Intersections. (continued)

Corridor: Fourth Plain Boulevard					Limits: Andresen Road to I-205							
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Andresen Road	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 86th Avenue	----	----	----	----	0%	0%	0%	----	0%	0%	0%	----
Thurston Way	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
I-205 SB on-ramp/Oak View Drive	----	----	----	0%	0%	0%	0%	0%	0%	0%	0%	0%
I-205 SB off-ramp/Van Mall Drive	0%	0%	0%	0%	0%	----	0%	0%	0%	----	0%	0%
I-205 NB on-ramp/NE 54th Street	0%	0%	0%	0%	0%	0%	----	----	----	0%	0%	0%

Corridor: Fourth Plain Boulevard (SR-500)					Limits: I-205 to NE 162nd Avenue							
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
I-205 NB on-ramp/NE 54th Street	0%	0%	0%	0%	0%	0%	----	----	----	0%	0%	0%
Covington Road/Gher Road	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 112th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 117th Avenue (SR 503/500)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 121st Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 137th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ward Road	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 162nd Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Corridor: Mill Plain Boulevard					Limits: Fourth Plain Boulevard to I-5							
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Fourth Plain Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Kauffman Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Main Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
I-5 southbound on-/off-ramps	0%	0%	0%	----	0%	0%	----	----	----	0%	0%	----
I-5 northbound on-/off-ramps	----	----	----	0%	0%	----	0%	0%	0%	----	0%	0%

Corridor: Mill Plain Boulevard					Limits: I-5 to Andresen Road							
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
I-5 northbound on-/off-ramps	----	----	----	0%	0%	----	0%	0%	0%	----	0%	0%
Fort Vancouver Way	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Grand Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
MacArthur Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Andresen Road	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Exhibit 1A. Trip Distribution for Corridor Intersections. (continued)

Corridor: Mill Plain Boulevard	Limits: Andresen Road to I-205											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Andresen Road	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Lieser Road	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 97th/98th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
I-205 southbound on-/off-ramps	0%	----	0%	0%	0%	----	----	----	----	0%	0%	----
I-205 northbound on-/off-ramps	0%	----	----	0%	0%	----	0%	----	----	----	0%	0%

Corridor: Mill Plain Boulevard	Limits: I-205 to NE 136th Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
I-205 northbound on-/off-ramps	0%	----	----	0%	0%	----	0%	----	----	----	0%	0%
Chkalov Drive	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE/SE 117th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE/SE 120th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
SE 123rd/NE 124th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
SE 126th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Park Plaza Dr/SE 131st Av	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE/SE 136th Avenue	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	5%	0%

Corridor: Mill Plain Boulevard	Limits: NE 136th Avenue to NE 164th Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE/SE 136th Avenue	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	5%	0%
SE 139th Avenue	----	----	----	----	5%	0%	0%	----	0%	0%	5%	----
Olympia Drive	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	5%	0%
Hearthwood Blvd/Park Crest Av	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	5%	0%
SE 148th Avenue	0%	----	0%	0%	5%	----	----	----	----	----	5%	0%
SE 155th Avenue	0%	----	0%	0%	5%	----	----	----	----	----	5%	0%
SE 157th Avenue	0%	----	0%	0%	5%	----	----	----	----	----	5%	0%
SE 160th Avenue	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	5%	0%
SE 164th Avenue	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	10%	0%

Corridor: Mill Plain Boulevard	Limits: NE 164th Avenue to NE 192nd Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
SE 164th Avenue	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	10%	0%
SE 168th Avenue	0%	10%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%
SE 172nd Av/Tech Center Dr	0%	10%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%
SE 177th Avenue	0%	10%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%
SE 192nd Avenue	10%	15%	0%	0%	0%	0%	0%	15%	0%	0%	0%	10%

Exhibit 1A. Trip Distribution for Corridor Intersections. (continued)

Corridor: NE 18th Street	Limits: NE 112th Avenue to NE 138th Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 112th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 125th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 138th Avenue	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	5%	0%

Corridor: NE 18th Street	Limits: NE 138th Avenue to NE 162nd Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 138th Avenue	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	5%	0%
NE 148th Court/Place	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	10%	0%
NE 155th Avenue	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	10%	0%
NE 162nd Avenue	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	10%	0%

Corridor: Burton Road/NE 28th Street	Limits: NE 18th Street to NE 112th Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 18th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 86th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 98th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 112th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Corridor: Burton Road/NE 28th Street	Limits: NE 112th Avenue and NE 138th Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 112th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 119th Avenue/Four Seasons	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 124th Avenue (South)	----	----	----	----	0%	0%	0%	----	0%	0%	0%	----
NE 124th Avenue (North)	0%	----	0%	0%	0%	----	----	----	----	----	0%	0%
NE 129th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 138th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Corridor: NE 28th Street	Limits: NE 138th Avenue to NE 162nd Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 136th/138th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 148th Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 152nd Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 162nd Avenue	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Exhibit 1A. Trip Distribution for Corridor Intersections. (continued)

Corridor: Ft. Vancouver Way/St. Johns Boulevard	Limits: Mill Plain Boulevard to NE 63rd Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Mill Plain Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
McLoughlin Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fourth Plain Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
St. Johns Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
E 33rd Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
SR 500	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 44th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Minnehaha/NE 63rd Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Corridor: NE 112th Avenue (also Chkalov Drive)	Limits: Mill Plain Boulevard to Burton Road/NE 28th Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Mill Plain Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 9th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 18th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Burton Road/NE 28th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Corridor: NE 112th Avenue	Limits: Burton Road/NE 28th Street to NE 51st Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Burton Road/NE 28th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 49th Street	----	0%	0%	0%	----	0%	0%	0%	----	----	----	----
NE 51st Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Corridor: NE 136th/138th Avenue	Limits: Mill Plain Boulevard to NE 28th Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Mill Plain Boulevard	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	5%	0%
NE 4th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 18th Street	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	5%	0%
NE 28th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Corridor: NE 137th/138th Avenue	Limits: NE 28th Street to Fourth Plain Boulevard											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 28th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 39th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 49th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fourth Plain Road	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Exhibit 1A. Trip Distribution for Corridor Intersections. (continued)

Corridor: SE 164th Avenue	Limits: SR-14 to SE 1st Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
SR-14 eastbound ramps	----	0%	0%	----	----	----	0%	0%	----	0%	----	0%
SR-14 westbound ramps	0%	0%	----	0%	----	0%	----	0%	0%	----	----	----
Cascade Park Dr/SE 34th St	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Village Loop/SE 29th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
McGillivray Boulevard	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Village Loop/SE 20th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
SE 15th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
SE 12th Court/Tech Center Drive	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Mill Plain Boulevard	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	10%	0%
SE 1st Street	0%	0%	0%	0%	15%	0%	0%	0%	0%	0%	15%	0%

Corridor: NE 162nd/SE 164th Avenue	Limits: SE 1st Street to Fourth Plain Road											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
SE 1st Street	0%	0%	0%	0%	15%	0%	0%	0%	0%	0%	15%	0%
NE 11th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 18th Street	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	10%	0%
NE 28th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 34th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 39th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Poplar Street/NE 45th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NE 65th Street	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Fourth Plain Road	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Corridor: NE/SE 192nd Avenue	Limits: SR-14 to NE 18th Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
SR-14 eastbound ramps	----	0%	15%	----	----	----	0%	0%	----	0%	----	0%
SR-14 westbound ramps	0%	15%	----	15%	----	0%	----	0%	0%	----	----	----
Brady Road	----	15%	0%	0%	----	0%	0%	15%	----	----	----	----
SE 34th Street/Pacific Rim Blvd	0%	15%	0%	0%	0%	0%	0%	15%	0%	0%	0%	0%
SE 31st Street	----	15%	0%	0%	----	0%	0%	15%	----	----	----	----
SE 20th Street	0%	15%	0%	0%	0%	0%	0%	15%	0%	0%	0%	0%
SE 15th Street	0%	15%	0%	0%	0%	0%	0%	15%	0%	0%	0%	0%
SE 12th Way	0%	15%	----	----	----	----	----	15%	0%	0%	----	0%
Westridge Boulevard	----	15%	0%	0%	----	0%	0%	15%	----	----	----	----
Mill Plain Boulevard	10%	15%	0%	0%	0%	0%	0%	15%	0%	0%	0%	10%
SE 1st Street	15%	25%	0%	0%	0%	0%	0%	25%	0%	0%	0%	15%
NE 6th Street	----	40%	0%	0%	----	0%	0%	40%	----	----	----	----
NE 9th Street	0%	40%	----	----	----	----	----	40%	0%	0%	----	0%
NE 11th Street	----	40%	0%	0%	----	0%	0%	40%	----	----	----	----
NE 13th Street	----	0%	30%	30%	----	40%	40%	0%	----	----	----	----
NE 18th Street	----	----	----	----	0%	0%	0%	----	30%	30%	0%	----

Exhibit 1B. Trip Assignment for Corridor Intersections.

Corridor: Andresen Road	Limits: Mill Plain Boulevard to SR-500											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Mill Plain Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
E. 18th Street/N.E. 18th Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 25th Street	0	0	0	0	0	0	0	0	0	0	0	0
Fourth Plain Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
SR-500	0	0	0	0	0	0	0	0	0	0	0	0

Corridor: Andresen Road	Limits: SR-500 to NE 78th Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
SR-500	0	0	0	0	0	0	0	0	0	0	0	0
NE 40th Street	0	0	0	0	0	0	0	0	0	0	0	0
Vancouver Mall Drive	0	0	0	0	0	0	0	0	0	0	0	0
NE 58th Street	0	0	0	0	0	0	0	0	0	0	0	0
Minnehaha/NE 63rd Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 78th Street	0	0	0	0	0	0	0	0	0	0	0	0

Corridor: Fourth Plain Boulevard	Limits: Mill Plain Boulevard to I-5											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Mill Plain Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
Fruit Valley Road/Kotobuki Way	0	0	0	0	0	0	0	0	0	0	0	0
Kauffman Avenue	0	0	0	0	0	0	0	0	0	0	0	0
Main Street	0	0	0	0	0	0	0	0	0	0	0	0
I-5 southbound off-/on-ramps	0	----	0	0	0	----	----	----	----	----	0	0
I-5 northbound off-/on-ramps	----	----	----	0	0	----	0	0	0	----	0	0

Corridor: Fourth Plain Boulevard	Limits: I-5 to Andresen Road											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
I-5 northbound off-/on-ramps	----	----	----	0	0	----	0	0	0	----	0	0
St. Johns Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
Fort Vancouver Way	0	0	0	0	0	0	0	0	0	0	0	0
Grand Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
Falk Road	0	----	0	0	0	----	----	----	----	----	0	0
Stapleton Road	0	0	0	0	0	0	0	0	0	0	0	0
Andresen Road	0	0	0	0	0	0	0	0	0	0	0	0

Exhibit 1B. Trip Assignment for Corridor Intersections. (continued)

Corridor: Fourth Plain Boulevard				Limits: Andresen Road to I-205								
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Andresen Road	0	0	0	0	0	0	0	0	0	0	0	0
NE 86th Avenue	----	----	----	----	0	0	0	----	0	0	0	----
Thurston Way	0	0	0	0	0	0	0	0	0	0	0	0
I-205 SB on-ramp/Oak View Drive	----	----	----	0	0	0	0	0	0	0	0	0
I-205 SB off-ramp/Van Mall Drive	0	0	0	0	0	----	0	0	0	----	0	0
I-205 NB on-ramp/NE 54th Street	0	0	0	0	0	0	----	----	----	0	0	0

Corridor: Fourth Plain Boulevard (SR-500)				Limits: I-205 to NE 162nd Avenue								
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
I-205 NB on-ramp/NE 54th Street	0	0	0	0	0	0	----	----	----	0	0	0
Covington Road/Gher Road	0	0	0	0	0	0	0	0	0	0	0	0
NE 112th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 117th Avenue (SR 503/500)	0	0	0	0	0	0	0	0	0	0	0	0
NE 121st Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 137th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
Ward Road/NE 147th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 162nd Avenue	0	0	0	0	0	0	0	0	0	0	0	0

Corridor: Mill Plain Boulevard				Limits: Fourth Plain Boulevard to I-5								
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Fourth Plain Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
Kauffman Avenue	0	0	0	0	0	0	0	0	0	0	0	0
Main Street	0	0	0	0	0	0	0	0	0	0	0	0
I-5 southbound on-/off-ramps	0	0	0	----	0	0	----	----	----	0	0	----
I-5 northbound on-/off-ramps	----	----	----	0	0	----	0	0	0	----	0	0

Corridor: Mill Plain Boulevard				Limits: I-5 to Andresen Road								
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
I-5 northbound on-/off-ramps	----	----	----	0	0	----	0	0	0	----	0	0
Fort Vancouver Way	0	0	0	0	0	0	0	0	0	0	0	0
Grand Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
MacArthur Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
Andresen Road	0	0	0	0	0	0	0	0	0	0	0	0

Exhibit 1B. Trip Assignment for Corridor Intersections. (continued)

Corridor: Mill Plain Boulevard	Limits: Andresen Road to I-205											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Andresen Road	0	0	0	0	0	0	0	0	0	0	0	0
Lieser Road	0	0	0	0	0	0	0	0	0	0	0	0
NE 97th/98th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
I-205 southbound on-/off-ramps	0	----	0	0	0	----	----	----	----	0	0	----
I-205 northbound on-/off-ramps	0	----	----	0	0	----	0	----	----	----	0	0

Corridor: Mill Plain Boulevard	Limits: I-205 to NE 136th Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
I-205 northbound on-/off-ramps	0	----	----	0	0	----	0	----	----	----	0	0
Chkalov Drive	0	0	0	0	0	0	0	0	0	0	0	0
NE/SE 117th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE/SE 120th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
SE 123rd/NE 124th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
SE 126th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
Park Plaza Dr/SE 131st Av	0	0	0	0	0	0	0	0	0	0	0	0
NE/SE 136th Avenue	0	0	0	0	2	0	0	0	0	0	2	0

Corridor: Mill Plain Boulevard	Limits: NE 136th Avenue to NE 164th Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE/SE 136th Avenue	0	0	0	0	2	0	0	0	0	0	2	0
SE 139th Avenue	----	----	----	----	2	0	0	----	0	0	2	----
Olympia Drive	0	0	0	0	2	0	0	0	0	0	2	0
Hearthwood Blvd/Park Crest Av	0	0	0	0	2	0	0	0	0	0	2	0
SE 148th Avenue	0	----	0	0	2	----	----	----	----	----	2	0
SE 155th Avenue	0	----	0	0	2	----	----	----	----	----	2	0
SE 157th Avenue	0	----	0	0	2	----	----	----	----	----	2	0
SE 160th Avenue	0	0	0	0	2	0	0	0	0	0	2	0
SE 164th Avenue	0	0	0	0	4	0	0	0	0	0	4	0

Corridor: Mill Plain Boulevard	Limits: NE 164th Avenue to NE 192nd Avenue											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
SE 164th Avenue	0	0	0	0	4	0	0	0	0	0	4	0
SE 168th Avenue	0	0	0	0	4	0	0	0	0	0	4	0
SE 172nd Av/Tech Center Dr	0	0	0	0	4	0	0	0	0	0	4	0
SE 177th Avenue	0	0	0	0	4	0	0	0	0	0	4	0
SE 192nd Avenue	4	6	0	0	0	0	0	7	0	0	0	4

Exhibit 1B. Trip Assignment for Corridor Intersections. (continued)

Corridor: NE 18th Street						Limits: NE 112th Avenue to NE 138th Avenue					
Intersecting Roadway	Traffic Movement										
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND	
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 112th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 125th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 138th Avenue	0	0	0	0	2	0	0	0	0	0	2	0

Corridor: NE 18th Street						Limits: NE 138th Avenue to NE 162nd Avenue					
Intersecting Roadway	Traffic Movement										
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND	
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 138th Avenue	0	0	0	0	2	0	0	0	0	0	2	0
NE 148th Court/Place	0	0	0	0	4	0	0	0	0	0	4	0
NE 155th Avenue	0	0	0	0	4	0	0	0	0	0	4	0
NE 162nd Avenue	0	0	0	0	4	0	0	0	0	0	4	0

Corridor: Burton Road/NE 28th Street						Limits: NE 18th Street to NE 112th Avenue					
Intersecting Roadway	Traffic Movement										
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND	
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 18th Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 86th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 98th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 112th Avenue	0	0	0	0	0	0	0	0	0	0	0	0

Corridor: Burton Road/NE 28th Street						Limits: NE 112th Avenue and NE 138th Avenue					
Intersecting Roadway	Traffic Movement										
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND	
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 112th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 119th Avenue/Four Seasons	0	0	0	0	0	0	0	0	0	0	0	0
NE 124th Avenue (South)	----	----	----	----	0	0	0	----	0	0	0	----
NE 124th Avenue (North)	0	----	0	0	0	----	----	----	----	----	0	0
NE 129th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 138th Avenue	0	0	0	0	0	0	0	0	0	0	0	0

Corridor: NE 28th Street						Limits: NE 138th Avenue to NE 162nd Avenue					
Intersecting Roadway	Traffic Movement										
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND	
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 136th/138th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 148th Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 152nd Avenue	0	0	0	0	0	0	0	0	0	0	0	0
NE 162nd Avenue	0	0	0	0	0	0	0	0	0	0	0	0

Exhibit 1B. Trip Assignment for Corridor Intersections. (continued)

Corridor: Ft. Vancouver Way/St. Johns Boulevard						Limits: Mill Plain Boulevard to NE 63rd Street					
Intersecting Roadway	Traffic Movement										
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND	
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Mill Plain Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
McLoughlin Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
Fourth Plain Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
St. Johns Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
E 33rd Street	0	0	0	0	0	0	0	0	0	0	0	0
SR 500	0	0	0	0	0	0	0	0	0	0	0	0
NE 44th Street	0	0	0	0	0	0	0	0	0	0	0	0
Minnehaha/NE 63rd Street	0	0	0	0	0	0	0	0	0	0	0	0

Corridor: NE 112th Avenue (also Chkalov Drive)						Limits: Mill Plain Boulevard to Burton Road/NE 28th Street					
Intersecting Roadway	Traffic Movement										
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND	
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Mill Plain Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
NE 9th Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 18th Street	0	0	0	0	0	0	0	0	0	0	0	0
Burton Road/NE 28th Street	0	0	0	0	0	0	0	0	0	0	0	0

Corridor: NE 112th Avenue						Limits: Burton Road/NE 28th Street to NE 51st Street					
Intersecting Roadway	Traffic Movement										
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND	
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Burton Road/NE 28th Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 49th Street	----	0	0	0	----	0	0	0	----	----	----	----
NE 51st Street	0	0	0	0	0	0	0	0	0	0	0	0

Corridor: NE 136th/138th Avenue						Limits: Mill Plain Boulevard to NE 28th Street					
Intersecting Roadway	Traffic Movement										
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND	
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
Mill Plain Boulevard	0	0	0	0	2	0	0	0	0	0	2	0
NE 4th Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 18th Street	0	0	0	0	2	0	0	0	0	0	2	0
NE 28th Street	0	0	0	0	0	0	0	0	0	0	0	0

Corridor: NE 137th/138th Avenue						Limits: NE 28th Street to Fourth Plain Boulevard					
Intersecting Roadway	Traffic Movement										
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND	
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
NE 28th Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 39th Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 49th Street	0	0	0	0	0	0	0	0	0	0	0	0
Fourth Plain Road	0	0	0	0	0	0	0	0	0	0	0	0

Exhibit 1B. Trip Assignment for Corridor Intersections. (continued)

Corridor: SE 164th Avenue	Limits: SR-14 to SE 1st Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
SR-14 eastbound ramps	----	0	0	----	----	----	0	0	----	0	---	0
SR-14 westbound ramps	0	0	----	0	---	0	----	0	0	----	----	----
Cascade Park Dr/SE 34th St	0	0	0	0	0	0	0	0	0	0	0	0
Village Loop/SE 29th Street	0	0	0	0	0	0	0	0	0	0	0	0
McGillivray Boulevard	0	0	0	0	0	0	0	0	0	0	0	0
Village Loop/SE 20th Street	0	0	0	0	0	0	0	0	0	0	0	0
SE 15th Street	0	0	0	0	0	0	0	0	0	0	0	0
SE 12th Court/Tech Center Drive	0	0	0	0	0	0	0	0	0	0	0	0
Mill Plain Boulevard	0	0	0	0	4	0	0	0	0	0	4	0
SE 1st Street	0	0	0	0	6	0	0	0	0	0	6	0

Corridor: NE 162nd/SE 164th Avenue	Limits: SE 1st Street to Fourth Plain Road											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
SE 1st Street	0	0	0	0	6	0	0	0	0	0	6	0
NE 11th Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 18th Street	0	0	0	0	4	0	0	0	0	0	4	0
NE 28th Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 34th Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 39th Street	0	0	0	0	0	0	0	0	0	0	0	0
Poplar Street/NE 45th Street	0	0	0	0	0	0	0	0	0	0	0	0
NE 65th Street	0	0	0	0	0	0	0	0	0	0	0	0
Fourth Plain Road	0	0	0	0	0	0	0	0	0	0	0	0

Corridor: NE/SE 192nd Avenue	Limits: SR-14 to NE 18th Street											
Intersecting Roadway	Traffic Movement											
	SOUTHBOUND			WESTBOUND			NORTHBOUND			EASTBOUND		
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
SR-14 eastbound ramps	----	0	6	----	----	----	0	0	----	0	----	0
SR-14 westbound ramps	0	6	----	7	----	0	----	0	0	----	----	----
Brady Road	----	6	0	0	----	0	0	7	----	----	----	----
SE 34th Street/Pacific Rim Blvd	0	6	0	0	0	0	0	7	0	0	0	0
SE 31st Street	----	6	0	0	----	0	0	7	----	----	----	----
SE 20th Street	0	6	0	0	0	0	0	7	0	0	0	0
SE 15th Street	0	6	0	0	0	0	0	7	0	0	0	0
SE 12th Way	0	6	----	----	----	----	----	7	0	0	----	0
Westridge Boulevard	----	6	0	0	----	0	0	7	----	----	----	----
Mill Plain Boulevard	4	6	0	0	0	0	0	7	0	0	0	4
SE 1st Street	6	10	0	0	0	0	0	11	0	0	0	6
NE 6th Street	----	16	0	0	----	0	0	17	----	----	----	----
NE 9th Street	0	16	----	----	----	----	----	17	0	0	----	0
NE 11th Street	----	16	0	0	----	0	0	17	----	----	----	----
NE 13th Street	----	0	12	12	----	16	17	0	----	----	----	----
NE 18th Street	----	----	----	----	0	0	0	----	12	12	0	----

Table 6: 2035 PM Peak Hour Mitigated Intersection Level of Service

Roadway	Limits	Description	Benefits
Goodwin Road	192nd Avenue to Friberg Street	An improvement is needed to provide additional capacity between Vancouver and Camas. No specific project has been identified, but could include: • widening of 13th Street • constructing an 18th Street connection • or a combination of the two	• Modeling shows there will be a high travel demand in the future between Vancouver and northern Camas. Either two three-lane corridors or one five-lane corridor will be needed to connect 192nd and Goodwin/28th.
Goodwin Road	Friberg Street to Ingle Road	High travel demand along this corridor will require a five-lane section to provide capacity between Vancouver and northeastern Camas.	• Capacity improvement for key corridor • Safety improvement for key corridor
Goodwin Road	Ingle Road to 242nd Avenue	Traffic forecasts indicate a three-lane section, in combination with the proposed 242nd Extension/East-West Arterial Roadway will provide sufficient capacity in this corridor	• Lower cost than originally anticipated (3-lane vs. 5-lane section • Improved capacity and safety
Camas Meadows Drive	Payne to Lake Road	Extend Camas Meadows Drive from Payne Street to Lake Road along Larkspur alignment as a three-lane collector	• Improved capacity and safety • Improves operation of Lake/Parker intersection • Eliminates the need to widen 1st/Lake to accommodate eastbound through traffic
Ingle Street Extension (New East-West Connector)	Extend Ingle Street south and east between Goodwin/28th and 232nd Street	Provides an alternative route into north portion of Camas, eliminating the need for a five-lane section on Goodwin between Ingle and 242nd Avenue	• Provides additional capacity • Provides access to new development area

Exhibit 108 APPEAL24-1001

Roadway	Limits	Description	Benefits
23rd Street Realignment	283rd Avenue to 23rd Street	Construct connection between 23rd Street Extension terminus on 283rd Avenue south of 23rd Street to 23rd Street	• Provide a direct connection between the new 23rd Street Extension (at 283rd Avenue) and the existing 23rd Street, providing access east toward Washougal
Friberg Street	1st Street to 13th Street	Widen to 3 lanes	• Provide turn lane capacity for adjacent development and growth in through traffic
38th Avenue Extension	192nd to Bybee	Construct new 3 lane roadway	• Provide a direct connection to 192nd with adequate capacity rather than a residentially fronted two lane street
38th Avenue (West)	Bybee to Parker	Widen to 3 lanes	• Provide turn lane capacity for adjacent development and growth in through traffic
38th Avenue (East)	Parker to 650 feet west of Dahlia	Widen to 3 lanes	• Provide turn lanes and increased capacity for development
Bybee Realignment	199th Avenue to 20th Street	Realign to meet new signalized intersection	• Current alignment of Bybee would not be access spacing standards between the new signal planned west of 202nd Avenue

Exhibit 108 APPEAL24-1001

Notes:

- 13th Street/18th Street Corridor: It is recognized that additional capacity (five lanes total) is needed between NE 192nd Avenue (in Vancouver) and NE Goodwin Road (in Camas). The area between these two points is located within Clark County and, while there are multiple alignment options, there are issues related to each. The most desirable option, in terms of vehicular demand and connectivity, would be a new route along the 18th Street alignment. However, there are known environmental issues with this alignment which would make development of a project very difficult. Another alternative would be to widen NE 13th Street between 192nd Avenue and Goodwin Road, however, this alignment goes through a neighborhood, and would require acquisition of residential property to build a five-lane section. A third alternative would provide two three-lane roadways, however, both environmental and neighborhood issues would need to be addressed. This analysis assumes that some sort of connection is provided (to be determined at a later date), that would provide capacity for the equivalent of a five lane roadway.

- Previous analysis has indicated that a five-lane section would be required along the Goodwin/28th corridor. Current analysis indicates that with the planned improvements in the North UGA area, including a parallel collector route, a three-lane section will work between Ingle and 242nd Avenue. Right-of-way should be reserved for a five-lane section, as ultimately, it may be required.

- In the 2007 Framework Plan, it was recommended that Camas Meadows Drive be realigned to intersect with 1st Street/Lake Road at Larkspur/Parker Street. A key purpose of this realignment was to consolidate access and the need for additional traffic signals along 1st Street/Lake Road. Alternatives to this realignment were considered, such as improving the existing Payne Street alignment. However, the Larkspur alignment significantly improves operations at the Lake Road/1st Street/Parker intersection and preserves pedestrian access on all intersection approaches. Pedestrian access may have been at risk on the west approach to the intersection due to the high number of eastbound right turns/northbound left turns that can be reduced by extending Parker north to align with Camas Meadows Drive. Camas Meadows Drive will be improved between Payne Street and Lake Road as a three-lane collector.

- The previous TIF Update recommended improvements to Crown Road. However, current analysis reflects changing development patterns with an increased traffic shed to the north. Current modeling indicates that the current capacity of Crown Road should be adequate to accommodate future growth in Camas.

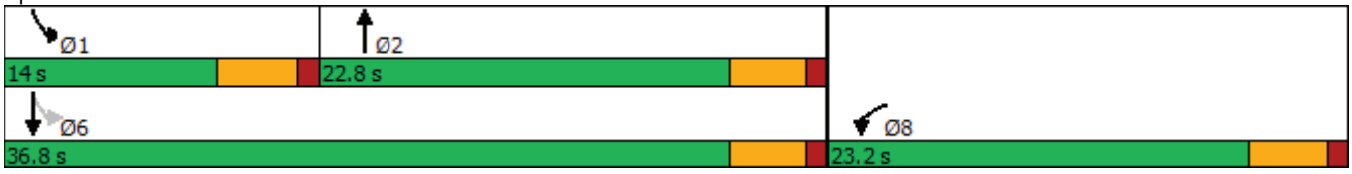
Lanes, Volumes, Timings
1: NE 192nd Avenue & NE 13th Street

2023 Adjusted Existing Traffic, AM Peak Hour
09/09/2023

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	186	240	175	74	362	270
Future Volume (vph)	186	240	175	74	362	270
Confl. Peds. (#/hr)	1	2		1	2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	4%	4%	7%	7%
Shared Lane Traffic (%)						
Turn Type	Prot		NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases					6	
Detector Phase	8		2		1	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	23.2		22.5		9.5	22.5
Total Split (s)	23.2		22.8		14.0	36.8
Total Split (%)	38.7%		38.0%		23.3%	61.3%
Yellow Time (s)	3.5		3.5		3.5	3.5
All-Red Time (s)	1.0		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.5		4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		Max		None	Max
Act Effct Green (s)	16.5		18.5		32.4	32.4
Actuated g/C Ratio	0.28		0.32		0.56	0.56
v/c Ratio	0.86		0.48		0.72	0.30
Control Delay	32.1		17.7		17.8	8.4
Queue Delay	0.0		0.0		0.0	0.0
Total Delay	32.1		17.7		17.8	8.4
LOS	C		B		B	A
Approach Delay	32.1		17.7			13.8
Approach LOS	C		B			B

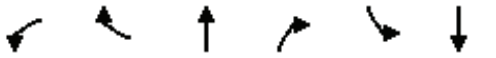
Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 57.9	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 20.5	Intersection LOS: C
Intersection Capacity Utilization 70.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: NE 192nd Avenue & NE 13th Street



HCM 6th Signalized Intersection Summary
1: NE 192nd Avenue & NE 13th Street

2023 Adjusted Existing Traffic, AM Peak Hour
09/09/2023



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	186	240	175	74	362	270
Future Volume (veh/h)	186	240	175	74	362	270
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1841	1841	1796	1796
Adj Flow Rate, veh/h	207	267	194	82	402	300
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	4	4	7	7
Cap, veh/h	225	290	375	159	578	969
Arrive On Green	0.31	0.31	0.31	0.31	0.16	0.54
Sat Flow, veh/h	724	934	1227	519	1711	1796
Grp Volume(v), veh/h	475	0	0	276	402	300
Grp Sat Flow(s),veh/h/ln	1662	0	0	1746	1711	1796
Q Serve(g_s), s	16.5	0.0	0.0	7.8	9.2	5.5
Cycle Q Clear(g_c), s	16.5	0.0	0.0	7.8	9.2	5.5
Prop In Lane	0.44	0.56		0.30	1.00	
Lane Grp Cap(c), veh/h	515	0	0	534	578	969
V/C Ratio(X)	0.92	0.00	0.00	0.52	0.70	0.31
Avail Cap(c_a), veh/h	519	0	0	534	578	969
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.9	0.0	0.0	17.1	11.2	7.6
Incr Delay (d2), s/veh	21.9	0.0	0.0	3.5	3.6	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	0.0	0.0	3.2	3.2	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	41.9	0.0	0.0	20.7	14.8	8.4
LnGrp LOS	D	A	A	C	B	A
Approach Vol, veh/h	475		276			702
Approach Delay, s/veh	41.9		20.7			12.1
Approach LOS	D		C			B

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	14.0	22.8			36.8	23.1
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	9.5	18.3			32.3	18.7
Max Q Clear Time (g_c+I1), s	11.2	9.8			7.5	18.5
Green Ext Time (p_c), s	0.0	0.9			1.6	0.0

Intersection Summary	
HCM 6th Ctrl Delay	23.5
HCM 6th LOS	C

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	443	0	0	431		0
Future Volume (vph)	443	0	0	431	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	2%	2%	2%	2%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization	33.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	443	0	0	431	1	0
Future Vol, veh/h	443	0	0	431	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	20	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	5	2	2	2	2
Mvmt Flow	492	0	0	479	1	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	492	0	971	492
Stage 1	-	-	-	-	492	-
Stage 2	-	-	-	-	479	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1071	-	280	577
Stage 1	-	-	-	-	615	-
Stage 2	-	-	-	-	623	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1071	-	280	577
Mov Cap-2 Maneuver	-	-	-	-	280	-
Stage 1	-	-	-	-	615	-
Stage 2	-	-	-	-	623	-

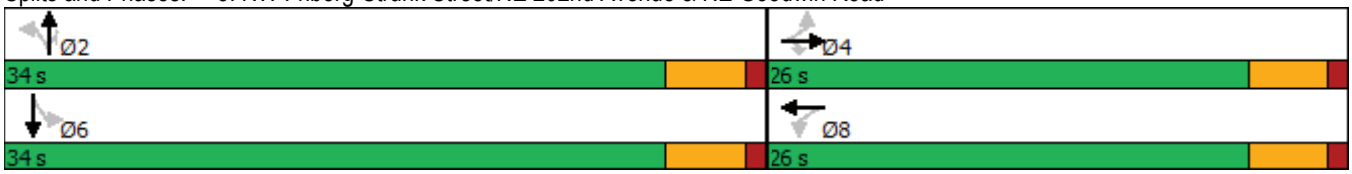
Approach	EB	WB	NB
HCM Control Delay, s	0	0	17.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	280	-	-	1071	-
HCM Lane V/C Ratio	0.004	-	-	-	-
HCM Control Delay (s)	17.9	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

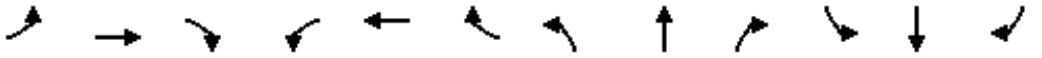
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	134	308	101	289	5	139	4	66	2	10	3
Future Volume (vph)	1	134	308	101	289	5	139	4	66	2	10	3
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	3%	3%	3%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	25.2	25.2	25.2	25.5	25.5		33.2	33.2	33.2	33.2	33.2	
Total Split (s)	26.0	26.0	26.0	26.0	26.0		34.0	34.0	34.0	34.0	34.0	
Total Split (%)	43.3%	43.3%	43.3%	43.3%	43.3%		56.7%	56.7%	56.7%	56.7%	56.7%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		4.5	4.5	4.5	4.5			4.5	4.5		4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)		15.1	15.1	15.1	15.1			29.7	29.7		29.7	
Actuated g/C Ratio		0.28	0.28	0.28	0.28			0.55	0.55		0.55	
v/c Ratio		0.31	0.52	0.35	0.67			0.22	0.09		0.02	
Control Delay		16.5	5.0	18.0	23.5			8.4	2.7		6.5	
Queue Delay		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Delay		16.5	5.0	18.0	23.5			8.4	2.7		6.5	
LOS		B	A	B	C			A	A		A	
Approach Delay		8.5			22.1			6.6			6.5	
Approach LOS		A			C			A			A	

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 53.8	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 13.2	Intersection LOS: B
Intersection Capacity Utilization 50.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road



HCM 6th Signalized Intersection Summary 2023 Adjusted Existing Traffic, AM Peak Hour
3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road 09/09/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	134	308	101	289	5	139	4	66	2	10	3
Future Volume (veh/h)	1	134	308	101	289	5	139	4	66	2	10	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1870	1870	1870	1856	1856	1856	1900	1900	1900
Adj Flow Rate, veh/h	1	158	362	119	340	6	164	5	78	2	12	4
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	5	5	5	2	2	2	3	3	3	0	0	0
Cap, veh/h	68	515	437	323	517	9	877	25	865	134	704	218
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.55	0.55	0.55	0.55	0.55	0.55
Sat Flow, veh/h	2	1822	1547	882	1832	32	1355	45	1572	107	1280	396
Grp Volume(v), veh/h	159	0	362	119	0	346	169	0	78	18	0	0
Grp Sat Flow(s),veh/h/ln	1824	0	1547	882	0	1865	1400	0	1572	1783	0	0
Q Serve(g_s), s	0.0	0.0	11.8	6.6	0.0	8.8	3.0	0.0	1.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.7	0.0	11.8	10.3	0.0	8.8	3.2	0.0	1.3	0.2	0.0	0.0
Prop In Lane	0.01		1.00	1.00		0.02	0.97		1.00	0.11		0.22
Lane Grp Cap(c), veh/h	583	0	437	323	0	527	902	0	865	1055	0	0
V/C Ratio(X)	0.27	0.00	0.83	0.37	0.00	0.66	0.19	0.00	0.09	0.02	0.00	0.00
Avail Cap(c_a), veh/h	798	0	620	427	0	747	902	0	865	1055	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	15.1	0.0	18.0	19.2	0.0	17.0	6.2	0.0	5.7	5.5	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	6.4	0.7	0.0	1.4	0.5	0.0	0.2	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	4.4	1.2	0.0	3.4	0.8	0.0	0.3	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.4	0.0	24.4	19.9	0.0	18.4	6.6	0.0	5.9	5.5	0.0	0.0
LnGrp LOS	B	A	C	B	A	B	A	A	A	A	A	A
Approach Vol, veh/h		521			465			247			18	
Approach Delay, s/veh		21.7			18.7			6.4			5.5	
Approach LOS		C			B			A			A	

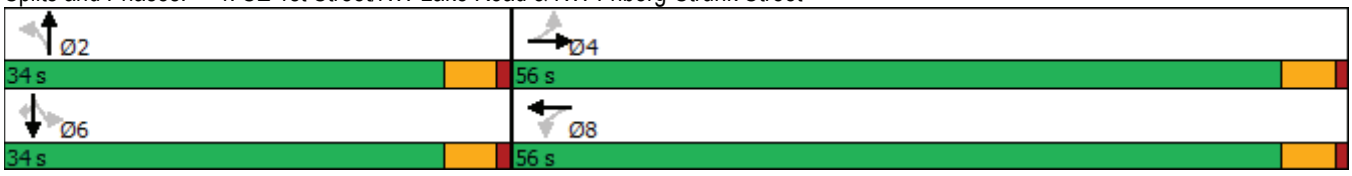
Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.0	19.7	34.0	19.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	29.5	21.5	29.5	21.5
Max Q Clear Time (g_c+I1), s	5.2	13.8	2.2	12.3
Green Ext Time (p_c), s	1.1	1.4	0.0	1.8

Intersection Summary	
HCM 6th Ctrl Delay	17.3
HCM 6th LOS	B

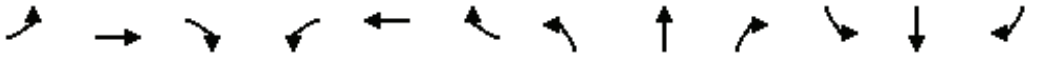
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	345	247	0	0	267	163	0	0	0	131	0	185
Future Volume (vph)	345	247	0	0	267	163	0	0	0	131	0	185
Confl. Peds. (#/hr)	9		2	1		8	2		1	8		9
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	0%	0%	0%	3%	3%	3%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA					Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		25.5	25.5		33.2	33.2		33.2	33.2	33.2
Total Split (s)	56.0	56.0		56.0	56.0		34.0	34.0		34.0	34.0	34.0
Total Split (%)	62.2%	62.2%		62.2%	62.2%		37.8%	37.8%		37.8%	37.8%	37.8%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	Max
Act Effct Green (s)	51.5	51.5			51.5						29.5	29.5
Actuated g/C Ratio	0.57	0.57			0.57						0.33	0.33
v/c Ratio	1.03	0.16			0.28						0.37	0.36
Control Delay	72.7	9.3			6.2						26.2	4.8
Queue Delay	0.0	0.0			0.0						0.0	0.0
Total Delay	72.7	9.3			6.2						26.2	4.8
LOS	E	A			A						C	A
Approach Delay		46.3			6.2						13.7	
Approach LOS		D			A						B	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.03	
Intersection Signal Delay: 25.7	Intersection LOS: C
Intersection Capacity Utilization 68.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street



HCM 6th Signalized Intersection Summary 2023 Adjusted Existing Traffic, AM Peak Hour
4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street 09/09/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	345	247	0	0	267	163	0	0	0	131	0	185
Future Volume (veh/h)	345	247	0	0	267	163	0	0	0	131	0	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1900	1900	1900	1856	1856	1856
Adj Flow Rate, veh/h	448	321	0	0	347	212	0	0	0	170	0	240
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Percent Heavy Veh, %	3	3	3	1	1	1	0	0	0	3	3	3
Cap, veh/h	491	2017	0	80	1229	736	0	623	0	540	0	511
Arrive On Green	0.57	0.57	0.00	0.00	0.57	0.57	0.00	0.00	0.00	0.33	0.00	0.33
Sat Flow, veh/h	842	3618	0	1067	2147	1286	0	1900	0	1404	0	1560
Grp Volume(v), veh/h	448	321	0	0	288	271	0	0	0	170	0	240
Grp Sat Flow(s),veh/h/ln	842	1763	0	1067	1791	1643	0	1900	0	1404	0	1560
Q Serve(g_s), s	43.9	3.9	0.0	0.0	7.4	7.6	0.0	0.0	0.0	8.3	0.0	11.0
Cycle Q Clear(g_c), s	51.5	3.9	0.0	0.0	7.4	7.6	0.0	0.0	0.0	8.3	0.0	11.0
Prop In Lane	1.00		0.00	1.00		0.78	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	491	2017	0	80	1025	940	0	623	0	540	0	511
V/C Ratio(X)	0.91	0.16	0.00	0.00	0.28	0.29	0.00	0.00	0.00	0.31	0.00	0.47
Avail Cap(c_a), veh/h	491	2017	0	80	1025	940	0	623	0	540	0	511
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.9	9.1	0.0	0.0	9.8	9.9	0.0	0.0	0.0	23.1	0.0	24.0
Incr Delay (d2), s/veh	21.4	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	1.5	0.0	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.0	1.3	0.0	0.0	2.6	2.4	0.0	0.0	0.0	2.8	0.0	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.3	9.1	0.0	0.0	10.0	10.0	0.0	0.0	0.0	24.7	0.0	27.1
LnGrp LOS	D	A	A	A	A	B	A	A	A	C	A	C
Approach Vol, veh/h		769			559			0			410	
Approach Delay, s/veh		30.8			10.0			0.0			26.1	
Approach LOS		C			A						C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		34.0		56.0		34.0		56.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		29.5		51.5		29.5		51.5				
Max Q Clear Time (g_c+I1), s		0.0		53.5		13.0		9.6				
Green Ext Time (p_c), s		0.0		0.0		1.5		3.6				

Intersection Summary												
HCM 6th Ctrl Delay			23.0									
HCM 6th LOS			C									

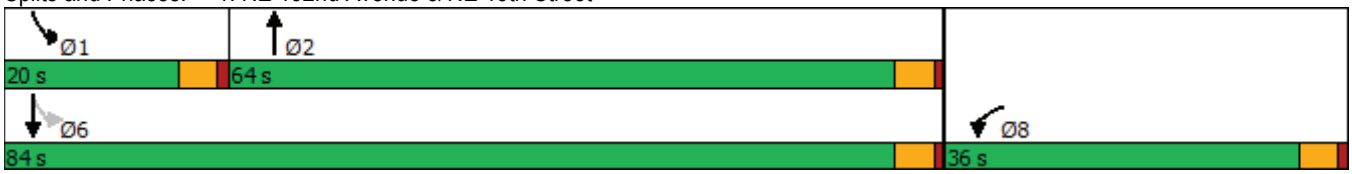
Lanes, Volumes, Timings
1: NE 192nd Avenue & NE 13th Street

2023 Adjusted Existing Traffic, PM Peak Hour
09/09/2023

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	141	249	540	183	228	409
Future Volume (vph)	141	249	540	183	228	409
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)						
Turn Type	Prot		NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases					6	
Detector Phase	8		2		1	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	23.2		22.5		9.5	22.5
Total Split (s)	36.0		64.0		20.0	84.0
Total Split (%)	30.0%		53.3%		16.7%	70.0%
Yellow Time (s)	3.5		3.5		3.5	3.5
All-Red Time (s)	1.0		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.5		4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		Max		None	Max
Act Effct Green (s)	28.9		61.4		79.6	79.6
Actuated g/C Ratio	0.25		0.52		0.68	0.68
v/c Ratio	0.92		0.84		0.77	0.36
Control Delay	62.7		34.0		33.6	9.4
Queue Delay	0.0		0.0		0.0	0.0
Total Delay	62.7		34.0		33.6	9.4
LOS	E		C		C	A
Approach Delay	62.7		34.0			18.1
Approach LOS	E		C			B

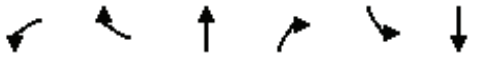
Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 117.5	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 34.6	Intersection LOS: C
Intersection Capacity Utilization 86.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: NE 192nd Avenue & NE 13th Street



HCM 6th Signalized Intersection Summary
1: NE 192nd Avenue & NE 13th Street

2023 Adjusted Existing Traffic, PM Peak Hour
09/09/2023



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	141	249	540	183	228	409
Future Volume (veh/h)	141	249	540	183	228	409
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	157	277	600	203	253	454
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	158	278	736	249	326	1249
Arrive On Green	0.26	0.26	0.55	0.55	0.08	0.66
Sat Flow, veh/h	601	1060	1347	456	1795	1885
Grp Volume(v), veh/h	435	0	0	803	253	454
Grp Sat Flow(s),veh/h/ln	1664	0	0	1803	1795	1885
Q Serve(g_s), s	31.3	0.0	0.0	43.7	7.1	12.8
Cycle Q Clear(g_c), s	31.3	0.0	0.0	43.7	7.1	12.8
Prop In Lane	0.36	0.64		0.25	1.00	
Lane Grp Cap(c), veh/h	437	0	0	985	326	1249
V/C Ratio(X)	1.00	0.00	0.00	0.82	0.78	0.36
Avail Cap(c_a), veh/h	437	0	0	985	416	1249
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.2	0.0	0.0	22.3	22.6	9.0
Incr Delay (d2), s/veh	41.9	0.0	0.0	7.4	6.9	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.7	0.0	0.0	19.1	4.4	5.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	86.0	0.0	0.0	29.7	29.5	9.8
LnGrp LOS	F	A	A	C	C	A
Approach Vol, veh/h	435		803			707
Approach Delay, s/veh	86.0		29.7			16.9
Approach LOS	F		C			B

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	13.9	70.1			84.0	36.0
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	15.5	59.5			79.5	31.5
Max Q Clear Time (g_c+I1), s	9.1	45.7			14.8	33.3
Green Ext Time (p_c), s	0.4	4.8			2.9	0.0

Intersection Summary	
HCM 6th Ctrl Delay	37.6
HCM 6th LOS	D

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	390	1	0	383	0	0
Future Volume (vph)	390	1	0	383	0	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	1%	1%	2%	2%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization	30.2%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	390	1	0	383	0	0
Future Vol, veh/h	390	1	0	383	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	20	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	1	1	2	2
Mvmt Flow	433	1	0	426	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	434	0	859	433
Stage 1	-	-	-	-	433	-
Stage 2	-	-	-	-	426	-
Critical Hdwy	-	-	4.11	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.209	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1131	-	327	623
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	659	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1131	-	327	623
Mov Cap-2 Maneuver	-	-	-	-	327	-
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	659	-

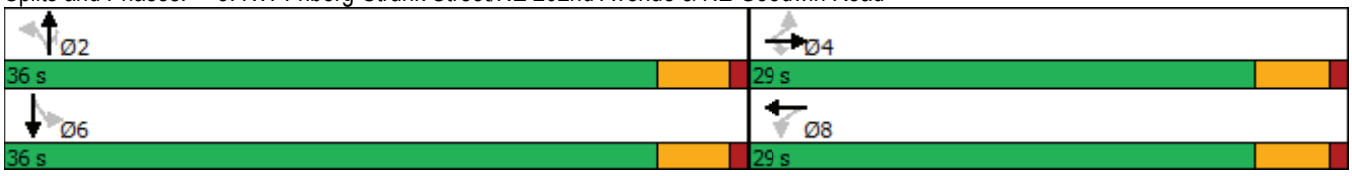
Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1131	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

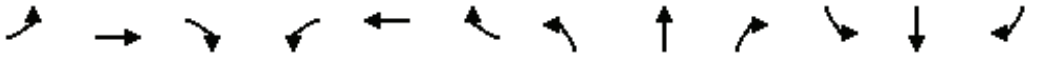
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	280	101	109	265	2	115	12	227	0	6	3
Future Volume (vph)	9	280	101	109	265	2	115	12	227	0	6	3
Confl. Peds. (#/hr)	5		5	7		7	5		7	7		5
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm		NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	25.2	25.2	25.2	25.5	25.5		33.2	33.2	33.2	33.2	33.2	
Total Split (s)	29.0	29.0	29.0	29.0	29.0		36.0	36.0	36.0	36.0	36.0	
Total Split (%)	44.6%	44.6%	44.6%	44.6%	44.6%		55.4%	55.4%	55.4%	55.4%	55.4%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		4.5	4.5	4.5	4.5			4.5	4.5		4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)		15.1	15.1	15.1	15.1			31.7	31.7		31.7	
Actuated g/C Ratio		0.27	0.27	0.27	0.27			0.57	0.57		0.57	
v/c Ratio		0.64	0.22	0.61	0.59			0.17	0.26		0.01	
Control Delay		24.0	4.8	31.3	22.4			7.8	2.1		6.3	
Queue Delay		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Delay		24.0	4.8	31.3	22.4			7.8	2.1		6.3	
LOS		C	A	C	C			A	A		A	
Approach Delay		19.0			25.0			4.2			6.3	
Approach LOS		B			C			A			A	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 55.9	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 16.3	Intersection LOS: B
Intersection Capacity Utilization 61.5%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road



HCM 6th Signalized Intersection Summary 2023 Adjusted Existing Traffic, PM Peak Hour
3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road 09/09/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	280	101	109	265	2	115	12	227	0	6	3
Future Volume (veh/h)	9	280	101	109	265	2	115	12	227	0	6	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1885	1885	1885	1885	1885	1885	1900	1900	1900
Adj Flow Rate, veh/h	10	315	113	122	298	2	129	13	255	0	7	3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	0	0	0
Cap, veh/h	68	591	506	291	592	4	807	76	844	0	669	287
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.53	0.53	0.53	0.00	0.53	0.53
Sat Flow, veh/h	18	1868	1597	964	1870	13	1300	143	1587	0	1259	540
Grp Volume(v), veh/h	325	0	113	122	0	300	142	0	255	0	0	10
Grp Sat Flow(s),veh/h/ln	1886	0	1597	964	0	1883	1443	0	1587	0	0	1799
Q Serve(g_s), s	0.0	0.0	3.1	7.1	0.0	7.7	2.8	0.0	5.3	0.0	0.0	0.2
Cycle Q Clear(g_c), s	8.4	0.0	3.1	15.4	0.0	7.7	3.0	0.0	5.3	0.0	0.0	0.2
Prop In Lane	0.03		1.00	1.00		0.01	0.91		1.00	0.00		0.30
Lane Grp Cap(c), veh/h	660	0	506	291	0	596	883	0	844	0	0	956
V/C Ratio(X)	0.49	0.00	0.22	0.42	0.00	0.50	0.16	0.00	0.30	0.00	0.00	0.01
Avail Cap(c_a), veh/h	840	0	660	384	0	778	883	0	844	0	0	956
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	16.7	0.0	14.9	23.1	0.0	16.5	7.2	0.0	7.7	0.0	0.0	6.5
Incr Delay (d2), s/veh	0.6	0.0	0.2	1.0	0.0	0.7	0.4	0.0	0.9	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	1.0	1.5	0.0	3.0	0.8	0.0	1.5	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.3	0.0	15.1	24.0	0.0	17.1	7.6	0.0	8.7	0.0	0.0	6.6
LnGrp LOS	B	A	B	C	A	B	A	A	A	A	A	A
Approach Vol, veh/h		438			422			397			10	
Approach Delay, s/veh		16.7			19.1			8.3			6.6	
Approach LOS		B			B			A			A	

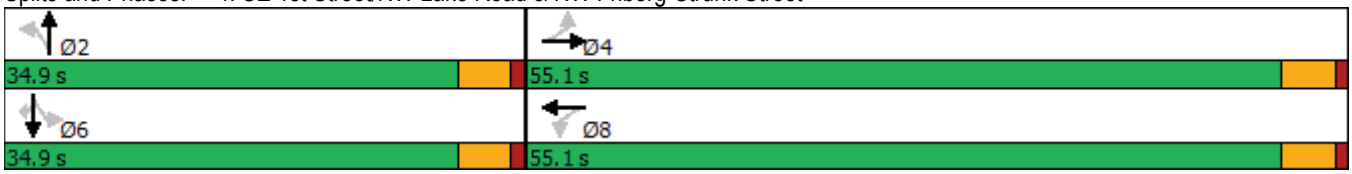
Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	36.0	23.3	36.0	23.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	31.5	24.5	31.5	24.5
Max Q Clear Time (g_c+I1), s	7.3	10.4	2.2	17.4
Green Ext Time (p_c), s	1.6	1.9	0.0	1.3

Intersection Summary	
HCM 6th Ctrl Delay	14.8
HCM 6th LOS	B

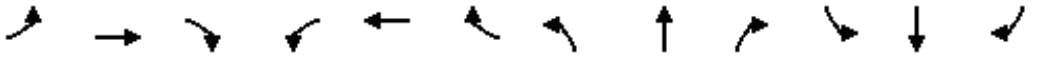
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	250	567	2	0	402	116	2	0	0	101	0	141
Future Volume (vph)	250	567	2	0	402	116	2	0	0	101	0	141
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		25.5	25.5		33.2	33.2		33.2	33.2	33.2
Total Split (s)	55.1	55.1		55.1	55.1		34.9	34.9		34.9	34.9	34.9
Total Split (%)	61.2%	61.2%		61.2%	61.2%		38.8%	38.8%		38.8%	38.8%	38.8%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	Max
Act Effct Green (s)	30.1	30.1			30.1			31.3			31.3	31.3
Actuated g/C Ratio	0.43	0.43			0.43			0.44			0.44	0.44
v/c Ratio	0.84	0.40			0.37			0.00			0.17	0.19
Control Delay	40.8	13.8			11.7			17.5			17.2	4.3
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	40.8	13.8			11.7			17.5			17.2	4.3
LOS	D	B			B			B			B	A
Approach Delay		22.0			11.7			17.5			9.7	
Approach LOS		C			B			B			A	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 70.7	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 16.7	Intersection LOS: B
Intersection Capacity Utilization 45.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street



HCM 6th Signalized Intersection Summary 2023 Adjusted Existing Traffic, PM Peak Hour
4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street 09/09/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	567	2	0	402	116	2	0	0	101	0	141
Future Volume (veh/h)	250	567	2	0	402	116	2	0	0	101	0	141
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	269	610	2	0	432	125	2	0	0	109	0	152
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	422	1751	6	96	1313	377	557	0	0	695	0	653
Arrive On Green	0.47	0.47	0.47	0.00	0.47	0.47	0.41	0.00	0.00	0.41	0.00	0.41
Sat Flow, veh/h	866	3691	12	823	2768	794	1137	0	0	1476	0	1610
Grp Volume(v), veh/h	269	298	314	0	280	277	2	0	0	109	0	152
Grp Sat Flow(s),veh/h/ln	866	1805	1898	823	1805	1757	1137	0	0	1476	0	1610
Q Serve(g_s), s	21.1	7.8	7.8	0.0	7.2	7.4	0.1	0.0	0.0	0.0	0.0	4.6
Cycle Q Clear(g_c), s	28.5	7.8	7.8	0.0	7.2	7.4	2.9	0.0	0.0	2.9	0.0	4.6
Prop In Lane	1.00		0.01	1.00		0.45	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	422	856	900	96	856	833	557	0	0	695	0	653
V/C Ratio(X)	0.64	0.35	0.35	0.00	0.33	0.33	0.00	0.00	0.00	0.16	0.00	0.23
Avail Cap(c_a), veh/h	595	1218	1281	261	1218	1186	557	0	0	695	0	653
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.2	12.4	12.4	0.0	12.3	12.3	15.0	0.0	0.0	14.1	0.0	14.6
Incr Delay (d2), s/veh	1.6	0.2	0.2	0.0	0.2	0.2	0.0	0.0	0.0	0.5	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	2.8	2.9	0.0	2.6	2.5	0.0	0.0	0.0	1.1	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.8	12.6	12.6	0.0	12.5	12.5	15.0	0.0	0.0	14.6	0.0	15.5
LnGrp LOS	C	B	B	A	B	B	B	A	A	B	A	B
Approach Vol, veh/h		881			557			2			261	
Approach Delay, s/veh		15.7			12.5			15.0			15.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.9	40.1	34.9	40.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	30.4	50.6	30.4	50.6
Max Q Clear Time (g_c+I1), s	4.9	30.5	6.6	9.4
Green Ext Time (p_c), s	0.0	5.1	1.0	3.5

Intersection Summary	
HCM 6th Ctrl Delay	14.6
HCM 6th LOS	B

Lanes, Volumes, Timings
1: NE 192nd Avenue & NE 13th Street

2026 Background Traffic, AM Peak Hour
09/10/2023

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	302	297	186	107	403	286
Future Volume (vph)	302	297	186	107	403	286
Confl. Peds. (#/hr)	1	2		1	2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	4%	4%	7%	7%
Shared Lane Traffic (%)						
Turn Type	Prot		NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases					6	
Detector Phase	8		2		1	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	23.2		22.5		9.5	22.5
Total Split (s)	40.0		25.0		25.0	50.0
Total Split (%)	44.4%		27.8%		27.8%	55.6%
Yellow Time (s)	3.5		3.5		3.5	3.5
All-Red Time (s)	1.0		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.5		4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		Max		None	Max
Act Effct Green (s)	34.6		21.3		45.5	45.5
Actuated g/C Ratio	0.39		0.24		0.51	0.51
v/c Ratio	0.97		0.75		0.91	0.35
Control Delay	52.7		41.8		42.1	14.6
Queue Delay	0.0		0.0		0.0	0.0
Total Delay	52.7		41.8		42.1	14.6
LOS	D		D		D	B
Approach Delay	52.7		41.8			30.7
Approach LOS	D		D			C

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 89.1	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 41.1	Intersection LOS: D
Intersection Capacity Utilization 85.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: NE 192nd Avenue & NE 13th Street

HCM 6th Signalized Intersection Summary
1: NE 192nd Avenue & NE 13th Street

2026 Background Traffic, AM Peak Hour
09/10/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	302	297	186	107	403	286
Future Volume (veh/h)	302	297	186	107	403	286
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1841	1841	1796	1796
Adj Flow Rate, veh/h	336	330	207	119	448	318
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	4	4	7	7
Cap, veh/h	333	327	268	154	510	908
Arrive On Green	0.39	0.39	0.24	0.24	0.21	0.51
Sat Flow, veh/h	844	829	1096	630	1711	1796
Grp Volume(v), veh/h	667	0	0	326	448	318
Grp Sat Flow(s),veh/h/ln	1676	0	0	1726	1711	1796
Q Serve(g_s), s	35.5	0.0	0.0	15.8	16.7	9.6
Cycle Q Clear(g_c), s	35.5	0.0	0.0	15.8	16.7	9.6
Prop In Lane	0.50	0.49		0.37	1.00	
Lane Grp Cap(c), veh/h	661	0	0	422	510	908
V/C Ratio(X)	1.01	0.00	0.00	0.77	0.88	0.35
Avail Cap(c_a), veh/h	661	0	0	422	539	908
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.3	0.0	0.0	31.7	19.4	13.4
Incr Delay (d2), s/veh	37.2	0.0	0.0	12.8	14.7	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	20.0	0.0	0.0	7.8	8.0	3.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	64.4	0.0	0.0	44.5	34.0	14.4
LnGrp LOS	F	A	A	D	C	B
Approach Vol, veh/h	667		326			766
Approach Delay, s/veh	64.4		44.5			25.9
Approach LOS	E		D			C

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	23.5	26.5			50.0	40.0
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	20.5	20.5			45.5	35.5
Max Q Clear Time (g_c+I1), s	18.7	17.8			11.6	37.5
Green Ext Time (p_c), s	0.3	0.5			1.9	0.0

Intersection Summary	
HCM 6th Ctrl Delay	44.0
HCM 6th LOS	D

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	518	0	0	606	1	0
Future Volume (vph)	518	0	0	606	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	2%	2%	2%	2%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

Exhibit 108 APPEAL24-1001

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	518	0	0	606	1	0
Future Vol, veh/h	518	0	0	606	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	20	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	5	2	2	2	2
Mvmt Flow	576	0	0	673	1	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	576	0	1249	576
Stage 1	-	-	-	-	576	-
Stage 2	-	-	-	-	673	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	997	-	191	517
Stage 1	-	-	-	-	562	-
Stage 2	-	-	-	-	507	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	997	-	191	517
Mov Cap-2 Maneuver	-	-	-	-	191	-
Stage 1	-	-	-	-	562	-
Stage 2	-	-	-	-	507	-

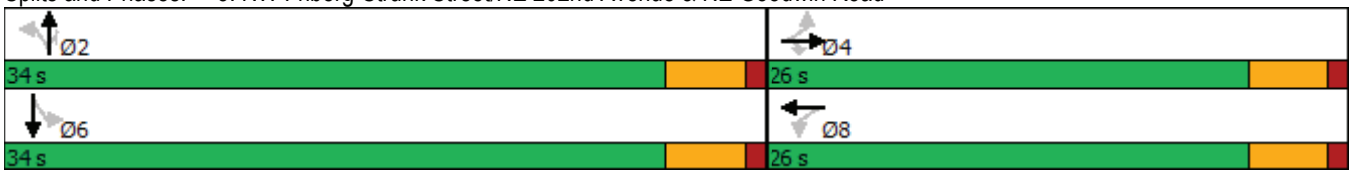
Approach	EB	WB	NB
HCM Control Delay, s	0	0	24
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	191	-	-	997	-
HCM Lane V/C Ratio	0.006	-	-	-	-
HCM Control Delay (s)	24	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	187	329	171	446	5	156	4	93	2	11	3
Future Volume (vph)	1	187	329	171	446	5	156	4	93	2	11	3
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	3%	3%	3%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	25.2	25.2	25.2	25.5	25.5		33.2	33.2	33.2	33.2	33.2	
Total Split (s)	26.0	26.0	26.0	26.0	26.0		34.0	34.0	34.0	34.0	34.0	
Total Split (%)	43.3%	43.3%	43.3%	43.3%	43.3%		56.7%	56.7%	56.7%	56.7%	56.7%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		4.5	4.5	4.5	4.5			4.5	4.5		4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)		19.7	19.7	19.7	19.7			29.6	29.6		29.6	
Actuated g/C Ratio		0.34	0.34	0.34	0.34			0.51	0.51		0.51	
v/c Ratio		0.36	0.50	0.54	0.85			0.28	0.13		0.02	
Control Delay		16.4	4.4	21.8	32.6			10.3	2.5		7.1	
Queue Delay		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Delay		16.4	4.4	21.8	32.6			10.3	2.5		7.1	
LOS		B	A	C	C			B	A		A	
Approach Delay		8.7			29.6			7.4			7.1	
Approach LOS		A			C			A			A	

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 58.3	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 17.7	Intersection LOS: B
Intersection Capacity Utilization 60.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road



HCM 6th Signalized Intersection Summary 2026 Background Traffic, AM Peak Hour
3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road 09/10/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	187	329	171	446	5	156	4	93	2	11	3
Future Volume (veh/h)	1	187	329	171	446	5	156	4	93	2	11	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1870	1870	1870	1856	1856	1856	1900	1900	1900
Adj Flow Rate, veh/h	1	220	387	201	525	6	184	5	109	2	13	4
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	5	5	5	2	2	2	3	3	3	0	0	0
Cap, veh/h	61	653	554	340	661	8	786	20	773	115	645	185
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.49	0.49	0.49	0.49	0.49	0.49
Sat Flow, veh/h	1	1823	1547	813	1845	21	1358	40	1572	99	1312	376
Grp Volume(v), veh/h	221	0	387	201	0	531	189	0	109	19	0	0
Grp Sat Flow(s),veh/h/ln	1825	0	1547	813	0	1867	1398	0	1572	1787	0	0
Q Serve(g_s), s	0.0	0.0	12.8	14.4	0.0	15.3	4.4	0.0	2.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.3	0.0	12.8	19.7	0.0	15.3	4.7	0.0	2.3	0.3	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.01	0.97		1.00	0.11		0.21
Lane Grp Cap(c), veh/h	714	0	554	340	0	669	806	0	773	945	0	0
V/C Ratio(X)	0.31	0.00	0.70	0.59	0.00	0.79	0.23	0.00	0.14	0.02	0.00	0.00
Avail Cap(c_a), veh/h	714	0	554	340	0	669	806	0	773	945	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.1	0.0	16.5	21.2	0.0	17.3	8.9	0.0	8.3	7.8	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	3.8	2.7	0.0	6.6	0.7	0.0	0.4	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	4.5	2.7	0.0	6.8	1.3	0.0	0.7	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.3	0.0	20.3	24.0	0.0	23.8	9.6	0.0	8.7	7.9	0.0	0.0
LnGrp LOS	B	A	C	C	A	C	A	A	A	A	A	A
Approach Vol, veh/h		608			732			298			19	
Approach Delay, s/veh		18.1			23.9			9.3			7.9	
Approach LOS		B			C			A			A	

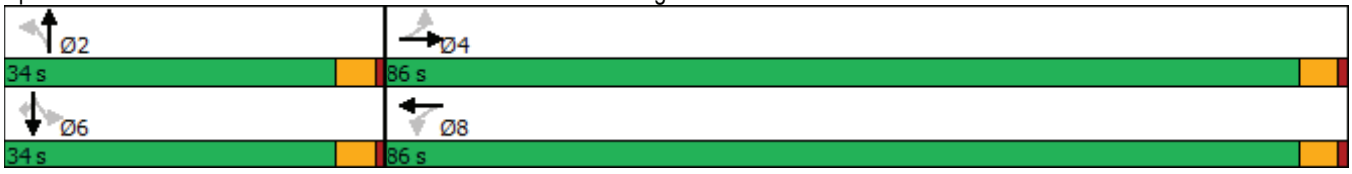
Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.0	26.0	34.0	26.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	29.5	21.5	29.5	21.5
Max Q Clear Time (g_c+I1), s	6.7	14.8	2.3	21.7
Green Ext Time (p_c), s	1.3	1.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	18.9
HCM 6th LOS	B

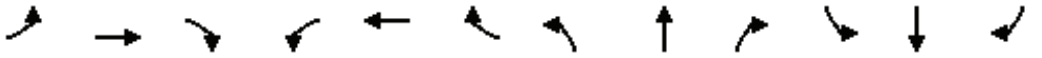
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	376	269	0	0	287	186	0	0	0	184	0	232
Future Volume (vph)	376	269	0	0	287	186	0	0	0	184	0	232
Confl. Peds. (#/hr)	9		2	1		8	2		1	8		9
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	0%	0%	0%	3%	3%	3%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA					Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		25.5	25.5		33.2	33.2		33.2	33.2	33.2
Total Split (s)	86.0	86.0		86.0	86.0		34.0	34.0		34.0	34.0	34.0
Total Split (%)	71.7%	71.7%		71.7%	71.7%		28.3%	28.3%		28.3%	28.3%	28.3%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	Max
Act Effct Green (s)	81.1	81.1			81.1						29.5	29.5
Actuated g/C Ratio	0.68	0.68			0.68						0.25	0.25
v/c Ratio	0.99	0.15			0.27						0.70	0.50
Control Delay	58.3	7.1			4.6						53.7	7.2
Queue Delay	0.0	0.0			0.0						0.0	0.0
Total Delay	58.3	7.1			4.6						53.7	7.2
LOS	E	A			A						D	A
Approach Delay		36.9			4.6						27.7	
Approach LOS		D			A						C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 119.6	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 24.5	Intersection LOS: C
Intersection Capacity Utilization 71.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street



HCM 6th Signalized Intersection Summary 2026 Background Traffic, AM Peak Hour
4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street 09/10/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	376	269	0	0	287	186	0	0	0	184	0	232
Future Volume (veh/h)	376	269	0	0	287	186	0	0	0	184	0	232
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1900	1900	1900	1856	1856	1856
Adj Flow Rate, veh/h	488	349	0	0	373	242	0	0	0	239	0	301
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Percent Heavy Veh, %	3	3	3	1	1	1	0	0	0	3	3	3
Cap, veh/h	547	2394	0	60	1420	907	0	467	0	405	0	382
Arrive On Green	0.68	0.68	0.00	0.00	0.68	0.68	0.00	0.00	0.00	0.25	0.00	0.25
Sat Flow, veh/h	800	3618	0	1040	2091	1336	0	1900	0	1403	0	1555
Grp Volume(v), veh/h	488	349	0	0	319	296	0	0	0	239	0	301
Grp Sat Flow(s),veh/h/ln	800	1763	0	1040	1791	1635	0	1900	0	1403	0	1555
Q Serve(g_s), s	73.0	4.2	0.0	0.0	8.3	8.5	0.0	0.0	0.0	18.6	0.0	21.7
Cycle Q Clear(g_c), s	81.5	4.2	0.0	0.0	8.3	8.5	0.0	0.0	0.0	18.6	0.0	21.7
Prop In Lane	1.00		0.00	1.00		0.82	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	547	2394	0	60	1216	1111	0	467	0	405	0	382
V/C Ratio(X)	0.89	0.15	0.00	0.00	0.26	0.27	0.00	0.00	0.00	0.59	0.00	0.79
Avail Cap(c_a), veh/h	547	2394	0	60	1216	1111	0	467	0	405	0	382
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.6	6.9	0.0	0.0	7.5	7.5	0.0	0.0	0.0	41.1	0.0	42.3
Incr Delay (d2), s/veh	16.9	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	6.2	0.0	15.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.8	1.4	0.0	0.0	2.9	2.7	0.0	0.0	0.0	7.0	0.0	9.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.5	6.9	0.0	0.0	7.6	7.7	0.0	0.0	0.0	47.3	0.0	57.4
LnGrp LOS	D	A	A	A	A	A	A	A	A	D	A	E
Approach Vol, veh/h		837			615			0			540	
Approach Delay, s/veh		26.5			7.6			0.0			52.9	
Approach LOS		C			A						D	

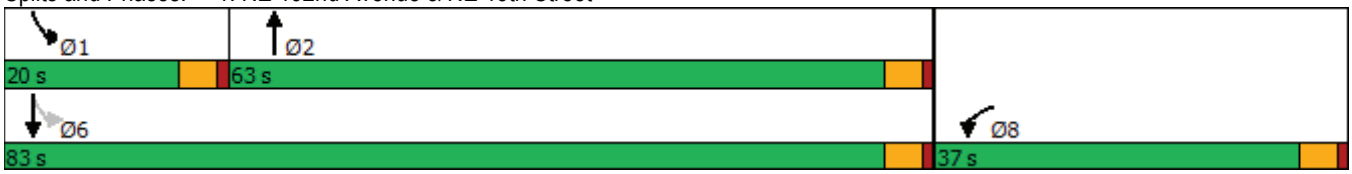
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		34.0		86.0		34.0		86.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		29.5		81.5		29.5		81.5				
Max Q Clear Time (g_c+I1), s		0.0		83.5		23.7		10.5				
Green Ext Time (p_c), s		0.0		0.0		1.2		4.1				

Intersection Summary												
HCM 6th Ctrl Delay			27.8									
HCM 6th LOS			C									

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	212	296	572	299	287	434
Future Volume (vph)	212	296	572	299	287	434
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)						
Turn Type	Prot		NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases					6	
Detector Phase	8		2		1	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	23.2		22.5		9.5	22.5
Total Split (s)	37.0		63.0		20.0	83.0
Total Split (%)	30.8%		52.5%		16.7%	69.2%
Yellow Time (s)	3.5		3.5		3.5	3.5
All-Red Time (s)	1.0		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.5		4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		Max		None	Max
Act Effct Green (s)	32.5		58.5		78.5	78.5
Actuated g/C Ratio	0.27		0.49		0.65	0.65
v/c Ratio	1.13		1.09		1.09	0.39
Control Delay	116.9		86.6		112.6	10.8
Queue Delay	0.0		0.0		0.0	0.0
Total Delay	116.9		86.6		112.6	10.8
LOS	F		F		F	B
Approach Delay	116.9		86.6			51.3
Approach LOS	F		F			D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.13	
Intersection Signal Delay: 81.8	Intersection LOS: F
Intersection Capacity Utilization 105.4%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: NE 192nd Avenue & NE 13th Street



HCM 6th Signalized Intersection Summary
1: NE 192nd Avenue & NE 13th Street

2026 Background Traffic, PM Peak Hour
09/09/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	212	296	572	299	287	434
Future Volume (veh/h)	212	296	572	299	287	434
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	236	329	636	332	319	482
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	189	264	569	297	292	1233
Arrive On Green	0.27	0.27	0.49	0.49	0.13	0.65
Sat Flow, veh/h	698	974	1167	609	1795	1885
Grp Volume(v), veh/h	566	0	0	968	319	482
Grp Sat Flow(s),veh/h/ln	1675	0	0	1776	1795	1885
Q Serve(g_s), s	32.5	0.0	0.0	58.5	15.5	14.3
Cycle Q Clear(g_c), s	32.5	0.0	0.0	58.5	15.5	14.3
Prop In Lane	0.42	0.58		0.34	1.00	
Lane Grp Cap(c), veh/h	454	0	0	866	292	1233
V/C Ratio(X)	1.25	0.00	0.00	1.12	1.09	0.39
Avail Cap(c_a), veh/h	454	0	0	866	292	1233
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.8	0.0	0.0	30.8	41.6	9.6
Incr Delay (d2), s/veh	128.8	0.0	0.0	68.5	79.8	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	29.4	0.0	0.0	39.7	10.6	5.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	172.5	0.0	0.0	99.3	121.4	10.6
LnGrp LOS	F	A	A	F	F	B
Approach Vol, veh/h	566		968			801
Approach Delay, s/veh	172.5		99.3			54.7
Approach LOS	F		F			D

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	20.0	63.0			83.0	37.0
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	15.5	58.5			78.5	32.5
Max Q Clear Time (g_c+I1), s	17.5	60.5			16.3	34.5
Green Ext Time (p_c), s	0.0	0.0			3.2	0.0

Intersection Summary	
HCM 6th Ctrl Delay	101.7
HCM 6th LOS	F

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	563	1	0	503	0	0
Future Volume (vph)	563	1	0	503	0	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	1%	1%	2%	2%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	563	1	0	503	0	0
Future Vol, veh/h	563	1	0	503	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	20	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	1	1	2	2
Mvmt Flow	626	1	0	559	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	627	0	1185	626
Stage 1	-	-	-	-	626	-
Stage 2	-	-	-	-	559	-
Critical Hdwy	-	-	4.11	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.209	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	960	-	209	484
Stage 1	-	-	-	-	533	-
Stage 2	-	-	-	-	572	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	960	-	209	484
Mov Cap-2 Maneuver	-	-	-	-	209	-
Stage 1	-	-	-	-	533	-
Stage 2	-	-	-	-	572	-

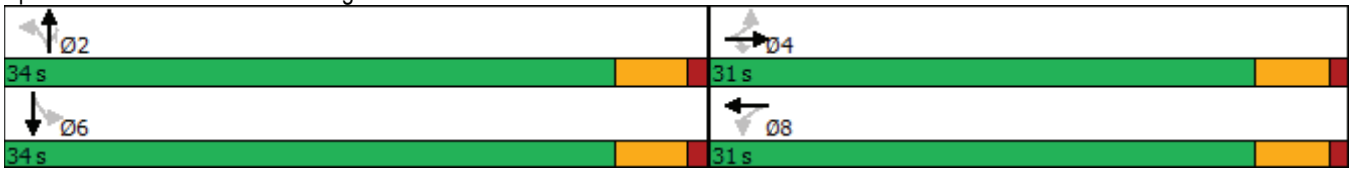
Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	960	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	442	112	157	367	2	133	13	310	0	6	3
Future Volume (vph)	10	442	112	157	367	2	133	13	310	0	6	3
Confl. Peds. (#/hr)	5		5	7		7	5		7	7		5
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm		NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	25.2	25.2	25.2	25.5	25.5		33.2	33.2	33.2	33.2	33.2	
Total Split (s)	31.0	31.0	31.0	31.0	31.0		34.0	34.0	34.0	34.0	34.0	
Total Split (%)	47.7%	47.7%	47.7%	47.7%	47.7%		52.3%	52.3%	52.3%	52.3%	52.3%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		4.5	4.5	4.5	4.5			4.5	4.5		4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)		23.0	23.0	23.0	23.0			29.7	29.7		29.7	
Actuated g/C Ratio		0.37	0.37	0.37	0.37			0.48	0.48		0.48	
v/c Ratio		0.73	0.19	0.99	0.59			0.24	0.41		0.01	
Control Delay		23.2	3.6	91.0	19.2			11.9	6.2		8.7	
Queue Delay		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Delay		23.2	3.6	91.0	19.2			11.9	6.2		8.7	
LOS		C	A	F	B			B	A		A	
Approach Delay		19.3			40.6			8.0			8.7	
Approach LOS		B			D			A			A	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 61.8	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 23.2	Intersection LOS: C
Intersection Capacity Utilization 73.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road



HCM 6th Signalized Intersection Summary 2026 Background Traffic, PM Peak Hour
3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road 09/09/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	442	112	157	367	2	133	13	310	0	6	3
Future Volume (veh/h)	10	442	112	157	367	2	133	13	310	0	6	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1885	1885	1885	1885	1885	1885	1900	1900	1900
Adj Flow Rate, veh/h	11	497	126	176	412	2	149	15	348	0	7	3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	0	0	0
Cap, veh/h	62	765	652	265	764	4	695	65	719	0	571	245
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.45	0.45	0.45	0.00	0.45	0.45
Sat Flow, veh/h	13	1875	1600	807	1874	9	1298	144	1585	0	1259	539
Grp Volume(v), veh/h	508	0	126	176	0	414	164	0	348	0	0	10
Grp Sat Flow(s),veh/h/ln	1888	0	1600	807	0	1883	1442	0	1585	0	0	1798
Q Serve(g_s), s	0.0	0.0	3.3	12.4	0.0	10.8	4.3	0.0	10.0	0.0	0.0	0.2
Cycle Q Clear(g_c), s	14.1	0.0	3.3	26.5	0.0	10.8	4.5	0.0	10.0	0.0	0.0	0.2
Prop In Lane	0.02		1.00	1.00		0.00	0.91		1.00	0.00		0.30
Lane Grp Cap(c), veh/h	826	0	652	265	0	768	760	0	719	0	0	816
V/C Ratio(X)	0.61	0.00	0.19	0.66	0.00	0.54	0.22	0.00	0.48	0.00	0.00	0.01
Avail Cap(c_a), veh/h	826	0	652	265	0	768	760	0	719	0	0	816
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	15.6	0.0	12.4	27.0	0.0	14.6	10.9	0.0	12.4	0.0	0.0	9.7
Incr Delay (d2), s/veh	1.4	0.0	0.1	6.1	0.0	0.8	0.7	0.0	2.3	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.0	1.1	3.0	0.0	4.2	1.3	0.0	3.4	0.0	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.9	0.0	12.5	33.1	0.0	15.4	11.6	0.0	14.7	0.0	0.0	9.8
LnGrp LOS	B	A	B	C	A	B	B	A	B	A	A	A
Approach Vol, veh/h		634			590			512			10	
Approach Delay, s/veh		16.1			20.7			13.7			9.8	
Approach LOS		B			C			B			A	

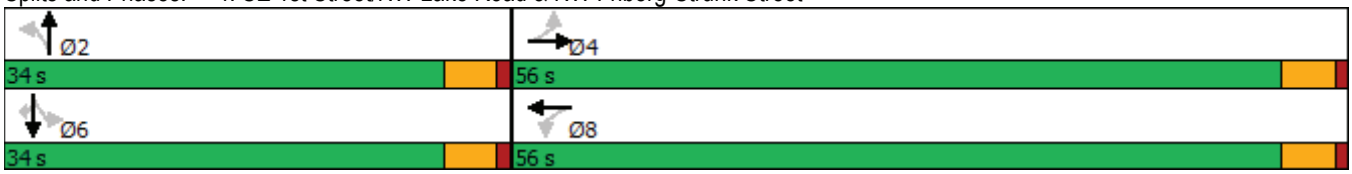
Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.0	31.0	34.0	31.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	29.5	26.5	29.5	26.5
Max Q Clear Time (g_c+I1), s	12.0	16.1	2.2	28.5
Green Ext Time (p_c), s	1.9	2.7	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	16.9
HCM 6th LOS	B

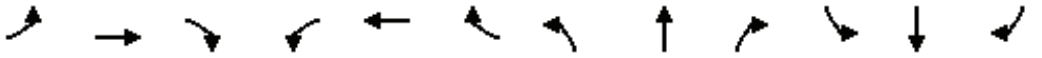
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	296	606	4	0	435	167	8	0	1	134	0	186
Future Volume (vph)	296	606	4	0	435	167	8	0	1	134	0	186
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		25.5	25.5		33.2	33.2		33.2	33.2	33.2
Total Split (s)	56.0	56.0		56.0	56.0		34.0	34.0		34.0	34.0	34.0
Total Split (%)	62.2%	62.2%		62.2%	62.2%		37.8%	37.8%		37.8%	37.8%	37.8%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	Max
Act Effct Green (s)	40.3	40.3			40.3			30.2			30.2	30.2
Actuated g/C Ratio	0.51	0.51			0.51			0.38			0.38	0.38
v/c Ratio	0.92	0.36			0.36			0.02			0.27	0.27
Control Delay	52.0	11.8			9.7			6.2			22.3	4.5
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	52.0	11.8			9.7			6.2			22.3	4.5
LOS	D	B			A			A			C	A
Approach Delay		24.9			9.7			6.2			12.0	
Approach LOS		C			A			A			B	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 79.7	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 17.6	Intersection LOS: B
Intersection Capacity Utilization 52.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street



HCM 6th Signalized Intersection Summary 2026 Background Traffic, PM Peak Hour
4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street 09/09/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	296	606	4	0	435	167	8	0	1	134	0	186
Future Volume (veh/h)	296	606	4	0	435	167	8	0	1	134	0	186
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	318	652	4	0	468	180	9	0	1	144	0	200
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	437	2006	12	85	1393	532	404	4	36	607	0	561
Arrive On Green	0.55	0.55	0.55	0.00	0.55	0.55	0.35	0.00	0.35	0.35	0.00	0.35
Sat Flow, veh/h	796	3678	23	790	2554	975	927	13	104	1497	0	1610
Grp Volume(v), veh/h	318	320	336	0	330	318	10	0	0	144	0	200
Grp Sat Flow(s),veh/h/ln	796	1805	1896	790	1805	1724	1044	0	0	1497	0	1610
Q Serve(g_s), s	31.4	8.3	8.3	0.0	8.6	8.7	0.2	0.0	0.0	0.0	0.0	7.8
Cycle Q Clear(g_c), s	40.2	8.3	8.3	0.0	8.6	8.7	5.0	0.0	0.0	4.8	0.0	7.8
Prop In Lane	1.00		0.01	1.00		0.57	0.90		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	437	984	1034	85	984	940	444	0	0	607	0	561
V/C Ratio(X)	0.73	0.32	0.33	0.00	0.33	0.34	0.02	0.00	0.00	0.24	0.00	0.36
Avail Cap(c_a), veh/h	487	1098	1153	135	1098	1049	444	0	0	607	0	561
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.9	10.6	10.6	0.0	10.7	10.7	19.0	0.0	0.0	19.6	0.0	20.5
Incr Delay (d2), s/veh	4.8	0.2	0.2	0.0	0.2	0.2	0.1	0.0	0.0	0.9	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	2.9	3.1	0.0	3.0	2.9	0.1	0.0	0.0	2.0	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.8	10.8	10.8	0.0	10.9	10.9	19.1	0.0	0.0	20.5	0.0	22.3
LnGrp LOS	C	B	B	A	B	B	B	A	A	C	A	C
Approach Vol, veh/h		974			648			10			344	
Approach Delay, s/veh		16.0			10.9			19.1			21.5	
Approach LOS		B			B			B			C	

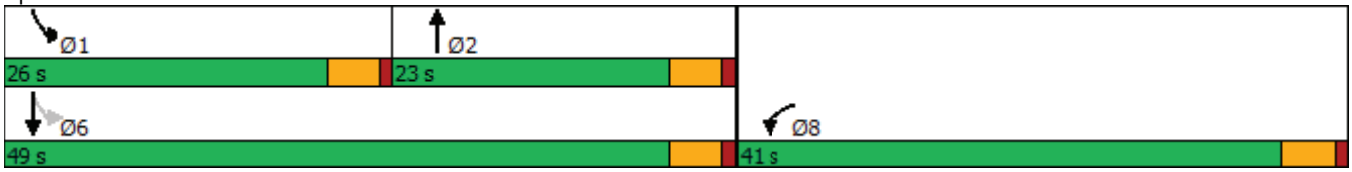
Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.0	50.7	34.0	50.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	29.5	51.5	29.5	51.5
Max Q Clear Time (g_c+I1), s	7.0	42.2	9.8	10.7
Green Ext Time (p_c), s	0.0	4.0	1.3	4.2

Intersection Summary	
HCM 6th Ctrl Delay	15.3
HCM 6th LOS	B

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	321	317	175	130	419	279
Future Volume (vph)	321	317	175	130	419	279
Confl. Peds. (#/hr)	1	2		1	2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	4%	4%	7%	7%
Shared Lane Traffic (%)						
Turn Type	Prot		NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases					6	
Detector Phase	8		2		1	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	23.2		22.5		9.5	22.5
Total Split (s)	41.0		23.0		26.0	49.0
Total Split (%)	45.6%		25.6%		28.9%	54.4%
Yellow Time (s)	3.5		3.5		3.5	3.5
All-Red Time (s)	1.0		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.5		4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		Max		None	Max
Act Effct Green (s)	36.5		18.5		44.5	44.5
Actuated g/C Ratio	0.41		0.21		0.49	0.49
v/c Ratio	0.99		0.89		0.97	0.35
Control Delay	56.6		58.3		58.6	15.4
Queue Delay	0.0		0.0		0.0	0.0
Total Delay	56.6		58.3		58.6	15.4
LOS	E		E		E	B
Approach Delay	56.6		58.3			41.3
Approach LOS	E		E			D

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 50.4	Intersection LOS: D
Intersection Capacity Utilization 89.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: NE 192nd Avenue & NE 13th Street



HCM 6th Signalized Intersection Summary
1: NE 192nd Avenue & NE 13th Street

2026 Total Traffic, AM Peak Hour
09/09/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	321	317	175	130	419	279
Future Volume (veh/h)	321	317	175	130	419	279
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1841	1841	1796	1796
Adj Flow Rate, veh/h	357	352	194	144	466	310
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	4	4	7	7
Cap, veh/h	342	337	207	154	495	888
Arrive On Green	0.41	0.41	0.21	0.21	0.23	0.49
Sat Flow, veh/h	843	831	980	728	1711	1796
Grp Volume(v), veh/h	710	0	0	338	466	310
Grp Sat Flow(s),veh/h/ln	1676	0	0	1708	1711	1796
Q Serve(g_s), s	36.5	0.0	0.0	17.5	18.8	9.5
Cycle Q Clear(g_c), s	36.5	0.0	0.0	17.5	18.8	9.5
Prop In Lane	0.50	0.50		0.43	1.00	
Lane Grp Cap(c), veh/h	680	0	0	361	495	888
V/C Ratio(X)	1.04	0.00	0.00	0.94	0.94	0.35
Avail Cap(c_a), veh/h	680	0	0	361	506	888
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.8	0.0	0.0	34.9	21.7	13.9
Incr Delay (d2), s/veh	46.7	0.0	0.0	33.5	25.7	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	22.2	0.0	0.0	10.3	10.4	3.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	73.4	0.0	0.0	68.4	47.4	15.0
LnGrp LOS	F	A	A	E	D	B
Approach Vol, veh/h	710		338			776
Approach Delay, s/veh	73.4		68.4			34.5
Approach LOS	E		E			C

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	25.5	23.5			49.0	41.0
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	21.5	18.5			44.5	36.5
Max Q Clear Time (g_c+I1), s	20.8	19.5			11.5	38.5
Green Ext Time (p_c), s	0.1	0.0			1.8	0.0

Intersection Summary	
HCM 6th Ctrl Delay	55.9
HCM 6th LOS	E

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	508	49	21	594	52	18
Future Volume (vph)	508	49	21	594	52	18
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	2%	2%	2%	2%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	508	49	21	594	52	18
Future Vol, veh/h	508	49	21	594	52	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	20	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	5	2	2	2	2
Mvmt Flow	564	54	23	660	58	20

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	618	0	1270	564
Stage 1	-	-	-	-	564	-
Stage 2	-	-	-	-	706	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	962	-	186	525
Stage 1	-	-	-	-	569	-
Stage 2	-	-	-	-	489	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	962	-	179	525
Mov Cap-2 Maneuver	-	-	-	-	179	-
Stage 1	-	-	-	-	569	-
Stage 2	-	-	-	-	470	-

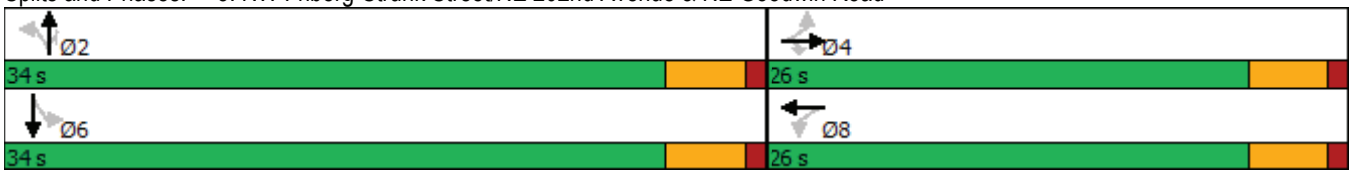
Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	30.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	216	-	-	962	-
HCM Lane V/C Ratio	0.36	-	-	0.024	-
HCM Control Delay (s)	30.8	-	-	8.8	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.5	-	-	0.1	-

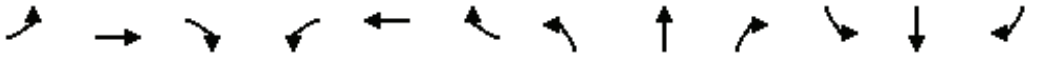
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	188	337	171	447	5	164	4	93	2	11	3
Future Volume (vph)	1	188	337	171	447	5	164	4	93	2	11	3
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	3%	3%	3%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	25.2	25.2	25.2	25.5	25.5		33.2	33.2	33.2	33.2	33.2	
Total Split (s)	26.0	26.0	26.0	26.0	26.0		34.0	34.0	34.0	34.0	34.0	
Total Split (%)	43.3%	43.3%	43.3%	43.3%	43.3%		56.7%	56.7%	56.7%	56.7%	56.7%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		4.5	4.5	4.5	4.5			4.5	4.5		4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)		19.7	19.7	19.7	19.7			29.6	29.6		29.6	
Actuated g/C Ratio		0.34	0.34	0.34	0.34			0.51	0.51		0.51	
v/c Ratio		0.36	0.51	0.54	0.85			0.29	0.13		0.02	
Control Delay		16.4	4.4	21.8	32.7			10.4	2.5		7.1	
Queue Delay		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Delay		16.4	4.4	21.8	32.7			10.4	2.5		7.1	
LOS		B	A	C	C			B	A		A	
Approach Delay		8.7			29.7			7.6			7.1	
Approach LOS		A			C			A			A	

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 58.3	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 17.7	Intersection LOS: B
Intersection Capacity Utilization 61.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road



HCM 6th Signalized Intersection Summary — 2026 Total Traffic, AM Peak Hour
3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road — 09/09/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	188	337	171	447	5	164	4	93	2	11	3
Future Volume (veh/h)	1	188	337	171	447	5	164	4	93	2	11	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1870	1870	1870	1856	1856	1856	1900	1900	1900
Adj Flow Rate, veh/h	1	221	396	201	526	6	193	5	109	2	13	4
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	5	5	5	2	2	2	3	3	3	0	0	0
Cap, veh/h	61	653	554	337	661	8	787	19	773	115	645	185
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.49	0.49	0.49	0.49	0.49	0.49
Sat Flow, veh/h	1	1823	1547	806	1846	21	1360	38	1572	99	1312	376
Grp Volume(v), veh/h	222	0	396	201	0	532	198	0	109	19	0	0
Grp Sat Flow(s),veh/h/ln	1825	0	1547	806	0	1867	1398	0	1572	1787	0	0
Q Serve(g_s), s	0.0	0.0	13.2	14.6	0.0	15.3	4.6	0.0	2.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.3	0.0	13.2	19.9	0.0	15.3	4.9	0.0	2.3	0.3	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.01	0.97		1.00	0.11		0.21
Lane Grp Cap(c), veh/h	714	0	554	337	0	669	806	0	773	945	0	0
V/C Ratio(X)	0.31	0.00	0.71	0.60	0.00	0.80	0.25	0.00	0.14	0.02	0.00	0.00
Avail Cap(c_a), veh/h	714	0	554	337	0	669	806	0	773	945	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.1	0.0	16.6	21.3	0.0	17.3	9.0	0.0	8.3	7.8	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	4.3	2.8	0.0	6.6	0.7	0.0	0.4	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	4.7	2.7	0.0	6.9	1.3	0.0	0.7	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.3	0.0	20.9	24.2	0.0	23.9	9.7	0.0	8.7	7.9	0.0	0.0
LnGrp LOS	B	A	C	C	A	C	A	A	A	A	A	A
Approach Vol, veh/h		618			733			307			19	
Approach Delay, s/veh		18.6			24.0			9.4			7.9	
Approach LOS		B			C			A			A	

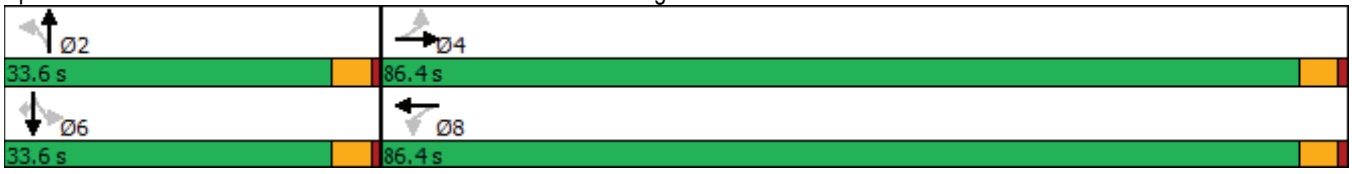
Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.0	26.0	34.0	26.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	29.5	21.5	29.5	21.5
Max Q Clear Time (g_c+I1), s	6.9	15.2	2.3	21.9
Green Ext Time (p_c), s	1.4	1.5	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	19.1
HCM 6th LOS	B

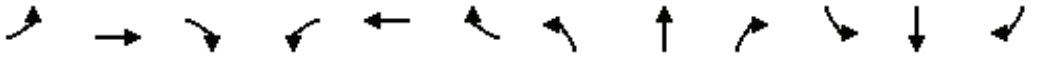
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	376	269	0	0	287	192	0	0	0	190	0	232
Future Volume (vph)	376	269	0	0	287	192	0	0	0	190	0	232
Confl. Peds. (#/hr)	9		2	1		8	2		1	8		9
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	0%	0%	0%	3%	3%	3%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA					Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		25.5	25.5		33.2	33.2		33.2	33.2	33.2
Total Split (s)	86.4	86.4		86.4	86.4		33.6	33.6		33.6	33.6	33.6
Total Split (%)	72.0%	72.0%		72.0%	72.0%		28.0%	28.0%		28.0%	28.0%	28.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	Max
Act Effct Green (s)	81.9	81.9			81.9						29.1	29.1
Actuated g/C Ratio	0.68	0.68			0.68						0.24	0.24
v/c Ratio	0.99	0.15			0.27						0.74	0.50
Control Delay	58.7	6.9			4.5						56.4	7.3
Queue Delay	0.0	0.0			0.0						0.0	0.0
Total Delay	58.7	6.9			4.5						56.4	7.3
LOS	E	A			A						E	A
Approach Delay		37.1			4.5						29.4	
Approach LOS		D			A						C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 24.9	Intersection LOS: C
Intersection Capacity Utilization 71.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street



HCM 6th Signalized Intersection Summary — 2026 Total Traffic, AM Peak Hour
4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street — 09/09/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	376	269	0	0	287	192	0	0	0	190	0	232
Future Volume (veh/h)	376	269	0	0	287	192	0	0	0	190	0	232
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1900	1900	1900	1856	1856	1856
Adj Flow Rate, veh/h	488	349	0	0	373	249	0	0	0	247	0	301
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Percent Heavy Veh, %	3	3	3	1	1	1	0	0	0	3	3	3
Cap, veh/h	546	2406	0	60	1409	926	0	461	0	400	0	377
Arrive On Green	0.68	0.68	0.00	0.00	0.68	0.68	0.00	0.00	0.00	0.24	0.00	0.24
Sat Flow, veh/h	795	3618	0	1040	2065	1357	0	1900	0	1403	0	1555
Grp Volume(v), veh/h	488	349	0	0	323	299	0	0	0	247	0	301
Grp Sat Flow(s),veh/h/ln	795	1763	0	1040	1791	1631	0	1900	0	1403	0	1555
Q Serve(g_s), s	73.3	4.2	0.0	0.0	8.4	8.6	0.0	0.0	0.0	19.4	0.0	21.8
Cycle Q Clear(g_c), s	81.9	4.2	0.0	0.0	8.4	8.6	0.0	0.0	0.0	19.4	0.0	21.8
Prop In Lane	1.00		0.00	1.00		0.83	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	546	2406	0	60	1222	1113	0	461	0	400	0	377
V/C Ratio(X)	0.89	0.15	0.00	0.00	0.26	0.27	0.00	0.00	0.00	0.62	0.00	0.80
Avail Cap(c_a), veh/h	546	2406	0	60	1222	1113	0	461	0	400	0	377
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.5	6.7	0.0	0.0	7.4	7.4	0.0	0.0	0.0	41.8	0.0	42.7
Incr Delay (d2), s/veh	17.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	7.0	0.0	16.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.8	1.4	0.0	0.0	2.9	2.7	0.0	0.0	0.0	7.3	0.0	9.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.6	6.7	0.0	0.0	7.5	7.5	0.0	0.0	0.0	48.8	0.0	58.7
LnGrp LOS	D	A	A	A	A	A	A	A	A	D	A	E
Approach Vol, veh/h		837			622			0			548	
Approach Delay, s/veh		26.5			7.5			0.0			54.2	
Approach LOS		C			A						D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		33.6		86.4		33.6		86.4				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		29.1		81.9		29.1		81.9				
Max Q Clear Time (g_c+I1), s		0.0		83.9		23.8		10.6				
Green Ext Time (p_c), s		0.0		0.0		1.2		4.2				

Intersection Summary												
HCM 6th Ctrl Delay			28.2									
HCM 6th LOS			C									

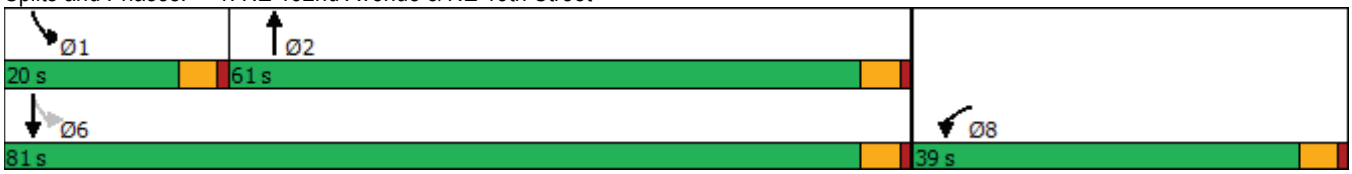
Lanes, Volumes, Timings
1: NE 192nd Avenue & NE 13th Street

2026 Total Traffic, PM Peak Hour
09/09/2023

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	236	321	559	329	307	426
Future Volume (vph)	236	321	559	329	307	426
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)						
Turn Type	Prot		NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases					6	
Detector Phase	8		2		1	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	23.2		22.5		9.5	22.5
Total Split (s)	39.0		61.0		20.0	81.0
Total Split (%)	32.5%		50.8%		16.7%	67.5%
Yellow Time (s)	3.5		3.5		3.5	3.5
All-Red Time (s)	1.0		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.5		4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		Max		None	Max
Act Effct Green (s)	34.5		56.5		76.5	76.5
Actuated g/C Ratio	0.29		0.47		0.64	0.64
v/c Ratio	1.17		1.15		1.16	0.39
Control Delay	131.6		111.0		137.5	11.7
Queue Delay	0.0		0.0		0.0	0.0
Total Delay	131.6		111.0		137.5	11.7
LOS	F		F		F	B
Approach Delay	131.6		111.0			64.4
Approach LOS	F		F			E

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.17	
Intersection Signal Delay: 100.6	Intersection LOS: F
Intersection Capacity Utilization 110.5%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 1: NE 192nd Avenue & NE 13th Street



HCM 6th Signalized Intersection Summary
1: NE 192nd Avenue & NE 13th Street

2026 Total Traffic, PM Peak Hour
09/09/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	236	321	559	329	307	426
Future Volume (veh/h)	236	321	559	329	307	426
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	262	357	621	366	341	473
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	204	277	524	309	292	1202
Arrive On Green	0.29	0.29	0.47	0.47	0.13	0.64
Sat Flow, veh/h	708	965	1112	655	1795	1885
Grp Volume(v), veh/h	620	0	0	987	341	473
Grp Sat Flow(s),veh/h/ln	1676	0	0	1767	1795	1885
Q Serve(g_s), s	34.5	0.0	0.0	56.5	15.5	14.6
Cycle Q Clear(g_c), s	34.5	0.0	0.0	56.5	15.5	14.6
Prop In Lane	0.42	0.58		0.37	1.00	
Lane Grp Cap(c), veh/h	482	0	0	832	292	1202
V/C Ratio(X)	1.29	0.00	0.00	1.19	1.17	0.39
Avail Cap(c_a), veh/h	482	0	0	832	292	1202
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.8	0.0	0.0	31.8	41.2	10.5
Incr Delay (d2), s/veh	144.0	0.0	0.0	95.8	106.2	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	33.2	0.0	0.0	44.6	12.8	5.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	186.8	0.0	0.0	127.6	147.4	11.5
LnGrp LOS	F	A	A	F	F	B
Approach Vol, veh/h	620		987			814
Approach Delay, s/veh	186.8		127.6			68.4
Approach LOS	F		F			E

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	20.0	61.0			81.0	39.0
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	15.5	56.5			76.5	34.5
Max Q Clear Time (g_c+I1), s	17.5	58.5			16.6	36.5
Green Ext Time (p_c), s	0.0	0.0			3.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	122.9
HCM 6th LOS	F

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	555	59	24	491	61	20
Future Volume (vph)	555	59	24	491	61	20
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	1%	1%	2%	2%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	555	59	24	491	61	20
Future Vol, veh/h	555	59	24	491	61	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	20	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	1	1	2	2
Mvmt Flow	617	66	27	546	68	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	683	0	1217	617
Stage 1	-	-	-	-	617	-
Stage 2	-	-	-	-	600	-
Critical Hdwy	-	-	4.11	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.209	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	915	-	200	490
Stage 1	-	-	-	-	538	-
Stage 2	-	-	-	-	548	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	915	-	192	490
Mov Cap-2 Maneuver	-	-	-	-	192	-
Stage 1	-	-	-	-	538	-
Stage 2	-	-	-	-	525	-

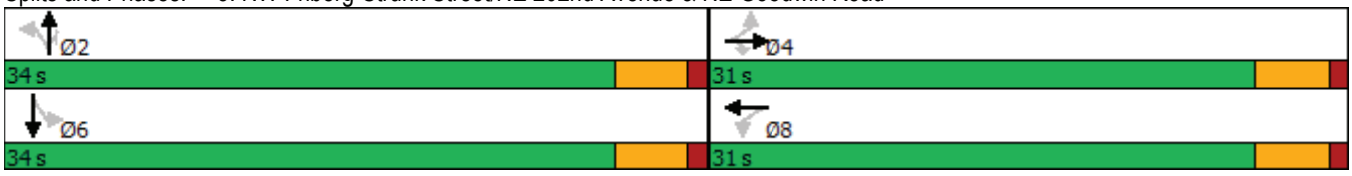
Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	31.1
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	226	-	-	915	-
HCM Lane V/C Ratio	0.398	-	-	0.029	-
HCM Control Delay (s)	31.1	-	-	9.1	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.8	-	-	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	444	122	157	369	2	143	13	310	0	6	3
Future Volume (vph)	10	444	122	157	369	2	143	13	310	0	6	3
Confl. Peds. (#/hr)	5		5	7		7	5		7	7		5
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm		NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	25.2	25.2	25.2	25.5	25.5		33.2	33.2	33.2	33.2	33.2	
Total Split (s)	31.0	31.0	31.0	31.0	31.0		34.0	34.0	34.0	34.0	34.0	
Total Split (%)	47.7%	47.7%	47.7%	47.7%	47.7%		52.3%	52.3%	52.3%	52.3%	52.3%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		4.5	4.5	4.5	4.5			4.5	4.5		4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)		23.1	23.1	23.1	23.1			29.7	29.7		29.7	
Actuated g/C Ratio		0.37	0.37	0.37	0.37			0.48	0.48		0.48	
v/c Ratio		0.73	0.20	0.99	0.59			0.26	0.41		0.01	
Control Delay		23.3	3.5	91.8	19.3			12.1	6.3		8.7	
Queue Delay		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Delay		23.3	3.5	91.8	19.3			12.1	6.3		8.7	
LOS		C	A	F	B			B	A		A	
Approach Delay		19.1			40.8			8.2			8.7	
Approach LOS		B			D			A			A	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 61.9	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 23.1	Intersection LOS: C
Intersection Capacity Utilization 73.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road



HCM 6th Signalized Intersection Summary — 2026 Total Traffic, PM Peak Hour
3: NW Friberg-Strunk Street/NE 202nd Avenue & NE Goodwin Road — 09/09/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	444	122	157	369	2	143	13	310	0	6	3
Future Volume (veh/h)	10	444	122	157	369	2	143	13	310	0	6	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1885	1885	1885	1885	1885	1885	1900	1900	1900
Adj Flow Rate, veh/h	11	499	137	176	415	2	161	15	348	0	7	3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	0	0	0
Cap, veh/h	62	765	652	263	764	4	698	61	719	0	571	245
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.45	0.45	0.45	0.00	0.45	0.45
Sat Flow, veh/h	13	1875	1600	797	1874	9	1305	134	1585	0	1259	539
Grp Volume(v), veh/h	510	0	137	176	0	417	176	0	348	0	0	10
Grp Sat Flow(s),veh/h/ln	1888	0	1600	797	0	1883	1439	0	1585	0	0	1798
Q Serve(g_s), s	0.0	0.0	3.6	12.4	0.0	10.9	4.7	0.0	10.0	0.0	0.0	0.2
Cycle Q Clear(g_c), s	14.1	0.0	3.6	26.5	0.0	10.9	4.9	0.0	10.0	0.0	0.0	0.2
Prop In Lane	0.02		1.00	1.00		0.00	0.91		1.00	0.00		0.30
Lane Grp Cap(c), veh/h	826	0	652	263	0	768	759	0	719	0	0	816
V/C Ratio(X)	0.62	0.00	0.21	0.67	0.00	0.54	0.23	0.00	0.48	0.00	0.00	0.01
Avail Cap(c_a), veh/h	826	0	652	263	0	768	759	0	719	0	0	816
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	15.6	0.0	12.5	27.2	0.0	14.6	11.0	0.0	12.4	0.0	0.0	9.7
Incr Delay (d2), s/veh	1.4	0.0	0.2	6.5	0.0	0.8	0.7	0.0	2.3	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.0	1.2	3.1	0.0	4.2	1.5	0.0	3.4	0.0	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.0	0.0	12.6	33.6	0.0	15.4	11.7	0.0	14.7	0.0	0.0	9.8
LnGrp LOS	B	A	B	C	A	B	B	A	B	A	A	A
Approach Vol, veh/h		647			593			524			10	
Approach Delay, s/veh		16.1			20.8			13.7			9.8	
Approach LOS		B			C			B			A	

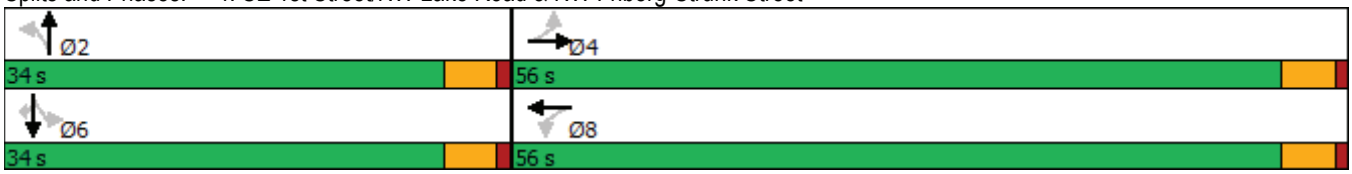
Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.0	31.0	34.0	31.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	29.5	26.5	29.5	26.5
Max Q Clear Time (g_c+I1), s	12.0	16.1	2.2	28.5
Green Ext Time (p_c), s	2.0	2.7	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	16.9
HCM 6th LOS	B

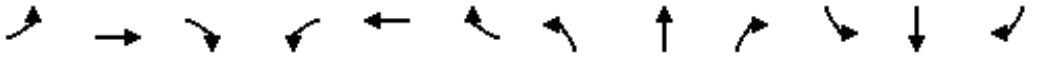
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	296	606	4	0	435	175	8	0	1	142	0	186
Future Volume (vph)	296	606	4	0	435	175	8	0	1	142	0	186
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		25.5	25.5		33.2	33.2		33.2	33.2	33.2
Total Split (s)	56.0	56.0		56.0	56.0		34.0	34.0		34.0	34.0	34.0
Total Split (%)	62.2%	62.2%		62.2%	62.2%		37.8%	37.8%		37.8%	37.8%	37.8%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	Max
Act Effct Green (s)	40.8	40.8			40.8			30.1			30.1	30.1
Actuated g/C Ratio	0.51	0.51			0.51			0.38			0.38	0.38
v/c Ratio	0.93	0.36			0.36			0.02			0.29	0.27
Control Delay	53.2	11.7			9.6			6.2			22.6	4.6
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	53.2	11.7			9.6			6.2			22.6	4.6
LOS	D	B			A			A			C	A
Approach Delay		25.3			9.6			6.2			12.4	
Approach LOS		C			A			A			B	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 80.1	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 17.7	Intersection LOS: B
Intersection Capacity Utilization 53.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street



HCM 6th Signalized Intersection Summary — 2026 Total Traffic, PM Peak Hour
4: SE 1st Street/NW Lake Road & NW Friberg-Strunk Street — 09/09/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	296	606	4	0	435	175	8	0	1	142	0	186
Future Volume (veh/h)	296	606	4	0	435	175	8	0	1	142	0	186
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	318	652	4	0	468	188	9	0	1	153	0	200
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	435	2015	12	85	1380	550	396	4	36	604	0	558
Arrive On Green	0.55	0.55	0.55	0.00	0.55	0.55	0.35	0.00	0.35	0.35	0.00	0.35
Sat Flow, veh/h	790	3678	23	790	2519	1005	911	13	103	1499	0	1610
Grp Volume(v), veh/h	318	320	336	0	334	322	10	0	0	153	0	200
Grp Sat Flow(s),veh/h/ln	790	1805	1896	790	1805	1719	1026	0	0	1499	0	1610
Q Serve(g_s), s	31.9	8.3	8.3	0.0	8.8	8.9	0.2	0.0	0.0	0.0	0.0	7.9
Cycle Q Clear(g_c), s	40.8	8.3	8.3	0.0	8.8	8.9	5.4	0.0	0.0	5.3	0.0	7.9
Prop In Lane	1.00		0.01	1.00		0.58	0.90		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	435	989	1039	85	989	942	436	0	0	604	0	558
V/C Ratio(X)	0.73	0.32	0.32	0.00	0.34	0.34	0.02	0.00	0.00	0.25	0.00	0.36
Avail Cap(c_a), veh/h	480	1092	1147	130	1092	1040	436	0	0	604	0	558
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.1	10.6	10.6	0.0	10.7	10.7	19.3	0.0	0.0	19.9	0.0	20.8
Incr Delay (d2), s/veh	5.1	0.2	0.2	0.0	0.2	0.2	0.1	0.0	0.0	1.0	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	2.9	3.0	0.0	3.1	3.0	0.2	0.0	0.0	2.2	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.1	10.8	10.8	0.0	10.9	10.9	19.4	0.0	0.0	20.9	0.0	22.6
LnGrp LOS	C	B	B	A	B	B	B	A	A	C	A	C
Approach Vol, veh/h		974			656			10			353	
Approach Delay, s/veh		16.1			10.9			19.4			21.8	
Approach LOS		B			B			B			C	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.0	51.1	34.0	51.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	29.5	51.5	29.5	51.5
Max Q Clear Time (g_c+I1), s	7.4	42.8	9.9	10.9
Green Ext Time (p_c), s	0.0	3.8	1.4	4.3

Intersection Summary	
HCM 6th Ctrl Delay	15.4
HCM 6th LOS	B

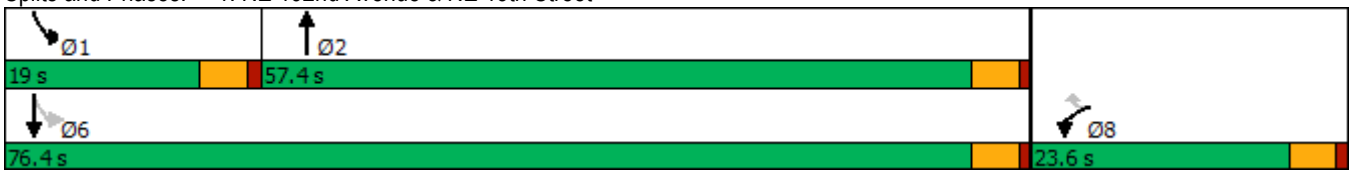
Lanes, Volumes, Timings
1: NE 192nd Avenue & NE 13th Street

2026 Background Traffic-MIT, PM Peak Hour
09/09/2023

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	212	296	572	299	287	434
Future Volume (vph)	212	296	572	299	287	434
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	23.2	23.2	22.5		9.5	22.5
Total Split (s)	23.6	23.6	57.4		19.0	76.4
Total Split (%)	23.6%	23.6%	57.4%		19.0%	76.4%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	Max		None	Max
Act Effct Green (s)	16.6	16.6	53.0		72.0	72.0
Actuated g/C Ratio	0.17	0.17	0.54		0.74	0.74
v/c Ratio	0.78	0.60	0.98		0.93	0.35
Control Delay	56.6	9.2	46.1		62.1	5.6
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	56.6	9.2	46.1		62.1	5.6
LOS	E	A	D		E	A
Approach Delay	29.0		46.1			28.1
Approach LOS	C		D			C

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 97.6	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.98	
Intersection Signal Delay: 35.8	Intersection LOS: D
Intersection Capacity Utilization 87.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: NE 192nd Avenue & NE 13th Street



HCM 6th Signalized Intersection Summary
1: NE 192nd Avenue & NE 13th Street

2026 Background Traffic-MIT, PM Peak Hour
09/09/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	212	296	572	299	287	434
Future Volume (veh/h)	212	296	572	299	287	434
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	236	329	636	332	319	482
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	343	305	617	322	332	1355
Arrive On Green	0.19	0.19	0.53	0.53	0.14	0.72
Sat Flow, veh/h	1795	1598	1167	609	1795	1885
Grp Volume(v), veh/h	236	329	0	968	319	482
Grp Sat Flow(s),veh/h/ln	1795	1598	0	1776	1795	1885
Q Serve(g_s), s	12.2	19.1	0.0	52.9	13.6	9.7
Cycle Q Clear(g_c), s	12.2	19.1	0.0	52.9	13.6	9.7
Prop In Lane	1.00	1.00		0.34	1.00	
Lane Grp Cap(c), veh/h	343	305	0	939	332	1355
V/C Ratio(X)	0.69	1.08	0.00	1.03	0.96	0.36
Avail Cap(c_a), veh/h	343	305	0	939	332	1355
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.7	40.5	0.0	23.6	33.9	5.3
Incr Delay (d2), s/veh	5.7	73.9	0.0	37.5	38.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	13.6	0.0	29.2	7.4	3.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	43.4	114.4	0.0	61.0	72.6	6.0
LnGrp LOS	D	F	A	F	E	A
Approach Vol, veh/h	565		968			801
Approach Delay, s/veh	84.7		61.0			32.5
Approach LOS	F		E			C

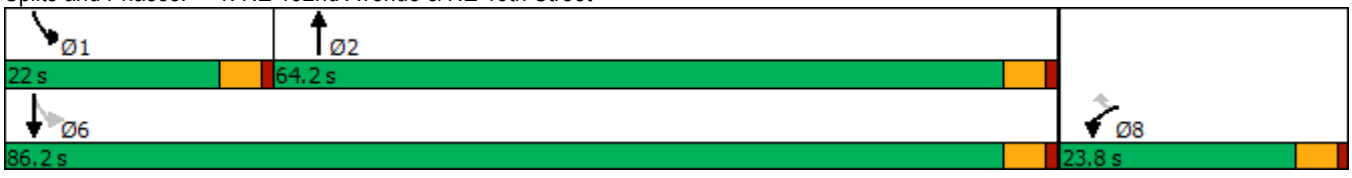
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	19.0	57.4			76.4	23.6
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	14.5	52.9			71.9	19.1
Max Q Clear Time (g_c+I1), s	15.6	54.9			11.7	21.1
Green Ext Time (p_c), s	0.0	0.0			3.2	0.0

Intersection Summary	
HCM 6th Ctrl Delay	57.0
HCM 6th LOS	E

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	236	321	559	329	307	426
Future Volume (vph)	236	321	559	329	307	426
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	23.2	23.2	22.5		9.5	22.5
Total Split (s)	23.8	23.8	64.2		22.0	86.2
Total Split (%)	21.6%	21.6%	58.4%		20.0%	78.4%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	Max		None	Max
Act Effct Green (s)	18.4	18.4	59.7		81.7	81.7
Actuated g/C Ratio	0.17	0.17	0.55		0.75	0.75
v/c Ratio	0.87	0.63	0.99		0.96	0.34
Control Delay	72.3	9.8	50.9		71.8	5.5
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	72.3	9.8	50.9		71.8	5.5
LOS	E	A	D		E	A
Approach Delay	36.3		50.9			33.3
Approach LOS	D		D			C

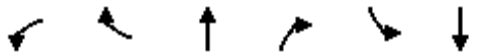
Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 109.1	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 41.2	Intersection LOS: D
Intersection Capacity Utilization 90.8%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: NE 192nd Avenue & NE 13th Street



HCM 6th Signalized Intersection Summary
1: NE 192nd Avenue & NE 13th Street

2026 Total Traffic-MIT, PM Peak Hour
09/09/2023



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	236	321	559	329	307	426
Future Volume (veh/h)	236	321	559	329	307	426
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	262	357	621	366	341	473
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	315	280	603	356	351	1400
Arrive On Green	0.18	0.18	0.54	0.54	0.16	0.74
Sat Flow, veh/h	1795	1598	1112	655	1795	1885
Grp Volume(v), veh/h	262	357	0	987	341	473
Grp Sat Flow(s),veh/h/ln	1795	1598	0	1767	1795	1885
Q Serve(g_s), s	15.5	19.3	0.0	59.7	16.7	9.5
Cycle Q Clear(g_c), s	15.5	19.3	0.0	59.7	16.7	9.5
Prop In Lane	1.00	1.00		0.37	1.00	
Lane Grp Cap(c), veh/h	315	280	0	959	351	1400
V/C Ratio(X)	0.83	1.27	0.00	1.03	0.97	0.34
Avail Cap(c_a), veh/h	315	280	0	959	351	1400
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.8	45.3	0.0	25.2	38.4	4.9
Incr Delay (d2), s/veh	17.0	148.0	0.0	36.7	40.2	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	19.0	0.0	32.1	12.9	3.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	60.8	193.3	0.0	61.9	78.7	5.5
LnGrp LOS	E	F	A	F	E	A
Approach Vol, veh/h	619		987			814
Approach Delay, s/veh	137.2		61.9			36.2
Approach LOS	F		E			D

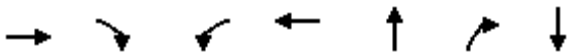
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	22.0	64.2			86.2	23.8
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	17.5	59.7			81.7	19.3
Max Q Clear Time (g_c+I1), s	18.7	61.7			11.5	21.3
Green Ext Time (p_c), s	0.0	0.0			3.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	72.5
HCM 6th LOS	E

Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	474	276	402	300
v/c Ratio	0.86	0.48	0.72	0.30
Control Delay	32.1	17.7	17.8	8.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	32.1	17.7	17.8	8.4
Queue Length 50th (ft)	118	69	79	55
Queue Length 95th (ft)	#265	132	#162	96
Internal Link Dist (ft)	2250	872		592
Turn Bay Length (ft)			200	
Base Capacity (vph)	614	580	562	993
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.48	0.72	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	159	362	119	346	169	78	18
v/c Ratio	0.31	0.52	0.35	0.67	0.22	0.09	0.02
Control Delay	16.5	5.0	18.0	23.5	8.4	2.7	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.5	5.0	18.0	23.5	8.4	2.7	6.5
Queue Length 50th (ft)	39	0	30	96	24	0	2
Queue Length 95th (ft)	72	38	60	152	61	15	10
Internal Link Dist (ft)	228			879	635		611
Turn Bay Length (ft)		150	185			200	
Base Capacity (vph)	726	834	491	748	752	900	1002
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.43	0.24	0.46	0.22	0.09	0.02

Intersection Summary

Lane Group	EBL	EBT	WBT	SBT	SBR
Lane Group Flow (vph)	448	321	559	170	240
v/c Ratio	1.03	0.16	0.28	0.37	0.36
Control Delay	72.7	9.3	6.2	26.2	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	72.7	9.3	6.2	26.2	4.8
Queue Length 50th (ft)	~275	42	46	73	0
Queue Length 95th (ft)	#353	52	55	108	27
Internal Link Dist (ft)		871	1508	817	
Turn Bay Length (ft)	300				135
Base Capacity (vph)	436	2005	1992	454	664
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.03	0.16	0.28	0.37	0.36

Intersection Summary

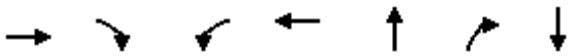
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	434	803	253	454
v/c Ratio	0.92	0.84	0.77	0.36
Control Delay	62.7	34.0	33.6	9.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	62.7	34.0	33.6	9.4
Queue Length 50th (ft)	275	530	91	143
Queue Length 95th (ft)	#460	#793	#201	202
Internal Link Dist (ft)	2250	872		592
Turn Bay Length (ft)			200	
Base Capacity (vph)	505	958	352	1273
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.86	0.84	0.72	0.36

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	325	113	122	300	142	255	10
v/c Ratio	0.64	0.22	0.61	0.59	0.17	0.26	0.01
Control Delay	24.0	4.8	31.3	22.4	7.8	2.1	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.0	4.8	31.3	22.4	7.8	2.1	6.3
Queue Length 50th (ft)	94	0	35	85	19	0	1
Queue Length 95th (ft)	158	27	80	145	57	29	8
Internal Link Dist (ft)	228			879	635		611
Turn Bay Length (ft)		150	185			200	
Base Capacity (vph)	827	756	327	830	818	989	1027
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.15	0.37	0.36	0.17	0.26	0.01

Intersection Summary

Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	269	612	557	2	109	152
v/c Ratio	0.84	0.40	0.37	0.00	0.17	0.19
Control Delay	40.8	13.8	11.7	17.5	17.2	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.8	13.8	11.7	17.5	17.2	4.3
Queue Length 50th (ft)	97	90	69	1	27	0
Queue Length 95th (ft)	195	121	99	6	85	40
Internal Link Dist (ft)		871	1508	219	817	
Turn Bay Length (ft)	300					135
Base Capacity (vph)	552	2661	2588	577	636	799
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.23	0.22	0.00	0.17	0.19

Intersection Summary

Queues
1: NE 192nd Avenue & NE 13th Street

2026 Background Traffic, AM Peak Hour
09/10/2023

Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	666	326	448	318
v/c Ratio	0.97	0.75	0.91	0.35
Control Delay	52.7	41.8	42.1	14.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	52.7	41.8	42.1	14.6
Queue Length 50th (ft)	332	160	170	104
Queue Length 95th (ft)	#566	#292	#350	163
Internal Link Dist (ft)	2250	872		592
Turn Bay Length (ft)			200	
Base Capacity (vph)	706	433	505	906
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.94	0.75	0.89	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	221	387	201	531	189	109	19
v/c Ratio	0.36	0.50	0.54	0.85	0.28	0.13	0.02
Control Delay	16.4	4.4	21.8	32.6	10.3	2.5	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.4	4.4	21.8	32.6	10.3	2.5	7.1
Queue Length 50th (ft)	57	0	56	167	37	0	3
Queue Length 95th (ft)	98	39	104	#287	68	18	11
Internal Link Dist (ft)	228			879	635		611
Turn Bay Length (ft)		150	185			200	
Base Capacity (vph)	668	812	408	688	679	849	924
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.48	0.49	0.77	0.28	0.13	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBT	SBT	SBR
Lane Group Flow (vph)	488	349	615	239	301
v/c Ratio	0.99	0.15	0.27	0.70	0.50
Control Delay	58.3	7.1	4.6	53.7	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	58.3	7.1	4.6	53.7	7.2
Queue Length 50th (ft)	333	46	50	170	0
Queue Length 95th (ft)	#454	53	54	216	31
Internal Link Dist (ft)		871	1508	817	
Turn Bay Length (ft)	300				135
Base Capacity (vph)	497	2388	2330	340	604
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.98	0.15	0.26	0.70	0.50

Intersection Summary

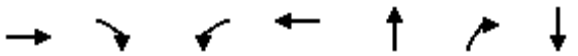
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	565	968	319	482
v/c Ratio	1.13	1.09	1.09	0.39
Control Delay	116.9	86.6	112.6	10.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	116.9	86.6	112.6	10.8
Queue Length 50th (ft)	~474	~831	~227	160
Queue Length 95th (ft)	#697	#1085	#412	224
Internal Link Dist (ft)	2250	872		592
Turn Bay Length (ft)			200	
Base Capacity (vph)	501	890	293	1230
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.13	1.09	1.09	0.39

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	508	126	176	414	164	348	10
v/c Ratio	0.73	0.19	0.99	0.59	0.24	0.41	0.01
Control Delay	23.2	3.6	91.0	19.2	11.9	6.2	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.2	3.6	91.0	19.2	11.9	6.2	8.7
Queue Length 50th (ft)	157	0	63	120	38	30	1
Queue Length 95th (ft)	251	26	#173	194	74	78	9
Internal Link Dist (ft)	228			879	635		611
Turn Bay Length (ft)		150	185			200	
Base Capacity (vph)	811	749	206	811	677	856	870
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.17	0.85	0.51	0.24	0.41	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	318	656	648	10	144	200
v/c Ratio	0.92	0.36	0.36	0.02	0.27	0.27
Control Delay	52.0	11.8	9.7	6.2	22.3	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.0	11.8	9.7	6.2	22.3	4.5
Queue Length 50th (ft)	135	95	76	0	54	0
Queue Length 95th (ft)	#309	127	108	8	110	46
Internal Link Dist (ft)		871	1508	219	817	
Turn Bay Length (ft)	300					135
Base Capacity (vph)	451	2384	2321	617	540	735
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.28	0.28	0.02	0.27	0.27

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

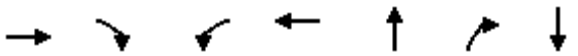
Queues
1: NE 192nd Avenue & NE 13th Street

2026 Total Traffic, AM Peak Hour
09/09/2023

Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	709	338	466	310
v/c Ratio	0.99	0.89	0.97	0.35
Control Delay	56.6	58.3	58.6	15.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	56.6	58.3	58.6	15.4
Queue Length 50th (ft)	363	169	212	103
Queue Length 95th (ft)	#611	#326	#410	162
Internal Link Dist (ft)	2250	872		592
Turn Bay Length (ft)			200	
Base Capacity (vph)	718	379	481	878
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.99	0.89	0.97	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	222	396	201	532	198	109	19
v/c Ratio	0.36	0.51	0.54	0.85	0.29	0.13	0.02
Control Delay	16.4	4.4	21.8	32.7	10.4	2.5	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.4	4.4	21.8	32.7	10.4	2.5	7.1
Queue Length 50th (ft)	57	0	56	168	40	0	3
Queue Length 95th (ft)	98	40	104	#288	72	18	11
Internal Link Dist (ft)	228			879	635		611
Turn Bay Length (ft)		150	185			200	
Base Capacity (vph)	668	818	406	687	676	849	922
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.48	0.50	0.77	0.29	0.13	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBT	SBT	SBR
Lane Group Flow (vph)	488	349	622	247	301
v/c Ratio	0.99	0.15	0.27	0.74	0.50
Control Delay	58.7	6.9	4.5	56.4	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	58.7	6.9	4.5	56.4	7.3
Queue Length 50th (ft)	335	45	49	177	0
Queue Length 95th (ft)	#455	52	53	226	31
Internal Link Dist (ft)		871	1508	817	
Turn Bay Length (ft)	300				135
Base Capacity (vph)	493	2392	2333	335	599
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.99	0.15	0.27	0.74	0.50

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
1: NE 192nd Avenue & NE 13th Street

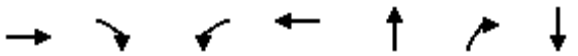
2026 Total Traffic, PM Peak Hour
09/09/2023

Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	619	987	341	473
v/c Ratio	1.17	1.15	1.16	0.39
Control Delay	131.6	111.0	137.5	11.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	131.6	111.0	137.5	11.7
Queue Length 50th (ft)	~540	~888	~262	165
Queue Length 95th (ft)	#770	#1143	#450	231
Internal Link Dist (ft)	2250	872		592
Turn Bay Length (ft)			200	
Base Capacity (vph)	528	858	293	1199
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.17	1.15	1.16	0.39

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

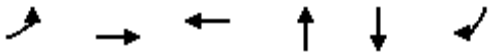
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	510	137	176	417	176	348	10
v/c Ratio	0.73	0.20	0.99	0.59	0.26	0.41	0.01
Control Delay	23.3	3.5	91.8	19.3	12.1	6.3	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.3	3.5	91.8	19.3	12.1	6.3	8.7
Queue Length 50th (ft)	158	0	63	121	41	30	1
Queue Length 95th (ft)	252	27	#173	196	79	79	9
Internal Link Dist (ft)	228			879	635		611
Turn Bay Length (ft)		150	185			200	
Base Capacity (vph)	810	754	204	810	672	854	868
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.18	0.86	0.51	0.26	0.41	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	318	656	656	10	153	200
v/c Ratio	0.93	0.36	0.36	0.02	0.29	0.27
Control Delay	53.2	11.7	9.6	6.2	22.6	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.2	11.7	9.6	6.2	22.6	4.6
Queue Length 50th (ft)	136	95	76	0	60	0
Queue Length 95th (ft)	#312	127	108	8	117	46
Internal Link Dist (ft)		871	1508	219	817	
Turn Bay Length (ft)	300					135
Base Capacity (vph)	442	2368	2307	610	536	732
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.28	0.28	0.02	0.29	0.27

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Gmail Karin Nosrati, DC <bforback@gmail.com>

Gas station

4 messages

Anthony Braunstein <braunstein.tony@gmail.com> Sun, Nov 10, 2024 at 6:41 PM
To: "Karin Nosrati, DC" <bforback@gmail.com>

I greatly appreciate Karin's efforts. As I told her when she was going house to house that I am not financially able to assist, nor can I attend any meetings. I am the caregiver for my wife that has dementia.

We have lived in our house for 52 years. During that time we have fought the County on the landfill, gravel mining, numerous projects and the rezoning of this area.

Our group hired John Karpjnski, a land use and environmental lawyer, citing our concerns on all the various projects that would affect our water and quality of life.
Many of us on 11th Street are in our 70's and 80's.

We have fought the good fight, but unfortunately big business and greed won out.

I applaud your efforts and wish you success. If I sound disillusioned, its because I am.

Maybe a younger generation will have more success in fighting the County than we, your senior neighbors had.

Tony

Karin Nosrati, DC <bforback@gmail.com> Sun, Nov 10, 2024 at 8:10 PM
To: Anthony Braunstein <braunstein.tony@gmail.com>

Thank you, Tony.

What is your address and how large is your property? Please reply to this email and I will submit this email string.
[Quoted text hidden]

Anthony Braunstein <braunstein.tony@gmail.com> Sun, Nov 10, 2024 at 8:18 PM
To: "Karin Nosrati, DC" <bforback@gmail.com>

My address is:
19700 NE 11TH ST

I am on a one acre lot.
[Quoted text hidden]

Karin Nosrati, DC <bforback@gmail.com> Sun, Nov 10, 2024 at 8:20 PM
To: Anthony Braunstein <braunstein.tony@gmail.com>

Source Water Protection

Sanitary Control Area Protection

331-453 • Revised 11/30/2022

What is a sanitary control area?

The area immediately surrounding your well or spring that is most susceptible to contamination is called the sanitary control area (SCA). You must maintain an SCA of at least 100 feet around wells and 200 feet around springs.

The SCA is your first line of defense in keeping contaminants out of your drinking water system. You must control and monitor this area regularly to ensure that things going on closest to your source do not threaten your water quality. In the long run, prevention costs much less than installing treatment or a new source. This is not just a matter of regulation but can also expose you legally if, due to improper care or monitoring, contamination occurs and harms people.

Your SCA is part of a larger protective boundary called the source water or wellhead protection area. This area collects and transports not just water, but also potential contaminants, to your drinking water source.

Sanitary control area protection

You must control your SCA both legally and physically. This means you should either own the land around your water source or, if someone else owns it, have an enduring legal agreement in place that limits land uses and activities in that area. The resources list below includes a separate publication about this.

The SCA immediately surrounding a well or surface water intake is part of a larger protective boundary called the source water or wellhead protection area.

It also means that you cannot allow potential contaminant sources within the SCA. If you can't avoid or remove potential contaminant threats, we may require that you:

- Take steps to lessen the severity of the threat,
- Increase water quality monitoring,
- Install treatment, and/or
- Find a new drinking water source.

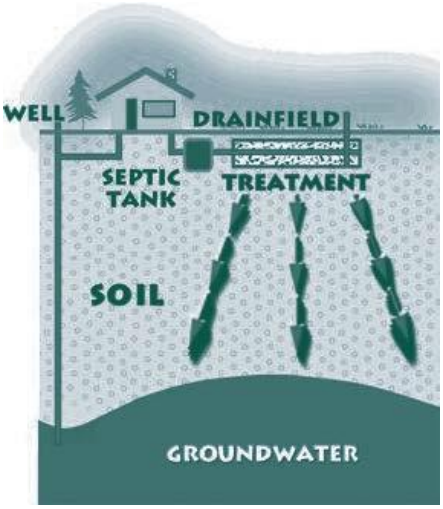
We consider the following factors when evaluating whether a potential contaminant source can remain in your SCA:

1. The nature of the potential contamination and the risk of release.
2. Source construction details including well depth, source construction, subsurface geology and other factors that could protect the source from contamination.
3. Distance from the potential contaminant source to the drinking water source.
4. Other relevant information.

Water systems must also develop a source water or wellhead protection plan to protect drinking water sources from contamination and loss of supply. The plan defines the protection area, identifies potential contaminant sources and includes management strategies to prevent contamination and loss of supply.

Common sanitary control area threats

Some common activities and land uses can threaten your source with contamination. Your well is more susceptible to contamination if it is shallow, poorly constructed, located in highly permeable soils, or served by surface water or groundwater under the influence of surface water. Below are some common threats to your SCA and some ways to protect your drinking water source. The best solution is to remove the threat. If that isn't possible, ask your regional office to help you find another workable solution.



Failing septic tanks can affect groundwater quality.

Sewer and septic systems

Sewer lines, drain fields, and septic tanks could leak and contaminate your drinking water source, resulting in severe illness or even death. Therefore, preventing this type of contamination is one of our highest priorities.

Ways to prevent or minimize the risk of contamination include:

- Remove the threat from your SCA, if possible.
- Sleeve the sewer line within another watertight line, or encase the sewer line in concrete.
- Increase coliform monitoring so you can detect problems early.
- Install disinfection treatment (with a CT of 6 according to agency requirements).

Do not store hazardous materials in the SCA.

Hazardous materials

Businesses, homeowners and water system personnel may use, store and dispose of hazardous wastes and materials. These include gasoline or diesel fuel, used motor oil, heating oil, cleaning products, pesticides, herbicides, and fertilizers. If they accidentally enter your drinking water supply, these hazardous wastes and materials are dangerous to public health.

To prevent or minimize contamination:

- Do not store chemicals there.
- Do not dispose of or apply hazardous waste or materials there.
- Install double-walled storage tanks, or provide other secondary containment.
- Install permanent on-site leak detection equipment.

Landfills and dumps

Everyday garbage can contain pathogens (bacteria, viruses, etc.); nutrients; and hazardous materials such as solvents, pesticides, fertilizers, pharmaceuticals, and paints. Leaks from landfills, dumps, and dumpsters could threaten nearby drinking water sources. Even properly constructed municipal landfills could leach hazardous materials, causing a plume, or large area of underground contamination, that could eventually reach your drinking water source.

To prevent or minimize contamination:

- Site wells and intakes at least 1,000 feet away from landfills.
- Remove dumpsters from your SCA.

Sewer waste by-products

Wastewater spray (sludge) irrigation or surface application of dry sludge is a way to recycle treated sewer waste. Even though the waste is treated, it can tend to increase nitrogen which then soaks into the soil and can contaminate groundwater. Do not apply sewer waste by-products in the SCA.

Cemeteries

Common burial practices use formaldehyde and other chemicals that pose a cancer threat for embalming. Studies show that these chemicals may leach from cemeteries into groundwater. If your SCA is near a cemetery, contact your regional office for guidance.

Animal waste, pens, feed lots and dead animals

If you see evidence of animals in your SCA, be concerned. Animal waste and dead animals could contaminate your source with bacteria and nutrients and make your customers ill.

To prevent or minimize contamination:

- Keep animals out of your SCA using fences or other means, which may include non-chemical controls to keep wild animals from invading your source.
- Install linings and walls around waste holding ponds.
- Increase coliform monitoring so you can detect problems early.
- Install disinfection treatment (with a CT of 6 according to agency requirements).

Unused and abandoned wells

All wells are a direct conduit to your groundwater and distribution system. Unused or abandoned wells that have not been properly decommissioned are often not monitored or maintained properly, increasing the likelihood of source contamination. Proper decommissioning means removing the well from active service and sealing it off from your distribution system and groundwater source. See resources listed below for more information.

Roads, parking areas, and landscaping strips

Petroleum products, chemicals, and metals can leak or be spilled and accumulate on paved surfaces like roads and parking lots, and chemicals can be used for landscaping maintenance.

To prevent or minimize contamination:

- Do not store vehicles or motorized equipment like lawn mowers in your SCA.
- Slope and pave surfaces away from the source.
- Install closed drainage systems. Do not install or allow stormwater infiltration ponds within your SCA.
- Install protective barriers (such as cones or poles) around the source to protect from vehicle damage.
- Post "no-spray" signs.

Noxious weeds

State law gives our state and local noxious weed control boards broad authority. Occasionally, a board might insist that a water system spray to kill noxious weeds in its SCA. Unfortunately, there's nothing in the law that requires them to consider or act in the best interests of source water protection. To avoid such conflicts, it's best for you to become familiar with both the state noxious weed lists (see WAC 16-750-005 through -015) and your local list, which varies by county. Continuously inspect your SCA(s) to remove any noxious weed starts before they establish.

Important: Giant Hogweed is highly phototoxic and requires special handling. Do not touch it without first looking up instructions for removal techniques to protect your employees or landscapers. Certain other weeds may be toxic as well. Do not compost noxious weeds; instead, place them in the trash.

For more information

Department of Health Office of Drinking Water
Eastern Regional Office 509-329-2100
Northwest Regional Office 253-395-6750
Southwest Regional Office 360-236-3030

Department of Ecology
Well Construction and Licensing (regional contacts on webpage)
Well Decommissioning

Free Technical Assistance
Evergreen Rural Water of Washington 360-462-9287

Relevant Rules and Publications
Washington Administrative Code citations.

- Chapter 173-160 WAC Minimum standards for construction and maintenance of wells.
- Chapter 246-203 WAC General sanitation.

- WAC 246-290-135 Source water protection (Group A).
- WAC 246-291-125 Groundwater source approval (Group B).

Our publications are online at doh.wa.gov/drinkingwater.

- *Legal Protections for your Sanitary Control Area* 331-048 (PDF).
- *Wellhead Protection Program Guidance Document* 331-018 (PDF).
- *Abandoned Wells: Problems and Solutions* 96-br-097 (PDF) Department of Ecology.

Washington State Department of Health

To request this document in another format, call 1-800-525-0127. Deaf or hard of hearing customers, please call 711 (Washington Relay) or email civil.rights@doh.wa.gov.

E

16.55.080 - Uses prohibited from critical aquifer recharge areas.

The following activities and uses are prohibited in critical aquifer recharge areas:*

A. Landfills. Landfills, including hazardous or dangerous waste, municipal solid waste, special waste, wood waste, and inert and demolition waste landfills;

B. Underground Injection Wells. Classes I, III, and IV wells and subclasses 5F01, 5D03, 5F04, 5W09, 5W10, 5W11, 5W31, 5X13, 5X14, 5X15, 5W20, 5X28, and 5N24 of Class V wells;

C. Mining.

1. Metals and hard rock mining, and
2. Sand and gravel mining;

D. Wood Treatment Facilities. Wood treatment facilities that allow any portion of the treatment process to occur over permeable surfaces (both natural and man-made);

E. Storage, Processing, or Disposal of Radioactive Substances. Facilities that store, process, or dispose of radioactive substances;

F. Fuel and/or gas stations;

G. Vehicle repair and servicing;

H. Oil and lubricant centers; and

I. Other.

1. Activities that would significantly reduce the recharge to aquifers currently or potentially used as a potable water source,
2. Activities that would significantly reduce the recharge to aquifers that are a source of significant baseflow to a regulated stream,
3. Activities that are not connected to an available sanitary sewer system are prohibited from critical aquifer recharge areas associated with sole source aquifers, and
4. Underground storage tanks for the use and storage of hazardous substances or hazardous materials.

(Ord. 2517 § 1 (Exh. A (part)), 2008)

* Prohibited uses are based on "Guidance Document for the Establishment of Critical Aquifer Recharge Area Ordinances," by Ecology, July 2000, publication #97-30, and local concerns.

PROPERTY INFORMATION CENTER

Environmental Constraints

Property Identification Number: 176148000 **MapsOnline** **Fact Sheet**
Property Type: Real
Property Status: Active
Site Address: 20101 NE 13TH ST, CAMAS, WA 98607 (Situs Addresses)
Abbreviated Description: #2 SEC 29 T2N R3EWM .95A
Tax Status: Regular

Cultural Resources

Archaeological Probability:	High
Archaeological Site Buffer:	Yes
Historic Site:	No Mapping Indicators

Development Moratorium Info...

none

Geological Hazards Info...

Geological Hazard:	
Liquefaction:	Very Low
NEHRP Class:	C
Slope Stability:	

Habitat and Species Resources Info...

Habitat and Species Impacts:	Yes
Habitat Area:	Oak Woodland
Adjacent to Habitat Area:	Oak Woodland

Wetlands and Soil Types

Critical Aquifer Recharge Area:	Category 2 Recharge Areas
FEMA Map / FIRM Panel: Info...	53011C0414D FEMA Flood Map Service Center
Flood Hazard Area: Info...	Outside Flood Area
Shoreline Designation:	none
Soil Types / Class:	Hydric / CwA Non-Hydric / WrB
Water Resource Inventory Area:	Name: SALMON-WASHOUGAL Sub-Basin: Burnt Bridge
Watershed:	Lacamas Creek
Sub Watershed:	Dwyer Creek
Wetland Class:	
Wetland Inventory: Info...	No Mapping Indicators

Septic Document Details

Application Date	August 18, 2010
As-Built:	
Last Inspected	August 2, 2021
Permit:	
onlineRME Docs (external site)	February 25, 2008 February 2, 2011 May 19, 2016 August 2, 2021

Water Well Details

Ecology Well Tag ID	Unknown
Program Element Category	DW Individual Systems
Public Health ID	WP0002883
Well Depth	109
Well Type	Drilled Well

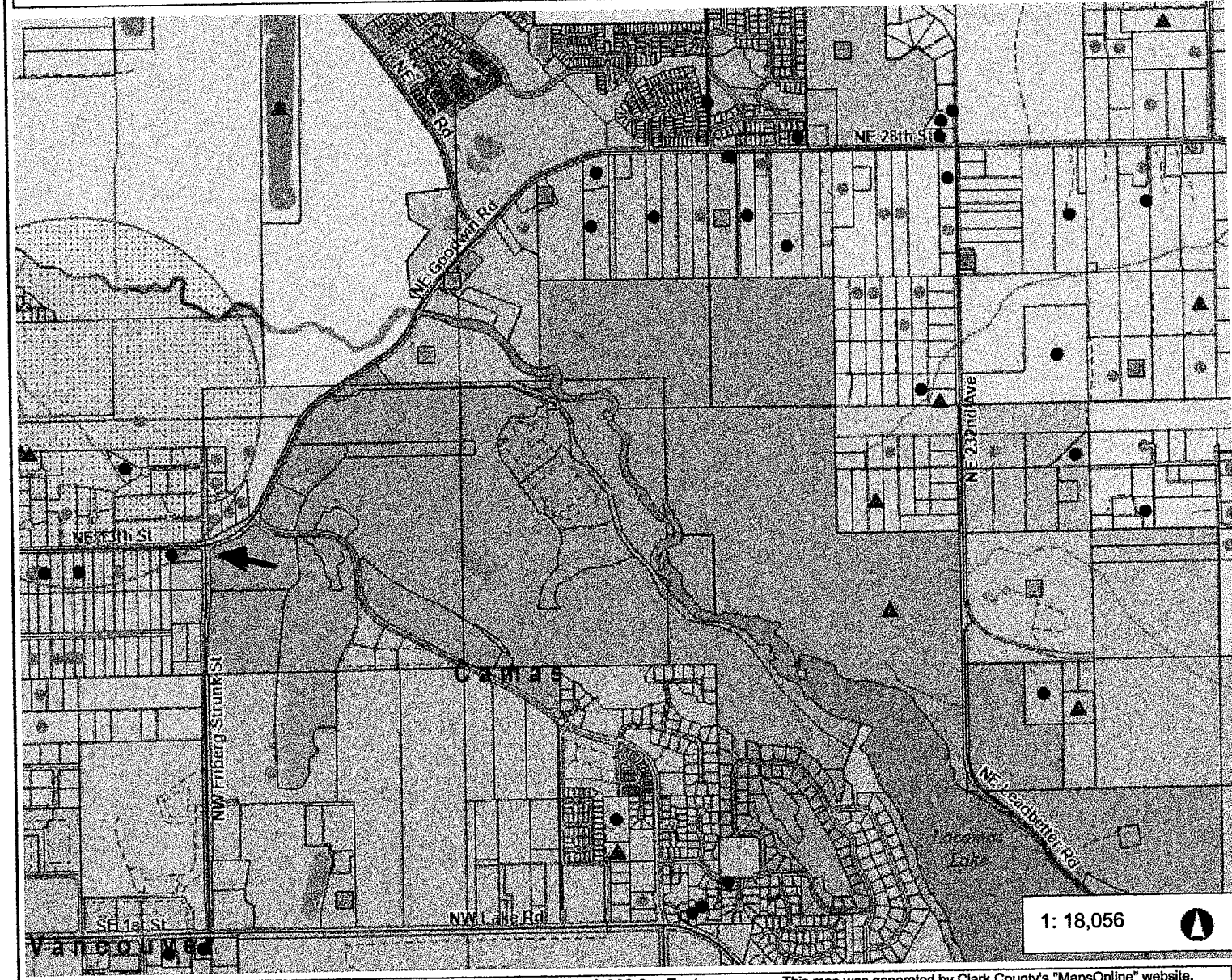
If you have any questions concerning the data on this page, please contact the land use department in your jurisdiction. For properties not within a city limits, contact Clark County Community Development. Main Phone: (564) 397-2375, Email: commdev@clark.wa.gov

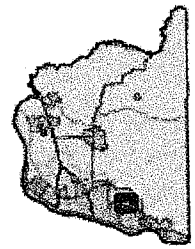
Disclaimer: Clark County does not warrant the accuracy, reliability or timeliness of any information in this system, and shall not be held liable for losses caused by using this information. Portions of this information may not be current or accurate. Any person or entity who relies on any information obtained from this system, does so at their own risk. RCW 42.56.070(8) prohibits releasing and/or using lists of individuals gathered from this site for commercial purposes. [Full Disclaimer]

Exhibit 108 APPEAL24-1001

Search on GIS or ask Jeff

Special Wellhead Protection Area





1346

Legend

- Water Well
  - Group A Public Water System
  - Group B Public Water System
  - Individual Water System
  - Irrigation Well
  - Unclassified Water System
  - Decommissioned
- Special Wellhead Protection Ar
- Taxlots

Notes:

Hatch pattern shows protection area within 1900 foot buffer

3,009.3 0 1,504.67 3,009.3 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov

This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information. Taxlot (i.e., parcel) boundaries cannot be used to determine the location of property lines on the ground.

Exhibit 108 APPEAL24-1001

Environmental Public Health

Map Sites | Find Parcel | Locate Address | Find Lat/Long | Print Map | Disclaimer | Help

Show / Hide

Layers | Search | Info

Map Layers Show

- **Environmental Public Health**
  - **Public Health**
    - Food Inspection Sites
    - Food Inspection District Boundary
    - Food Plan Review Areas
    - WRAP Inspection District Boundary
    - WRIA Subbasins
    - Recreational Water Inspection Distric
    - School Health and Safety Inspection
  - **Utilities**
    - Septic System
    - Sanitary Sewer
    - Sanitary Sewer - County-owned
    - Landfills
    - Water Well
    - Water Line
    - Municipal Wellhead Protection Areas
    - Special Wellhead Protection Area
      - Within 1,900-foot buffer
  - **Land Records**
    - Building Footprints
    - Taxlots
    - **Public Land Survey System**
  - **Transportation**
    - **Railroad Group**

Taxlot (i.e., parcel) boundaries cannot be used to determine the location of property lines on the gr

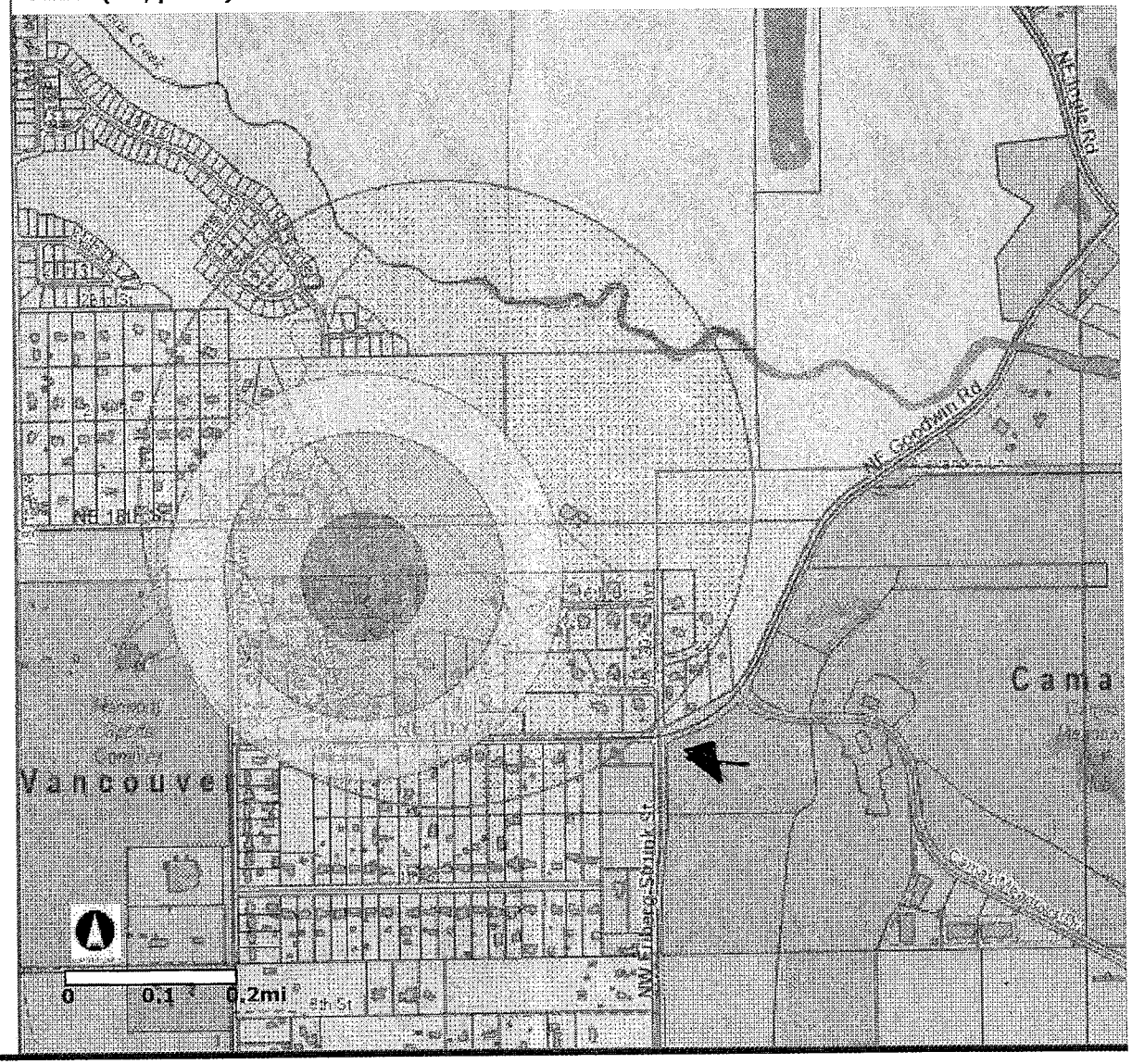


Exhibit 108 APPEAL24-1001

WELLHEAD PROTECTION PROGRAM

5.1 INTRODUCTION

Vancouver serves more than 230,000 residents with the City of Vancouver municipal water system. This water supply comes entirely from a number of underground aquifers located beneath the City and extends into Clark County. Groundwater supplies can be susceptible to contamination from the surface, particularly when located in highly urbanized or industrial areas.

To protect groundwater supplies, the U.S. Environmental Protection Agency (EPA) and the State of Washington Department of Health (DOH) require public water utilities to develop a wellhead protection program as a component of their water system comprehensive plans. The Wellhead Protection Program details local utilities plans and methods to prevent groundwater contamination. Vancouver's Wellhead Protection Program consists of a number of components for protecting water in the City. These programs described below form the basis of the chapter that follows:

- Vancouver's critical aquifer recharge area (CARA) is defined in the City's Water Resources Protection Ordinance to encompass all groundwater underlying the City, effectively providing aquifer protection measures throughout the entire City limits. In addition, special wellhead protection area buffers circling the City's water stations incorporate additional restrictions and regulations.
- A City database maintains a detailed inventory of industrial, commercial, and residential sources within the City that have a greater potential to pollute water resources. In addition, the City tracks contamination sites and problematic septic tanks that could pose a threat to water stations outside City limits.
- Spill response plans were developed in conjunction with local first responders (police, fire, HAZMAT team, etc.) for the City's facilities. The City's water protection ordinance also requires that businesses and industries identified as potential sources of contamination prepare spill and emergency response plans.
- Contingency plans were made for providing alternate sources of drinking water in the event contamination occurs.
- A Water Resources Protection Program was implemented in 2003 with the adoption of the City Water Resources Protection Ordinance (VMC 14.26). Program staff inspects businesses and industries throughout the City and investigates when notified of a spill, leak, or other discharge. Similarly, Clark County has a Source Control Inspection Program that conducts similar inspections in unincorporated areas of the water system boundary. Groundwater sources in unincorporated Clark County rely on the County's Source Control Inspection Program for protection. Both programs have proven effective in reducing the likelihood that potential contaminant sources will pollute the drinking water supply.

Exhibit 108 APPEAL24-1001

5.4 WELLHEAD PROTECTION AREA DELINEATIONS

The purpose of delineation is to identify areas in the City that could contribute potential contaminants. In the case of Vancouver, the entire City is underlain by aquifers. Therefore, contamination anywhere in the City could present a threat to these aquifers. The following describes how the City has recognized this concern and created a wellhead protection area that effectively covers all property within the City limits.

5.4.1 The Critical Aquifer Recharge Area

The City's 1996 Water Comprehensive Plan originally defined limited areas, referred to as Zones of Contribution (ZOCs), to provide a basis for focusing groundwater protection efforts. Many communities incorporate 1-, 5-, 10- and 20-year ZOCs to help define areas around water stations for applying protective measures and best management practices (BMPs).

In 2002, the City, working with the Department of Ecology, found that defined ZOCs would not provide sufficient groundwater protection in Vancouver. The City's Water Resources Protection Ordinance (WRPO) was developed with help from Ecology, other regulatory agencies, businesses, and citizen groups. This ordinance recognizes that ***any contamination in any part of the City poses a threat to underlying aquifers*** and designates the entire City of Vancouver as a Critical Aquifer Recharge Area (CARA). The City is, therefore, one large designated Wellhead Protection Area. Management practices and restrictions listed in the ordinance apply to all businesses, industries, government facilities, and residents in the City and, in effect, provide many more protections than were previously designated for the 1-, 5-, 10- or 20-year ZOCs.

5.4.2 Special Protection Buffer Areas

The City's WRPO also creates Special Protection Areas (SPAs) around each wellhead that are subject to more stringent protective restrictions than specified in the citywide Wellhead Protection Area. Within the SPA's the City will not allow development of a fueling operation or the installation of septic systems or heating oil tanks without prior approval. Infiltration systems, such as drywells, will not be approved at sites that store and manage hazardous materials unless a groundwater impact evaluation is prepared and submitted.

The ordinance defines two radial extents around municipal water wellheads. One is a 1900-foot buffer, which was derived from modeling and roughly represents an average one-year zone of contribution around City water stations. The other is a 1000-foot buffer in which there are a few additional protective provisions related to property conformance and development restrictions. Because Zones of Contributions are usually calculated from models based on water rate withdrawals and other changing parameters, updating wellhead protection boundaries can lead to uncertainty. Using specific distances to define the radial extents of protective wellhead buffers is preferable for providing existing and proposed developments with stable boundary lines.

Exhibit 108 APPEAL24-1001

5.4.3 Groundwater Modeling Considerations

A Portland Basin numeric Modflow groundwater model was originally employed to help delineate zones of contribution around the City of Vancouver's water stations. As discussed previously, the City and Ecology have agreed that ZOCs do not adequately protect Vancouver's aquifers; therefore, the entire City is now a delineated Wellhead Protection Area (defined by ordinance as a CARA) and modeling is no longer deemed necessary for delineating protection zones. The modeling data was used, however, to help better define areas in Vancouver that present greater risks of contamination to the aquifer. See the discussion of the Aquifer Vulnerability Study and GIS Mapping in Section 5.7.2.

5.5 INVENTORY OF POTENTIAL CONTAMINANT SOURCES

5.5.1 Potential Contaminant Sources

There are many diverse activities that may contaminate an aquifer, thereby jeopardizing the water supply. It is important these activities are properly inventoried and, if necessary, regulated to prevent degradation of the groundwater supply. These activities include land use and zoning practices, landfills, commercial and industrial operations, underground storage tanks, septic tanks, dry wells and catch basins, and known sites of contamination. A discussion of these practices, their potential effects on groundwater, and the regulatory requirements that may apply, are included in the following sections.

5.5.1.1 Landfills

A landfill is a disposal facility in which solid waste is permanently placed and is not a land treatment facility. Minimum functional standards for solid waste hauling are regulated by the Washington State Department of Ecology under WAC 173-304. These regulations set siting and closure criteria, performance standards, and operating requirements for landfills. The City's WRPO limits new development of landfills within the CARA.

Past landfill practices were not so restrictive. Abandoned and improperly maintained landfills and dumpsites are often a major source of groundwater contamination. The Department of Ecology is responsible for mitigating dumpsite cleanup when potentially hazardous leachates are present.

5.5.1.2 Commercial and Industrial Activity

The City has areas of land zoned for commercial and industrial uses. Businesses within these commercially zoned areas that may contribute contaminants to the groundwater include dry cleaners, gas stations and other fuel storage tanks, auto repair shops, metal plating, asphalt and concrete facilities, and machine shops. Wastes generated at these businesses include such substances as petroleum products, solvents, surfactants, heavy metals, and other organic materials. These wastes can potentially enter the groundwater through inadequate disposal practices or accidental spills. Table 5.3 presents typical commercial and industrial activities

November 10, 2024

Dear Hearings Examiner,

We are opposed to the gas station/car wash/convenience store project directly across the street from the back of our home due to the following concerns:

- Our 3 acre property contains wetlands; this wetland is habitat to deer, racoon, coyote, owl, woodpecker, rabbits and any number of smaller critters that we don't see every day but make their home there.
- The project lies within the boundary of a public wellhead buffer area (as represented on Clark County GIS).
- There are 45 private drinking water wells that would be contaminated by runoff from this project, most of which have not been registered previously and therefore were not included in the original decision.
- The project is at an intersection which is already extremely dangerous, has recently added large numbers of semi-trucks to it (Interstate battery moved in across the street), and handles traffic for the 2000+ student highschool just up the street.
- The venting of the gas vapors may pose a health risk to those of us living nearby, including our children and grandchildren.
- The project will, undoubtedly, reduce our property values and make it difficult to sell our homes.

Please weigh the number of negative impacts this project will have compared to the unnecessary addition of another gas station which can already be found nearby and which will ultimately be phased out as gas-powered vehicles become unlawful or less utilized.

Thank you,

Keli and Jeff Goertzen
20009 NE 14th St
Camas WA 98607

First 20’ from boundary to well

Second 20’ from parcel to well

Third 20’ from parcel to well

Fourth distance is
15’ to drinking water
well = 75’ from
boundary

WETLANDS

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Southwest Region Office
PO Box 47775, Olympia, WA 98504-7775 • 360-407-6300

March 6, 2024

Robert Maul, Planning Manager
City of Camas
Community Development Department
616 Northeast Fourth Avenue
Camas, WA 98607

Dear Robert Maul:

Thank you for the opportunity to comment on the determination of nonsignificance for the 13th Street Gas Station Project (SEPA23-12) 20101 Northeast 13th Street as proposed by Travis Johnson. The Department of Ecology (Ecology) reviewed the environmental checklist and has the following comment(s):

HAZARDOUS WASTE & TOXICS REDUCTION: Garret Peck (564) 669-0836

The applicant proposes to demolish an existing structure(s). In addition to any required asbestos abatement procedures, the applicant should ensure that any other potentially dangerous or hazardous materials present, such as PCB-containing lamp ballasts, fluorescent lamps, and wall thermostats containing mercury, are removed prior to demolition. It is important that these materials and wastes are removed and appropriately managed prior to demolition. It is equally important that demolition debris is also safely managed, especially if it contains painted wood or concrete, treated wood, or other possibly dangerous materials.

Please review the "Dangerous Waste Rules for Demolition, Construction, and Renovation Wastes," posted at Ecology's website, https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Dangerous-waste-guidance/Common-dangerous-waste/Construction-and-demolition . The applicant may also contact Rob Rieck of Ecology's Hazardous Waste and Toxics Reduction Program at (360) 407-6751 for more information about safely handling dangerous wastes and demolition debris.

SHORELANDS & ENVIRONMENTAL ASSISTANCE: Meghan Tait, (360) 210-2783

Thank you for providing the Department of Ecology the opportunity to review and comment on the proposed 13th Street Gas Station.
The wetland delineation was conducted in August, typically a dry time of the year for the region. Per the Corps of Engineers WMVC regional supplement to the wetland delineation manual, additional field investigation is necessary to determine whether a wetland is present. One or more site visits should be scheduled to coincide with the normal wet portion of the growing season, the period of the year when the presence or absence of wetland hydrology indicators is most likely to reflect the true wetland/non-wetland status of the site.

The City of Camas Critical Areas Ordinance states that all wetlands and recommended buffer zones within 300 feet of the project area shall be addressed in the critical area report (16.53.030(B)(2)). Wetlands and buffers on surrounding parcels have not been evaluated and included in the Critical Areas Report dated October 2, 2023 prepared by Ecological Land Services for this project. There are mapped wetlands and hydric soils on the parcel to the west and south of the project area.

For technical assistance or questions, please contact Wetland Specialist, Meghan Tait, at meghan.tait@ecy.wa.gov or 360-210-2783.

Ecology's comments are based upon information provided by the lead agency. As such, they may not constitute an exhaustive list of the various authorizations that must be obtained or legal requirements that must be fulfilled in order to carry out the proposed action.

If you have any questions or would like to respond to these comments, please contact the appropriate reviewing staff listed above.

Department of Ecology
Southwest Regional Office

(JKT:2024000789)

cc: Garret Peck, HWTR
Meghan Tait, SEA

Wetland plants immediately adjacent to parcel boundary

More wetland plants in parcel to west of project

ED-1.6: Remain active in regional recruitment organizations to ensure the availability of an adequate supply of commercial and industrial employment land to support the City's economic development goals.

ED-1.7: Support retention, expansion, and recruitment of local businesses with a commitment to the community.

ED-1.8: Ensure that development standards are balanced in order to promote high-quality building and site design and encourage businesses to operate in an environmentally responsible manner.

ED-1.9: Encourage businesses to reduce travel times and trips through implementation of a trip reduction program, which includes incentives for carpooling, transit ridership, and other options beyond single-occupancy vehicles.

ED-1.10: Encourage complementary businesses throughout the City to support industry clusters and leverage resources.

6.4.2 Downtown

Downtown Camas is the historic center of the City, which has seen steady redevelopment in recent years with a brew pub, conversion of uses (e.g., Ford dealership to offices), and a new building on NE Everett. Land uses in downtown include a mix of retail services, restaurants, professional offices, government services, and single- and multi-family residential development. Downtown Camas is also home to several community events throughout the year, including Camas Days. These events attract thousands of people to downtown and support the local economy and community.

Downtown Economic Development Goal

ED-2: Maintain Downtown Camas as the heart of the City and encourage development/redevelopment from 3rd Avenue to 6th Avenue, and Adams to Garfield, which respect the area's historic character and support walkability and a range of diverse services.

Downtown Economic Development Policies

ED-2.1: Safeguard the design of downtown through requiring compliance with the *Downtown Design Review Manual* and consistency with the comprehensive plan, which includes an abundance of street trees and historic design features.

ED-2.2: Collaborate with public agencies, private parties, and non-profits in marketing and outreach efforts that sustain existing local businesses and attract new development/redevelopment while maintaining the historic character of downtown.

ED-2.3: Ensure the Land Use Element supports higher residential densities adjacent to the downtown district and atop downtown businesses to increase activity in downtown in support of local businesses.

ED-2.4: Fulfill the vision for a central gathering place in the heart of downtown, which will support regular community events, and be the catalyst for new ones. The gathering place could include design features such as: seating areas; public art; fountains; children engagement art; expanded farmer's market space; and other amenities that create ambiance and bring people of all ages to Downtown.

ED-2.5: Ensure adequate parking in Downtown for continued business growth. Seek out opportunities for additional parking on the edges of the downtown district, which could also serve as a park and ride transit facility.

6.4.3 Grass Valley

Grass Valley is home to several national and international technology and manufacturing firms. Land uses in Grass Valley include large technology and manufacturing campuses, surrounded by retail and commercial services and residential development. The City has invested in significant infrastructure improvements in Grass Valley in support of high-tech industrial development, which is still the focus for this area.

Grass Valley Economic Development Goal

ED 3: Promote a cooperative industrial business park in which businesses and the City share resources efficiently to achieve sustainable development, with the intention of increasing economic gains and improving environmental quality.

Grass Valley Economic Development Policies

ED-3.1: Promote the development of a subarea plan that will capitalize on the creation and retention of industries that provide family-wage jobs.

ED-3.2: Subarea planning should capitalize on existing facilities and infrastructure and include a mix of uses that are trail- and transit-oriented and designed with high-quality streetscape appeal.

ED-3.3: Protect employment land from conversion to residential uses by requiring an analysis of adequate buildable lands in Grass Valley to meet 20-year employment projections prior to land conversion approval.

6.4.4 North Shore

The area north of Lacamas Lake is anticipated to experience substantial growth and redevelopment within the 20-year planning horizon. Planned transportation infrastructure will improve transportation connectivity throughout the City and support the employment and retail uses desired in the North Shore area. A large portion of the land in this area is zoned Business Park and Multi-Family, with some Commercial and lower density residential zoning. The Port of Camas-Washougal manages an airport that is outside City limits, but most of the developable land in the North Shore area is within the airport influence area.

North Shore Economic Development Goal

ED 4: To encourage master planning that allows a more intense level of development, well-served by transportation options and includes facilities for pedestrian and bicycle travel, a range of housing choices, and a mix of shops, services, and public spaces.

North Shore Economic Development Policies

ED-4.1: Promote the growth of businesses such as grocery stores, medical offices, and restaurants that will meet the retail and service needs of the population.

ED-4.2: Protect the viability of the airport as a significant economic resource to the community by encouraging compatible land uses[7] and densities, and reducing hazards that may endanger the lives and property of the public and aviation users consistent with state laws RCW 36.70A.510 and RCW 36.70.547.

ED-4.3: Encourage new developments to include provisions for neighborhood parks that are within walking and biking distance of a person's home or work to encourage greater physical activity, including shared-use paths (or trails) that link homes, work and commercial centers, public transit, and community facilities.

ED-4.4: Promote economic development opportunities adjacent to the Port of Camas-Washougal's Grove Field that will benefit from additional transportation options.

ED-4.5: Preserve large tracts of land for large industry and master-planned commercial development.

ED-4.6: Support public-private partnerships for infrastructure development.

ED-4.7: Advocate better transit routes and service.

6.4.5 Eastside Commercial District

The Eastside Commercial District has tremendous economic growth potential and would benefit from targeted streetscape improvements. The development of a streetscape that is attractive and safe for all modes of transportation (e.g., bicycles, wheelchairs, pedestrians) could attract new economic opportunities and investment to the area.

This commercial area generally straddles NE Third Avenue at the City's eastern edge to the bridge over the Washougal River. The commercial structures are single-story, with stretches along the street that are in disrepair and vacant. Scattered businesses have been recently renovated. This vehicle-dominated corridor has several drive-through chain restaurants and large parking lots adjoin the street. There are no pedestrian or bicycle amenities and landscaping is scarce or non-existent.

[7] Refer to "Airport and Compatible Land-Use Program Guidebook," Washington State Department of Transportation; available online at http://www.wsdot.wa.gov/aviation/Planning/ACLUguide.htm.

Zoning Districts	NC	DC	CC	RC	MX	BP	LI/ BP	LI	HI	C-NS	MX-NS	ME-NS
Commercial Uses												
Animal kennel, commercial boarding [6]	X	X	X	P [11]	X	P [11]	X	P [11]	P [11]	X	X	P [11]
Animal shelter [6]	X	X	X	C	X	C	X	C	P	X	X	C
Antique shop [6]	P	P	P	P	P	C	X	X	P	P	P	P
Appliance sales and service [6]	X	P	P	P	P	P	X	C	P	P	P	P
Automobile repair (garage) [6]	X	P	C	P	X	P	X	P	P	C	X	P
Automobile sales, new or used [6]	X	P	X	P	X	P	X	P	P	X	X	P
Automobile service station [6]	X	P	C	P	X	P	X	P	P	C	X	P
Automobile wrecking [6]	X	X	X	X	X	X	X	X	C	X	X	X
Bakery (wholesale) [6]	X	X	X	P	X	P	P [5]	P	P	C	C	P
Bakery (retail) [6]	P	P	P	P	P	P	P [5]	P	P	P	P	P
Banks, savings and loan	X	P	P	P	P	P	P [5]	P	P	P	P	P
Barber and beauty shops [6]	P	P	P	P	P	P	P [5]	P	P	P	P	P
Boat building [6]	X	X	X	C	X	C	X	C	P	X	X	C
Boat repair and sales [6]	X	P	X	P	X	P	X	P	P	X	X	P
Book store [6]	C	P	P	P	P	P	P [5]	P	P	P	P	P
Bowling alley/billiards [6]	X	P	X	P	P	P	X	P	P	X	P	P

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Zoning Districts	NC	DC	CC	RC	MX	BP	LI/ BP	LI	HI	C-NS	MX-NS	ME-NS
Building, hardware and garden supply store [6]	X	P	C	P	P	P	X	P	P	C	P	P
Bus station [6]	X	C	C	P	C	P	X	P	P	P	P	P
Cabinet and carpentry shop [6]	X	P	C	P	C	P	P [5]	P	P	C	C	P
Candy; confectionery store [6]	P	P	P	P	P	P	P [5]	P	P	P	P	P
Cemetery [6]	X	X	X	C	X	X	X	C	P	X	X	C
Clothing store [6]	C	P	P	P	P	P	X	P	P	P	P	P
Coffee shop, cafe [6] or kiosk	P	P	P	P	P	P	P [5]	P	P	P	P	P
Convention center [6]	X	P	X	C	C	P	P	C	X	X	C	C
Day care center [6]	C	P	P	C	P	C	P [5]	C	C	P	P	C
Day care, adult	P	P	P	P	P	P	P	P	P	P	P	P
Day care, family home [6]	P	P	P	P	P	X	P [5]	P	X	P	P	P
Day care, mini-center [6]	P	P	P	P	P	P	P [5]	P	X	P	P	P
Delicatessen (deli) [6]	P	P	P	P	P	P	P [5]	P	P	P	P	P
Department store [6]	X	P	C	P	P	P	X	P	X	C	C	P
Electric vehicle battery charging station and rapid charging stations	P	P	P	P	P	P	P	P	P	P	P	P
Equipment rental [6]	C	P	C	C	C	P	P [5]	P	P	C	P	C
Event center	X	P	C	P	C	P	P	P	P	P	P	

Exhibit 108 APPEAL24-1001

Zoning Districts	NC	DC	CC	RC	MX	BP	LI/ BP	LI	HI	C-NS	MX-NS	ME-NS
Feed store [6]	X	X	X	P	X	C	X	P	P	X	X	P
Fitness center/sports club [6]	X	P	P	P	P	P	P [5]	P	P	P	P	P
Florist shop [6]	P	P	P	P	P	P	P [5]	P	X	P	P	P
Food cart/food truck/food delivery business [6]	C	P	C	P	C	P	C	P	X	C	C	P
Furniture repair; upholstery [6]	X	P	C	P	P	P	X	P	P	C	P	P
Furniture store [6]	X	P	C	P	P	P	X	P	X	C	P	P
Funeral home [6]	X	P	C	P	P	X	X	X	X	C	C	P
Gas/fuel station [6]	X	P	C	P	X	P	X	P	P	C	X	P
Gas/fuel station with mini market [6]	X	P	C	P	X	P	X	P	P	C	X	P
Grocery, large scale [6]	X	P	C	P	P	C [8]	X	P	P	C	C	P
Grocery, small scale [6]	P	P	C	P	P	P	X	P	P	P	P	P
Grocery, neighborhood scale [6]	P	P	P	P	P	P	P [5]	P	X	P	P	P
Hospital, emergency care [6]	X	C	P	P	P	P	X	P	X	C	C	P
Hotel, motel [6]	X	C	C	P	P	P	X	P	X	C	C	C
Household appliance repair [6]	X	P	C	P	P	P	X	P	P	C	P	P
Industrial supplies store [6]	X	P	X	C	C	C	X	C	P	X	C	C
Laundry/dry cleaning (industrial)	X	X	X	P	X	X	X	P	P	X	X	P
Laundry/dry cleaning (retail) [6]	P	P	P	P	P	P	P [5]	P	P	P	P	P

Exhibit 108 APPEAL24-1001

Zoning Districts	NC	DC	CC	RC	MX	BP	LI/ BP	LI	HI	C-NS	MX-NS	ME-NS
Laundry (self-serve)	P	P	P	P	P	P	X	P	P	P	P	P
Liquor store [6]	X	P	C	P	C	C	X	C	C	P	P	P
Machine shop [6]	X	X	C	C	C	C	P [5]	C	P	C	C	C
Marijuana processor	X	X	X	X	X	X	X	X	X	X	X	X
Marijuana producer	X	X	X	X	X	X	X	X	X	X	X	X
Marijuana retailer	X	X	X	X	X	X	X	X	X	X	X	X
Medical or dental clinics (outpatient) [6]	C	P	P	P	P	P	P [5]	P	P	P	P	P
Mini-storage/vehicular storage [6]	X	X	X	X	X	X	X	P	P	X	X	X
Manufactured home sales lot [6]	X	X	X	P	X	X	X	P	P	X	X	P
Newspaper printing plant [6]	X	P	C	C	X	X	X	P	P	C	X	C
Nursery, plant [6]	X	P	C	C	C	C	X	C	P	C	C	P
Nursing, rest, convalescent, retirement home [6]	C	P	P	P	P	X	X	X	X	P	P	P
Office supply store [6]	X	P	P	P	P	X	P [5]	P	P	P	P	P
Pawnshop [6]	X	X	X	X	X	X	X	C	C	X	X	X
Parcel freight depots [6]	X	P	X	P	X	P	P [5]	P	P	X	X	P
Permanent supportive housing	C	P	X /P 10	X /P 10	P	X	X	X	X	X /P 10	P	X /P 10
Pet shops [6]	X	P	P	P	P	P	X	P	C	P	P	

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Zoning Districts	NC	DC	CC	RC	MX	BP	LI/ BP	LI	HI	C-NS	MX-NS	ME-NS
Pharmacy [6]	X	P	P	P	P	P	P [5]	P	P	P	P	P
Photographic/electronics store [6]	X	P	P	P	P	P	P [5]	P	P	P	P	P
Plumbing, or mechanical service [6]	X	X	X	P	C	P	X	P	P	X	C	P
Printing, binding, blue printing [6]	C	P	P	P	P	P	P [5]	P	P	P	P	P
Professional office(s) [6]	C	P	P	P	P	P	P	P	P	P	P	P
Public agency [6]	C	P	P	P	P	P	P	P	P	P	P	P
Real estate office [6]	C	P	P	P	P	P	T	P	P	P	P	P
Recycling center [6]	X	X	X	X	X	X	X	P	P	X	X	X
Recycling collection point [6]	T or C	P	T or C	T or C	C	C	P [5]	P	P	T or C	C	X
Recycling plant [6]	X	X	X	X	X	X	X	C	P	X	X	C
Research facility [6]	X	P	C	C	X	P	P	P	P	C	C	C
Restaurant [6]	C	P	P	P	C	P	P [5]	P	P	P	P	P
Restaurant, fast food [6]	X	P	C	P	C	P	P [5]	P	P	C	C	P
Roadside produce stand [6]	T	T	T	T	C	X	T	T	T	T	C	T
Sand, soil, gravel sales and storage [6]	X	X	X	X	X	X	X	C	P	X	X	X
Second-hand/consignment store [6]	C	P	P	P	P	P	X	P	P	P	P	P

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Zoning Districts	NC	DC	CC	RC	MX	BP	LI/ BP	LI	HI	C-NS	MX-NS	ME-NS
Sexually oriented business [1,5]	X	X	X	X	X	X	P	X	X	X	X	X
Shoe repair and sales [6]	P	P	P	P	P	P	X	P	P	P	P	P
Smoke shop/head shop [9]	X	X	P	P	X	X	X	X	X	P	X	P
Stock broker, brokerage firm	P	P	P	P	P	P	P	P	P	P	P	P
Specialty goods production (e.g. brew pub)	P	P	P	P	P	P	P	P	P	P	P	P
Taverns [6]	X	P	C	P	C	P	X	P	P	C	C	P
Theater, except drive-in [6]	X	P	C	P	P	P	X	P	P	P	P	P
Truck terminals [6]	X	C	X	C	X	X	X	C	P	X	X	C
Veterinary clinic [6]	X	P	C	P	P	P	X	P	P	P	P	P
Warehousing, wholesale and trade [6]	X	X	X	C	C	P	P [5]	P	P	X	X	P
Warehousing, bulk retail [6]	X	X	X	C	C	X	X	P	P	X	X	P
Manufacturing and/or processing of the following:												
Cotton, wool, other fibrous material	X	X	X	X	X	P	X	P	P	X	X	X
Food production or treatment	X	X	X	C	C	P	X	P	C	X	C	C
Foundry	X	X	X	X	X	X	X	C	C	X	X	X
Furniture manufacturing	X	P	X	X	C	C	X	P	P	X	C	X
Gas, all kinds (natural, liquefied)	X	X	X	X	X	X	X	X	C	X	X	

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Zoning Districts	NC	DC	CC	RC	MX	BP	LI/ BP	LI	HI	C-NS	MX-NS	ME-NS
Gravel pits/rock quarries	X	X	X	X	X	X	X	C	P	X	X	X
Hazardous waste treatment—Off-site	X	X	X	X	X	X	X	X	P	X	X	X
Hazardous waste treatment—On-site	X	X	X	X	X	X	X	X	P	X	X	X
Junkyard/wrecking yard	X	X	X	X	X	X	X	X	C	X	X	X
Metal fabrication and assembly	X	X	X	X	X	C	X	X	P	X	X	C
Hazardous waste treatment—On-site	X	X	X	X	X	X	X	X	P	X	X	X
Paper, pulp or related products	X	X	X	X	X	X	X	X	P	X	X	X
Signs or other advertising structures	X	X	X	C	C	C	P	C	P	X	C	C
Electronic equipment	X	P	X	X	X	X	P	P	P	X	X	X
Industrial Uses												
High-tech industry	X	P	X	X	P	P	P [2]	X	X	X	P	P
Manufacturing of miscellaneous goods (e.g. musical instruments, toys, vehicle parts)	X	X	X	X	C	X	X	P	P	X	C	P
Optical goods	X	C	C	C	C	P	P [5]	P	P	C	C	C
Packaging of prepared materials	X	X	C	P	C	C	P [5]	C	P	C	C	P
Scientific and precision instruments	X	P	X	X	X	P	P	P	P	X	X	P

Zoning Districts	NC	DC	CC	RC	MX	BP	LI/ BP	LI	HI	C-NS	MX-NS	ME-NS
Recreational, Religious, Cultural Uses												
Auditorium [6]	C	P	P	P	P	P	X	P	P	P	P	P
Community club [6]	C	P	P	P	P	P	X	P	P	P	P	P
Church [6]	P	P	P	P	P	P	X	P	P	P	P	P
Golf course/driving range [6]	P	X	P	P	X	P	P [5]	P	P	X	X	P
Library [6]	C	P	P	P	P	P	X	P	P	P	P	P
Museum [6]	C	P	P	P	P	P	X	P	P	P	P	P
Recreational vehicle park [6]	X	X	X	C	X	X	X	P	P	X	X	C
Open space [6]	P	P	P	P	P	P	P	P	P	P	P	P
Park or playground	P	P	P	P	P	P	P	P	P	P	P	P
Sports fields [6]	C	X	P	P	P	P	X	P	P	P	P	P
Trails	P	P	P	P	P	P	P	P	P	P	P	P
Educational Uses												
College/university [6]	P	P	P	P	P	P	X	P	P	P	P	P
Elementary school [6]	P	P	P	P	P	P	X	P	P	P	P	P
Junior or senior high school [6]	P	P	P	P	P	P	X	P	P	P	P	P
Private, public or parochial school [6]	P	P	P	P	P	P	X	P	P	P	P	P
Trade, technical or business college [6]	P	P	P	P	P	P	P	P	P	P	P	P

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Zoning Districts	NC	DC	CC	RC	MX	BP	LI/ BP	LI	HI	C-NS	MX-NS	ME-NS
Residential Uses												
Adult family home	C	P	P	X	P	X	X	X	X	P	P	X
Assisted living	C	P	P	X /P 10	P	X	X	X	X	P	P	X /P 10
Bed and breakfast	P	P	P	X	P	X	X	X	X	P	P	X
Designated manufactured home	X	X	X	X	P	X	X	X	X	X	X	X
Duplex or two-family dwelling	X	C/P 7	X	X	P	X	X	X	X	X	P	X
Group home	C	P	P	X	P	X	X	X	X	P	P	X
Home occupation	P	P	P	X /P 10	P	X	X	X	X	P	P	X /P 10
Housing for the disabled	P	P	P	X /P 10	P	X	X	X	X	P	P	X /P 10
Apartment, multifamily development, row houses	X	C/P 7	X /P 10	X/P 10	C	X	X	X	X	X	P	X
Residence accessory to and connected with a business	P	P	P	X /P 10	P	X	X	X	X	P	P	X /P 10
Residential Treatment Facility [12]	C	P	P	P	P	X	X	X	X	P	P	P
Single-family Cottage-style homes	X	X	X	X	X	X	X	X	X	X	P	X
Single-family dwelling	X	X	X	X	P	X	X	X	X	X	X	X
Sober Living Homes	C	P	P	X	P	X	X	X	X	P	P	X

Zoning Districts	NC	DC	CC	RC	MX	BP	LI/ BP	LI	HI	C-NS	MX-NS	ME-NS
Transitional Housing	C	P	C	P	P	P	X	P	X	C	P	P
Communication, Utilities and Facilities												
Electrical vehicle infrastructure	P	P	P	P	P	P	P	P	P	P	P	P
Wireless communications facility	Refer to Chapter 18.35											
Facilities, minor public	P	P	P	P	C	P	P	C	P	P	C	P
Facility, essential [6]	X	X	C	C	C	C	P	C	C	C	C	C
Railroad tracks and facilities [6]	C	X	C	C	C	X	X	C	C	C	C	C
Temporary Uses												
Temporary sales office for a development [4]	T	T	T	T	T	T	T	T	T	T	T	T

18.01.020 - Purpose. TRAFFIC Property value F

A. The purposes of this title are: to implement the comprehensive plan for the city; to encourage the most appropriate use of land; to conserve and stabilize the value of property; to aid in rendering of fire and police protection; to provide adequate open space for light and air; to lessen the congestion on streets; to give an orderly growth to the city; to prevent undue concentration of population; to improve the city's appearance; to facilitate adequate provisions for community utilities and facilities such as water, sewerage, and electrical distribution system, transportation, schools, parks, and other public requirements; and in general to promote public health, safety and general welfare.

B. Since the public health, safety and general welfare is superior to the interests and pecuniary gains of the individual, this title may limit the use of property and prevent its most profitable gain. If some reasonable use of property is allowed by this title and the effect is not confiscatory, the city is exercising a proper use of police power.

(Ord. 2515 § 1 (Exh. A (part)), 2008: Ord. 2443 § 3 (Exh. A (part)), 2006)

18.05.050 - Commercial and industrial zones.

The purpose of the commercial, industrial, and high technology zones are to provide services and employment primarily to residents. These areas are zoned according to the services they provide. As a result, each zone has different characteristics as summarized below:

A. NC Neighborhood Commercial. This zone provides for the day-to-day needs of the immediate neighborhood. This zone is intended to be small, but fairly numerous throughout the city. Convenience goods (e.g., food, drugs and sundries), along with personal services (e.g., dry cleaning, barbershop or beauty shop), are common goods and services offered.

B. CC Community Commercial. This zone provides for the goods and services of longer-term consumption, and tend to be higher-priced items than the neighborhood commercial zone district. Typical goods include clothing, hardware and appliance sales. Some professional services are offered, e.g., real estate office or bank. Eating and drinking establishments may also be provided. This zone tends to vary in size, but is larger than the neighborhood commercial zone.

C. RC Regional Commercial. This zone provides apparel, home furnishings, and general merchandise in depth and variety, as well as providing services for food clusters and some recreational activities. Regional commercial is the largest of the commercial zones and is designed to serve the region or a significant portion of the region's population.

D. DC Downtown Commercial. This zone is designated as a large community commercial area, providing a large range of goods and services. This area is designed to promote commercial diversification to serve the immediate residential and office uses in the surrounding areas. Compact development is encouraged that is supportive of transit and pedestrian travel, through higher building heights and floor area ratios than those found in other commercial districts.

E. C-NS North Shore Commercial. This zone is designated as a commercial area in the North Shore subarea, meaning a range of goods and services are available.

F. ME-NS North Shore Mixed Employment. This zone allows a wide variety of employment uses in the North Shore subarea, including retail, office space, warehouse, manufacturing, and other employment uses.

G. LI Light Industrial. This zone provides for uses that are more compatible with commercial, residential, or multifamily uses. Typical uses in this zone include assembly and manufacturing of electronic and precision instruments. More intensive industry, e.g., metal fabrication, is excluded.

H. BP Business Park. This zone provides for employment growth in the city by protecting industrial areas for future employment. Design of business park facilities in this district will be campus-style, with landscaped buffers, and architectural features compatible with surrounding areas.

I. LI/BP Light Industrial/Business Park. This zone provides for uses such as, offices related to industrial usage, research and development, limited commercial, and associated warehousing uses, including the provision of employee recreation opportunities. Development in campus-like setting with generous landscaping, well-designed buildings and near major traffic corridors is anticipated.

J. HI Heavy Industrial. This zone provides for a wide range of industrial and manufacturing uses. Types of activities in this zone include assembly, manufacturing, fabrication, processing, bulk handling and storage, research facilities, associated warehousing, and heavy trucking.

K. MX Mixed Use. This zone provides for a wide range of commercial and residential uses. Compact development is encouraged that is supportive of transit and pedestrian travel.

L. MX-NS North Shore Mixed Use. This zone provides for a wide range of commercial and residential uses in the North Shore subarea. Compact development that supports transit and pedestrian travel is encouraged. Mixed-use areas should create spaces for community gathering, waiting, discussion, and outdoor commercial activities. Horizontal and vertical mixed-use developments are allowed. Mixed-use development should include multiple entries and windows on the ground floor to facilitate business access, create visual interest, and promote safety. For the residential uses, this zone allows a maximum density of twenty-four dwellings per acre and minimum density of ten dwelling units per acre. Each horizontal mixed-use development should have no more than seventy percent of the total acreage of the development dedicated to residential uses. Each vertical mixed-use development shall, at a minimum, dedicate the ground floor to commercial uses (up to fifty percent of the ground floor may be used for indoor parking). Residential multifamily is allowed only on the second floor or above or in the back of commercial buildings as a live-work unit (only twenty-five percent of the required thirty percent can be live-work units).

(Ord. 2515 § 1 (Exh. A (part)), 2008: Ord. 2443 § 3 (Exh. A (part)), 2006; Ord. No. 23-010, Exh. A, 8-7-2023)

(Ord. No. 2547, § III(Exh. C), 5-18-2009; Ord. No. 2691, § I(Exh. A), 1-21-2014; Ord. No. 19-001, § I(Att. A), 1-22-2019; Ord. No. 23-010, Exh. A, 8-7-2023)

Gmail

Karin Nosrati, DC <bforback@gmail.com>

ssibly important arguments regarding the gas station

5 messages

Karin Nosrati, DC <bforback@gmail.com> Tue, Sep 3, 2024 at 12:11 AM
To: Kristin Price <19813mkp@gmail.com>
Cc: Heidi Parker <heidihparker@gmail.com>

Hi, Kristin,

I was wondering if you have time to talk regarding a couple of items that may be imported regarding the gas station project.

There is a public hearing tomorrow evening, Tuesday, September 3, 2024, and I am not sure if it would be worth speaking up regarding:

1. Car wash zoning:

- I could not find any listing of "car wash" in the Camas zoning permitted uses document
- There is only one car wash in Camas and it is in a location that is zoned CC "Community Commercial" which is right by a freeway entrance/exit
- If a car wash was similar to a commercial laundry, "laundry/dry cleaning industrial" it would not be permitted in the current zoning, which is BP

2. Convenience store:

- Gas stations and mini mart are allowed in BP
- Grocery stores are also allowed in BP
- A 4,100 sq. ft convenience store is arguably larger than a mini mart?
- A liquor store has only "conditional" approval for BP zoning
- Some grocery stores now sell liquor, so I am not sure that that would all fit...

3. I also think that the argument for your neighbors needing to pay for a special well inspection upon selling, if their buyer is trying to get an FHA loan, due to the proximity of the gas station, is important.

4. Should we ask to have a type III review with a hearing examiner instead of just a staff review (type II)? Ordinarily for BP they don't have to. However, the new warehouse is zoned BP and warehousing, according to the way I read the permitted uses, should have been in BP/LI which does require a type III review. Please see my email from last week for more detail.

Do you think these ideas might have merit?

Thanks,

Karin

2 attachments

City of Camas zoning.pdf
3611K

Zoning and permitted use Camas, WA Code of Ordinances.pdf
992K

Kristin Price <19813mkp@gmail.com> Tue, Sep 3, 2024 at 8:55 AM
To: "Karin Nosrati, DC" <bforback@gmail.com>

li Karin,
. m still looking at the material you sent...I can talk anytime this afternoon - my schedule is flexible today.
I'm not sure that it would be useful to speak specifically at the meeting, since the issues are technical in nature. It might be helpful to submit additional comments in writing - perhaps appearing personally to submit comments. Would it be helpful to appear to request additional time and additional materials for review? The issue of a Type III review could be introduced.

Table 17.19.040-2 Minimum Public Street Standards

Expand

Public Street	Right-of-Way	Pavement Width	Sidewalk
A. Street (by approval of City Engineer) [1]	52′	28′	Five foot detached sidewalk on both sides, with planter strip, no parking on one side.
B. Street (two lane)	60′	36′	Five foot detached sidewalks required on both sides of the street, with planter strip. Bike lanes required on collectors and arterials, no on-street parking.
C. Street (three lane)	74′	46′ to include 12′ median	Six foot detached sidewalks required on both sides of the street, with planter strip, bike lanes, no on-street parking.
D. Street (five lane)/Arterial	100′	74′ to include 14′ median	Six foot detached sidewalks required on both sides of the street, with planter strip, bike lanes, no on-street parking.

To: Community Development Office, City of Camas
(communitydevelopment@cityofcamas.us)
Regarding: Appeal of Proposed Project 13th Street in Camas (Clark County Tax Parcel 176148000, SPRV23-06)
Date: November 11, 2024
Respectfully submitted,
M. Kristin Price (19813 NE 13th Street, Camas WA.)

I support the appeal of the proposed project (convenience store/gas station/carwash) at the intersection of 13th Street and Friberg Road. Project development has proceeded without considering adjacent neighborhoods, the community, and students & faculty of Union High School. Additional comments were previously submitted on August 28, 2024.

> As a homeowner residing on 13th Street, in the neighborhood designated as Evergreen Acre Tracts in Camas, I state concerns for myself and my neighbors. Home ownership is maintained by 96% of residents, representing 48 households. The water supply for residents is provided by individual wells on each property. **Both increased exposure to toxic fumes and compromised integrity of existing well systems are critical concerns.** Further, we have also been advised that additional assessment would be required by FHA at the property sale due to our proximity to the the proposed gas station and storage units.

> **Concerns about the creation of a dangerous intersection have not been adequately addressed**. The proposed project would result in a dangerous intersection, impeding traffic flow, increasing the possibility of motor vehicle crashes, and compromising the safety of pedestrians, including children walking from the local high school, and bicyclists using a traditional bike route. Project impacts include probable queuing of vehicles, limiting residential access for homes in adjacent neighborhoods.

SEPARATE AND DISTINCT ENTRY AND EXIT SHOULD BE REQUIRED FOR THE PROPOSED FACILITY. Modifications have been made to the roadway and fuel delivery schedule to avoid the providing distinct entry and exit to the facility. The project design should provide for exit to Friberg Road via a right-hand turn. Other jurisdictions in Washington State require gas stations to assure separate entry/exit. * Our recent survey of eleven established gas stations in Camas indicated that each of the stations provided for separate entry and exit, with the observation that some stations designed exit to limit the impact on traffic flow on adjacent roadways.

It is unclear why an exception was granted in terms of the proximity of the entrance to this busy intersection. **The addition of a left-hand turn lane near the intersection only complicates issues of traffic flow, driver and pedestrian safety.**

The modified schedule for delivery of fuel by supply trucks is unacceptable, as it does not conform to usual business hours for a business park location. The site proposal should provide adequate space to permit access for a fuel truck during typical business hours. Proposed nighttime hours for fuel delivery would result in additional

traffic, noise and light pollution, interfering with the safety and well-being of residents in the area. Nighttime activity is a safety concern in terms of crime surveillance. Provision should be made for fuel delivery between the hours of 7:00 am and 10:00 pm given the proximity to residential areas.

The current project proposal does not permit adequate access for emergency vehicles (ambulance, firetrucks) in the event of an incident or medical emergency on-site. Further, congestion on this roadway limits access for emergency services for neighborhoods with access on either side of 13th Street.

The proposed project does not consider safety for pedestrians and bicyclists. Additional requirements are needed for planned improvements, including modifications to roadway and construction of sidewalks to permit safe passage for pedestrians in an increasingly busy area. With the proposed left-turn lane, a pedestrian must cross three lanes of traffic with limited visibility.

Bicycle lanes are anticipated in the design. However, the design does not provide for a bicycle lane west-bound. The current design suggests that a bicyclist must cross both entry and exit traffic at the gas station - an unsafe situation. The proposal should further address safe transit issues, and consider a provision for bicycle / pedestrian through-traffic at the site.

//Camas Development Plan: Vital, Stable and Livable Neighborhoods (Camas 2035)
"Camas is a well-planned and connected city where residents enjoy pedestrian and bicycle paths between neighborhoods and to downtown."//

A revised traffic study is needed to reflect current traffic volume on adjacent roads. The proposal reflects limited awareness of current traffic patterns. At present, traffic back-ups occur several times a day with vehicles queued from 192nd Street to Friberg Road - on both eastbound and westbound directions. The project would result in queues of vehicles on both Friberg Road and 13th Street. At times drivers have used the widened roadway and private driveways to execute u-turns to exit the queue. (This practice resulted in a vehicle/schoolbus crash in May, 2024, temporarily closing all access to 13th Street last year.) The proposed project has not addressed risks involved in the location, including potential risks of a designated left-turn lane and burden of tanker trucks on a two-lane roadway.

*Reference: City of Blaine, Washington. https://www.codepublishing.com/WA/Blaine/html/Blaine15/Blaine1530.html

D. Ingress/Egress and On-Site Circulation.

1. Separate ingress and egress points shall be provided unless a traffic study demonstrates that a dual ingress and egress driveway can be implemented without adverse impact on adjacent streets.
3. A minimum of 70 feet of clear vehicle stacking space (queuing) shall be provided on-site and in line with each row of pump islands.

To: City of Camas, Washington
Date: 11/12/2024

13th Street Gas Station Project Hearing Appeal Letter (Apeal24-1001)

The primary issue that we and our neighbors are extremely concerned about is groundwater quality.

- There are forty plus homes within ½ mile of the proposed 13th Street Gas Station that rely on private household drinking water wells.
- Some of these household wells are less than six hundred feet from the proposed gasoline storage tanks.

Even with all the safety features of the underground storage tanks and the monitoring equipment, the system could fail due to:

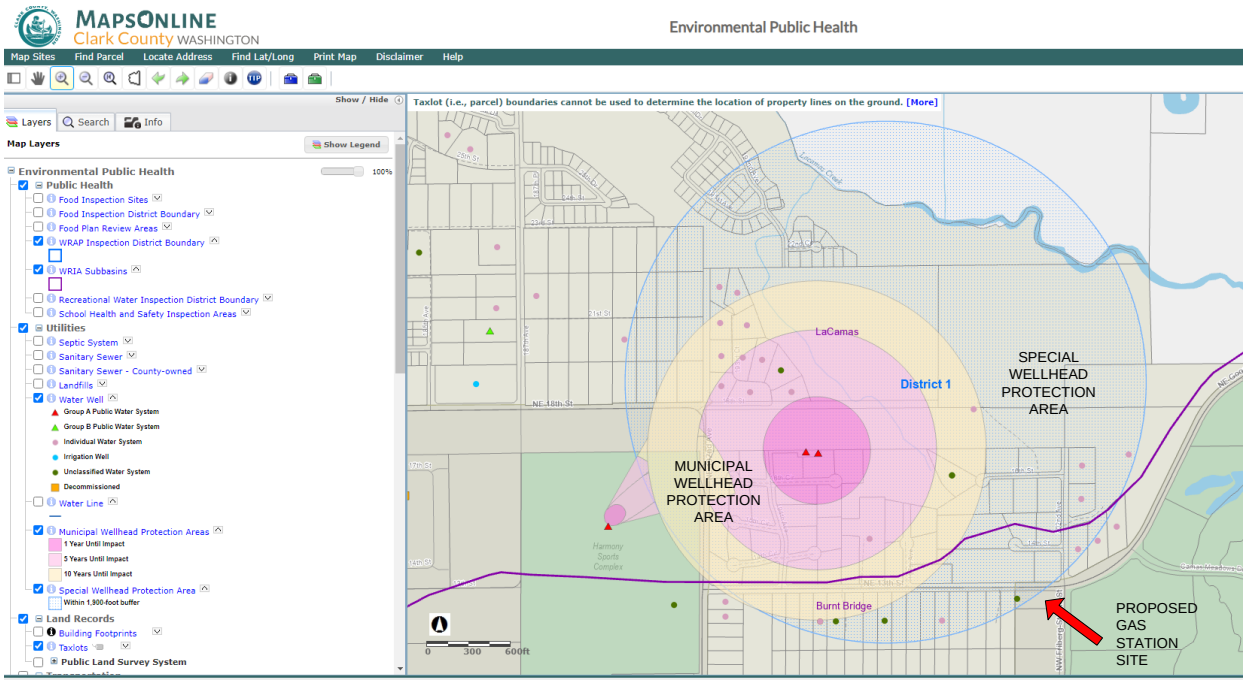
- Faulty installation or basic materials failure.
- A malfunction of the monitoring equipment's, electronics, or electro-mechanical systems
- Being compromised due to an accident, fire, or an earthquake

If there were a major spill:

- The household wells of forty plus homes could be contaminated
- Clean-up of an underground spill would be extremely complicated and difficult to correct
- Litigation involved for the clean-up would cause a major economic impact

The proposed gas station is in a Special Wellhead Protection Area within the 1900-foot buffer as shown in the following Clark County Environmental Public Health map:

- Located at: (https://gis.clark.wa.gov/mapsonline/?site=EnvPublicHealth&ext=1)



The site for the gas station is designated as a Category 2 Recharge Area. (CARA). According to Camas Code gas stations and underground storage tanks are prohibited in a critical aquifer recharge area.

- Camas, Washington - Code of Ordinances, Title 16 - Environment, Critical Areas, Chapter 16.55 – Critical Aquifer Recharge Areas. Version: Nov. 5, 2024,
  16.55.080 - Uses prohibited from critical aquifer recharge areas
  F. Fuel and/or gas stations.
  I. Other.
  4. Underground storage tanks for the use and storage of hazardous substances or hazardous materials.

- According to Washington State Department of Ecology:
  - The goal of establishing critical aquifer recharge areas (CARA) is to protect a community's drinking water by preventing pollution and maintaining supply. Washington residents get at least 60 percent of their drinking water from groundwater.
- Washington State Category 2 Critical Aquifer Recharge Areas Zones
  - Highly permeable soils (Group A hydrologic soils)
  - That are separated from the underlying aquifers by an impermeable layer
  - Areas with high concentration of potable water supply wells

These Category II Critical Aquifer Recharge Areas are characterized by their potential to recharge aquifers used for potable water supply and are vulnerable to contamination based on the type of land use activity.

- References:
  - (https://ecology.wa.gov/Water-Shorelines/Water-quality/Groundwater/Protecting-aquifers/Critical-aquifer-recharge-areas)

Also noted on the Clark Co. website:

- In a Category 2 Recharge Area Gasoline Stations & above and below ground storage tanks (tanks and pipes used to contain an accumulation of regulation substances (see Section 40.100.070) are not prohibited but required to implement Best Management Practices (BMP), and need a CARA Permit.

A secondary major issue for nearby homeowners will be that when selling their home, the FHA single Housing Policy Handbook for Appraisers and Property Requirements states that if you have a drinking water well that is within ¼ mile of a gas station:

- When you sell your home, you will need to obtain an independent inspection of your well as part of the appraisal process.
- Property values will go down

Considering all the risk to the environment with all the potential problems of water quality, air quality, traffic safety, increased crime, and possible incurred litigations that can occur with the gas station, carwash, and store that is absolutely not needed; considering the many major retailers and multi-complex commercial centers that have been built and are currently being constructed less than one mile away.

- The bottom line is do not approve this project.

Richard and Joan Rickard

William and Ruth Small

Carey Certo

From: William Kohut <wkohut5@gmail.com>
Sent: Wednesday, November 13, 2024 3:30 PM
To: Community Development Email
Subject: Construction of gas station at 20101 NE 13th Street

Importance: High

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you recognize the sender as a city employee and you see this message this email is a phishing email. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

As a nearby resident, I am expressing concern regarding the construction of gas station at 20101 NE 13th Street . There are major traffic concerns especially since the irresponsible approval of construction of the Interstate battery warehouse on the same corner. Large trucks are not able to safely negotiate the turns on the local streets. Construction of a gas station will make the traffic concerns even greater in this primarily residential area.
1) A medium gas station puts out around 400,000 liters of gas per month. That puts out 24,000 liters of compound/ vapors which equals l 6,000 gallons of compounds/ vapors each month
2) Vapors travels approximately 600 feet in the surrounding area in all direction depending on winds. This would affect multiple homes in the immediate area.
3) Diesel can put out double this number.
4) These compounds /particles will go where the water goes. and drift into the nearby wetlands, wells, and aquifers. A major Aquifer that is within 200 feet of the gas station supplies all the over 12 wells on 13th street. Drinking water and is number one risk water plus potential contamination risk for wildlife, wetlands, Lacamas Lake, Lacamas Creek, Storm Water runoff and more.

Please act responsibly and do not approve this .

William (Bill) Kohut
4034 NW 77th Ave.
Camas, WA 98607
wkohut5@gmail.com
360.606.2596

Carey Certo

From: stacy brickert <pinkangel6968@gmail.com>
Sent: Wednesday, November 13, 2024 11:10 PM
To: Community Development Email; Lance Thomas Brickert; Chris Brickert
Subject: Appeal of Decision for SPRV23-06: 13th Street Gas Station

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you recognize the sender as a city employee and you see this message this email is a phishing email. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

Please read at the public hearing on November 14th 2024 for consideration.

Hello. I am writing to express my concerns and objections to the convenience store and car wash proposal at 20101 NE 13th Street in Camas.
We have lived here for more than 23 years. We love our community and recognize that there is opportunity for others to enjoy and live in the area. However, we currently have a multitude of unresolved environmental issues surrounding the adjacent wetlands and Lacamas Lake itself. This is a single-family residential area. We are hoping to not have commercial business in our neighborhood disrupting the peace and quiet we moved here to enjoy.
13th street is not designed to handle the current amount of traffic that flows on a daily basis. As the Green Mountain development continues to grow the traffic is becoming a bigger and bigger problem for those of us that live on 13th street. Getting out of my own driveway can be nearly impossible. I am disabled and need to be able to have good access to my driveway for getting my vehicle with my scooter in and out. There are strangers using my driveway as a turnaround. Since 13th street is a narrow two lane street. This has become an ongoing concern. Our driveway was recently damaged when a driver was trying to turn around. Not knowing that there is a significant swale for rain water management on either side, the driver drove into the swale and broke the asphalt on our driveway.
Finally, inviting unwanted crime via vandalism and theft is already a problem. Opening up a full-blown gas station will invite more activity and homeless individuals to the area and continue to degrade the quality of life that we moved to Camas to enjoy. Please consider an area that is already zoned commercial and is away from our natural resources and beautiful wetlands. We support small local businesses but in the proper place. A single family neighborhood is not a good fit. Perhaps considering running 18th St. through to Goodwin to ease traffic and relocate the Gas station to the Green Mountain development that is underway.

Thank you for your consideration,

Stacy Brickert
19809 NE 13th St Camas Washington 98607
503-314-6816

Carey Certo

From: Tiffany Kettermann <tiffany@healthalliescounseling.com>
Sent: Wednesday, November 13, 2024 7:31 PM
To: Community Development Email
Subject: Concerns about gas station project on Friberg-Strunk

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Hello

I am writing in to express my opposition to and concerns about the proposed development of the gas station at the corner of Friberg-Strunk and Goodwin Road.

I live in this neighborhood after moving away from an area in Ridgefield where a similar development occurred with a gas station and caused my neighborhood to become unlivable. I moved here to get away from that situation .

Gas stations bring with them a high level of traffic congestion, as well as noise and pollution. The high traffic will also bring more crime to an otherwise safe pocket of our community. This neighborhood is known for being peaceful, safe and quiet. Already the traffic is increasing in a way that is making it difficult to travel along goodwin road and adding a large gas station is exactly the kind of addition we do NOT need here. There are many other potential uses of this site that would be less disruptive.

Further gas stations are notoriously problematic in increasing negative health outcomes to area residents. One study is here Another study is here. https://pmc.ncbi.nlm.nih.gov/articles/PMC3222489/ https://pmc.ncbi.nlm.nih.gov/articles/PMC8172828/
I do not wish to live near businesses that increase my health risks such as this, which is why i chose this neighborhood.

They are notorious in their permanent damage to the site and a community's inability to restore the site for other uses when the time comes. Link to one study is here chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https:/www.beyondtoxics.org/wp-content/uploads/2023/10/BeneathThePump_TheThreat-of-PetroleumContamination_FINAL_10-13-23.pdf

Please dont do this to our neighborhood and find another business with less negative impacts to its neighbors. We do not want it here!

Thank you

Tiffany Kettermann
Resident of Camas
and of the neighborhood that will be adversely impacted

--

The information contained in this transmission is privileged and confidential and/or protected health information (PHI) and may be subject to protection under the law, including the Health Insurance Portability and Accountability Act of 1996, as amended (HIPAA). This transmission is intended for the sole use of the individual or entity to whom it is addressed. If you are not the intended recipient, you are notified that any use, dissemination, distribution, printing or copying of this transmission is strictly prohibited and may subject you to criminal or civil penalties. If you have received this transmission in error, please contact the sender immediately by replying to this email and deleting this email and any attachments from any computer.

Added links to email that Tiffany referenced as they won't be able to click on them when converted to pdf-CC

Carey Certo

From: Carlos_Cinzia Torres <ccdtr@outlook.com>
Sent: Thursday, November 14, 2024 10:33 AM
To: Community Development Email
Subject: Propose gas station

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Good morning
The plan of a new gas station in the corner of 13 St and Goodwing rd It is not a good idea you ll make a lot of residents unhappy.
The13 St at the entrance of the trail is already super busy It is in needs of a posted sing with a tree way rd and slow dow written on it.
The residents of two ccteeks have hard time turnnig left at that corner cars are sppeding in the 50 mph 😱
There is a near by gas station at Costco don't think another gas station is needed .
Thanks for your attention
Regards
Cinzia Carlos Torres
Resident at two creeks

Sent from my iPad

Carey Certo

From: Naenae Witaaka <naenaewitaaka@gmail.com>
Sent: Thursday, November 14, 2024 10:50 AM
To: Community Development Email

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you recognize the sender as a city employee and you see this message this email is a phishing email. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

This is to whom it may concern;
In reguards to putting a gas station car wash mini mart. I would absoultly be one of thee many careless things clark county has done to " improve" the city at the expense of the people's Health and well-being, which if you ask me is pretty messed up to do to people who support and back you up with 100% confidence that you would do the same in return when really you obviously see them to be expendable tools that you use to get money because ultimately that's all it's about money nothing about that gas station car wash Mini Mart is going to help the community the environment wvhhere do people in it except for providing junk food cheap alcohol and tobacco products for ridiculous prices and ridiculously priced car wash and Gas could you definitely can get somewhere else cheaper with better prices and less harmful to the environment, no it's not forget about all those people better be affected by such a thing happening causing elements of the body and mind
For nothing. I find that to be absolutely despicable i dont I think that into it's not a good call to do that given the economy in the way that things are going all over the world it just seems really stupid and dangerous to do.
Sent via the Samsung Galaxy A03s, an AT&T 4G LTE smartphone
Sent
Get Outlook for Android

REBUTTAL TO APPEAL24-1001 STAFF REPORT

1. "1st paragraph of the Summary states that a gas station, convenience store and drive-through car wash are permitted per Table 1 CMC 18.07.030 are allowed within BP zone." A car wash is NOT listed in Table 1. The ONLY car wash in the City of Camas is in zoning Community Commercial, CC.
2. "Water pollution": The discussion around stormwater control does not address the proximity to the closest of the over 50 drinking water well heads nearby. Per the Washington Department of Health's Sanitary Control Ares document, the distance has to be greater than 100'. There can be no source of pollution within these 100'. Best Management Practices are applicable if prevention is not possible. In this situation the prevention that the regulations call for, is to not allow such a project in this location in the first place.
3. "Noise": The pre-existing road noise is created by vehicles passing by as commuters use the arterial without stopping, unless the signal light turns. This project would add hundreds of more daily trips and stops, each stopping, entering, exiting, turning engines on and off. It would have delivery trucks for each line of food and alcohol categories arrive and depart. The car wash would create swooshing, dinging noises and the vacuums would create loud vacuum noises. Omitting and minimizing this exponential noise pollution is egregious. Just because noise from commuters exists, does not give permission to exacerbate the condition.
4. "Light": The section 18.19.050 refers to Design Principles, However, section CMC 18.21.060 Site development criteria, it states that Site and building lighting shall be designed to minimize glar or objectionable effects to the adjacent properties. Residential neighborhoods are of particular concern. There is light pollution from two sources: One is the building, the gas pump canopy and the sign. The second which not being addressed in the staff report, is the light pollution caused by the new trips/stops by vehicles, which ordinarily would only travel in the east-west direction. By entering and exiting their light with EACH vehicle will shine into the north and west residential properties.
5. "BP – is an auto oriented use" According to Table 1, NOT anything related to autos is permitted in BP zone. If someone would only want to build a car wash, which zoning is approved by the City witout being mentioned in Table 1. Table lists nearly any business imaginable and give guidance for the permitted zoning. The precedent has been set by only having a car wash in the the CC – Community commercial zoning. A car wash uses chemicals that are similar to those used in commercial dry cleaning business to remove grime from tires. A commercial dry cleaning business is not allowed in the BP zone due to the toxicity of the chemicals. The chemicals used would not be permitted to be sold within the convenience store. ……
6. "Dangerous intersection/Access standards" It is clear that the 660' access standard cannot be met. Ironically in the last sentence the report states that the standard is met! To be clear, the standard not being met. The city is jeopardizing the safety of this already dangerous and busy intersection to grant a deviation to the access standard. With the newly proposed median/left turn lane into the proposed gas station, the city is only addressing the access to the gas station. It does not addresshow the residents in the neighborhood to the north and their services (garbage, mail, etc.) can make a safe left turn from eastbound to northbound. How could eastbound and westbound cars share the same median. This median just made it worse. There

is also no bike lane on the north side of NE 13th in the proposal as needs to be included, per Camas City code for arterials.

7. “Traffic study” We hired our own traffic engineers to evaluate the accuracy of the Charbonneau 2023 TIR. They found significant errors and their report has been submitted to the hearings examiner.
8. “Ingress-egress” A right-in right-out only option may reduce rear-end collisions caused by stacking cars approaching west-bound. It will severely negatively impact traffic to the High school, school bus traffic and stacking of cars along residences on NE 13th Street. It will also affect cars waiting to turn southbound from westbound traffic and cause illegal U-turns.

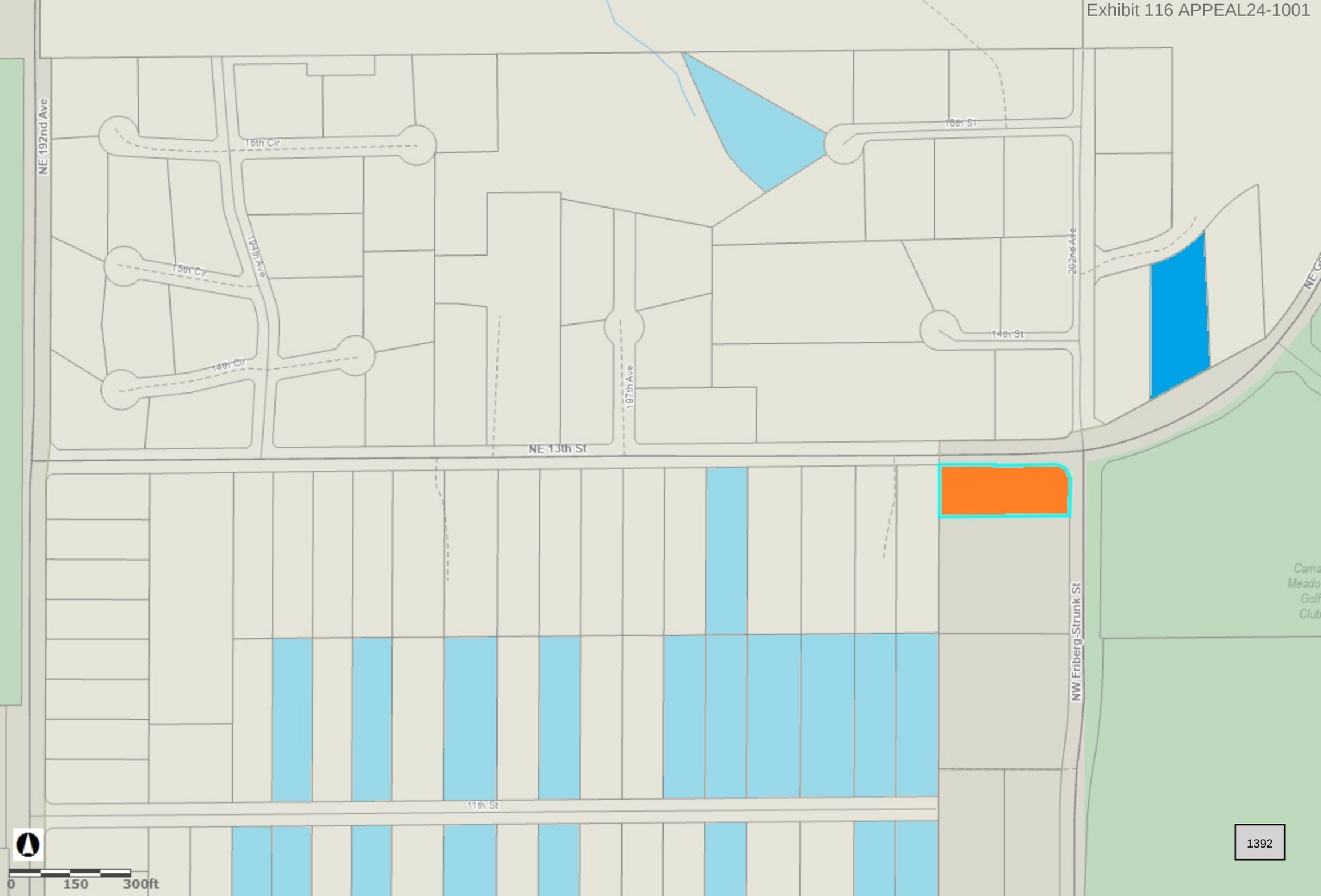
REBUTTAL TO STAFF REPORT & DECISION 13th Street Gas Station
File Number SPRV23-06 (CONSOLIDATED FILES: ARCH23-07, CA23-08, DR23-09, SEPA23-12) *Type II* Decision Date: September 16, 2024:

1. Page 1: Table 1 of CMC 18.07.030, does NOT list a car wash to be allowed in BP zoning. The only other car wash in Camas is in CC (community commercial) because BP is a park-like setting per Camas definition (p1128)
2. The Staff report only addresses the environmental concerns during the construction and demolition through recommendations of other agencies. However the staff did not address the environmental issues that will be present during the business operation, once the business goes live. They did not consult agencies to request input on the feasibility and safety of the proposed project in this location.
3. Page 2: Add that convenience store will sell alcoholic beverages
4. Page 2: All comments submitted were opposing this development. If there was a single comment in favor, then please rephrase your summary statement to accurately reflect that the vast majority is against this project.
5. Page 2: The CAR was conducted on the project site, yet just 20' west from the property boundary is either a wetland (or a spring?) per the Department of Ecology and 75' west of the property boundary is a drinking water well
6. Page 2: The revised SEPA did not take the drinking water safety of the wells of the adjacent parcels into consideration, despite comments by numerous affected residences.
7. Page 4 Zoning: Listing the "Comprehensive Plan" instead of the actual definition is problematic. More accurately it should read: Per CMC **18.37.010 -** The Business Park (BP) district is intended to provide for employment growth in the city by protecting industrial areas for future employment. Design of business park facilities in this district will be "campus-style," with landscaped buffers, and architectural features compatible with, and not offensive to, surrounding uses. Fact: A gas station does not provide a campus-like impact on the surrounding area and it is offensive to the surrounding homes. The intent of BP zoning is not met for placing a gas station near residential homes.
8. Page 4: The "provides employment" statement is also problematic, because a typical gas station/convenience store has 5 or fewer employees on site. This represents a miniscule result for job creation on a one acre parcel.
9. Page 4: A gas station is also not meeting the Land use definition LU-2.5 of being compatible with adjacent neighborhoods.
10. Page 5: Parking: If the car wash were to only requires 1 parking space for 2 employees, it is curious to imagine how the second employee would get to work, because there are only side-walk to the south, unless they would walk along the dangerous NE 13th/Goodwin Rd. arterial.

11. Page 5 Parking: The 50' setback requirement, disallows parking spaces to be built within this area. If this setback requirement is not upheld, it implies a favor to the developer and a disfavor to the surrounding properties. Rephrasing the setback to occur from the ingress is misleading. The setback requirement from the road should be upheld.
12. Page 6: Roads: CDSM should include a bike lane in both directions, the current proposed road improvements fail to include a west bound bike lane. Please revise the road construction to include the west-bound bike lane.
13. Page 10: Fueling trucks cannot be permitted to deliver outside of City of Camas's business hours due to the noise and light impact on surrounding residences. Regular business hours per CMC are from 7:00 a.m. to 10:00 p.m. and the fuel tanker truck delivery has to occur during business hours. The gas station hours need to be adjusted to accommodate the delivery of all their goods, through undoubtedly many trucks, during regular business hours. Allowing operation outside of business hours would be viewed as providing a favor to the project developer while disregarding the surrounding residential area, which would be a break from the BP zoning definition.
14. Page 11: We respectfully disagree that 2023 and 2024 traffic counts are the same. Fact: New traffic in 2024:
    a. The new Oak Tree Food truck station opened summer 2024
    b. the high cube warehouse which became occupied in 2024 and has semi-trucks entering and exiting (large Interstate Battery distribution center),
    c. residential traffic to more newly constructed homes along former Green Mountain golf course
    d. construction traffic for 2 Camas Meadows Golf course communities
15. page 12: Developer should be required to provide updated traffic counts to Clark County and City of Vancouver just prior to development start or upon building permit approval because the current dollar amounts are significant lower than the actual counts will be when the project is ready for construction or business opening. The former owner of the parcel, Mr. Warren Townsend, is still living on the property in the single-family dwelling. He is permitted to stay as long as he likes. The project construction may be a number of years into the future and therefore the fees should be adjusted accordingly. Fixing the fees at this early stage may be viewed as a favor to the applicant.
16. Page 18: The Oak Tree station on the south end of Friberg/Strunk Rd. has managed to maintain the Oak Tree on their site. There is a valuable Natural feature on this parcel: the white oak. It is inaccurate to state "There are no significant natural features on site." Camas has a description of maintaining tree canopy in their Comprehensive Plan, but if Camas allows the removal of

an oak tree and then allows the purchase of "oak tree credits" outside the City, how is that preserving the tree canopy, per the vision?

17. Page 19: Outdoor lighting: Lighting will not only be generated by the building the pump station canopy, but foremost by vehicles entering and exiting, shining their lights in the surrounding neighbors yards to the north and west and southwest, completely denying the right to quite enjoyment per CMC for residential neighborhoods. The current description is inadequate and does not effectively address the prevention of light pollution generated by cars entering and exiting: "**Outdoor lighting shall not be directed off-site.** The applicant's narrative indicates that the lighting plan meets the minimum safety standards and outdoor lighting will be shielded to prevent off-site light intrusion to the greatest extent possible. Landscape, parking lot and/or building lighting shall be directed, hooded, or shielded away from surrounding properties and is conditioned as such." The remedy may be very tall walls. Furthermore, all lights, including signage lights, should be completely shut off when the gas station closes for the night, similar to the gas station on 192nd Ave. across from QFC.
18. The staff report does not address noise – please see our comments on the SEPA response. Noise nuisance is not allowed per a CMC, and code enforcement in Camas is carried out by the police department, which may be overburdened when called to curtail the music/raucous created by customers of the gas station.


NE 192nd Ave
16th Cir
16th St
15th Cir
19th Ave
14th Cir
197th Ave
202nd Ave
14th St
NE 13th St
NW Friberg-Strunk St
11th St
0
150
300ft

WAC 173-160-171
What are the requirements for the location of the well site and access to the well?
(1) The proposed water well shall be located where it is not subject to ponding and is not in the floodway, except as provided in chapter 86.16 RCW.
(2) It shall be protected from a one hundred-year flood and from any surface or subsurface drainage capable of impairing the quality of the groundwater supply.
(3) All wells **shall not** be located within certain minimum distances of known or potential sources of contamination.
(a) Some examples of sources or potential sources of contamination include:
(i) Septic systems, including proposed and reserve sites under a valid septic design: Provided, that the design has been approved for installation by a health authority;
(ii) Manure, sewage, and industrial lagoons;
(iii) Landfills;
(iv) Hazardous waste sites;
(v) Sea/salt water intrusion areas;
(vi) Chemical and petroleum storage areas;
(vii) Pipelines used to convey materials with contamination potential;
(viii) Livestock barns and livestock feed lots.
(b) Minimum set-back distances for water wells other than for public water supply are:
(i) Five feet from any existing building structure or building projection. Water wells shall not be located in garages, barns, storage buildings or dwellings. When locating a nonpublic water well adjacent to a building, the well location shall be measured from the building sewer and closest building projection.
(ii) Fifty feet from a septic tank, septic holding tank, septic containment vessel, septic pump chamber, and septic distribution box.
(iii) Fifty feet from building sewers, public sewers, collection and nonperforated sewer distribution lines except building drains.
(iv) One hundred feet from the edge of a drainfield, proposed drainfield which has been approved by a health authority, and reserve drainfield areas.
(v) One hundred feet from all other sources or potential sources of contamination except for solid waste landfills.

Carey Certo

From: Lisa Mangels <lisa.mangels@gmail.com>
Sent: Thursday, November 14, 2024 11:50 AM
To: Community Development Email
Subject: Hearing for the Appeal of Decision SPRV23-06 Gas Station, Planning Case APPEAL24-1001

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I am writing in regards to the meeting on 11/14 regarding the construction of an 8 pump gas station, a 4100 sq ft convenience store and a drive thru car wash located at 20101 NE 13th Street. I have a residence at the Parklands at Camas Meadows, on NW McMaster Drive This addition will overcrowd the local streets as there is no improvement proposed to the infrastructure. Already the trucks from the new battery warehouse are disruptive of regular traffic in the area. Plus the danger of living close to a battery storage facility is alarming. With the additional housing going in on Camas Meadows Drive, the additional traffic plus the environmental dangers of the gas station are grave concerns to the residents. We already have polluted water and runoff damaging Lacamas Lake, and it is unknown how this new addition will add to that.

As a concerned citizen, I am opposed to the addition of the gas station, convenience store and car wash to the location and neighborhood.

Lisa Mangels
(925) 351-5447

Carey Certo

From: Mac McBride <Mac@mcbridearchitecture.com>
Sent: Thursday, November 14, 2024 11:51 AM
To: Community Development Email
Subject: Gas Station Public Hearing

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Locating a gas station directly adjacent to a wetlands, a creek and an aquifer is considered poor practice in my profession and in my professional opinion. The proposed uses would more appropriately be located along a commercial street like 192nd Ave, capable of handling the traffic, noise etc., away from the residential neighborhoods located along 13th.

Richard (Mac) McBride, Architect
McBride Architecture, PC
Ph. 503-201-4634
e-mail mac@mcbridearchitecture.com

Carey Certo

From: Alan Peters
Sent: Thursday, November 14, 2024 2:38 PM
To: Carey Certo
Subject: FW: Critical aquifer recharge areas map

Please add this to the record for APPEAL24-1001. Thank you.

Alan Peters, AICP
Community Development Director
Cell 360-409-1475
Desk 360-817-7254
www.cityofcamas.us I apeters@cityofcamas.us

The City of Camas has gone digital! Apply for permits online through our new Civic Access Portal at www.cityofcamas.us/permits.

From: Johnson, Deborah L (DOH) <deborah.johnson@doh.wa.gov>
Sent: Thursday, November 14, 2024 11:42 AM
To: Alan Peters <APeters@cityofcamas.us>
Cc: Rob Charles <RCharles@cityofcamas.us>
Subject: Critical aquifer recharge areas map

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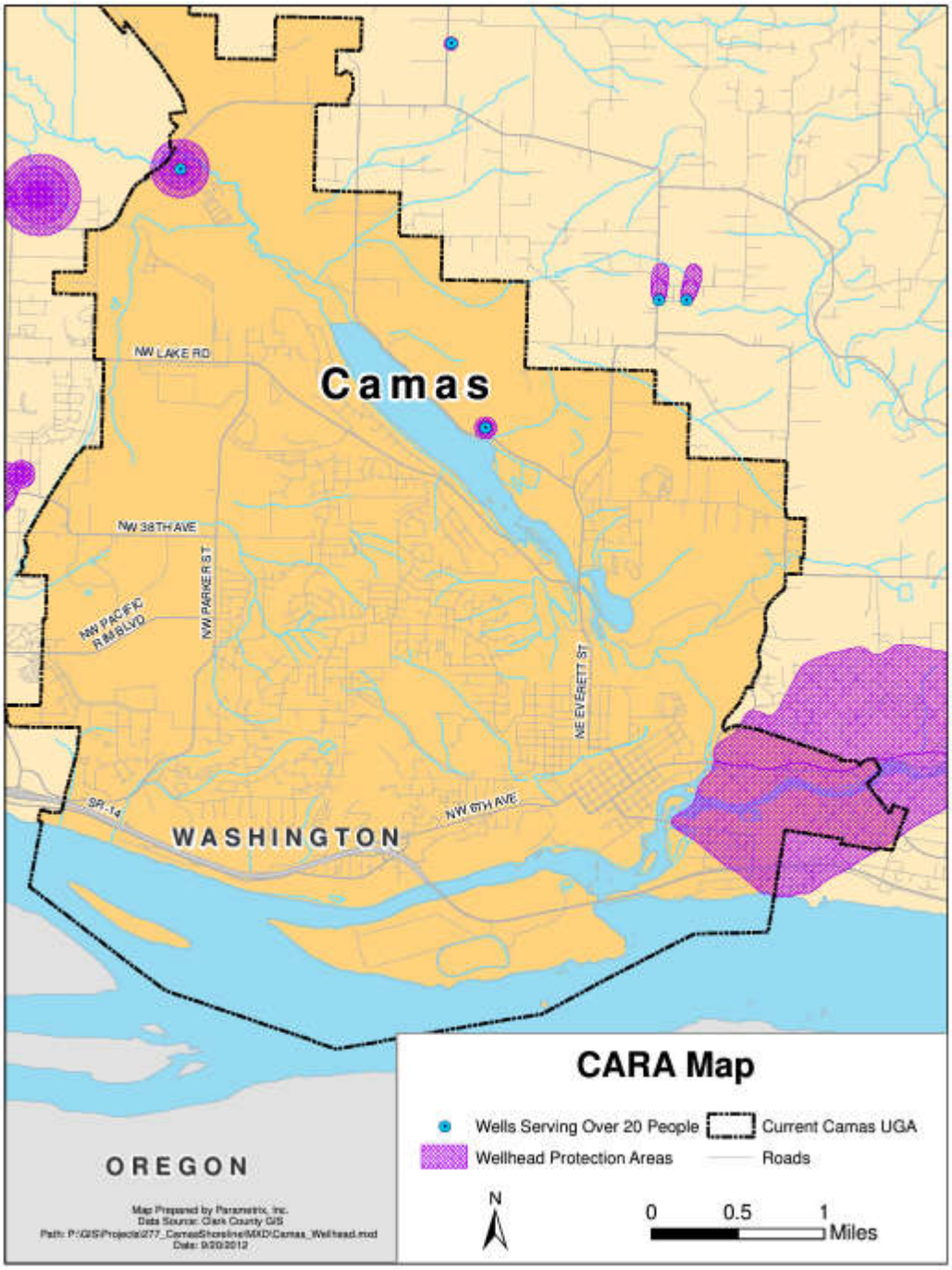
Hello,
I had an inquiry relating to a City of Camas project that brought my attention to your critical areas requirements &, by extension, mapping.

It appears the City is, if not actually using this map for determining its CARAs, at least putting it out there as the City's official CARAs map on this webpage.
I note the map is dated 2012. Meanwhile, the City's wellhead protection areas, recognized as designated CARAs under CMC 16.55.010.A, today cover a much greater area according to our SWAP map. (Plus, this would include anyone else's WHPAs that overlay your corporate limits, ex. Washougal.) The two are shown below for comparison.

In addition, the City's critical areas ordinance designates sole source aquifers as CARAs. A considerable portion of the city is overlain by the EPA-designated Troutdale Aquifer System Source Area SSA. See 3rd image below & EPA's SSA map. Between that & the WHPAs, this places the majority of the city into the CARAs designation.

(scroll down- continued below screen clips)


Camas
NW LAKE RD
NW 38TH AVE
NW PARKER ST
NW PACIFIC RIM BLVD
NE EVERETT ST
SR-14
NW 6TH AVE
WASHINGTON
OREGON
CARA Map
Wells Serving Over 20 People
Current Camas UGA
Wellhead Protection Areas
Roads
N
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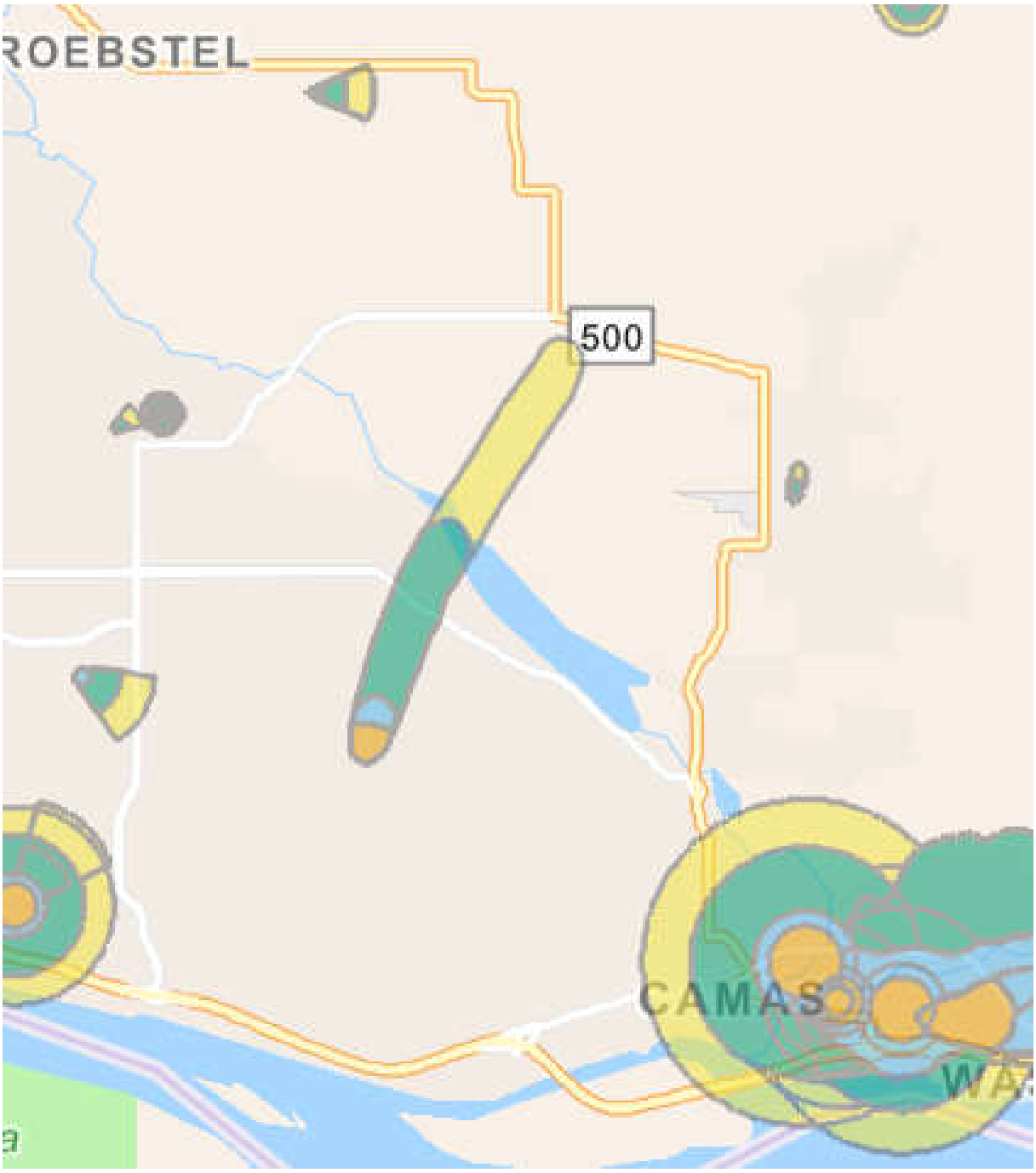
1
Miles
Map Prepared by Parametrix, Inc.
Data Source: Clark County GIS


ROEBSTEL
500
CAMAS

CMC 16.55.030.A refers to the "adopted critical area maps" but noting this section dates to 2008, am not sure how that aligns with the 2012 map. But CMC 16.55.030.B clarifies that the "maps are to be used as a guide…and may be continuously updated… They are a reference and do not provide a final critical area designation." This approach is in keeping with Commerce guidance & GMA statute, rule, & case law.

It would be optimal to rework the CARAs map you are displaying on your website to incorporate both WHPAs & the SSA limits, plus any of the other features listed in CMC 16.55.010 that are known. If the City lacks the ability to produce a new map, then it might want to remove the 2012 map from its website since it is outdated, & perhaps replace it with links to the SWAP & SSA maps.

Thank you for your consideration. I am also cc'ing Rob Charles, as he's working with us on a grant to model Camas' WHPAs which will ultimately affect the mapped boundaries too.

Deborah Johnson
Wellhead Protection Program Coordinator
Office of Drinking Water
Environmental Public Health Division
deborah.johnson@doh.wa.gov
doh.wa.gov | 253-433-4054

Washington State Department of
HEALTH

Carey Certo

From: Joe Turner <jtpc1@icloud.com>
Sent: Friday, November 15, 2024 7:36 AM
To: Alan Peters; Karin Nosrati DC; Mullaney, Patrick J.; Horenstein, Stephen W.; Carey Certo; Yvette Sennewald
Subject: Re: Critical aquifer recharge areas map

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As I noted at the hearing last night, all parties to the appeal (the City, the applicant, and the appellant's representative (Ms. Nosrati)) shall cc all parties on all new evidence and testimony they submit. This order only applies to these three parties. The parties are not required to cc everyone who has commented on the application. The City will post all of the exhibits received on its website for other members of the public to review.

Please do not submit documents directly to me. The City will mark all submittals as exhibits and forward them to me.

Also, please send submittals to the City to *communitydevelopment@cityofcamas.us* rather than to all of the City staff included in this email.

Also, to reiterate my oral order. All new submittals shall comply with the following deadlines:
- The applicant, the City, and the appellants shall submit their arguments regarding the SEPA appeal process by 5:00 pm on Thursday November 21, 2024.
- All parties shall submit their rebuttal arguments regarding the SEPA appeal process by 5:00 pm on Wednesday November 27, 2024.
- All parties, including the general public, shall submit all new testimony and evidence by 5:00 pm on Friday December 6, 2024.

In addition, I will issue my order outlining the hearing process by 5:00 pm on Friday December 6, 2024.

I will reconvene the hearing in this matter at 4:30 pm on Thursday December 12, 2024.

Ms. Certo, please include this email as an exhibit in the record for this case.

Thank you
Joe Turner
City of Camas Hearing Examiner

> On Nov 14, 2024, at 2:49 PM, Horenstein, Stephen W. <SHorenstein@schwabe.com> wrote:
>
> Thank you Alan.

Mr.Turner, the applicant is compelled to ask for full continuance this evening based on the receipt of this new information in the last 90 minutes. We do not have the time or the technical ability to determine how it affects our site plan, our analysis of the issues raised or the viability of the staff analysis at this point. We will need to engage a hydrogeologist to assist. As water is the most significant issue in this matter, we believe that a full continuance is warranted.

Many thanks…Steve

On Nov 14, 2024, at 2:37 PM, Alan Peters <APeters@cityofcamas.us> wrote:

Hi Joe,
I wanted you to be aware of this email we received today from the Department of Health. We are addressing this with the other parties.

Alan Peters, AICP
Community Development Director
Cell 360-409-1475
Desk 360-817-7254
www.cityofcamas.us I apeters@cityofcamas.us

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Sent: Thursday, November 14, 2024 11:42 AM
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Cc: Rob Charles <RCharles@cityofcamas.us>
Subject: Critical aquifer recharge areas map

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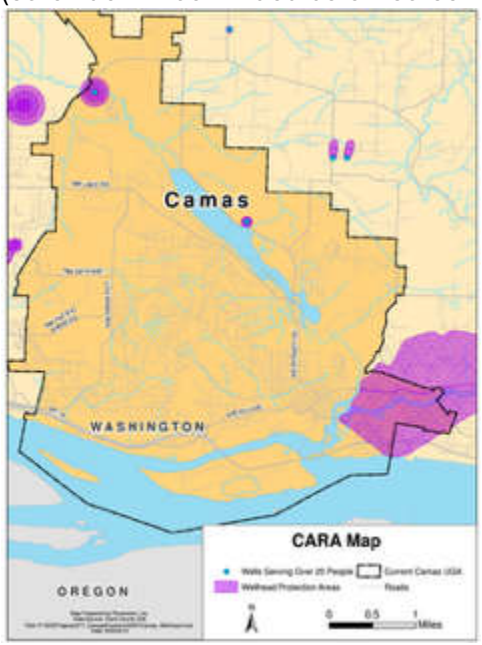
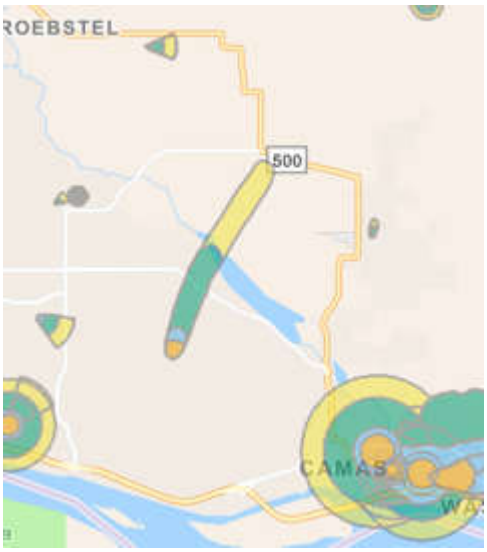
In addition, the City's critical areas ordinance designates sole source aquifers as CARAs. A considerable portion of the city is overlain by the EPA-designated Troutdale Aquifer System Source Area SSA. See 3rd image below & EPA's SSA map. Between that & the WHPAs, this places the majority of the city into the CARAs designation.

(scroll down- continued below screen clips)





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Deborah Johnson
Wellhead Protection Program Coordinator
Office of Drinking Water
Environmental Public Health Division
deborah.johnson@doh.wa.gov
doh.wa.gov | 253-433-4054

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Carey Certo

From: Karin Nosrati, DC <bforback@gmail.com>
Sent: Friday, November 15, 2024 11:11 AM
To: Community Development Email
Cc: Alan Peters; Patrick Mullaney; Carey Certo; Yvette Sennewald; Stephen Horenstein
Subject: Reply to Mr. Turner regarding appeal procedure
Attachments: Email thread about who can join the appeal per City of Camas Portrait mode.pdf

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Hi,

Attached please find the email communication during which we were told that we can file one appeal with others to join. The document is an email thread with correspondence. Please view the entire document.

- We followed the appeal procedures that were printed on the "Notice of Decision" received from the City and dated 09-16-2024, and we are appealing the decision.
- Questions remained after reading through these limited instructions and so we contacted the city for answers to those procedural questions.
- Robert Maul Wed, Sep 25, 2024 at 2:27 PM To: "Karin Nosrati, DC" Cc: Yvette Sennewald , Carey Certo , Alan Peters You can file one appeal with others to join

Based on the above information we submitted the appeal as follows (excerpts):

- "On behalf of the residents of Morning Meadows Estates, residents of Katie's Hill and residents of Evergreen Acre Tracts, I am appealing the approval of a project called 13TH STREET GAS STATION (FILE NO. SPRV23-06). We live in single family residences adjacent to the project."
- "The following neighbors would like to be included in the appeal and receive an invitation to the hearing:" and the neighbors names and addresses were listed.

We are appealing the City's "decision of approval" and we had to submit the appeal on the website, which was the way we also paid for the appeal. The website directed us to complete specific fields one page at a time. The steps were prescribed and not intuitive or flexible to allow for explanations or choices beyond what was prescribed.

I would also respectfully request a minor modification to Mr. Turner's first line in the email to refer to the plural rather than the singular by moving the apostrophe: If possible, please change it to read "...(the City, the applicant, and the appellants' representative (Ms. Nosrati)) ...

Could the City please confirm receipt of this email and the request to forward it to Mr. Turner? Please let me know if there is anyone else I need to cc from this point forward. Please make this letter an exhibit.

Thank you for your consideration,

Karin Nosrati

Gmail

Karin Nosrati, DC <bforback@gmail.com>

SPRV23-06 - 13th Street Gas Station

11 messages

Yvette Sennewald <YSennewald@cityofcamas.us> Fri, Sep 20, 2024 at 1:52 PM
To: "Karin Nosrati, DC" <bforback@gmail.com>
Cc: Robert Maul <RMaul@cityofcamas.us>

Hi Karin,

Please find attached, the Notice of Decision for the project noted above. The appeal instructions are contained in the notice.

Thank you,

Yvette

Yvette Sennewald, Senior Planner
Community Development – Planning
Office: (360) 817-1568
Direct: (360) 817-7269
www.cityofcamas.us | ysennewald@cityofcamas.us

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SPRV23-06 Notice of Decision.pdf
620K

Karin Nosrati, DC <bforback@gmail.com> Fri, Sep 20, 2024 at 3:54 PM
To: Yvette Sennewald <YSennewald@cityofcamas.us>
Cc: Robert Maul <RMaul@cityofcamas.us>

Thank you!
[Quoted text hidden]

Karin Nosrati, DC <bforback@gmail.com> Tue, Sep 24, 2024 at 11:27 AM
To: Yvette Sennewald <YSennewald@cityofcamas.us>
Cc: Robert Maul <RMaul@cityofcamas.us>
Bcc: Kristin Price <19813mkp@gmail.com>, Joan & Rich Rickard <joanier@comcast.net>, Russell Wegner <rwegner@lmi.net>, Barbara Wegner <oakbarb@lmi.net>

Hi,

I just left a message in the planning department's voicemail.

I was hoping that somewhere on the City website we could find more detailed instructions and a description of procedures and timelines for the Type II hearing with the hearings examiner.

Specifically, we need to to know

- Can one person submit the appeal or should it be submitted by all or some of the neighbors?
- Can neighbors not listed on the submission voice their opinions at the hearing?
- If the appeal is submitted via email, how is the payment process handled?
- Is the deadline for the appeal submission September 30, 2024?
- How can we access documents from a similar hearing, e.g. the gasoline station project on Brady Road near Prune Hill Elementary, in order to educate ourselves about the process? If there is a link on the City website, it would be much appreciated.
- Do we need to appear with legal counsel?

Thank you for your time,

Karin Nosrati
360-254-1585

On Fri, Sep 20, 2024 at 1:52 PM Yvette Sennewald <YSennewald@cityofcamas.us> wrote:
[Quoted text hidden]

Kristin Price <19813mkp@gmail.com> Tue, Sep 24, 2024 at 11:36 AM
To: "Karin Nosrati, DC" <bforback@gmail.com>

Also I am wondering if we can access the schematic for the planned facility- I wasn't able to locate it with the materials that were submitted previously.
Thanks,
Kristin Price

Sent from my iPad

On Sep 24, 2024, at 11:28 AM, Karin Nosrati, DC <bforback@gmail.com> wrote:

Hi,

I just left a message in the planning department's voicemail.

I was hoping that somewhere on the City website we could find more detailed instructions and a description of procedures and timelines for the Type II hearing with the hearings examiner.

Specifically, we need to to know

- Can one person submit the appeal or should it be submitted by all or some of the neighbors?
- Can neighbors not listed on the submission voice their opinions at the hearing?
- If the appeal is submitted via email, how is the payment process handled?
- Is the deadline for the appeal submission September 30, 2024?
- How can we access documents from a similar hearing, e.g. the gasoline station project on Brady Road near Prune Hill Elementary, in order to educate ourselves about the process? If there is a link on the City website, it would be much appreciated.
- Do we need to appear with legal counsel?

Thank you for your time,

Karin Nosrati
360-254-1585

On Fri, Sep 20, 2024 at 1:52 PM Yvette Sennewald <YSennewald@cityofcamas.us> wrote:

> Hi Karin,
>
> Please find attached, the Notice of Decision for the project noted above. The appeal instructions are contained in the notice.
>
> Thank you,
>
> Yvette
>
> <image001.jpg>
> **Yvette Sennewald, Senior Planner**
> Community Development – Planning
> Office: (360) 817-1568
> Direct: (360) 817-7269
> www.cityofcamas.us | ysennewald@cityofcamas.us
>
> The City of Camas has gone digital! Apply for permits online through our new Civic Access Portal at www.cityofcamas.us/permits

[Quoted text hidden]

Robert Maul <RMaul@cityofcamas.us> Tue, Sep 24, 2024 at 12:44 PM
To: "Karin Nosrati, DC" <bforback@gmail.com>, Yvette Sennewald <YSennewald@cityofcamas.us>
Cc: Carey Certo <CCerto@cityofcamas.us>, Alan Peters <APeters@cityofcamas.us>

Good afternoon, Karin.

The notice of decision clearly outlines what is needed for the appeal which is also listed in CMC 18.55.200. You will need to file the appeal online using our electronic submittal process. Yes, the deadline to file is September 30th. For all the other items I have talked to you about them several times.

Regards,

Robert

From: Karin Nosrati, DC <bforback@gmail.com>
Sent: Tuesday, September 24, 2024 11:28 AM
To: Yvette Sennewald <YSennewald@cityofcamas.us>
Cc: Robert Maul <RMaul@cityofcamas.us>
Subject: Re: SPRV23-06 - 13th Street Gas Station

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[Quoted text hidden]

SPRV23-06 Notice of Decision.pdf
620K

Karin Nosrati, DC <bforback@gmail.com> Tue, Sep 24, 2024 at 12:54 PM
To: Robert Maul <RMaul@cityofcamas.us>
Cc: Yvette Sennewald <YSennewald@cityofcamas.us>, Carey Certo <CCerto@cityofcamas.us>, Alan Peters <APeters@cityofcamas.us>, Kristin Price <19813mkp@gmail.com>, Joan & Rich Rickard <joanier@comcast.net>, Russell Wegner <rwegner@lmi.net>, Barbara Wegner <oakbarb@lmi.net>

Hi, Robert,

Thank you for answering bullet points 3 and 4.

Could you please answer bullet points 1,2, 5 and 6, because I do not recall this critical information. If you have detailed it for me previously via email, a date would suffice.

Thank you,

Karin
[Quoted text hidden]

Robert Maul <RMaul@cityofcamas.us> Tue, Sep 24, 2024 at 1:02 PM
To: "Karin Nosrati, DC" <bforback@gmail.com>
Cc: Yvette Sennewald <YSennewald@cityofcamas.us>, Carey Certo <CCerto@cityofcamas.us>, Alan Peters <APeters@cityofcamas.us>, Kristin Price <19813mkp@gmail.com>, Joan & Rich Rickard <joanier@comcast.net>, Russell Wegner <rwegner@lmi.net>, Barbara Wegner <oakbarb@lmi.net>

Only parties of record can appeal, but anyone can testify at a hearing. I am not going to advise you on legal matters, which we have talked about multiple times.

[Quoted text hidden]

Karin Nosrati, DC <bforback@gmail.com> Tue, Sep 24, 2024 at 1:43 PM
To: Robert Maul <RMaul@cityofcamas.us>
Cc: Yvette Sennewald <YSennewald@cityofcamas.us>, Carey Certo <CCerto@cityofcamas.us>, Alan Peters <APeters@cityofcamas.us>, Kristin Price <19813mkp@gmail.com>, Joan & Rich Rickard <joanier@comcast.net>, Russell Wegner <rwegner@lmi.net>, Barbara Wegner <oakbarb@lmi.net>

Thank you for your clarification. Regarding bullet point #5, which department or resource at the City should I contact to access this information - I presume it is public record?

Lastly, does written information that will be presented at the hearing, e.g. revised public documents, new studies, expert opinions etc., need to be submitted prior to the hearing? Looking at the City's hearing schedule, what is a ballpark timetable - days, weeks or months away? This information is important to help us prepare and obtain advice.

Best,

Karin
[Quoted text hidden]

Robert Maul <RMaul@cityofcamas.us> Wed, Sep 25, 2024 at 10:33 AM
To: "Karin Nosrati, DC" <bforback@gmail.com>
Cc: Yvette Sennewald <YSennewald@cityofcamas.us>, Carey Certo <CCerto@cityofcamas.us>, Alan Peters <APeters@cityofcamas.us>, Kristin Price <19813mkp@gmail.com>, Jo
Rich Rickard <joanier@comcast.net>, Russell Wegner <rwegner@lmi.net>, Barbara Wegner <oakbarb@lmi.net>

Karin,

All past hearings are on the city's website under the meetings portal. You can search for hearing examiner meetings there. As you and I have discussed very specifically before, the filing of the appeal should contain whatever information you want to present to make your case to the examiner.

[Quoted text hidden]

Karin Nosrati, DC <bforback@gmail.com>
To: Robert Maul <RMaul@cityofcamas.us>
Cc: Yvette Sennewald <YSennewald@cityofcamas.us>, Carey Certo <CCerto@cityofcamas.us>, Alan Peters <APeters@cityofcamas.us>, Kristin Price <19813mkp@gmail.com>, Joan & Rich R
<rwegner@lmi.net>, Barbara Wegner <oakbarb@lmi.net>, Randy Nosrati <randynos1@gmail.com>

Hi, Robert,

Thank you for helping direct me to find the prior hearing notes on the Camas website.

I apologize, but I don't remember very specifically discussing the finer details of the hearing process, because we were in the stage of submitting comments on the SEPA at the time. This is n expert opinions or rebuttals, if they can only be submitted now, when we turn in the appeal.

The only written instructions, which do not detail the limits of timeliness of submission of documents, I found here:

18.55.200 - Appeals—Generally.

A. Type II decisions may be appealed to the hearings examiner.
B. The following decisions may be appealed to the City Council: (1) Shoreline master program permits; (2) SEPA decisions; (3) civil regulatory orders, and (4) c chapter, there is no appeal to any other decision maker within the city.
C. All appeals are initiated by filing a notice of appeal with the director within fourteen days of issuance of the decision being appealed.
D. The notice of appeal shall be in writing and contain the following information:
   1. Appellant's name, address and phone number;
   2. Appellant's statement describing their or other standing appeal;
   3. Identification of the application which is the subject of the appeal;
   4. Appellant's statement of grounds for the appeal and the facts upon which the appeal is based;
   5. The relief sought, including the specific nature and extent;
   6. A statement that the appellant has read the notice of appeal and believes the content to be true, followed by the appellant's signature.
E. The notice of appeal shall be accompanied by an appeal fee as set forth in a fee schedule adopted by resolution.
F. Appeals of civil regulatory orders and civil fines shall be heard de novo by the city council. All other appeals, with the exception of SEPA appeals subject to S hearings before the city council.
G. Notice of any appeal shall be given to those entitled to notice of the decision or determination being appealed.

Where else can I find the instructions specifically pertaining to additional documentation which will be available at the time of the hearing? In other words, wi be considered?

From the July 26, 2022 hearing, from the Hearing Examiner's introduction, I read " Exhibits may be submitted to City staff at the hearing." I just need to verif documents at the time of the hearing. I am not trying to split hair, but I need to know if I need to rush a report by next week, or not.

Additional question: Several neighbors would like to also sign the appeal. Would that require multiple filing fees?

Thank you,

[Quoted text hidden]

Robert Maul <RMaul@cityofcamas.us> Wed, Sep 25, 2024 at 2:27 PM
To: "Karin Nosrati, DC" <bforback@gmail.com>
Cc: Yvette Sennewald <YSennewald@cityofcamas.us>, Carey Certo <CCerto@cityofcamas.us>, Alan Peters <APeters@cityofcamas.us>, Kristin Price <19813mkp@gmail.com>, Joan & Rich Rickard <joanier@comcast.net>, Russell Wegner <rwegner@lmi.net>, Barbara Wegner <oakbarb@lmi.net>, Randy Nosrati <randynos1@gmail.com>

You can file one appeal with others to join. As you have listed below, 18.55.200 tells you what you need to supply for the appeal. If you want certain documents or information to be considered it needs to be in the appeal you file.

The statement from the July meeting about submittal of items to staff at the hearing is in reference to a conditional use permit hearing where a decision has not been made. The difference here is the decision has been made, which you disagree with, and now you need to prove to the examiner why the decision should be modified or denied. As for when we meet with the examiner, it is on an as-needed basis so there is nothing on the calendar right now.

From: Karin Nosrati, DC <bforback@gmail.com>
Sent: Wednesday, September 25, 2024 2:02 PM
To: Robert Maul <RMaul@cityofcamas.us>
Cc: Yvette Sennewald <YSennewald@cityofcamas.us>; Carey Certo <CCerto@cityofcamas.us>; Alan Peters <APeters@cityofcamas.us>; Kristin Price <19813mkp@gmail.com>; Joan & Rich Rickard <joanier@comcast.net>; Russell Wegner <rwegner@lmi.net>; Barbara Wegner <oakbarb@lmi.net>; Randy Nosrati <randynos1@gmail.com>
Subject: Re: SPRV23-06 - 13th Street Gas Station

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Hi, Robert,

Thank you for helping direct me to find the prior hearing notes on the Camas website.

I apologize, but I don't remember very specifically discussing the finer details of the hearing process, because we were in the stage of submitting comments on the SEPA at the time. This is now the new reality and I need to know if we obtain expert opinions or rebuttals, if they can only be submitted now, when we turn in the appeal.

The only written instructions, which do not detail the limits of timeliness of submission of documents, I found here:

18.55.200 - Appeals—Generally.

Share Link to section Print section Download (Docx) of sections Email section Compare versions

[Quoted text hidden]
[Quoted text hidden]

Carey Certo

From: JKGoertzen <jkgoertzen@comcast.net>
Sent: Wednesday, November 20, 2024 7:13 AM
To: Community Development Email
Subject: Gas station

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I am resubmitting this as it is missing from the list. Thank you!

November 10, 2024

Dear Hearings Examiner,

We are opposed to the gas station/car wash/convenience store project directly across the street from the back of our home due to the following concerns:

- Our 3 acre property contains wetlands; this wetland is habitat to deer, racoon, coyote, owl, woodpecker, rabbits and any number of smaller critters that we don't see every day but make their home there.
- The project lies within the boundary of a public wellhead buffer area (as represented on Clark County GIS).
- There are 45 private drinking water wells that would be contaminated by runoff from this project, most of which have not been registered previously and therefore were not included in the original decision.
- The project is at an intersection which is already extremely dangerous, has recently added large numbers of semi-trucks to it (Interstate battery moved in across the street), and handles traffic for the 2000+ student highschool just up the street.
- The venting of the gas vapors may pose a health risk to those of us living nearby, including our children and grandchildren.
- The project will, undoubtedly, reduce our property values and make it difficult to sell our homes.

Please weigh the number of negative impacts this project will have compared to the unnecessary addition of another gas station which can already be found nearby and which will ultimately be phased out as gas-powered vehicles become unlawful or less utilized.

Thank you,

Keli and Jeff Goertzen

20009 NE 14th St

Camas WA 98607

Carey Certo

From: Karin Nosrati, DC <bforback@gmail.com>
Sent: Wednesday, November 20, 2024 7:07 PM
To: Carey Certo
Subject: Fwd: Re-submission as .pdf - same content
Attachments: SEPA comments final 03-06-2024 5pm.pdf

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Hi, Carey,

This is the first of two or three emails and files that I do not see in the public record. Please add the email with the photos and the attached file entitled "SEPA comments final 03-06-2024". As you can see it was sent on 03-07-2024.

Thanks,

Karin

---------- Forwarded message ---------
From: **Karin Nosrati, DC** <bforback@gmail.com>
Date: Thu, Mar 7, 2024 at 12:59 PM
Subject: Re-submission as .pdf - same content
To: <communitydevelopment@cityofcamas.us>

Dear Community Development Team,

I am submitting the file entitled "SEPA comments final 03-06-2024 5p.m." as a .pdf so it is smaller - please see below. Same content. Could you please confirm the receipt?

My comments to the SEPA for the proposed gas station, convenience store and car wash address the following items: Please see the attached file entitled "SEPA comments final 03-06-2024 5pm"

- Earth
- Air
- Water
- Environmental Health
- Land use
- Aesthetics
- Light and glare
- Recreation
- Transportation - see photos below taken after my fence was driven into

I attended a City Council meeting on February 20th, 2024. Please let me know if you have the files I submitted at that time in your possession.

Thank you for your consideration,

Karin Nosrati

CAMAS

Karin Nosrati
20107 NE 14th Street
Camas, WA 98607
360-254-1585

SEPA comments:

1. Earth

This project would need to bring in soil, if the concrete surfaces are intended to be level. Sloped toward the east and at eastern most portion 4-5' below street level. Also sloped toward the southwest and west portion.

2. Air

- Vapor leaks of gasoline during customer filling and tanker truck filling of underground storage tank (UST)
- Exhaust fumes from cars waiting, idling, from trucks idling, even more from diesel powered engines on cars and trucks, exhaust fumes from tanker trucks
- Exhaust fumes from 2,000 of additional trips of cars and trucks to the site
- The City of Camas has permitted a large warehouse with 20+ truck bays, which may simultaneously arrive and depart. The air pollution from this amount of exhaust fumes and exacerbated by another project with exhaust and vapor fumes is overwhelming and beyond excessive, given that it is surrounded by residences and a high school.
- Vacuums from car wash operation/customers vacuuming releasing particles.

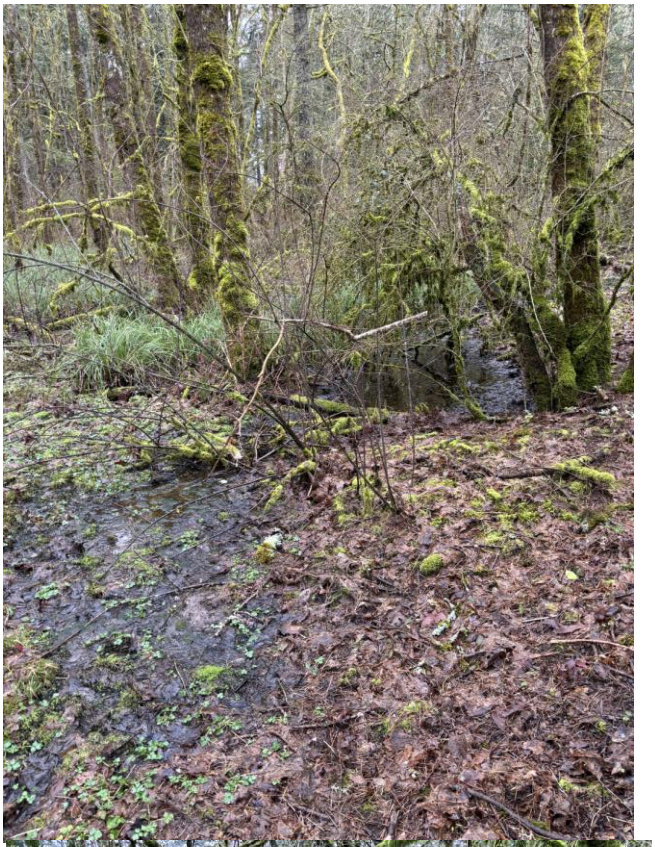
3. Water

Surface:
Yes, there are at least 4:

- Neighbor to the west at 20005 NE 13th Street has standing water most of the year (more about this later), 17' from the property line to the proposed development

- Neighbor to the north at 20107 NE 14th Street has a storm water pond that contains water most of the year (mine)
-

- Neighbor, also to the north at 20009 NE 14th Street has a large green belt with wetland protection



- Commercially zoned parcel to the south at 7163 NW FRIBERG-STRUNK ST has a wetland immediately adjacent to the parcel, belongs to the same developer
- The Critical Areas report was conducted on August 29, 2023, one of the hottest days of the summer. Does the parcel with the proposed development actually have wetland properties? The report needs 3 parameters, Vegetation, Soil and Hydrology to conclude that there is a wetland. The report states that the vegetation points (parameter 1) to a wetland. On page 3 it indicates that there are hydric soils (parameter 2), yet on the summary page it contradicts itself. Regarding Hydrology (parameter 3) it states "no" however, the report was done untimely for a correct conclusion.

Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

- Yes!!! The developer does not have a plan, and does not seem to know, per their response on the SEPA submission.
- See wetlands map
- Camas Municipal Code 16.55.080 F. prohibits Fuel and/or gas stations

Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

Problem is that this will affect the wetland to the west.

Will the proposal require surface water withdrawals or diversions? Give a general description, purpose, and approximate quantities if known.

Affects neighboring properties, because the existing hydric soils on the parcel will now be redirect to the parcel to the west.

Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

- Surface spills during the rainy season may be carried away to the street and from there to the storm water pond and Lacamas Creek/Lacamas Lake below
- The car wash suds and grime-laden waste water (Hydrofluoric acid, waxes/petroleum products) will supposedly be treated by the "waste water treatment". However, afterwards it will be discharged to the ditch which will drain toward Lacamas Creek/Lacamas Lake (See attachments G, A, B)

- What is the reliability of these waste water treatment systems, their capacity, inspection frequency, and ability to dissolve petroleum products and car wash chemicals?
- These waste waters may also discharge to the property to the west (that has wetlands/standing water) which may even seep to the aquifer below.
- Researchers at John Hopkins University have found that spillage of fuel releases an average of 40 gallons of gasoline annually at the pumps of a typical gas station. Furthermore they found that spilled gasoline can migrate through the concrete pads. (attachment)

a. Water Runoff (including stormwater):

Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

- **Yes, this water will flow into other waters.**
- **When there is snow and ice melt it will cross the road and run toward the property at 20107 NE 14th Street and others.**
- **Surface spills during the rainy season will mix with storm water which would then be discharged into the nearly ditch which leads to Lacamas Creek/Lacamas Lake, toward the west and its wetland/standing water, the aquifer below.**
- **A geohydrolic study is needed**

Could waste materials enter ground or surface waters? If so, generally describe.

Yes, petroleum chemicals can enter ground affecting different elements.

Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

- The property owner at 20005 NE 13th Street experienced drainage problems and flooding onto this property, when the parcel of the current Lacamas Tech Center was initially leveled, a trench was dug in the western perimeter and wetlands were filled in. (To our knowledge the filling of the wetlands at that time was not properly managed by the City of Camas. The property owner complained and wrote to the City, with no avail.) However, water will continue to find its way and it has: In this case, consequential to activities on the neighboring commercial property it has created or enlarged a wetland at the property at 20005 NE 13th Street that is not yet on the original maps. This property is IMMEDIATELY adjacent to the proposed gas station, the new wetland is 17' from the east boundary of the proposed gas station and would very likely receive run-off.

- The current project would once again affect the drainage pattern to this property.
- Since the slope on the parcel with the proposed development is too acute and will need to be leveled, it will change the drainage pattern for this parcel. This can result in water draining to the street, from where it can run down 13th Street which is on a downhill slope and continuous with Goodwin Road and eventually run toward Lacamas Creek/Lacamas Lake
- With the new drainage pattern, the water can also cross the road and run to the storm water pond at 20107 NE 14th Street, and to the back yard of this property which is below street level. This topography is not obvious when viewed from the street, because there is a berm and a fence along a part of the property. However the back portion of the property can flood when water comes across the roadway from 13th Street.

7. Environmental health

Describe special emergency services that might be required.

- Police activity to deal with shoplifting, break-ins and robberies
- Fire truck activity for fuel fires
- Police activity to address unhoused people loitering and camping due to access to bathrooms and trash receptacles
- Spill clean-up cannot be performed with 2 or 3 employees and a 4,000 sq. ft. convenience store. The employees will be pre-occupied tending to customers and preventing shoplifting to care about performing a spill clean-up/over flow that is also dangerous to their health.
- Too few employees to monitor for spills/environmental hazards
- Spills caused by customers driving away with the nozzle still attached causing a large spill, which will need more manpower than 2 or 3 employees tending to other duties. (Costco has a dedicated employee tending their gas station [which is literally within walking distance])

b. Noise

What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site)?

- car wash: swooshing, blowing, loud noises
- customers: music from cars when doors are opened, and/or windows rolled down
- idling cars
- motor cycle and diesel truck engine noises
- starting of motor vehicles and motorcycles
- braking noise from motor vehicles
- horns if there is congestion, which is likely given how the entry/exit is designed
- tanker truck delivery process
- customers' loud voices
- Section 9.32.050 Public disturbance noises. of the Camas Municipal Code,
- 4. The creation of frequent, repetitive or continuous sounds in connection with the starting, operation, repair, rebuilding or testing of any motor vehicle, motorcycle, off-road vehicle, or internal combustion engine so as to unreasonably disturb or interfere with the peace, comfort and repose of owners or possessors of neighboring or nearby real property, provided, however, that this subsection shall not apply to the operation of lawn mowers, garden tools, chain saws or other power equipment used for building repair or grounds maintenance between the hours of 7 a.m. and 10 p.m.

  2.The making of any loud or raucous sound within one thousand feet of any school, hospital, sanitarium, nursing or convalescent facility, which unreasonably interferes with the use of such facility, or with the peace, comfort or repose of persons therein.

  - Union High School is 1,839 feet from the proposed property
  - A chiropractic office is within 70 feet of the proposed property

Proposed measures to reduce or control noise impacts, if any:

- There are companies which prepare noise level reports. This report should be generated for a project with the equivalent scope.

8. Land and shoreline use

a. **What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.**

- Surrounded by quiet residential properties

- It will disturb and interfere with the peace, comfort and repose of owners or possessors of neighboring and nearby real property
- The externalities from this project will destabilize property values of all neighbors (more than 27 homes) which is a violation of Camas City code:
- Section 18.01.020 of the Camas Municipal code states

  A.The purposes of this title are: to implement the comprehensive plan for the city; to encourage the most appropriate use of land; to conserve and stabilize the value of property; to aid in rendering of fire and police protection; to provide adequate open space for light and air; to lessen the congestion on streets; to give an orderly growth to the city; to prevent undue concentration of population; to improve the city's appearance; to facilitate adequate provisions for community utilities and facilities such as water, sewerage, and electrical distribution system, transportation, schools, parks, and other public requirements; and in general to promote public health, safety and general welfare.

  B.Since the public health, safety and general welfare is superior to the interests and pecuniary gains of the individual, this title may limit the use of property and prevent its most profitable gain. If some reasonable use of property is allowed by this title and the effect is not confiscatory, the city is exercising a proper use of police power. (Ord. 2515 § 1 (Exh. A (part)), 2008: Ord. 2443 § 3 (Exh. A (part)), 2006)

- This next section shows how the land use of a gas station, car wash and convenience store next to residential properties violates the City of Camas' Neighborhood Preservation Ordinance:
  - **8.06.010 - General provisions.** This chapter shall be known as the "neighborhood preservation ordinance" of the city, may be cited as such, and will be referred to hereinafter as "this chapter." (Ord. 2193 § 1 (part), 1999)

8.06.020 - Purpose and scope.

A. The purpose of this chapter is to promote the health, safety and welfare of the citizens of Camas, Washington, and to protect neighborhoods against hazards, blighting, and deteriorating influences or conditions that have a negative impact on families; encourage social disorder and crime; and decrease area property values, by establishing minimum standards for the maintenance of all residential and nonresidential buildings and structures, and vacant and improved land.

B. This chapter shall apply to all buildings, structures and lands within the city regardless of the use, the date of construction, improvement or alteration.

C. This chapter shall be fairly, sensibly and reasonably applied to promote the maintenance of all existing buildings and land in the city. The intent is to ensure that individuals and families do not suffer undue hardship.

- In this section is also a definition of Public nuisance. Near residential land use, a gas station, car wash and convenience store fits the description of the a public

nuisance. Please see below, as each item individually qualifies as a definition of a public nuisance, because they are separated by the word “or”:

- "Public nuisance" means a thing, act, omission to act, occupation, or use of property which annoys, injures or endangers the safety, health, comfort, or repose of the public, offends public decency, is offensive to the senses, lawfully interferes with, obstructs, or renders dangerous any portion of the city, or in any way renders other persons insecure in life or use of property, or obstructs the free use of property so as to essentially interfere with the comfort and enjoyment of life and property.
- The “senses” above are sense of smell (vapors and diesel and gasoline exhaust fumes), soundnoise (engines starting, vacuums from car wash, car wash water spraying, spinning brushes, etc.), sight (lights and lighting and lack of dark sky after dark)
- The proposed Camas development will cause undue burden on the adjacent neighborhoods and the City will experience a strain to their 911 call system.
- **Per Camas Municipal code 9.20.020 - Public consumption.** Except as permitted by RCW Chapter 66, no person shall open the package containing liquor or consume liquor in a public place within the limits of the city.
- This convenience store will make our neighborhoods and driveways targets for local loitering and consumption of items purchased. Trash is likely to be tossed into our neighborhood lawns, streets and Clark County public spaces.
  The proposed development will create additional cost for adjacent well-owning properties within ¼ mile of the gas station, when they try to sell their property:
- The FHA Single Family Housing Policy Handbook for Appraiser and Property Requirements for Title II Forward and Reverse Mortgages states …that properties within one quarter mile of a gas station will need to conduct an independent inspection of their wells (‘for the appraisal’).
- This requirement is an additional burden and expense to all the homes on NE 13th Street and in Morning Meadows and Katie’s Hill neighborhoods that are on drinking water wells.
- https://www.hud.gov/sites/documents/SFH_POLI_APPR_PROP.PDF
- https://www.hud.gov/sites/dfiles/OCHCO/documents/4000.1hsgh-080923.pdf page 604

Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how?

- Large tanker trucks will stop traffic as they attempt to maneuver into this parcel. One of the circulation plans calls for a truck to enter the parcel making a left turn. This truck will likely come from Highway 14, which means it arrives from Friberg-Strunk making a left turn. As it then has to await making a left turn into the development, it will stop traffic behind it. (The traffic study is false in its sight distance measurements along Friberg-Strunk. My request to meet with the City engineers was rejected.) Cars coming up the hill and around the corner on Goodwin Rd., would not expect to have to stop on a dime, and this will cause traffic accidents. Please see enclosed photo of one accident at this location.

Approximately how many people would reside or work in the completed project?

- This site will only create 3 jobs for Camas residents and possibly none, because it is located on the outskirts of Camas.

Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any.

- This project is incompatible with this community. It does not take into account that it surrounded by quiet residences and would project its collective problems onto them.

10. Aesthetics

a. What views in the immediate vicinity would be altered or obstructed?

- Customers of convenience stores and gas stations will litter and leave trash on the adjacent side-walks, properties, undeveloped ditches and NE 13th Street and Friberg-Strunk Road.
- Our neighbors have been walking with trash bags for years collecting the trash littering this portion of Camas leading to our neighborhood. Camas has not been collecting the trash and we are concerned that the City will not send crews to collect roadside trash.
- Customers may decide to consume purchases from the convenience store (including but not limited to alcohol) in the nearby residential neighborhoods, causing disturbances and leaving trash behind.
- A monument sign at the corner would obstruct the view for drivers making a right turn. Building set-backs should not be deviated from for the same reason as not to violate Camas City Code:

- **18.15.080 - Signs prohibited.**
- The following signs are specifically prohibited in the city:

  B.Signs located in such a manner so that by location, color, size, shape, nature would tend to obstruct the view or be confused with official traffic signage.

11. Light and glare

What type of light or glare will the proposal produce? What time of day would it mainly occur?

- Camas Municipal code 18.21.060 G.:
- Lighting. Site and building lighting shall be designed to minimize glare or objectionable effects to the adjacent properties. Residential neighborhoods are of particular concern. Site-lighting poles shall not exceed twenty feet in height and shall direct the light downward. Lighting sources viewed from above or below on adjacent property shall be shielded. Building lighting is to be concealed and indirect. Lighting in service areas is to be contained to conceal visibility of light sources from street and adjacent property. Site lighting is to be designed to provide uniform distribution, and the light levels shall be adequate for reasonable security and safety on the premises.
- Monument sign would create light pollution outside of the perimeter of the parcel
- LED bright lighting of the interior of the convenience store will project onto the concrete surfaces and reflect to neighboring properties
- LED lighting from the gas pump overhangs will reflect off the concrete surfaces.
- The area is steeped in darkness, except at the intersection. The dark sky benefits to wildlife and humans (improved sleep) have been widely documented.

Could light or glare from the finished project be a safety hazard or interfere with views?

- Each vehicle exiting the parcel, which will be hundreds (2,000+) per day, will shine their headlights at the two residential homes on the other side of NE 13th Street (20107 NE 14th Street and 20009 NE 14th Street). Especially during darkness which is in the early morning and late afternoons for 50% of the year, this will create a strobe-light effect, shining light into these properties. (The existing trees located on these properties do not adequately shield this light created by the development's customers, nor should they have to, because it is the responsibility of the development to shield the neighboring properties from light.

- Each vehicle entering the parcel making a left turn will shine their headlights at the residential property at 20005 NE 13th Circle. This also needs to be shielded or remedied.
- This project would significantly change the night sky. There are many mammals in the wooded residential lots and the wetland at 20009 NE 14th Street, which is within 70 feet of the proposed development (including deer, which use the proposed development to move to/from the Camas Meadows Golf course.)

Proposed measures to reduce or control light and glare impacts, if any:

- The Camas code referenced above needs to be enforced such that residential properties and animal habitat are completely shielded from the light used and emanating from the site.

12. Recreation

What designated and informal recreational opportunities are in the immediate vicinity?

- Developer did not mention that Union High School with enrollment over 2,000 students and all their sports facilities, including walking paths are along Friberg-Strunk Road. It is just 1,839 feet away.

Would the proposed project displace any existing recreational uses? If so, describe.

- Currently the sidewalks are used by Union High School daily for a class called "Fit for Life walking"
- Cross-country teams from the High School run along this road
- Due to exposure to vapors and fumes during exercise, and the attractive nuisance of a convenience store, these recreational activities may have to be abandoned by the students.

14. Transportation

Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle, or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

We have contacted the City of Camas' engineering department, regarding questions arising from reading the pre-application meeting notes dated August 8. 2022. but we did not receive yes/no responses, therefore I am placing these concerns here:

- Will 13th Street receive a left turn median turning strip/lane into the gas station?
- Will the speed limit be lowered to 25 mph?
- Will the City of Camas uphold the Access Spacing Standards?

These are the unanswered questions:

- On page 6, "Streets: 4.c. ...The applicant will be required to dedicate ... and a center left turn median." Does the applicant have to widen the road to accommodate this median? Will a left turn allowed from NE 13th Street into the proposed development? If so, will there be a median lane, essentially widening that portion from the existing 3 lanes (1-east, 1-west, 1-right turn) to 4 lanes with the center median lane? How long would that median lane be and would it extend into the Clark County portion of the road, even to the west of the parcel?

- And, will cars exiting the proposed development be allowed to make a left turn? If not, will a concrete traffic curb be installed to prevent this?

Due to the poor sight distance created by the uphill and around the corner design of Goodwin Road, one would think cars would travel at the recommended 35 mph.

However, most don't and as a remedy would you consider lowering the speed limit to 25 mph to accommodate this development to prevent rear-end collisions resulting from left-turn being allowed from the proposed development?

- also on page 6, "Streets: 5.b.i. Meeting the required offset from the back of sidewalk would further reduce the developable area. ii. A deviation request from the minimum 50-foot setback requirement should be submitted. A deviation request from this standard would be supported by the city engineer."
- The developer is asking the City to disregard the setback “standards” and allow them to place more parking spaces closer to the road.

Will the City of Camas uphold the setback standard?

I request that the City of Camas reject granting any deviations.

- also on page 6, "Streets:6. "Per CDSM Table 3, Access Spacing Standards on a roadway classified as an arterial are 660-feet minimum ... c. A deviation request from meeting the minimum access spacing required should be submitted."

- The developer is asking for a dangerous shortening of the City access standard. This will result in rear-end collisions. West-bound collisions will almost exclusively be suffered by City of Camas residents as the come up the hill on Goodwin from the homes below. I predict that east-bound collisions will be suffered mostly by high school students on their way to school.

As this is a City standard, the City should protect its citizens and reject any request for a deviation for this high-risk development.

15. Public services

Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

- This proposed development is located near wooded residential homes. The chance of a fuel or engine fire danger may require additional fire protection

Proposed measures to reduce or control direct impacts on public services, if any.

- Place a new fire station close to this proposed development.

Carey Certo

From: Karin Nosrati, DC <bforback@gmail.com>
Sent: Wednesday, November 20, 2024 7:11 PM
To: Carey Certo
Subject: Fwd: Gas Station questions remaining, request for meeting

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Another comment that should be added to the public record, please.

---------- Forwarded message ---------
From: **Karin Nosrati, DC** <bforback@gmail.com>
Date: Sun, Mar 3, 2024 at 11:17 PM
Subject: Gas Station questions remaining, request for meeting
To: Curleigh (Jim) Carothers <jcarothers@cityofcamas.us>, Anita Ashton <AAshton@cityofcamas.us>, Carey Certo <CCerto@cityofcamas.us>, <communitydevelopment@cityofcamas.us>
Cc: Mike Ogden <mogden@westernconstruction.com>, Randy Nosrati <randynos1@gmail.com>, Barbara Wegner <oakbarb@lmi.net>, Jeff Goertzen <jeffkgoertzen@gmail.com>, Ernie Lucier <lucier1796@comcast.net>

Hi, Curleigh and Anita,

The comment period for the SEPA ends this Thursday and we have not yet received a reply to some specific traffic questions. As a group we still cannot picture how the turning in and out of this proposed gas station would work, especially left turns.

We have been told to only focus on environmental issues for now. Whoever makes that statement, does not consider that the lights from vehicles turning in and out of the driveway affect the residences nearby, creating a strobe-light effect with each turn. Currently, traffic travels only east-west. This project would add a very high number of north-south vehicle headlight pointing trips. We need answers to be able to respond to the SEPA, because light problems need to be documented and considered.

We measured that the current driveway begins 196' from the edge of the property line when measured westward. If we understand it correctly, the distance to the driveway, per the Camas Access Spacing Standard has to be 300' for an arterial. We saw a map that indicates that NE 13th is an arterial. Are these statements accurate?

Would both of you, Anita and Curleigh, be able to meet with us at the intersection before Thursday mid-day?

Thank you for your consideration,

Karin Nosrati
360-254-1585

Carey Certo

From: Karin Nosrati, DC <bforback@gmail.com>
Sent: Wednesday, November 20, 2024 7:24 PM
To: Carey Certo
Subject: Fwd: Questions and comments about the proposed development at NE 13th/Goodwin and NE 202nd/Friberg-Strunk

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Hi, Carey,
This email from February 1, 2024 should be part of the public record. Thank you!

---------- Forwarded message ---------
From: **Karin Nosrati, DC** <bforback@gmail.com>
Date: Thu, Feb 1, 2024 at 1:03 PM
Subject: Questions and comments about the proposed development at NE 13th/Goodwin and NE 202nd/Friberg-Strunk
To: <ysennewald@cityofcamas.us>
Cc: heidihparker@gmail.com <heidihparker@gmail.com>

Dear Ms. Sonnewald,

Thank you for speaking with me the other day. I apologize for the lengthy email that follows!

Below are a few issues I would like to document and ask to be forwarded to the department and individuals rendering a SEPA decision for commercial development at the parcel that has applied for a permit to build a gas station, car wash and convenience store adjacent to one-acre residential lots. Would you be able to share the SEPA contact or copy us on the email? Additionally, please forward the concerns below to anyone involved rendering an opinion to move forward with the permitting process.

- Drainage: The parcel just west of Mr. Warren/property seeking your permit frequently has standing water, and Mr. Warren has personally talked to me about drainage issues there, and we have observed them as well.
- Drainage: Each of the one-acre (or larger) lots are on individual septic tanks with very large un-usable drain fields mandated by the septic rules of Clark County. Each lot had to be perc tested to determine septic tank placement. How could a large building pass a perc test when our lots can only support a single family home where each toilet and faucet is being counted. How could a commercial building with human traffic and waste be accommodated and how can a large building leave sufficient room for a large drain field?
- Drainage: The soil in our neighborhood which is likely the same across the street, does not absorb water well. We often joke that we live in a castle with a moat - because the water from our lot and our neighbors' lots takes time to drain.
- Sewage: We had a sewage overflow on Monday, January 29th, 2024, that spilled sewage onto NE 202nd Avenue in front of our house, which then ran off onto our property into the storm water pond on our lot! Is it a coincidence that the new commercial building just started accepting tenants and we are receiving sewage from outside our neighborhood on our properties (we are all on septic)? Can you please elaborate on the sewage/septic issues we might be facing given this new development?

- Water pressure issues: A few times per year the City of Camas comes to our cul-de-sac and releases a large amount of water, which then drains into our road and property to ward the storm water pond. Can you lps the City's water system.
- Topography of our property which is exactly across the street from the proposed development: There is a berm on the south side of our property and when viewed from 13th Street it is not obvious that the actual level of our property is lower than 13th Street level. The storm water pond on our property, at the corner of the intersection, also immediately adjacent, is of course also a low point where water collects.
- Traffic: Union High school is just down the street along the single-lane roads at this intersection. As residents we are are aware of many unreported accidents at this intersection, many of which are related to Union high school kids driving to school and after school activities. In our county we need to promote safe corridors for young drivers to prevent injuries and fatalities.
- Traffic: Even prior to additional development, this intersection has been quite dangerous. We have had cars driven into our fence and into the storm water pond. Visibility is difficult because of the curvature of the road at the approach of the intersection coupled with the steep slope of the road at the Goodwin portion of the intersection. A bottle neck at this location would add more danger.
- Traffic: Along 13th Street, which would act as an access point to the parcel at the corner, there are numerous driveways of single family homes. If traffic would back up more freuently than it already does during peak hours of traffic to the high school, it would add to the road hazard.

Could you please send us a link to the applicable zoning sections and permit requirements?

We would also like to know what traffic metrics you are looking for. If you have a contact for the department rendering the traffic study, we would be interested in providing them with additional information. Could you share their contact as well?

The residents of our neighborhood would like to meet the developers. Could you please ask them if they are open to accept our invitiation?

Thank you for your time! I can be the contact point for our neighborhood as I have the ability to text our neighbors in Morning Meadows Estates. Ms. Parker who is copied on the email is more knowledgable in legal affairs.

Karin Nosrati
360-254-1585

Carey Certo

From: Karin Nosrati, DC <bforback@gmail.com>
Sent: Thursday, November 21, 2024 12:17 PM
To: Community Development Email; Stephen Horenstein; Patrick Mullaney; Alan Peters; Yvette Sennewald; Carey Certo
Subject: Additional clarification about appeal of Notice of Decision

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Dear Carey,

Could you please forward these comments to Mr. Turner, and all parties, that need to receive this. Please reply with a receipt. Thank you!

Dear Mr. Turner,

In accordance with the Mr. Turner's order we want to respond to the request for further clarification of the appeal of "NOTICE OF DECISION 13TH STREET GAS STATION (FILE NO. SPRV23-06)". The procedural steps have been very unclear and I will try to address which items pertain to the SEPA and which pertain to the project in general.

I am not the only appellant, but I am acting on behalf of dozens of neighbors whose names are on the appeal document. We have collectively raised numerous issues leading to the appeal. We were told by the City that this was the proper procedure. The City has failed to consider what we have said and they are not acting with a broader look at the impact on the environment and the residences surrounding the one acre parcel with the proposed development.

We object to the SEPA as well as items outside of SEPA, but we are not limiting ourselves to these issues. We are not surrendering any claims, and below please find the principal times in each category:

Principal items from the SEPA:

- Dozens of Drinking water wells nearby, closest one less than 75' from property line
- Pollution of Critical Aquifer Recharge Area, fuel station not permitted
- Traffic congestion, Traffic safety and flow problems, Creating access problems for residents, Problems with ingress and egress
- Noise pollution
- Light pollution
- Pollution to nearby wetlands
- Contaminating stormwater pond and draining contaminated water toward Lacamas Lake
- Report only speaks about environmental issues during the time of construction, but not regarding issues caused during business operation of this project (after go-live)
- Oak Tree: Purchasing oak credits outside the City of Camas is against the city's mission to maintain the tree canopy
- Litter and Graffiti potential and remedies

Principal items with the project in general (outside SEPA):

- Traffic congestion, Traffic safety problems, left turn lane does not solve issues

- Problems with the applicant's traffic study and the City approving it
- Absence of bike lanes both directions on modified plan, not complying with City code
- Setback requirements not being met, per City code
- Parking spaces planned within 100' of drinking water well, and possibly a spring, not allowed per Sanitary Control Area, Department of Health, State of Washington
- Access spacing standards not being met, per City code
- Car wash is not permitted in BP zoning, per City code table
- BP zoning is supposed to be campus-like, to grow employment, not retail oriented, per City definition
- Not compatible with City's Land use definition LU-2.5 of being compatible with adjacent neighborhoods
- Not enough parking spaces for employees, if all spaces are built without favors to the applicant, incompatible with number of gasoline pumps

I summary we appeal the decision on numerous grounds and are not limiting ourselves to the items listed above.

Karin Nosrati

BEFORE THE CITY OF CAMAS HEARINGS EXAMINER

Karin Nostrati on behalf of Morning Meadows Estate et al., Appellant, v. City of Camas, a Washington municipal corporation, Permitting Agency, and Pac USA Camas LLC, Applicant.	*FILE NO.: SPRV23-06* *APPEAL24-1001* *PROJECT: 13TH STREET GAS STATION* **PAC USA CAMAS LLC'S PREHEARING BRIEF ON PROPER SCOPE OF APPEAL**

I. INTRODUCTION

This Memorandum responds to the Hearing Examiner's request for prehearing briefing on the proper scope and content of the upcoming hearing on the September 30, 2024, Karin Nosrati appeal[1] of the City's August 15, 2024 SEPA threshold determination of non-significance and September 16, 2024 Staff Report and Decision on the Type II permits for the 13th Street Gas Station Project ("Decision").[2]

[1] Ex. 105 (Nosrati Appeal).
[2] Ex. 103 (Staff Report and Decision).

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Attorneys at Law
1420 5th Avenue, Suite 3400
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Telephone: 206-622-1711

II. ISSUE PRESENTED AND SHORT ANSWER

ISSUE: Under the Camas Municipal Code, is the Examiner's consideration of a SEPA appeal and appeal of Type II site plan review and design review decisions subject to the same standards?

SHORT ANSWER: Yes. As described below, the Camas Municipal Code ("CMC") authorizes the Examiner to hear appeals of SEPA threshold determinations and Type II permit decisions. Both appeal processes require that an aggrieved party file a timely appeal within fourteen days of the decision at issue. Both hearings are conducted on the record, and both hearings place the burden of proof on the appellant.

Unlike a Type III predecisional open record hearing, such as a preliminary plat, where the Examiner is the decisionmaker of the first instance,[3] for both a SEPA appeal and a Type II appeal, the Examiner is sitting in review of the Community Development Director's SEPA determination and permit decisions. The hearings are "on the record," and, for both the SEPA DNS and Type II permits, the burden of proof remains with the appellant to demonstrate clear error in the City's decisions.

III. ARGUMENT

A. Ms. Karin Nosrati is the Sole Appellant in this Matter.

At the November 14, 2024 hearing, the issue arose as to whether Ms. Karin Nosrati is the appellant in this case or whether the approximately thirty-six other households that were listed by Ms. Nosrati in her appeal as "neighbors [that] would like to be included in the appeal and receive an invitation to the hearing" are also appellants.[4]

There are two reasons why the Ms. Nosrati is the only appellant in this matter:

First, in her appeal statement, Ms. Nosrati identifies herself as the sole appellant and claims that she is acting "[o]n behalf of the residents of Morning Meadows Estates, residents of Katie's

[3] A Type III decision is final decision made by the Examiner, after an "open record predecision hearing" and governed by different procedures than appeals of SEPA threshold determinations and Type II decisions. *See*, CMC 2.15.080 (B-C); CMC 18.55.180 (hearing procedure for Type III decisions).

[4] Ex. 105 (Nosrati Appeal, p. 3).

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Hill and residents of Evergreen Acres Tract."[5] She uses the singular to refer to herself as the appealing party—"[I] am appealing . . . ."[6] Of all the individuals listed on appeal statement pages 3-5, she put the word ("Appellant") only after her name and that of her husband.[7] Finally, CMC 18.55.200(6) requires that an appeal include "a statement that the appellant has read the notice of appeal and believes the content to be true, followed by the appellant's signature." Here, while she did not sign the appeal, Ms. Nosrati's typed name is the only one appearing after the required verification.

Second, in addition to the plain language of her appeal statement, under the applicable appeal procedures, Ms. Nosrati is the only appellant of record who filed a timely appeal. CMC 16.13.060 lists the requirements for perfecting a SEPA appeal, and CMC 18.55.200 lists the requirements for perfecting an appeal of a Type II decision.[8] Both provisions require that an appeal be filed within fourteen days of the decision being appealed. Ms. Nosrati is the only person who has met this requirement, and therefore is the only person who has not lost standing as a result of a failure to exhaust administrative remedies. *Ward v. Bd. of Cnty. Comm'rs, Skagit Cnty*., 86 Wn. App. 266, 271, 936 P.2d 42 (1997) ("The doctrine of exhaustion of administrative remedies is well established in Washington. In general, agency action cannot be challenged on review unless all rights of administrative appeal have been exhausted.");[9] *West v. Stahley*, 155 Wn. App. 691, 697, 229 P.3d 943 (2010), *as amended* (Aug. 5, 2010) (hearing examiner properly dismissed an appeal of an engineering permit filed more than fourteen days after the permit issued, as the untimely appeal precluded subsequent LUPA review).

[5] Ex. 105 (Nosrati Appeal, p. 1).
[6] *Id*.
[7] *Id.* at p. 5.
[8] Here, the City's SEPA threshold determination is made by the City's Community Development Director, who the Code designates as the City's SEPA responsible official, and is appealable to the Examiner. CMC 16.13.060; CMC18.055.030(E). Likewise, the City's site plan review and design review (major) are both Type II decisions made by the City's Community Development Director or his or her designee. CMC 18.55.030, Table 1; 18.055.030(1)(B); 18.55.200(A).
[9] The Wards were denied review because their attorney was one day late in filing an appeal of a hearing examiner's decision to the County's Commissioners.

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In undertaking the role of a lawyer, pro se litigants assume the duties and responsibilities of a lawyer and are held accountable to the same standard of legal knowledge. *Batten v. Abrams*, 28 Wn. App. 737, 739 n.1, 626 P.2d 984, *rev. denied*, 95 Wn.2d 1033 (1981). Even taking into account the relaxed standards of a quasi-judicial administrative proceeding, Ms. Nosrati should be held to the presentation of her case. The principle of fairness to all parties dictates that the scope of Ms. Nosrati's appeal, and by extension, the Examiner's jurisdiction, is based upon the record created before the Community Development Department, the issues presented in Ms. Nosrati's September 30, 2024 appeal statement, and the evidence that she presents at the consolidated appeal hearing to support her claims of error on those issues.

B. The Nosrati Appeal Is Primarily a SEPA Appeal.

The Nosrati appeal statement lists seven issues.[10] Five of the issues are properly characterized as SEPA issues, one is a Type II permit issue on whether a car wash is an allowed use in the BP zone, and the final issue, regarding the City's alleged potential liability for granting an exception to an intersection/parcel access spacing standard is likely outside of the Examiner's purview.

The SEPA issues are as follows:

1. Pollute open waters in the vicinity, increasing concerns about management of the Lacamas Lake watershed;
2. Endanger safe drinking water supply of immediate neighbors[’] wells;
3. Create noise and light pollution that would interfere with the quiet enjoyment of residences in the nearby neighborhoods;
4. Create a dangerous intersection with multiple safety concerns: Ingress and egress is proposed where there is poor visibility due to the topography of the Goodwin Road hill and it's (sic) near 90 degree turn; insufficient braking distance to avoid a crash; disrupt traffic including school bus traffic to nearby high school; and

[10] Ex. 105 (Nosrati Appeal, p. 3).

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5. Disrupt recreational use of designated bicycle route, create a hazardous crossing for pedestrians, including students.

The Type II permit issue is:

1. Permit the construction of a car wash in a BP zoning (sic), potentially violating zoning requirements. Camas has previously only permitted car washes in CC zoning. A car wash is not listed in the City of Camas Code of Ordinances.

The Unclassified Issue is:

1. Expose the City of Camas to liability for granting an exception to the posted Access Standards if permitting a left turn access shorter than 660 ft into the parcel.

Thus, the bulk of the Nosrati appeal relates to SEPA, with one zoning issue. As explained below, regardless of the characterization of the issues, both the City's SEPA and the Type II Permit appeal standards call for a hearing on the record and establish that Ms. Nosrati is the only person with standing to pursue that appeal.

C. Code Requirements for a SEPA Appeal

Per CMC18.55.165(E), all SEPA appeals must be filed in writing with the City of Camas clerk and accompanied by the required filing fee. The notice of appeal "***shall be filed no later than fourteen days after the threshold determination has been issued***" and "***shall identify the appellant, establish standing, and set principal points of the appeal.***"[11] Here, there was only one appeal filed, with one appeal fee paid, and that appeal identified Ms. Nosrati as the appellant. Subsequent requests by other individuals to provide comments after the SEPA comment period closed on August 29, 2024, or to join the appeal after the appeal deadline passed are simply untimely and are not properly part of the administrative record for this appeal. For this reason, materials received from non-parties after the close of the SEPA comment period (for SEPA issues) and issuance of the City's Decision (for Type II permit issues) should not be admitted at the hearing.

[11] Emphasis added.

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D. Code Requirements for a Type II Appeal.

The same 14-day bar applies for appealing the City's Type II site review and design review decisions. CMC 18.55.200(A) (Type II decisions may be appealed to the hearing examiner); CMC 18.55.200(C) ("***All appeals are initiated by filing a notice of appeal with the director within fourteen days of issuance of the decision being appealed***.")[12] The Type II appeal statement must include the appellant's name, address, and phone number; the appellant's statement describing their or other's standing to appeal; identification of the application which is the subject of the appeal; the appellant's statement of grounds for the appeal and the facts upon which the appeal is based; the relief sought, including the specific nature and extent; and a statement that the appellant has read the notice of appeal and believes the content to be true, followed by the appellant's signature. CMC 18.55.200(D)(1-6). Again, Ms. Nosrati is the only person who has met these requirements, and therefore is the only appellant of record with standing to prosecute the Type II appeal.

E. The Hearing Examiner's Jurisdiction for Both a SEPA Appeal and a Type II Permit Appeal is Limited to the Issues Raised in the Appeal Statement.

As a quasi-judicial administrative officer, the Examiner's authority is defined by the enabling legislation of the local government that created that position. *Chaussee v. Snohomish Cnty. Council,* 38 Wn. App. 630, 636, 689 P.2d 1084 (1984) ("[a]dministrative agencies are creatures of the legislature without inherent or common-law powers and may exercise only those powers conferred either expressly or by necessary implication").

Chapter 2.15 CMC creates the City's hearing examiner system and grants the Examiner the power to hear a variety of matters including SEPA threshold determinations and Type II permit decisions. CMC 2.15.020 and CMC 2.15.080(B-C).

/ / /

/ / /

[12] Emphasis added.

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For Type II decisions:

> The director's decision shall become final at the close of business on the fourteenth day after the date on the decision unless an appeal is filed. ***If an appeal is received the hearings examiner will review the decision based on the record and render the city's final decision.***

CMC 18.55.030(B) (emphasis added).

The City uses a consolidated process for SEPA threshold determination and project permit application review. Per CMC 18.55.165(C) SEPA appeals, other than an appeal of a DS, are consolidated with the underlying substantive permit decision. Thus, for both SEPA and Type II appeals, the appeal is based on the record, and the scope of the appeal is defined by the issues raised in a timely filed appeal statement. New parties cannot be added, and new issues cannot be raised after the 14-day appeal period. Furthermore, both SEPA and Ch. 36.70C ("LUPA") require exhaustion of administrative remedies as an element of standing. RCW 43.21C.075(4) and RCW 36.70C.060(2)(d). Thus, the timely filing of an appeal statement establishes both the appellant's standing and the issues subject to review.

F. An Open Record Hearing for a SEPA and Type II Permit Appeal Does Not Create an Opportunity for the Introduction of New Parties or New Appeal Issues.

Washington's Local Project Review Act (Ch. 36.70B RCW) distinguishes between "open record predecision hearings" and "open record appeal hearings". RCW 36.70B.030(3). An open record hearing that is held prior to a local government's decision on a project permit is known as an "open record predecision hearing." *Id.* An open record hearing held on an appeal, is known as an "open record appeal hearing," if no open record predecision hearing has been held on the project permit. *Id.* Thus, the Nosrati appeal is an open record appeal hearing. Per §4(4) of the Examiner's Rules of Type II Appeal Procedure for the City of Camas ("HE Rules") "[t]he appellant has the burden of proof . . ." for a Type II appeal.

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IV. CONCLUSION

While she may be representing the interests of other community members, Ms. Nosrati is the appellant here. Her SEPA/Type II permit appeal is limited to the issues raised in her September 30, 2024 appeal statement. Whether Ms. Nosrati's appeal is characterized as a SEPA appeal, a Type II permit appeal, or both, she bears the burden of demonstrating that the City's threshold determination and permit decision were in error. Under the applicable law, there is no basis for allowing an expansion of Ms. Nosrati's appeal, by adding new parties, admitting third-party comments that were offered after the applicable comment deadlines, or considering issues beyond those contained in Ms. Nosrati's appeal statement.

For these reasons, the applicant, PAC USA Camas, LLC, respectfully requests that the Examiner issue a pre-hearing order on the scope and procedures for Ms. Nosrati's appeal that is consistent with the applicable law as outlined in this Memorandum.

Dated this 21st day of November 2024.

SCHWABE, WILLIAMSON & WYATT, P.C.

By: */s/ Patrick J. Mullaney*

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pmullaney@schwabe.com
Stephen W. Horenstein, WSBA #6183
shorenstein@schwabe.com
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Seattle, WA 98101
Phone: 206-622-1711
Attorneys PAC USA Camas LLC

CERTIFICATE OF SERVICE

The undersigned declares under penalty of perjury, under the laws of the State of Washington, that the following is true and correct: That on the 21st day of November 2024, I arranged for service of the foregoing **PAC USA CAMAS LLC'S PREHEARING BRIEF ON PROPER SCOPE OF APPEAL** via Electronic Service to the parties to this action:

Hearing Examiner's Office:
Carey Certo
ccerto@cityofcamas.us

Applicant:
PLS Engineering
Travis Johnson
travis@plsengineering.com

Appellant:
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Alan Peters
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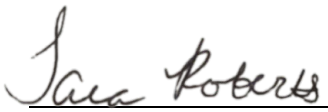
Yvette Sennewald
ysennewald@cityofcamas.us



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City of Camas WASHINGTON

Community Development Department

TO: Joe Turner, Hearing Examiner
CC: Shawn MacPherson, City Attorney
FROM: Robert Maul, Planning Manager
DATE: November 21, 2024
SUBJECT: APPEAL24-1001 – Arguments on SEPA appeal process and appellant status

The Appellant has not appealed the City's SEPA Determination.

Based on the appeal narrative, the City argues that the appellant is challenging the City's approval of the project and has not appealed the City's SEPA determination. The appeal explicitly challenges the City's land use decision only. The appellant's arguments and requests seek changes to the land use decision and conditions of approval but does not request relief that would affect the City's SEPA determination itself.

Camas Municipal Code (CMC) 18.55.165 provides for consolidated SEPA threshold determinations and project review. The project applicant requested consolidated review; as such, the SEPA Determination of Non-significance for the project was only considered final once the decision for the project was issued. Any SEPA appeal would also be consolidated with an appeal on the underlying project application, however the appellant would need to indicate that they are appealing the SEPA determination, and they must explicitly raise issues regarding the environmental review.

In the narrative submitted with the appeal, the appellant states, "I am appealing the approval of a project called 13TH STREET GAS STATION (FILE NO. SPRV23-06)." The appeal clearly identifies the City's site plan project number and does not raise separate appeal request specific to SEPA. All the items the appellant identifies are impacts that are addressed in adopted Camas Municipal Code standards and do not raise any issues specifically related to the City's SEPA determination.

The appeal should be treated as one concerning the City's land use decision only, without extending to the project's SEPA review or determination.

Only one individual has complied with the requirements to be recognized as the appellant.

The appeal was filed with one individual listed as the appellant who submitted and paid the appeal form and fee. This individual provided and signed a narrative which included a list of neighbors whom they wished to include in the appeal. However, the Camas Municipal Code requires that an appeal must include a statement from each appellant, including their name, address, and phone number, a description of standing, and a signed statement. The appeal submitted does not meet these requirements for multiple appellants, and as such, the City argues that only the individual who

submitted the appeal and complied with the necessary requirements can be recognized as the appellant in this case.

Camas Municipal Code (CMC) 18.55.200 includes the requirements for filing a notice of appeal. Each appeal must include the following:

1. Appellant's name, address and phone number;
2. Appellant's statement describing their or other standing appeal;
3. Identification of the application which is the subject of the appeal;
4. Appellant's statement of grounds for the appeal and the facts upon which the appeal is based;
5. The relief sought, including the specific nature and extent;
6. A statement that the appellant has read the notice of appeal and believes the content to be true, followed by the appellant's signature.

The appeal was submitted using the City's online application portal. The online application requires at least one applicant but includes an option to "add any additional applicant parties involved in this project if applicable." While neither the municipal code nor the application form precludes the filing of a single appeal by multiple appellants, the appeal form was submitted with Karin Nosrati listed as the sole applicant.

With the online submittal, Ms. Nosrati included a written narrative under her own name and address and signed by herself. The narrative states that Ms. Nosrati is appealing on behalf of certain nearby residents and includes a list of 50 additional individuals with a statement that these "neighbors would like to be included in the appeal and receive an invitation to the hearing."

However, Ms. Nosrati alone signed the application narrative and has fulfilled the requirements of CMC 18.55.200. The additional individuals listed in the appeal as neighbors have not signed the form, nor have they provided any individual statements regarding their standing or any other required information. Without meeting these procedural requirements, these individuals cannot be considered appellants. Notably, Ms. Nosrati also included her name and her husband's name at the end of this list, identifying "Karin and Randy Nosrati" as "appellant" in parenthesis.

Based on the municipal code's requirements, we assert that only Ms. Nosrati can be considered the appellant in this case. The additional names listed in the appeal, have not satisfied the appeal requirements in CMC 18.55.200.

Looking forward, should this matter be appealed under LUPA by the applicant, allowing a substantial number of appellants at this stage could create a service issue. Under RCW 36.70C.040(2) filing and

service of the petition is required to be served on each "person named in the written decision who filed an appeal." While this section does indicate that "persons who later . . . joined in the appeal" are exempt from this provision it would at least create an arguable procedural issue at that stage and, as a practical matter, a significant burden on a party attempting to fulfill the service requirements. LUPA contemplates an expedited procedure to resolve land use matters and the City would assert allowing the position of the appellant in this matter to prevail would run contrary to those directives.

Finally, within a long line of email inquiries pressing City staff to address legal and procedural questions on their behalf, the appellant has noted a comment from City staff which appears to be the sole basis for the assertion that some 50 neighbors should be included as joined parties. The City would respectfully request that in context this comment be disregarded particularly in relation to the authorities noted above.

Carey Certo

From: Michael Orchard <mspadorchard@gmail.com>
Sent: Sunday, November 24, 2024 8:39 PM
To: Community Development Email
Subject: "13th Street gas station"

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you recognize the sender as a city employee and you see this message this email is a phishing email. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

In regards to this proposal to put in a gas station.

It would seem that the real purpose of the gas station at such a site is not to remedy a shortage of gas stations around here, since we have plenty of gas stations around here, including one of the most accessible, Costo. Such a gas station will likely be mostly making their profits by selling junk food, largely to neighborhood kids and students at Union High School. Surely a real grocery store would be much more beneficial to local residents. An EV charging station might be a good attractant, and a forward looking one at that.

That said, if this property and business is owned by an LLC, the only purpose I can see for that arrangement is to turn deep pockets into shallow pockets that cannot be held responsible for any legal or environment issues that likely will arise sooner or later. Who will then be held responsible for the costs of decommissioning that gas station when it is found to be unsafe, in violation of pollution control standards, or not fiscally capable due to the structure of an LLC, which is only necessary insulate owners from such problems and their costs. When such costs arise who will bear them other than Camas, Clark County, and the State of Washington. This will be one more example of business being capitalistic when making a profit, and socialistic when unexpected costs of clean up arise.

Sincerely,

Michael Orchard
1307 NE 194th Ave
Camas, Wa 98607

BEFORE THE CITY OF CAMAS HEARINGS EXAMINER

Karin Nosrati on behalf of Morning Meadows Estate et al., Appellant, v. City of Camas, a Washington municipal corporation, Permitting Agency, and Pac USA Camas LLC, Applicant.	*FILE NO.: SPRV23-06* *APPEAL24-1001* *PROJECT: 13TH STREET GAS STATION* **REPLY IN SUPPORT OF PAC USA CAMAS LLC'S PREHEARING BRIEF ON PROPER SCOPE OF APPEAL**

I. ARGUMENT

The Applicant, PAC USA Camas LLC ("PAC USA"), renews the arguments and objections raised in its November 21, 2024 Response Brief. Here, the Appellant, Ms. Karin Nosrati, is responsible for following the appropriate rules to perfect her appeal, both procedurally and substantively. *Holder v. City of Vancouver*, 136 Wn. App. 104, 106, 147 P.3d 641 (2006) ("[P]ro se litigants are bound by the same rules of procedure and substantive law as attorneys."). In *Holder,* the trial court properly dismissed the appellant's LUPA appeal because the appellant only mentioned LUPA once in his petition for review and, at trial, failed to demonstrate that he was entitled to relief. *Id.*

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In *Edwards v. Le Duc*, 157 Wn. App. 455, 238 P.3d 1187, 1192 (2010), the appellate court found that a trial court had overstepped the bounds of impartiality by repeatedly assisting a pro se plaintiff in her personal injury trial by helping her in laying foundation for expert testimony, taking over questioning of key witnesses, coaching the plaintiff on answers to the defense counsel's objections, assisting the plaintiff in admitting exhibits, and instructing the jury that it could not draw any conclusions about merits of the case from the court's assistance. *Id*. at 460.

Affirming the rule that a court must hold pro se litigants to the same standards as attorneys, the appellate court concluded:

> We acknowledge that trial courts have a difficult job of overseeing and conducting a trial fairly and efficiently, especially with parties representing themselves, but the trial court must, above all, remain impartial. On this record, it appears that the trial court felt obliged to assist a pro se litigant, but the trial court must treat pro se parties in the same manner it treats lawyers. *Westberg,* 86 Wn. App. at 411, 936 P.2d 1175; *cf. Bolte,* 38 A.D. at 237, 239, 56 N.Y.S. 1038.

Id.

For both her SEPA appeal and Type II permit appeal, Ms. Nosrati was required to perfect her appeal within fourteen days of the decision at issue. CMC18.55.165(E) (SEPA); CMC 18.55.200(A) (Type II appeal). That included identifying the parties to the appeal, stating the issues to be considered, and paying the applicable appeal fee.

It was Ms. Nosrati's obligation to ensure that these steps were met. In her appeal statement, she said that she was acting as the sole appellant on behalf of her neighbors, and she only identified herself and her husband as the appellant. Moreover, she was the only person that arguably executed, by typing her name, the required verification, and she was the only person to pay the required appeal fee.

Ms. Nosrati's appeal statement contained seven issues, one of which is related to the City's potential liability and therefore is likely non-justiciable in this forum. Under the appliable rules, these are the issues for this appeal. In her November 21, 2024 briefing, Ms. Nosrati again attempted to expand the appeal issues, by listing over twenty issues, and claiming an alleged right to further

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expansion: "***I[n] summary, we appeal the decision on numerous grounds and are not limiting ourselves the items listed above***." Emphasis added.

The City's appeal rules ensure impartiality and fundamental fairness to all parties. The rules require strict compliance to foster the policy of finality in land use decisions. *Chelan Cnty. V. Nykreim,* 146 Wn.2d 904, 931-32, 52 P.3d 1 (2002). Ms. Nosrati, elected to act as a pro se appellant. She is not entitled to rely on purported advice from the City on how to perfect her appeal. Her status as a pro se litigant does not entitle her to special treatment or relaxation of the applicable rules. Instead, the law requires that she be held to the same standards as an attorney.

II. CONCLUSION

Ms. Nosrati is an appellant in a quasi-judicial appeal proceeding. The parties and issues in her appeal were fixed at the expiration of the appliable 14-day appeal period, and Ms. Nosrati's appeal statement defines the scope of the Examiner's jurisdiction. Ms. Nosrati is not entitled to add parties, expand the issues to be heard, or rely upon a stream of third-party comments that are being filed long after the SEPA and Type II permit comment periods have closed.

For these reasons, PAC USA respectfully requests that the Examiner issue an order that limits Ms. Nosrati's appeal to the issues presented in her appeal statement, strikes the untimely third-party comment letters, and rejects Ms. Nosrati's attempt to expand the number of appealing parties.

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Dated this 27th day of November 2024.

SCHWABE, WILLIAMSON & WYATT, P.C.

By: */s/ Patrick J. Mullaney*

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shorenstein@schwabe.com
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Phone: 206-622-1711
Attorneys PAC USA Camas LLC

CERTIFICATE OF SERVICE

The undersigned declares under penalty of perjury, under the laws of the State of Washington, that the following is true and correct: That on the 27th day of November 2024, I arranged for service of the foregoing **REPLY IN SUPPORT OF PAC USA CAMAS LLC'S PREHEARING BRIEF ON PROPER SCOPE OF APPEAL** via Electronic Service to the parties to this action:

Hearing Examiner's Office:
Carey Certo
ccerto@cityofcamas.us

Applicant:
PLS Engineering
Travis Johnson
travis@plsengineering.com

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bforback@gmail.com

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RMaul@cityofcamas.us
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Carey Certo

From: Karin Nosrati, DC <bforback@gmail.com>
Sent: Wednesday, November 27, 2024 3:37 PM
To: Patrick Mullaney; Stephen Horenstein; Alan Peters; Community Development Email; Carey Certo
Subject: Rebuttal letters and concern
Attachments: Appendix D - Appeal Narrative.pdf; Appendix C - website steps and annotations.pdf; Appendix A – email thread 02-25-2024.pdf; Appendix B - email thread 09-24-24 through 09-25-24.pdf; Appendix E - Statements .pdf; Rebuttal to - Applicant 11-27-2024 final.pdf; Rebuttal to - City of Camas 11-27-2024 final.pdf

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you recognize the sender as a city employee and you see this message this email is a phishing email. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

Hi, Carey,

Could you please forward this email with its 7 attachments to Mr. Turner today before 5:00 p.m., and reply with a receipt?

Thank you,

Mr. Turner,

Per your request we have written a rebuttal letter to the City of Camas' Arguments dated 11-21-2024 and a rebuttal letter to the Applicant's Brief dated 11-21-2024.

Additionally, we would like to raise the concern that there may be ex parte communication between the City of Camas and the Applicant regarding **this appea**l: Please see the email thread from November 21, 2024, which is also attached. I had sent a quote from the City which stated that "You can file one appeal with others to join". I had sent it to all parties. Esq. Stephen Horenstein replied to Alan Peters with the comment "I interesting approach. Will call you on Friday."

We respectfully request that the parties make all oral and written ex parte communications, such as meeting notes, emails, texts, transcripts, voice messages, etc., regarding **this appeal**, available to us.

We request that they cease ex parte communications about the appeal, because we presume it may have legal ramifications.

Thank you,

Karin Nosrati

Argument against "Issue Presented and Short Answer"

1. When the City of Camas issued a SEPA determination on February 22, 2024, we were only allowed to submit comments within 14 days. There was no path to file an appeal. However numerous individuals submitted comments to Community Development.
2. When the City of Camas issued a second SEPA determination on August 15, 2024, we were again only allowed to submit comments within 14 days. There was still no path to file an appeal. Again, numerous individuals submitted more comments to Community Development.
3. The City consolidated the SEPA, Type II site plan review and design review into one decision on September 16, 2024 and called it "Notice of Decision". This is the first time we were given a chance to file an appeal. Meanwhile more individuals submitted additional comments to Community Development.
4. Therefore we reject the argument that the SEPA appeal and the Type II site plan review and design review can be separated into two separate appeals and/or two separate hearings.
5. Furthermore, the City's electronic appeals website tool does not provide an option to appeal SEPA, Type II site plan review, or design review, individually. There is only a single choice on the website called "Appeal Plan Decision", which we had to select to begin the electronic filing of the appeal.

Argument against "Ms. Karin Nosrati is the Sole Appellant in this Matter"

<u>49 neighbors are Appellants</u>

Per communication exchanged with the City staff on September 24-25, 2024 , (Appendix B – email thread 09-24-24 through 09-25-2024):

Question to the City: "Can one person submit the appeal or should it be submitted by all or some of the neighbors?" (09-24-2024 11:27 a.m.)

Answer from the City: "You can file one appeal with others to join." (09-25-2024 2:27 p.m.)

We reject the City's request to disregard the comments from the email that provided procedural direction. In this situation the City is asking for evidence to be dismissed and this is unacceptable. We received two emails from the City providing clarification,

and both describe that the neighbors should consolidate their efforts and file a single appeal. (Appendix A – email thread 02-25-2024) (Appendix B – email thread 09-24-24 through 09-25-2024):

Statement from the City: "As you have listed below, 18.55.200 tells you what you need to supply for the appeal".

CMC 18.55.200 does not identify a situation where there are multiple appellants and how to file a collective appeal. The only information accessible to us were the answers provided by the City in the emails.

The appeal Narrative included the names and addresses of 34 homes or 49 appellants. Signed statements from original appellants are now included in Appendix E - Statements. The electronic appeals process did not allow a simultaneous processing of 49 signatures and statements, nor partial payments.

Electronic appeals submission of 49 appellants: (Appendix C – website steps and annotations)

a) The electronic appeal tool is not set up for entering and processing 49 appellants.
b) In the online steps, the "Narrative" option was chosen and the names of all 49 appellants were listed at the bottom of the Narrative.
c) At the bottom of this list of all appellants, Karin and Randy Nosrati are listed with the adage (Appellant) because the website tool only allowed a single appellant to be entered at the outset of the filing steps. The attorney argues that they can look at only the last name on the list of appellants, but this is false. They ignore the 47 prior names listed under the header "The following neighbors would like to be included in the appeal and receive an invitation to the hearing." (Appendix D – Appeal Narrative)
d) The Narrative clearly states "The following neighbors would like to be included in the appeal and receive an invitation to the hearing." (Appendix D – Appeal Narrative)
e) A separate mailing list with all 49 appellants was also uploaded as a .pdf document during the electronic filing.
f) The steps on the website allow for only <u>one</u> digital signature. Multiple signatures cannot be entered.
g) The final payment can only be processed with a <u>single credit card</u> for the full appeals fee of $465 as a pre-filled payment amount. Processing multiple payments or different amounts is not possible.

h) A single appeal would conceivably be less work for the City than 34 appeals and 34 subsequent hearings

Therefore we object to the Applicant's statement that Karin Nosrati is a sole appellant. Karin Nosrati did not state anywhere that she was the "sole applicant".

Numerous neighbors made small money contributions to collect the $465 appeals fee. Their payments are recorded via Venmo, Zelle, checks and cash receipts, which are available upon request.

We have completed the steps of the electronic appeals process with its inherent limitations. We insist that CMC 18.55.200 was satisfied as best as practically possible, given that it is not written to give instructions for the consolidated procedure with multiple appellants, and given that the City's website cannot accommodate certain steps during filing of an appeal.

Argument against "The Nosrati Appeal is Primarily a SEPA Appeal"

In the Appeal Narrative it clearly states, "All previously submitted information/comments shall be part of this appeal". We reject the applicant's argument to limit the scope of the appeal.

The neighbors have collectively raised environmental, traffic safety, zoning and other issues since February by submitting dozens of comments to the City via Community Development.

Argument against "Code Requirements for a SEPA Appeal"

The applicant is quoting CMC 18.55.165(E) alleging that we are not complying. However, this code is not applicable insofar that there was no path to file an appeal at that stage of the SEPA. Please refer to the first section of this letter, item (2): When the City of Camas issued a second SEPA determination on August 15, 2024, we were again only allowed to submit comments within 14 days. There was still no path to file an appeal. Again, numerous individuals submitted more comments to Community Development.

The applicant refers to August 29, 2024 and an appeal deadline. This is false. August 29, 2024 was merely a comment period close date.

The final decision on SEPA was rendered on September 16, 2024 and the appeal was properly filed within 14 days, as required, on September 30, 2024.

Question to the City: "10. Can SEPA be appealed more than once, if the first submission is upheld?"
Answer from the City: "The final SEPA determination will be within the final staff report and decision as I have mentioned. You can appeal the decision, which goes to the hearing examiner. His decision can then be appealed to superior court." (Appendix A – email thread 02-25-2024)

Argument against "Code Requirement for a Type II Appeal"

The appeal was filed properly within 14 days from the Notice of Decision, and 49 appellants were included. Please see section above explaining how the Appeals Narrative and the electronic submission of the appeal included all 49 appellants.

Argument against "...Limited to the Issues Raised in the Appeal Statement"

The neighbors have collectively raised issues since February by submitting dozens of comments to the City and submitted oral and written comments at City Council meetings, which are part of the public record.

In the Appeal Narrative it clearly states, "All previously submitted information/comments shall be part of this appeal". We reject the argument to limit the scope of the appeal.

The letter announcing the Notice of Public Hearing states that comments may be submitted, preferably at least 5 days prior to the hearing, but it is possible to submit up to noon (12:00 p.m.) the day of the hearing. "Written and oral comments may also be submitted in person during the hearing." We reject any attempts at limiting the scope of the appeal.

Argument against "Conclusion"

49 appellants joined in one appeal, as per procedural instructions given by the City. This clarification was necessary because CMC 18.55.200 describes the rules for a single appellant, but in this case there were 49 appellants. We have completed the steps of the electronic appeals process with its inherent limitations as best possible.

Additional comments were permitted per the Notice of Public Hearing.

We presume that this is not the first time the City is processing a final SEPA determination, Type II Plan review and design review in a consolidated fashion, as the applicant had requested. If the City previously allowed additional testimony as described in the Notice of Public Hearing for other such projects with this type of

decision, then it is incumbent upon them to follow the precedent and accept all comments.

On the contrary, if the City has created a new "product" per the applicant's request by rolling reviews and determinations into a single decision, then this calls into question how or if the CM codes can be applied. Per WAC 365-196-845 (2)(c)(vi) a component of such a consolidated process is to have a procedure on "How to appeal the decision". Clearly, CMC 18.55.200 does not delineate the steps to appeal each individual report/determination of the decision. Therefore all comments, SEPA related, zoning and non-SEPA should be admitted.

Furthermore, it could be construed that the omission of a clear appeals process is intended to create ambiguity to discourage individuals from filing an appeal. We were quite confused at the hearing on November 14, when the Hearings Examiner brought up that we needed to justify what we were appealing. We have spent many hours preparing letters and rebuttals for these superfluous steps. Using the City's own shortcomings in publishing the appropriate codes for the type of procedure they are using, should not result in hours of extra work and expenses for citizens.

Conclusion

We request that the Examiner issue an order that all comments and information submitted regarding this project, at any point up to December 6, 2024, to be admitted and to allow all 49 appellants to be recognized as appellants. The appeal for this consolidated decision was submitted in a timely fashion.

List of Appendices sent separately:

Appendix A – email thread 02-25-2024

Appendix B – email thread 09-24-24 through 09-25-2024

Appendix C – website steps and annotations

Appendix D – Appeal Narrative

Appendix E - Statements

Rebuttal to the SEPA Appeal process – Rebuttal to Arguments by City of Camas
11-27-2024

Argument against that "The Appellant has not appealed the City's SEPA Determination"

This Appeal is appealing both SEPA and non-SEPA related issues:

Instructions on how to appeal the SEPA from the email of 02-25-2024 attached as Appendix A – email thread 02-25-2024:

Question to the City: "10. Can SEPA be appealed more than once, if the first submission is upheld?"

Answer from the City: "The final SEPA determination will be within the final staff report and decision as I have mentioned. You can appeal the decision, which goes to the hearing examiner. His decision can then be appealed to superior court."

Recommendation by City to consolidate and file one fee, again from the email of 02-25-2024 (Appendix A – email thread 02-25-2024):

Question to the City: "16. Can each neighbor/concerned party appeal the SEPA process individually?"
Answer from the City: "Again, the final SEPA determination will be part of the staff report and decision, which can be appealed. Others can appeal, but they are based on the one decision, so we will only hold one hearing. It would make sense to consolidate your efforts and just file one fee. "

We object to the statement from the City that this is not an appeal of the SEPA determination, because The City's process rolls the SEPA, staff report and other information into a single decision, called "Notice of Decision 13th Street Gas Station (File NO. SPRV23-06). The decision was issued on September 16, 2024.

An appeal was submitted for the decision above on September 30, 2024.

There are no instructions in the City's appeal procedures to distinguish the type of appeal (SEPA or other). Furthermore, when filing the electronic appeal on the City's website, the only "Type" of Appeal available from the drop-down menu is "Appeal Plan Decision" (Appendix C – website steps and annotations)

The Narrative lists environmental and traffic issues in the statement of grounds, which are part of SEPA and it also includes the statement on page 2 "All previously submitted information/comments shall be part of this appeal".

- The neighbors have collectively raised environmental and other issues since February by submitting dozens of comments to the City
- Attended and Presented concerns at City Council meetings
- Contacted County and State-wide agencies to collect information
- Met with the applicant and their partners
- Held neighborhood meetings

More specifically, bullets 1 and 2 in the Appeal Narrative present concerns about water pollution. In the SEPA report, section "3. Water has sections for a) Surface Water and b) Ground Water.

Therefore, our Narrative is aligned with this component of the SEPA, and the City's interpretation of our narrative to be only a land-use appeal is false.

According to the City, the project applicant requested a consolidated review, as such the SEPA Determination of Non-Significance for the project was only considered final once the decision for the project was issued. We clearly outlined environmental, SEPA-related and non-SEPA related items in our Appeal Narrative.

Argument against that "Only one individual has complied with the requirements to be recognized as an appellant"

<u>49 individuals are Appellants</u>

Per communication exchanged with the City staff on September 24-25, 2024 , (Appendix B – email thread 09-24-24 through 09-25-2024):

Question to the City: "Can one person submit the appeal or should it be submitted by all or some of the neighbors?" (09-24-2024 11:27 a.m.)

Answer from the City: "You can file one appeal with others to join." (09-25-2024 2:27 p.m.)

These were merely procedural questions, and no legal advice was requested, nor received.

The instructions we were given by the City on how to complete the appeal were: "You can file one appeal with others to join" PLEASE NOTE: This is not taken out of context.

The emails in (Appendix A – email thread 02-25-2024) and (Appendix B – email thread 09-24-24 through 09-25-2024) gave us the procedural steps to file as a group.

We vehemently reject the City's request to disregard the comments from the emails that provided procedural direction. In this situation the City is asking for evidence to be dismissed and this is unacceptable. We received two emails from the City providing clarification, and both describe that the neighbors should consolidate their efforts and file a single appeal. (Appendix A – email thread 02-25-2024) (Appendix B – email thread 09-24-24 through 09-25-2024):

Statement from the City: "As you have listed below, 18.55.200 tells you what you need to supply for the appeal".

CMC 18.55.200 does not identify a situation where there are multiple appellants and how to file a collective appeal. The only information accessible to us were the answers provided by the City in the emails.

We presume that this is not the first time the City is processing a final SEPA determination, Type II Plan review and design review in a consolidated fashion, as the applicant had requested. If the City previously allowed additional testimony as described in the Notice of Public Hearing for other such projects with this type of decision, then it is incumbent upon them to follow the precedent and accept all comments and appellants.

On the contrary, if the City has created a new "product" per the applicant's request by rolling reviews and determinations into a single decision, then this calls into question how or if the CM codes can be applied. Per WAC 365-196-845 (2)(c)(vi) a component of such a consolidated process is to have a procedure on "How to appeal the decision". Clearly, CMC 18.55.200 does not delineate the steps to appeal each individual report/determination of the decision. Therefore all comments, SEPA related, zoning and non-zoning should be admitted and all appellants should be recognized.

Furthermore, it could be construed that the omission of a clear appeals process is intended to create ambiguity to discourage individuals from filing an appeal. We were quite confused at the hearing on November 14, when the Hearings Examiner brought up that we needed to justify what we were appealing and who was an appellant. We have spent many hours preparing letters and rebuttals for these superfluous steps. Using the City's own shortcomings in publishing the appropriate codes for the type of procedure they are using, and its accompanying appeal, should not result in hours of extra work and expenses for citizens.

The Appeal Narrative included the names and addresses of 34 homes or 49 appellants. Signed statements from original appellants are now included in Appendix E - Statements. The electronic appeals process did not allow a simultaneous processing of 49 signatures and statements, nor partial payments.

Electronic appeals submission of 49 appellants: (Appendix C – website steps and annotations)

a) The electronic appeal tool is not set up for entering and processing 49 appellants.
b) In the online steps, the "Narrative" option was chosen and the names of all 49 appellants were listed at the bottom of the Narrative.
c) At the bottom of the list of all appellants, Karin and Randy Nosrati are listed with the adage (Appellant) because the website tool only allowed a single appellant to be entered. The City argues that they can look at only the last name on the long list of neighbors, but this is false. They ignore the 47 prior names listed under the header "The following neighbors would like to be included in the appeal and receive an invitation to the hearing." (Appendix D – Appeal Narrative)

d) The Narrative clearly states "The following neighbors would like to be included in the appeal and receive an invitation to the hearing." (Appendix D – Appeal Narrative)
e) A separate mailing list with all 49 appellants was also uploaded as a .pdf document during the electronic filing.
f) The steps on the website allow for only <u>one</u> digital signature.
g) The final payment can only be processed with a <u>single credit card</u> for the entire appeals fee of $465 as a pre-filled payment amount. Processing multiple payments or different amounts is not possible.
h) A single appeal is conceivably be less work for the City than 34 appeals and 34 subsequent hearings. The alternative would have strained the Planning Department's resources. It seemed to make sense for the City to prefer to deal with a single appeal.

Therefore we object to the City's statement that Karin Nosrati is a sole appellant.

Numerous neighbors made small money contributions to collect the $465 appeals fee. Their payments are recorded via Venmo, Zelle, checks and cash receipts, which are available upon request.

We have completed the steps of the electronic appeals process with its inherent limitations. We insist that CMC 18.55.200 was satisfied as best as practically possible, given that it is not written to give instructions for the consolidated procedure with multiple appellants, and given that the City's website cannot accommodate certain steps during filing of an appeal.

Conclusion

We request that the Examiner issue an order that all comments and information submitted regarding this project, at any point up to December 6, 2024, to be admitted and to allow all 49 appellants to join the appeal. The appeal for this consolidated decision was submitted in a timely fashion.

List of Appendices sent separately:

Appendix A – email thread 02-25-2024

Appendix B – email thread 09-24-24 through 09-25-2024

Appendix C – website steps and annotations

Appendix D – Appeal Narrative

Appendix E - Statements

From: Karin Nosrati, DC <bforback@gmail.com>
Sent: Sunday, February 25, 2024 8:35 PM
To: Yvette Sennewald <YSennewald@cityofcamas.us>; Robert Maul <RMaul@cityofcamas.us>; Alan Peters <APeters@cityofcamas.us>
Cc: Barbara Wegner <oakbarb@lmi.net>
Subject: URGENT - answers needed for SEPA appeal

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Hi, Yvette, Robert and Alan,

Thank you to both of you for spending time speaking to me and/or forwarding our request to speak with the developer to him. We are eager to meet with him within the next 5 days, and we hope to find a solution that will serve him, us and the City for many years to come. If he declines, please let us know as soon as you know.

We need to gather as much information now to prepare for the next step. Could you please help us by answering these questions sequentially, in numbered order, as we are not familiar with this process (that is your daily bread and butter)?

1. Are the steps to permit approval the following: SEPA, then traffic study, then recommendation to approve by senior planners to each other, then internal approval and then issuance of the permit?
As we discussed last week the SEPA checklist, traffic study, critical areas report, stormwater report and all other submittal items are required submittal documents for this project. The staff report and decision will be based off of the staff analysis and conditions of approval informed in part by the information provided. There is only one decision that will be rendered on this project.
2. Is there any "hearing" at any point? If so, who is involved, who can give input and has a date been set?
There is no hearing as this is an administrative review.
3. Has a threshold for determination been made, and if so, can we please receive a copy of it?
Yes, a determination on Non-significance was issued last week. You should receive a copy which was mailed out last week. I have attached the certified mailing labels provided for reference.
4. Has there been a design review?
There will be a design review meeting, but it has not been scheduled yet. This is not a public meeting.
5. Can you please send us the staff report(s) related to SPRV23-06, DR23-09, and CA23-08?
The staff report has not been completed yet. It will be consolidated to include requirements for critical areas, storm, all infrastructure, design review, traffic, final SEPA determination, etc.
6. Can you please forward to us all the documents that were submitted by the applicant, including, but not limited to the ones listed on the cover page for the SEPA?
Yvette can provide all documents.

7. Could you inform any applicable City departments that we want to be notified of all proceedings related to all of these applications going forward.
Yvette is the project manager for the city. She will send you a copy of the staff report and decision once it is ready to issue.
8. Are there any additional times at which we can express our input?
You are already on record, but you can certainly add additional comments or information if you wish.
9. How can you make sure the run-off and stormwater does not drain onto the property to the north (20107 NE 14th street) and to the property to the west, ever? We have at least one episode of snow and ice per year and I am curious how the run-off would be contained 100% during the melt?
You will need to talk to Curleigh about engineering related standards,
10. Can SEPA be appealed more than once, if the first submission is upheld?
The final SEPA determination will be within the final staff report and decision as I have mentioned. You can appeal the decision, which goes to the hearing examiner. His decision can then be appealed to superior court.
11. Are there any steps in the process that we should be aware of, that we did not already mention?
I have outlined the process several times, so I'm not sure what else you are looking for.
12. Can you think of any less risky business types, alternatives or potential applicants that might be interested in a corner lot that we could propose to the developer? (Credit union, pet clinic, etc.)?
This is not for me to decide. The adopted use table lists all permitted uses, or conditional uses allowed in the zoning district.
13. Could you please send us the traffic study that was conducted for the warehouse across the street from the proposed development (the walls went up yesterday).
Yvette will provide.
14. Has there been a plan submitted for how the tanker truck would maneuver around the gas station for refilling (access, turn-around and egress)?
You will need to check with engineering on this.
15. Could we see the final SEPA report for the gas station project that was approved for the prune hill gas station?
Yvette will provide.
17. Which company will conduct the traffic study and how can they receive input, including input from Evergreen School District?
I'm not sure I follow. They have provided a traffic study. Staff reviews the traffic study. Evergreen School District has already been in contact with the City on this.
I know this is a lot and we thank you for your time! We hope you regard us as valued neighbors. For the past 20+ years we have contributed to the aesthetic appeal of the area. A high risk project, along the boundary between Clark County and the City of Camas that can impact the community and have the potential for long term repercussions for the City, needs careful consideration.

Regards,

Karin Nosrati

360-254-1585

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Gmail

Karin Nosrati, DC <bforback@gmail.com>

SPRV23-06 - 13th Street Gas Station

11 messages

Yvette Sennewald <YSennewald@cityofcamas.us> Fri, Sep 20, 2024 at 1:52 PM
To: "Karin Nosrati, DC" <bforback@gmail.com>
Cc: Robert Maul <RMaul@cityofcamas.us>

Hi Karin,

Please find attached, the Notice of Decision for the project noted above. The appeal instructions are contained in the notice.

Thank you,

Yvette

City of Camas WASHINGTON

Yvette Sennewald, Senior Planner
Community Development – Planning

Office: (360) 817-1568

Direct: (360) 817-7269

www.cityofcamas.us | ysennewald@cityofcamas.us

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SPRV23-06 Notice of Decision.pdf
620K

Karin Nosrati, DC <bforback@gmail.com> Fri, Sep 20, 2024 at 3:54 PM
To: Yvette Sennewald <YSennewald@cityofcamas.us>
Cc: Robert Maul <RMaul@cityofcamas.us>

Thank you!
[Quoted text hidden]

Karin Nosrati, DC <bforback@gmail.com> Tue, Sep 24, 2024 at 11:27 AM
To: Yvette Sennewald <YSennewald@cityofcamas.us>
Cc: Robert Maul <RMaul@cityofcamas.us>
Bcc: Kristin Price <19813mkp@gmail.com>, Joan & Rich Rickard <joanier@comcast.net>, Russell Wegner <rwegner@lmi.net>, Barbara Wegner <oakbarb@lmi.net>

Hi,

I just left a message in the planning department's voicemail.

I was hoping that somewhere on the City website we could find more detailed instructions and a description of procedures and timelines for the Type II hearing with the hearings examiner.

Specifically, we need to to know

- Can one person submit the appeal or should it be submitted by all or some of the neighbors?
- Can neighbors not listed on the submission voice their opinions at the hearing?
- If the appeal is submitted via email, how is the payment process handled?
- Is the deadline for the appeal submission September 30, 2024?
- How can we access documents from a similar hearing, e.g. the gasoline station project on Brady Road near Prune Hill Elementary, in order to educate ourselves about the process? If there is a link on the City website, it would be much appreciated.
- Do we need to appear with legal counsel?

Thank you for your time,

Karin Nosrati
360-254-1585

On Fri, Sep 20, 2024 at 1:52 PM Yvette Sennewald <YSennewald@cityofcamas.us> wrote:
[Quoted text hidden]

Kristin Price <19813mkp@gmail.com> Tue, Sep 24, 2024 at 11:36 AM
To: "Karin Nosrati, DC" <bforback@gmail.com>

Also I am wondering if we can access the schematic for the planned facility- I wasn't able to locate it with the materials that were submitted previously.
Thanks,
Kristin Price

Sent from my iPad

On Sep 24, 2024, at 11:28 AM, Karin Nosrati, DC <bforback@gmail.com> wrote:

Hi,

I just left a message in the planning department's voicemail.

I was hoping that somewhere on the City website we could find more detailed instructions and a description of procedures and timelines for the Type II hearing with the hearings examiner.

Specifically, we need to to know

- Can one person submit the appeal or should it be submitted by all or some of the neighbors?
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- Do we need to appear with legal counsel?

Thank you for your time,

Karin Nosrati
360-254-1585

On Fri, Sep 20, 2024 at 1:52 PM Yvette Sennewald <YSennewald@cityofcamas.us> wrote:

> Hi Karin,
>
> Please find attached, the Notice of Decision for the project noted above. The appeal instructions are contained in the notice.
>
> Thank you,
>
> Yvette
>
> <image001.jpg> **Yvette Sennewald, Senior Planner**
> Community Development – Planning
> Office: (360) 817-1568

Direct: (360) 817-7269

www.cityofcamas.us | ysennewald@cityofcamas.us

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[Quoted text hidden]

Robert Maul <RMaul@cityofcamas.us> Tue, Sep 24, 2024 at 12:44 PM
To: "Karin Nosrati, DC" <bforback@gmail.com>, Yvette Sennewald <YSennewald@cityofcamas.us>
Cc: Carey Certo <CCerto@cityofcamas.us>, Alan Peters <APeters@cityofcamas.us>

Good afternoon, Karin.

The notice of decision clearly outlines what is needed for the appeal which is also listed in CMC 18.55.200. You will need to file the appeal online using our electronic submittal process. Yes, the deadline to file is September 30th. For all the other items I have talked to you about them several times.

Regards,

Robert

From: Karin Nosrati, DC <bforback@gmail.com>
Sent: Tuesday, September 24, 2024 11:28 AM
To: Yvette Sennewald <YSennewald@cityofcamas.us>
Cc: Robert Maul <RMaul@cityofcamas.us>
Subject: Re: SPRV23-06 - 13th Street Gas Station

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[Quoted text hidden]

SPRV23-06 Notice of Decision.pdf
620K

Karin Nosrati, DC <bforback@gmail.com> Tue, Sep 24, 2024 at 12:54 PM
To: Robert Maul <RMaul@cityofcamas.us>
Cc: Yvette Sennewald <YSennewald@cityofcamas.us>, Carey Certo <CCerto@cityofcamas.us>, Alan Peters <APeters@cityofcamas.us>, Kristin Price <19813mkp@gmail.com>, Joan & Rich Rickard <joanier@comcast.net>, Russell Wegner <rwegner@lmi.net>, Barbara Wegner <oakbarb@lmi.net>

Hi, Robert,

Thank you for answering bullet points 3 and 4.

Could you please answer bullet points 1,2, 5 and 6, because I do not recall this critical information. If you have detailed it for me previously via email, a date would suffice.

Thank you,

Karin
[Quoted text hidden]

Robert Maul <RMaul@cityofcamas.us> Tue, Sep 24, 2024 at 1

To: "Karin Nosrati, DC" <bforback@gmail.com>
Cc: Yvette Sennewald <YSennewald@cityofcamas.us>, Carey Certo <CCerto@cityofcamas.us>, Alan Peters <APeters@cityofcamas.us>, Kristin Price <19813mkp@gmail.com>, Joan & Rich Rickard <joanier@comcast.net>, Russell Wegner <rwegner@lmi.net>, Barbara Wegner <oakbarb@lmi.net>

Only parties of record can appeal, but anyone can testify at a hearing. I am not going to advise you on legal matters, which we have talked about multiple times.

[Quoted text hidden]

Karin Nosrati, DC <bforback@gmail.com> Tue, Sep 24, 2024 at 1:43 PM
To: Robert Maul <RMaul@cityofcamas.us>
Cc: Yvette Sennewald <YSennewald@cityofcamas.us>, Carey Certo <CCerto@cityofcamas.us>, Alan Peters <APeters@cityofcamas.us>, Kristin Price <19813mkp@gmail.com>, Joan & Rich Rickard <joanier@comcast.net>, Russell Wegner <rwegner@lmi.net>, Barbara Wegner <oakbarb@lmi.net>

Thank you for your clarification. Regarding bullet point #5, which department or resource at the City should I contact to access this information - I presume it is public record?

Lastly, does written information that will be presented at the hearing, e.g. revised public documents, new studies, expert opinions etc., need to be submitted prior to the hearing? Looking at the City's hearing schedule, what is a ballpark timetable - days, weeks or months away? This information is important to help us prepare and obtain advice.

Best,

Karin
[Quoted text hidden]

Robert Maul <RMaul@cityofcamas.us> Wed, Sep 25, 2024 at 10:33 AM
To: "Karin Nosrati, DC" <bforback@gmail.com>
Cc: Yvette Sennewald <YSennewald@cityofcamas.us>, Carey Certo <CCerto@cityofcamas.us>, Alan Peters <APeters@cityofcamas.us>, Kristin Price <19813mkp@gmail.com>, Joan & Rich Rickard <joanier@comcast.net>, Russell Wegner <rwegner@lmi.net>, Barbara Wegner <oakbarb@lmi.net>

Karin,

All past hearings are on the city's website under the meetings portal. You can search for hearing examiner meetings there. As you and I have discussed very specifically before, the filing of the appeal should contain whatever information you want to present to make your case to the examiner.

[Quoted text hidden]

Karin Nosrati, DC <bforback@gmail.com>
To: Robert Maul <RMaul@cityofcamas.us>
Cc: Yvette Sennewald <YSennewald@cityofcamas.us>, Carey Certo <CCerto@cityofcamas.us>, Alan Peters <APeters@cityofcamas.us>, Kristin Price <19813
<rwegner@lmi.net>, Barbara Wegner <oakbarb@lmi.net>, Randy Nosrati <randynos1@gmail.com>

Hi, Robert,

Thank you for helping direct me to find the prior hearing notes on the Camas website.

I apologize, but I don't remember very specifically discussing the finer details of the hearing process, because we were in the stage of submitting comments or expert opinions or rebuttals, if they can only be submitted now, when we turn in the appeal.

The only written instructions, which do not detail the limits of timeliness of submission of documents, I found here:

18.55.200 - Appeals—Generally.

A. Type II decisions may be appealed to the hearings examiner.
B. The following decisions may be appealed to the City Council: (1) Shoreline master program permits; (2) SEPA decisions; (3) ci
chapter, there is no appeal to any other decision maker within the city.
C. All appeals are initiated by filing a notice of appeal with the director within fourteen days of issuance of the decision being appe
D. The notice of appeal shall be in writing and contain the following information:
    1. Appellant's name, address and phone number;
    2. Appellant's statement describing their or other standing appeal;
    3. Identification of the application which is the subject of the appeal;
    4. Appellant's statement of grounds for the appeal and the facts upon which the appeal is based;
    5. The relief sought, including the specific nature and extent;

6. A statement that the appellant has read the notice of appeal and believes the content to be true, followed by the appellar

E. The notice of appeal shall be accompanied by an appeal fee as set forth in a fee schedule adopted by resolution.

F. Appeals of civil regulatory orders and civil fines shall be heard de novo by the city council. All other appeals, with the exception hearings before the city council.

G. Notice of any appeal shall be given to those entitled to notice of the decision or determination being appealed.

Where else can I find the instructions specifically pertaining to additional documentation which will be available at the time of th be considered?

From the July 26, 2022 hearing, from the Hearing Examiner's introduction, I read " Exhibits may be submitted to City staff at the documents at the time of the hearing. I am not trying to split hair, but I need to know if I need to rush a report by next week, or

Additional question: Several neighbors would like to also sign the appeal. Would that require multiple filing fees?

Thank you,

[Quoted text hidden]

Robert Maul <RMaul@cityofcamas.us> Wed, Sep 25, 2024 at 2:27 PM
To: "Karin Nosrati, DC" <bforback@gmail.com>
Cc: Yvette Sennewald <YSennewald@cityofcamas.us>, Carey Certo <CCerto@cityofcamas.us>, Alan Peters <APeters@cityofcamas.us>, Kristin Price <19813mkp@gmail.com>, Joan & Rich Rickard <joanier@comcast.net>, Russell Wegner <rwegner@lmi.net>, Barbara Wegner <oakbarb@lmi.net>, Randy Nosrati <randynos1@gmail.com>

You can file one appeal with others to join. As you have listed below, 18.55.200 tells you what you need to supply for the appeal. If you want certain documents or information to be considered it needs to be in the appeal you file.

The statement from the July meeting about submittal of items to staff at the hearing is in reference to a conditional use permit hearing where a decision has not been made. The difference here is the decision has been made, which you disagree with, and now you need to prove to the examiner why the decision should be modified or denied. As for when we meet with the examiner, it is on an as-needed basis so there is nothing on the calendar right now.

From: Karin Nosrati, DC <bforback@gmail.com>
Sent: Wednesday, September 25, 2024 2:02 PM
To: Robert Maul <RMaul@cityofcamas.us>
Cc: Yvette Sennewald <YSennewald@cityofcamas.us>; Carey Certo <CCerto@cityofcamas.us>; Alan Peters <APeters@cityofcamas.us>; Kristin Price <19813mkp@gmail.com>; Joan & Rich Rickard <joanier@comcast.net>; Russell Wegner <rwegner@lmi.net>; Barbara Wegner <oakbarb@lmi.net>; Randy Nosrati <randynos1@gmail.com>
Subject: Re: SPRV23-06 - 13th Street Gas Station

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Hi, Robert,

Thank you for helping direct me to find the prior hearing notes on the Camas website.

I apologize, but I don't remember very specifically discussing the finer details of the hearing process, because we were in the stage of submitting comments on the SEPA at the time. This is now the new reality and I need to know if we obtain expert opinions or rebuttals, if they can only be submitted now, when we turn in the appeal.

The only written instructions, which do not detail the limits of timeliness of submission of documents, I found here:

18.55.200 - Appeals—Generally.

Share Link to section Print section Download (Docx) of sections Email section Compare versions

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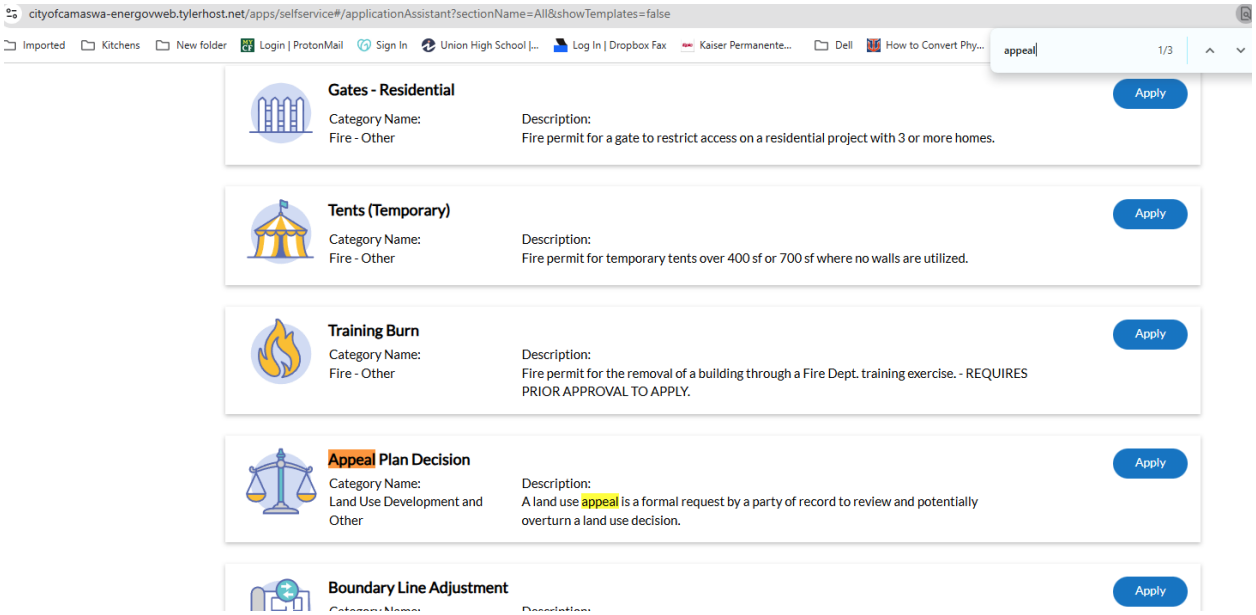
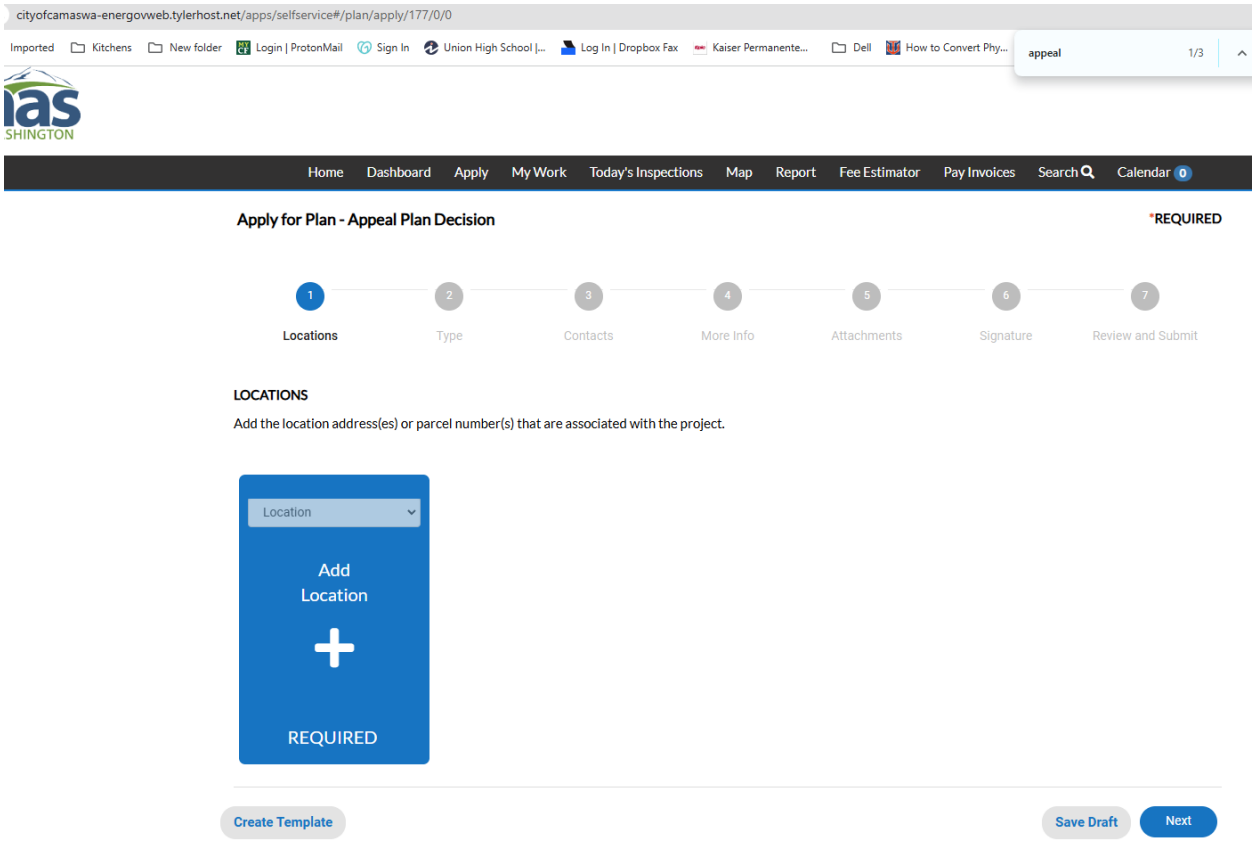
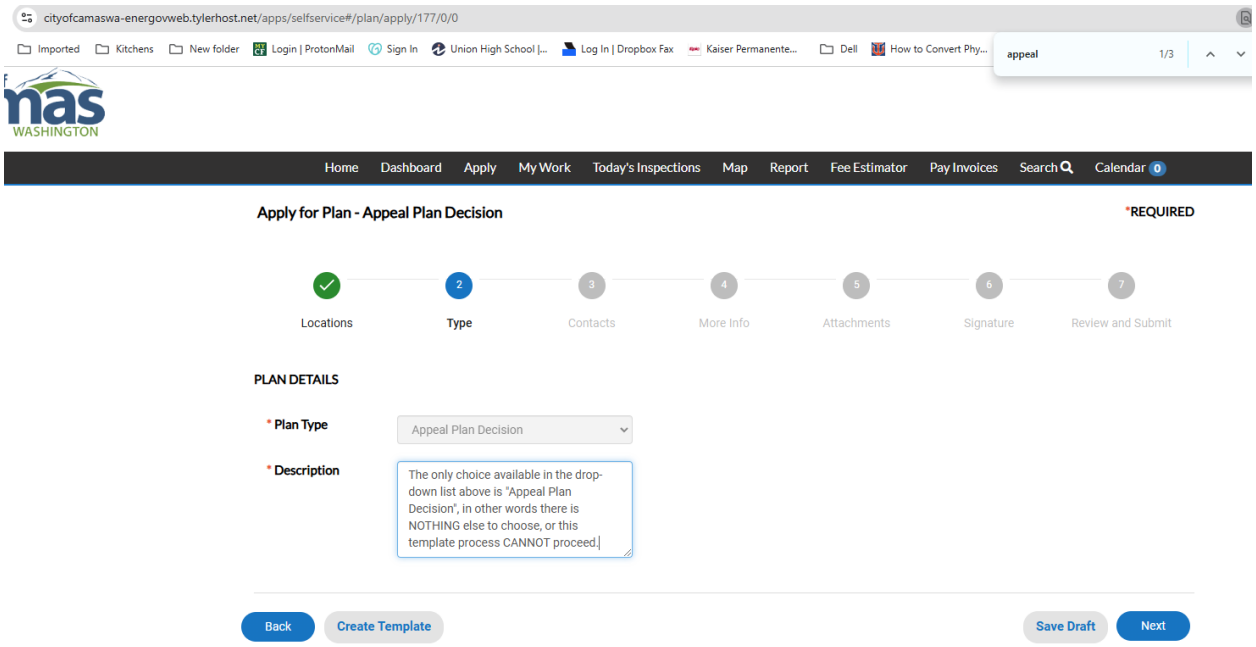
These are the steps to file an appeal on the City of Camas website:

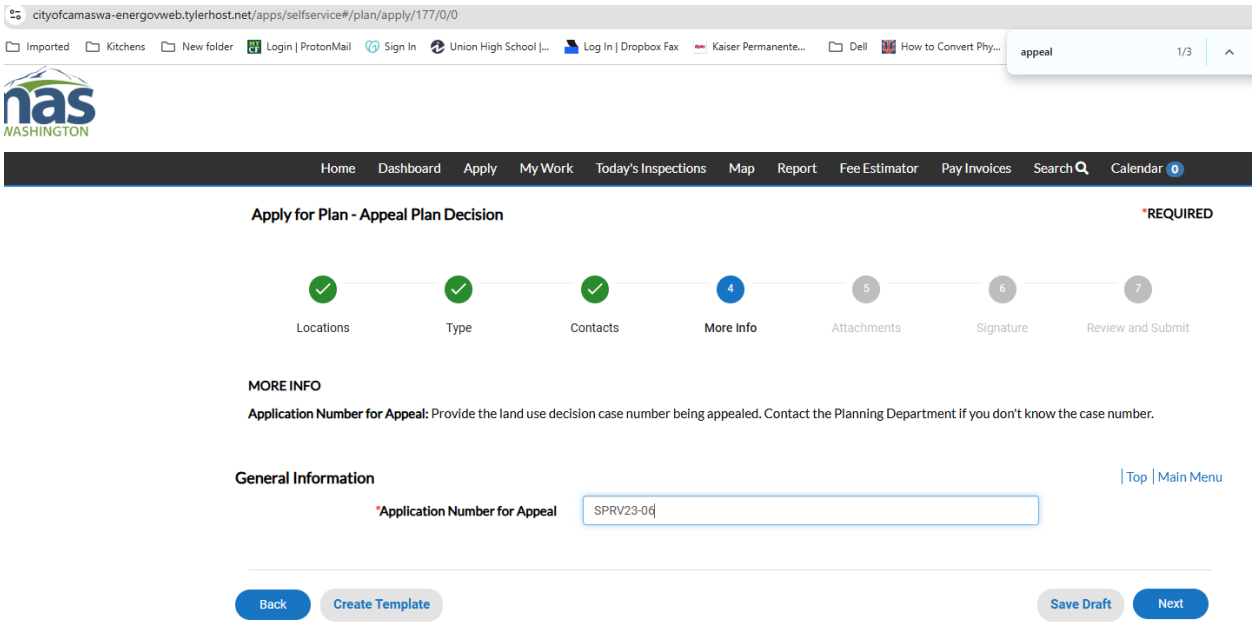


Please note that this is the only "Appeal" choice.

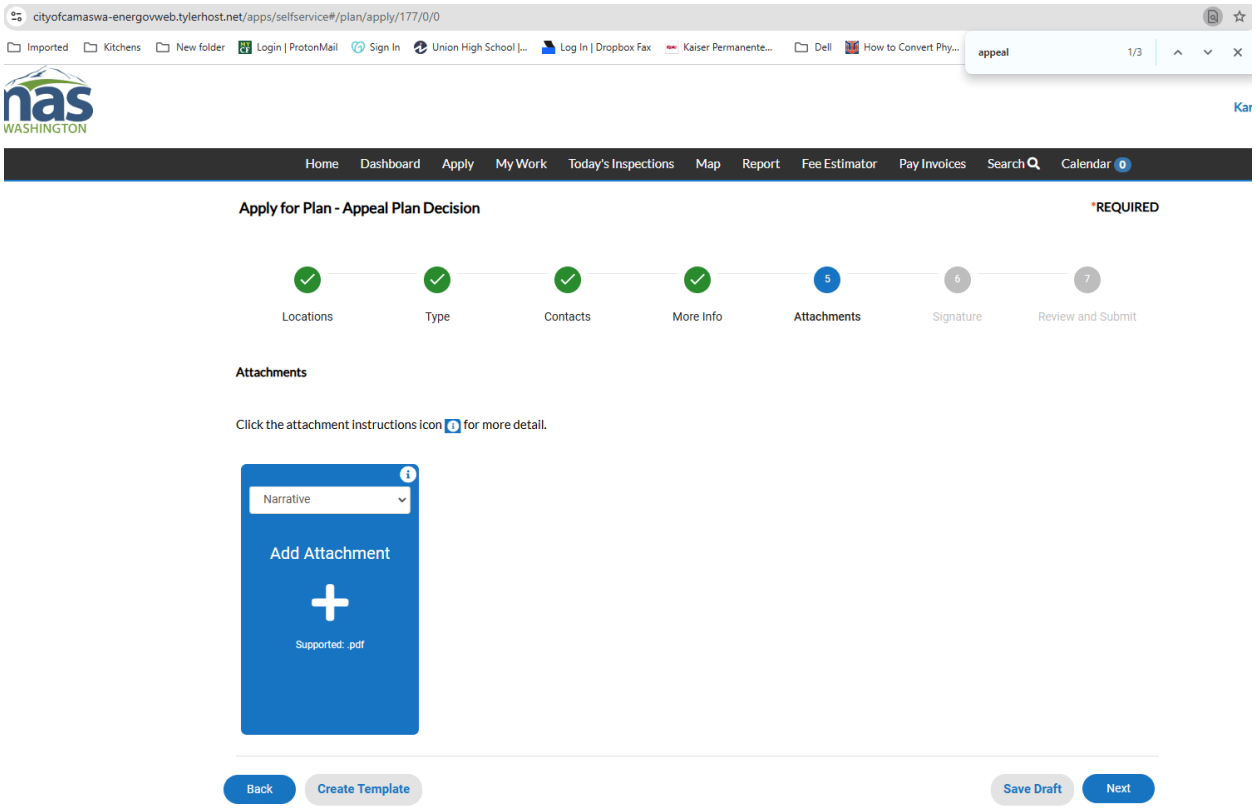

cityofcamaswa-energovweb.tylerhost.net/apps/selfservice#/plan/apply/177/0/0
Imported
Kitchens
New folder
Login | ProtonMail
Sign In
Union High School |...
Log In | Dropbox Fax
Kaiser Permanente...
Dell
How to Convert Phy...
appeal
1/3
Home
Dashboard
Apply
My Work
Today's Inspections
Map
Report
Fee Estimator
Pay Invoices
Search
Calendar 0
Apply for Plan - Appeal Plan Decision
*REQUIRED
1 Locations
2 Type
3 Contacts
4 More Info
5 Attachments
6 Signature
7 Review and Submit
LOCATIONS
Add the location address(es) or parcel number(s) that are associated with the project.
Location
Add Location
REQUIRED
Create Template
Save Draft
Next



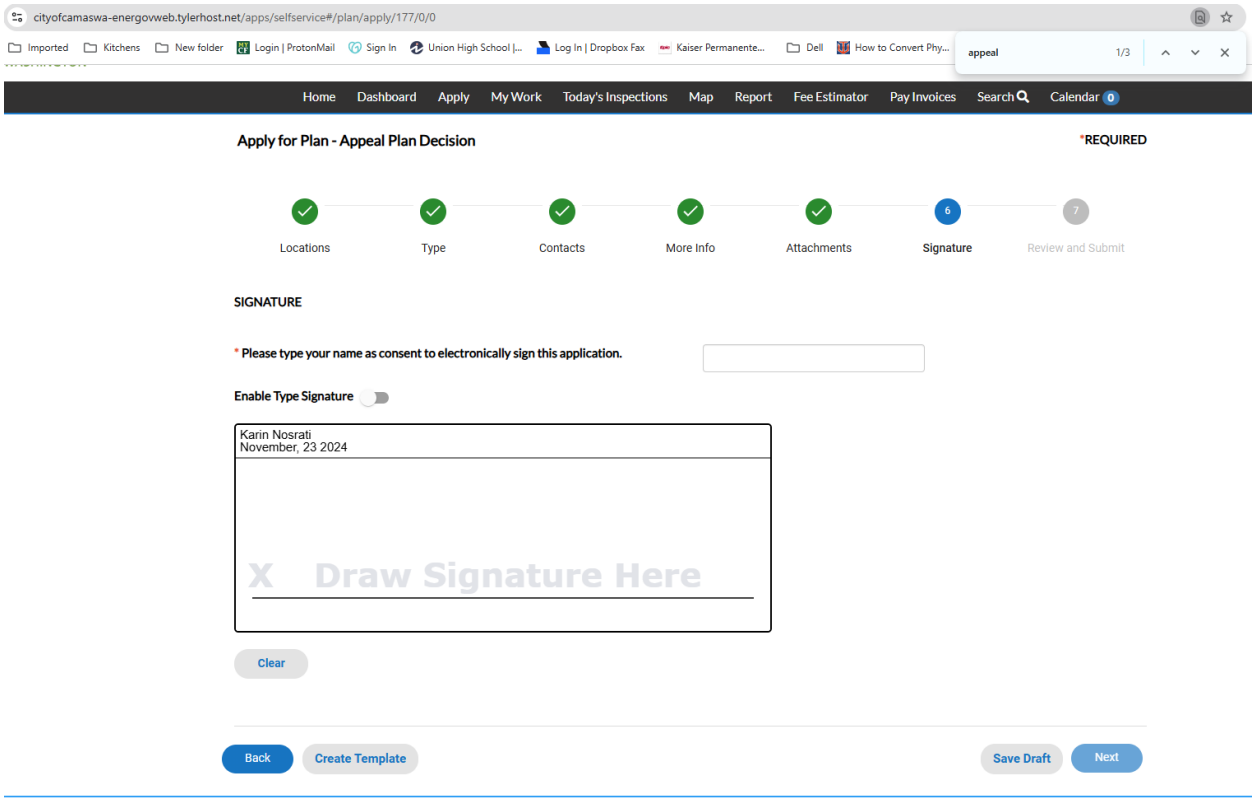
Please note: The only choice available in the drop-down list is “Appeal Plan Decision”



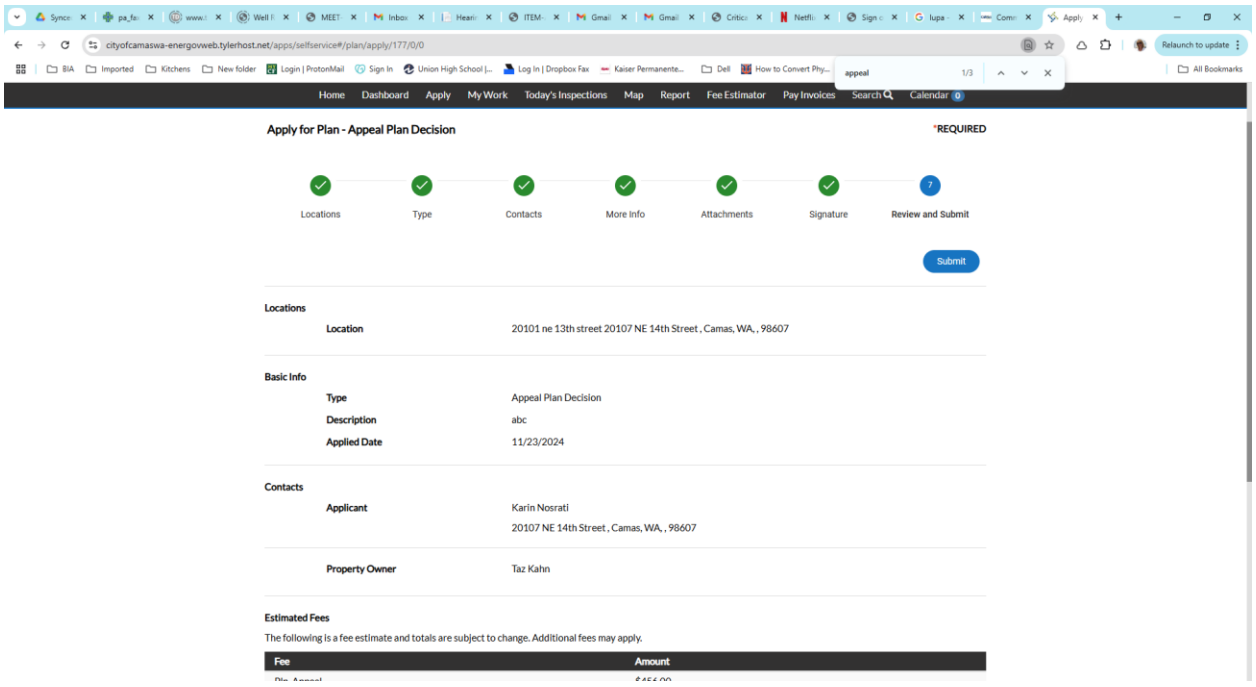
Please note that this section asks for the application number, not City’s claim to appeal specific portions of the decision.



Here the narrative option was chosen and uploaded, which included the names of all 34 appellants at the end and the statement that “The following neighbors would like to be included in the appeal and receive an invitation to the hearing”.



The tool does not allow more than one signature



Karin L Nosrati
20107 NE 14th Street
Camas, WA 98607
360-254-1585

On behalf of the residents of Morning Meadows Estates, residents of Katie's Hill and residents of Evergreen Acre Tracts, I am appealing the approval of a project called 13TH STREET GAS STATION (FILE NO. SPRV23-06). We live in single family residences adjacent to the project.

The project is called 13TH STREET GAS STATION (FILE NO. SPRV23-06)

This project has potential to

- Pollute open waters in the vicinity, increasing concerns about management of the Lacamas Lake watershed.
- Endanger safe drinking water supply of immediate neighbors on wells
- Create noise and light pollution that would interfere with the quiet enjoyment of residences in nearby neighborhoods
- Permit the construction of a car wash in a BP zoning, potentially violating zoning requirements. Camas has previously only permitted car washes in CC zoning. A car wash is not listed in the City of Camas Code of Ordinances
- Create a dangerous intersection with multiple safety concerns: Ingress and egress is proposed where there is poor visibility due to the topography of the Goodwin Road hill and it's near 90 degree turn; insufficient braking distance to avoid a crash; disrupt traffic including school bus traffic to nearby high school
- Expose the City of Camas to liability for granting an exception to the posted Access Standards if permitting a left turn access shorter than 660 ft into the parcel.
- Disrupt recreational use of the designated bicycle route; create a hazardous crossing for pedestrians, including students

Deny approval of this project or allow with the following modifications

- Require 300 ft distance from nearest drinking water wells and open bodies of water to underground storage tanks
- Require the project development owner to conduct a baseline comprehensive chemical drinking water well inspection of nearby wells. Thereafter the gasoline station owner shall be required to perform annual well inspections and if pollutants are detected, they must be remedied.
- Conduct a geological test that verifies the movement of ground water of the existing wells
- Lower the floor/topography of the filling stations 2 ft. below street level to contain spills and vehicle drips to the property to prevent their release to the street during heavy rains

and ice melts, which are common at this intersection and to prevent run-off to property to the north

- Conduct an updated traffic study that accounts for the new warehouse, the new residential traffic east (Goodwin/Green Mountain), Union High School traffic, the new Oak Tree Station, the new Business Park mall buildings on NW Friberg-Strunk St., and to include the traffic impact of Harmony Sports Complex.
- City of Camas to decline the request from the developer to allow a deviation from the City's Access Spacing Standards (Resolution 17-005) and setback requirements
- Only allow a right turn ingress to the project by building a concrete divider in the center of NE 13th Street, to block dangerous left turns
- Require separate ingress and egress for better traffic flow, including a primary exit to NW Friberg-Strunk St.
- Provide an updated circulation plan that describes stacking of cars waiting for a pump and how it would not interfere with traffic on this arterial
- Conduct a separate SEPA study for the carwash facility because the current SEPA addresses mostly the gas station
- Correct and update the Wetland Buffer Bank Use plan, as it omits the wetland to the south and was conducted without access to the wetland or spring on the adjacent property to the west.
- Remove car wash from the project
- Reduce the size of the convenience store due to estimated traffic to the location; limit operation and sales hours for alcohol due to proximity to high school.
- Post signs on project property reminding patrons of City of Camas' noise ordinance. No noise should be added to the surrounding neighborhoods.
- Erect a 12 ft noise and light barrier wall for neighbors to the west, east and north to diminish noise and light pollution
- Establish a litter control plan, including graffiti clean-up, and funding into perpetuity for twice-per-week trash collection along all four roads for 1000 ft.
- Operating hours of the gas station shall be in compliance with BP zoning, including all gasoline tanker trucks filling gasoline and all deliveries. There should be no night time noise generated.
- Require payment to well owners for a well inspection upon project construction start date. Homeowners along 13th Street and adjacent Streets in a ½ mile radius of a gas station, will incur the additional expense of a well inspection during the sale of their property to an FHA buyer due to the underground storage tank.
- Submit a decommissioning plan to address end-of-life of the gas station
- Require all provisions and responsibilities to transfer to subsequent owners of the gas station.

I have read the appeal and believe the content to be true.

Karin L. Nosrati

Please note: We request permission to submit a rebuttal to the traffic study at a later date, given the short period of time since your decision on September 16, 2024.

All previously submitted information/comments shall be part of this appeal.

The following neighbors would like to be included in the appeal and receive an invitation to the hearing:

Judith WILSON

20008 NE 11TH ST
CAMAS WA, 98607

Norma and Ernie HARRISON

20002 NE 11TH ST
CAMAS WA, 98607

Don LINGLE

19912 NE 11TH ST
CAMAS WA, 98607

Jeff and Keli GOERTZEN

20009 NE 14TH ST
CAMAS WA, 98607

Greg and Shannon CONNELL

20002 NE 14TH ST
CAMAS WA, 98607

Ken and Lisa WALTOS

20106 NE 14TH ST
CAMAS WA, 98607

Joan and Richard RICKARD

1417 NE 202ND AVE
CAMAS WA, 98607

Ruth and William SMALL

20217 NE 16TH ST
CAMAS WA, 98607

Heidi and Butch PARKER

20103 NE 16TH ST
CAMAS WA, 98607

SOLDATI MELISSA

19915 NE 16TH ST
CAMAS WA, 98607

Lisa and Mike OGDEN

19916 NE 16TH ST
CAMAS WA, 98607

Kristin Price

19813 NE 13TH ST
CAMAS WA, 98607

Anthony BRAUNSTEIN

19700 NE 11TH ST
CAMAS WA, 98607

Lisa and Michael MCCOLM

19606 NE 11TH ST
CAMAS WA, 98607

Sam WEBER

19514 NE 11TH ST
CAMAS WA, 98607

Stan GHEZZI

19504 NE 11TH ST
CAMAS WA, 98607

Beverly TERRY

19410 NE 11TH ST
CAMAS WA, 98607

Troy TIBBS

19505 NE 11TH ST
CAMAS WA, 98607

MARTIN LYNN E

19701 NE 11TH ST
CAMAS WA, 98607

Linda SHREVES

19805 NE 11TH ST
CAMAS WA, 98607

Rodney SMITH

19813 NE 11TH ST
CAMAS WA, 98607

Tressia and Max MORROW

19821 NE 11TH ST
CAMAS WA, 98607

Alan JOHNSTON

20003 NE 11TH ST UNIT 38
CAMAS WA, 98607

Tim LOY

20009 NE 11TH ST
CAMAS WA, 98607

Tony AGOLIO

19717 NE 11TH ST
CAMAS WA, 98607

Lee and Julie BOLLING

19607 NE 11TH ST
CAMAS WA, 98607

Kylene and Harold STENGEL

19411 NE 11TH ST
CAMAS WA, 98607

Kerry and Carol BASKIN

19403 NE 11TH ST
CAMAS WA, 98607

Jim Hughes
19812 NE 11TH ST
CAMAS WA, 98607

Tim and Julie LOY

20009 NE 11TH ST
CAMAS WA, 9860

Steve and Jeanette MURPHY

20007 NE 16TH ST
CAMAS WA, 98607

Brittany and Jonathan BOZARTH

19821 NE 13TH ST
CAMAS WA, 98607

Chris Yetter
20210 NE 16th
CAMAS, WA 98607

Karin and Randy NOSRATI (Appellant)
20107 NE 14th Street
Camas, WA 98607

November 26, 2024

City of Camas,

I, Keli Goertzen of 20009 NE 14th St,
Camas WA, agreed to join the appeal of the project called "13th Street Gas Station (File No. SPRV23-06)". I consider myself an appellant, because my name was listed on the appeal narrative, and I believe the content of the appeal to be true. All previously submitted information/comments shall be part of the appeal.

I have previously submitted multiple written comments appealing the City's decisions/developers studies, I paid a portion of the appeals fee, and I attended a City Council meeting.

Sincerely,
Keli Goertzen
jkgoertzen@comcast.net
360-901-9674

Richard & Joan Rickard
1417 NE 202nd Ave.
Camas, WA 98607
joanier@comcast.net

November 26, 2024
To:
The City of Camas,

We agreed to join the appeal of the project called "13th Street Gas Station (File No. SPRV23-06)" filed by Karin Nosrati and we consider ourselves to be appellants, because our names were listed on the appeal narrative, and that we believe the content of the appeal to be true, and we contributed to the fee for the appeal. And that all previously submitted information and comments shall be part of the appeal. We have submitted written comments concerning the project and we attended the November 14th hearing meeting.

Richard Rickard

Joan Rickard

Karin Nosrati
20107 NE 14th Street
Camas, WA 98607

Reference:
Appeal of the project "13th Street Gas Station (File No. SPRV23-06)"

Hello,

This is to confirm my status as an appellant, as listed in the appeal narrative previously submitted. I concur with the comments submitted on the appeal, pertaining to both the SEPA submission and the pending approval of the project. I confirm that I submitted payment to you for a portion of the appeals fee. I presented oral testimony at the City Council meeting prior to approval. Additionally, I was present at a recent hearing on November 14, 2024 and was prepared to present additional oral testimony at that time. I have already submitted two written statements including in the file; I trust that these statements will be included and reviewed by the hearing officer prior to any determination.

Thank you again for representing our concerns about the proposed project.

maryann kristin price 11/25/2024.

Maryann Kristin Price (19813mkp@gmail.com)
19813 NE 13th Street
Camas, WA 98607
(360) 601-2356

November 26, 2024

To: City of Camas Community Development Department

RE: 13th Street Gas Station – File #SPRV23-06

My name is Heidi Parker. My husband Butch Parker and I reside at 20103 NE 16th Street, Camas, 98607. We live in the neighborhood north of the intersection at Goodwin Rd/13th Street and Friberg-Strunk.

I want to confirm that Butch and I are appellants in the matter of the 13th Street Gas Station (file No. SPRV23-06). Our names were listed on the appeal narrative; we contributed to the filing fee; we believe the content of the appeal to be true, and we agree with all previously submitted statements and objections relating to the proposed gas station.

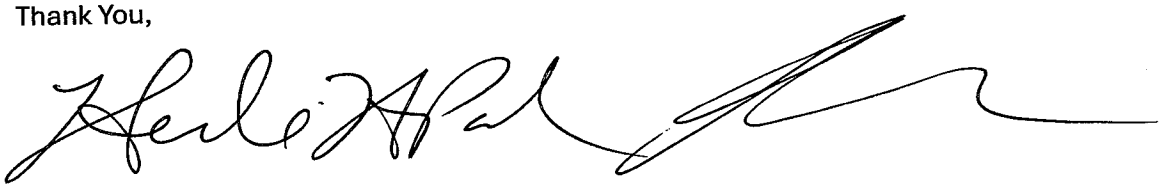
While Karin Nosrati is the opposition's spokesperson, she does not stand alone in this appeal. On March 7, 2024, I submitted to the Camas Community Development Office an email detailing my concerns with the proposed gas station. I am attaching that email again, as I still have the same concerns.

My greatest concern is with the gas station entrance on 13th. In short, I CANNOT BELIEVE the City of Camas would be so cavalier in granting the deviance for the gas station entrance. The intersection at 13th and Friberg-Strunk is already dangerous. I can't count how many times I've almost been hit coming in and out of the entrance of our neighborhood. Cars heading west on 13th (Goodwin) are not going 35mph. They speed around that bend, and if the gas station is approved, those cars will now come around that bend and hit a line of stopped cars that are waiting for someone to turn left into the gas station entrance.

That situation will only get worse when Union High School is excused every day. Buses and countless cars driven by teens will pour through that intersection, and again, they will be stopped in their tracks while they wait for a car to turn left into the gas station. The proposed entrance to the gas station is dangerously close to the intersection, so the stack of cars will extend back through the intersection. The applicant's traffic study didn't even propose an additional center lane for turning into the gas station. When car accidents occur at the 13th/Friberg-Strunk intersection and close to the entrance of the gas station, the City of Camas should be held responsible for their negligence.

I attended the March 18, 2024 City Council Meeting and expressed my concerns about the proposed gas station. I was out of town for work on November 14th; otherwise, I would have attended that hearing.

Thank You,



From: <heidihparker@gmail.com>
Date: Thu, Mar 7, 2024 at 1:40 PM
Subject: Proposed Gas Station/Car Wash at corner of 13th & Friberg-Strunk - Public Comments on SEPA
To: <communitydevelopment@cityofcamas.us>
CC: <eric.hahn@cityofvancouver.us>

Dear City of Camas & Mr. Hahn –

I have reviewed the SEPA checklist submitted for the captioned gas station and have the following concerns about #14 Transportation:

1. The applicant should conduct a traffic study when Union High School is in session instead of relying on models. The intersection at 13th & Friberg-Strunk is packed with high school student drivers and buses twice a day nine months out of the year. Whatever model Charbonneau used isn't accurate. I've lived in the Morning Meadows subdivision since 2008 and I've almost been hit countless times by teens in that intersection. And now we have a warehouse at that corner, which will add large truck traffic to an already dangerous intersection. I trust that truck traffic wasn't factored into Charbonneau's study.

2. The report concludes that a westbound turn lane on NE 13th isn't warranted. For me, that one statement calls into question the credibility of the entire report. First, no one driving west on 13th is going 35 mph unless they had to stop at the 13th/Friberg-Strunk light. Second, when high schoolers are streaming through that intersection after school more than one car will want to stop at the convenience store for a Red Bull. There will likely be several cars of kids who want to stop and they will back up the entire intersection because the proposed entrance to the convenience store is going to be just 200 feet from the intersection, which leads to my 3rd concern.

3. Why would the City of Camas be so willing to approve a commercial entrance that doesn't even come close to the 600 foot minimum? What are the requirements for obtaining a deviation? Why is the City prioritizing access for gas tanker trucks over

the safety of hundreds of high school kids who drive through that intersection 9 months a year? Is the City legally obligated to grant a major deviation?

I understand that the character of this area is evolving. I know how hard it is to strike a balance between emerging commercial zones that abut residential zones. But the balance is possible.

I was once a zoning attorney in Virginia and mostly represented developers. I know there's an art to downplaying the impact of a development on nearby residential areas. That's why I'm not terribly convinced by the traffic report. I also know that it's hard to stop developers. But I grew to respect and admire the planning departments and governing boards that made my clients either propose a better project or jump through expensive hoops to preserve the beauty and safety of adjacent areas. I hope both Camas and Vancouver will do the same with this developer.

Respectfully,

Heidi Parker

20103 NE 16th Street

360-907-8963

Randy Nosrati

20107 NE 14th Street

Camas, WA 98607

Reference: Appeal of the project "13th Street Gas Station (File No. SPRV23-06)"

To City of Camas,

This letter is to confirm my status as an appellant, as listed in the appeal narrative submitted on 9/30/2024. I concur with the comments submitted on the appeal narrative, regardless of whether interpreted as SEPA or other issues because the City rendered an approval of the project by consolidating a SEPA determination and a staff report.

I confirm that I contributed a portion of the appeal's fee submitted to the City.

I submitted an oral testimony at the City Council meeting and submitted comments to community development in writing. All previously submitted comments and information from other neighbors shall be included in the appeal.

I consider myself an appellant to the project.

I have read the notice of appeal and believe the content to be true.

Randy Nosrati

(360) 954-6757

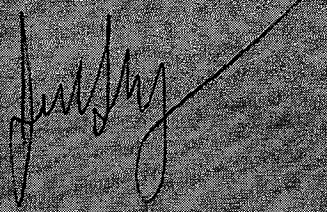
City of Camas,

We have agreed to join the appeal of the project called "13th Street Gas Station (File No. SPRV23-06)" and consider ourselves appellants because our names are listed on the appeal narrative. We believe the content of the appeal to be true.
We helped pay a portion of the appeals fee.

We have also written our own comments appealing the City's decisions and developers studies on this project previously. I expect our previous comments and others comments and information are part of the appeal also.

Thank you,

Steve Murphy



Jeannette Murphy

20007 NE 16th Street
Camas, WA 98607
jpnspdarm@hotmail.com

Lisa (& Michael) McColm
19606 NE 11th St.
Camas WA 98607
Lisam1991@gmail.com

I consider myself an appellant because my name was listed on the appeal narrative, and I believe the content of the appeal to be true. And all previously submitted information/comments should be part of the appeal. I submitted written comments as part of the hearing Nov. 14th.

Lisa K

11/26/24

Judith A Wilson
20008 NE 11 street
Camas WA 98607

I Judith Wilson agreed to join the appeal of the project "13 Street Gas Station File # No. SPRV23-06
I consider myself an Appellant. my name was listed on the appeal Narative.
I believe the Content of the appeal to be true, and that All previously Submitted information comments shall be part of the appeal. Thank you
Judith A Wilson

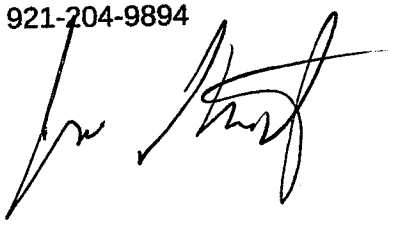
November 26, 2024

City of Camas,

I, Jeff Goertzen of 20009 NE 14th St,
Camas WA, agreed to join the appeal of the project called "13th Street Gas Station (File No. SPRV23-06)". I consider myself an appellant, because my name was listed on the appeal narrative, and I believe the content of the appeal to be true. All previously submitted information/comments shall be part of the appeal.

I have previously submitted written comments appealing the City's decisions/developers studies, I paid a portion of the appeals fee, and I attended a City Council meeting.

Sincerely,
Jeff Goertzen
jeffkgoertzen@gmail.com
921-204-9894



Gmail Karin Nosrati, DC <bforback@gmail.com>

URGENT - need a brief statement from you by tomorrow, TUESDAY 11-26-2024 if your name was on the appeal

SHANNON CONNELL <gsconnell@comcast.net> Wed, Nov 27, 2024 at 9:40 AM
To: "Karin Nosrati, DC" <bforback@gmail.com>

Karen,
Sorry for the delay. Out of town and distracted! See below.

Too Whom it May Concern,

We have agreed to be part of the appeal of the project called "13th Street Gas Station (File No SPRV23-06). We consider ourselves an appelant and have commented to the City before on this project. See copy of email sent prior on 8/27/2024 pasted below. Any questions or concerns please let us know.

Greg & Shannon Connell
20002 NE 14th St.
Camas, WA 98607
gsconnell@comcast.net

Email sent to City of Camas on 8/27/2024

To Whom it may concern,

A couple of comments regarding the issue regarding the SEPA 23-12 13th St. Gas Station. I find it interesting, per the report, the gas station convience store was originally going to be placed on the west end of the property but due to 50ft buffer requirements it would not fit on the lot. Therefore the site of the location of the convience store was moved to the east end of the lot. The Oak tree was the only thing holding up this location. The reality is this is a poor lot for this type of business. Single access with a needed driveway variance to make it even possible is ridiculous. Observing the the complex method fuel trucks will have to maneuver to fill the tanks is also ridiculous. This will back up traffic on an increasingly busy 2 lane road with no plan to improve it on the county road plan (I assume the county will require significant traffic impact fees in its approval process). 13th is quickly becoming the primary access road for the numerous housing developments to the north of Lacamas Lake. Vehicles traveling west attempting a left turn into the gas station will routinely back up into the intersection making an already dangerous intersection worse. More then likely this will result in a left turn restriction and therefore severely hampering the success of such a business. Since this study was undertaken multiple businesss have entered the area increasing traffic even more (the warehouse, food cart pod, and more business park. The study didn't study traffic when school was in session when traffic is busy for hours a day. This is a poor business plan for this location. An actual business park business is the most appropriate occupier of this lot not a high traffic convience store. There have been to many "adjustments" to make this "work".

Greg & Shannon Connell
20002 NE 14th St. Camas WA

On 11/25/2024 7:50 PM PST Karin Nosrati, DC <bforback@gmail.com> wrote:

[Quoted text hidden]

appeal

To DC Karin Nosrati <bforback@gmail.com>

Community Development, City of Camas
Mr. Turner,

There are many more people who should be considered appellants in the matter of the proposed gas station than our primary spokesperson, Karen Nosrati. We are named on the appeal along with many neighbors. We have paid a portion of the appeal fee, have submitted letters regarding these issues, have spoken at City Council meetings about SEPA and non-SEPA issues.

William T. Small
Ruth G. Small
20217 N.E.16th St.
Camas, WA 98607
rgwtsmall@comcast.net

William T. Small
Ruth G. Small

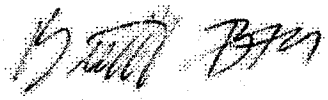
19821 NE 13th St

Camas, WA 98607

bozarth.brittany@gmail.com

Statement 13th Street Gas Station (File No. SPRV23-06):

I, Brittany Bozarth, have been actively involved in the recent city planning discussions. I consider myself an appellant, as my name was listed on the appeal narrative, and I believe the content of the appeal to be true. All previously submitted information, and comments shall be part of the appeal. I have submitted written comments appealing several of the City's decisions and developers' studies. Additionally, I contributed to the City Council meeting providing a letter as I was unable to attend in person, or virtually, due to parental priorities.



Brittany Bozarth

Gmail

Karin Nosrati, DC <bforback@gmail.com>

File # SPRV23-06

2 messages

Ken Waltos <ken.waltos@outlook.com>
To: DC Karin Nosrati <bforback@gmail.com>

Lisa Waltos and Ken Waltos

We believe the content of the appeal to be true and that all previously submitted information/comments shall be part
Our names Ken and Lisa Waltos our complete address is
20106 NE 14th street
Camas WA 98607
Ken.waltos@outlook.com

We have written comments appealing the cities decision and payed portions of the appeals fee.
I attended the November 14th meeting via zoom.

WALTOS

Kenneth Walt

Lisa Walt

Kylene and Harold Stengel

19411 NE 11th St

Camas, WA 98607

Scheibenkleisterr@msn.com

I agreed to join the appeal of the project called "13th Street Gas Station (File No.SPRV23-06)

And consider myself an appellant because my name was listed on the appeal narrative, and I believe the content of the appeal to be true. And all previously submitted information should be part of the appeal. I attended the meeting on November 14, 2024.

Kylene Stengel

Kylene Stengel

11-26-2024

My name is Alan Johnston, I am an appellant to the "13th Street Gas Station (File #SPRV 23-06). My name was listed on the appeal narrative & I believe the content of the appeal to be true, and that all previously submitted information/ comments shall be part of the appeal.

My Sister, Valerie Coffey, attended the Nov. 14th hearing at City hall in my stead,

signed: Alan Johnston
20003 NE 11th St Camas, WA 98607
aej129@msn.com

Alan E Johnston

signed: Valerie Coffey
20003 NE 11th St Camas, WA 98607
valerie1083@gmail.com

Valerie B. Coffey

Carey Certo

From: Russell Wegner <russwegner@mac.com>
Sent: Saturday, November 30, 2024 12:34 PM
To: Robert Maul; Community Development Email
Cc: bforback@gmail.com; Yvette Sennewald; Carey Certo; Alan Peters; Kristin Price; Joan & Rich Rickard; Barbara Wegner; Randy Nosrati; Barb Wegner
Subject: Re: SPRV23-06 - 13th Street Gas Station -December 12 Hearing Comments Submittal
Attachments: Wegner.Comment.11.25.24..Gas.Station..Hearing.pdf

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you recognize the sender as a city employee and you see this message this email is a phishing email. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

City of Camas,

Please find the attached letter/ comments for the upcoming hearing on December 12. We would like this included in public record. Please confirm receipt.
Thank you.

Russell and Barbara Wegner
19910 NE 16th St.
Camas, WA 98607

415-716-4373 mobile

russwegner@mac.com

Russell and Barbara Wegner
19910 NE 16th St.
Camas, WA 98607

Russwegner@mac.com

November 25, 2024

City of Camas

We are expressing our concerns for this hearing regarding the proposed construction of a gas station and car wash in our neighborhood, specifically 13th Street Gas Station:
File Number SPRV23-06.

While I understand the importance of providing essential services to our community, I believe that this particular project may have detrimental effects on our quality of life, environment, and local economy.

1. **Traffic and Safety Concerns**: The addition of a gas station and car wash is likely to increase traffic congestion in our area. The influx of vehicles can compromise the safety of pedestrians, cyclists, and especially children. Our neighborhood is primarily residential, and the expected volume of cars could pose significant safety hazards.

2. **Environmental Impact**: The construction and operation of a gas station can lead to increased water air, and noise pollution, which would negatively impact our community's health and well-being.
3. **The potential for oil spills and groundwater contamination is a considerable risk that could threaten local ecosystems and drinking water sources.**

    1) A medium gas station puts out around 400,000 liters of gas per month. That puts out 24,000 liters of compound/ vapors which equals l 6,000 gallons of compounds/ vapors each month
    2) Vapors travels approximately 600 feet in the surrounding aera in all direction depending on winds
    3) Diesel can put out double this number.

4. **The study of wells in the proximity has not been completely and responsibly addressed.**

A major drinking water Aquifer that is under and within 200 feet of the gas station AND supplies all the wells on 13th street (over 40), most of which are not tagged or on public record.

1. Drinking water contamination is a number one risk water plus potential contamination risk for wildlife, wetlands.

The Washington State Dept. of Health email of November 24,2024 to City of Camas regarding **Critical aquifer recharge areas map** states

"CMC 16.55.030.A refers to the "adopted critical area maps" but noting this section dates to 2008, am not sure how that aligns with the 2012 map. But CMC 16.55.030.B clarifies that the "maps are to be used as a guide…and may be continuously updated… They are a reference and do not provide a final critical area designation." This approach is in keeping with Commerce guidance & GMA statute, rule, & case law.

It would be optimal to rework the CARAs map you are displaying on your website to incorporate both WHPAs & the SSA limits, plus any of the other features listed in CMC 16.55.010 that are known. <u>If the City lacks the ability to produce a new map, then it might want to remove the 2012 map from its website since it is outdated,</u> & perhaps replace it with links to the SWAP & SSA maps.

2. . *Yes,* in "accordance (DOE 2019 SWMMWW)The Preliminary Stormwater Technical Information Report (PTIR) dated November 2023, was prepared by PLS Engineering is flawed. However, The PTIR and hence the SEPA report are flawed. There is no complete review of the SEPA document and the project from The Dept. of Ecology and other pertinent agencies.
3. For example, there is no reporting or even reference to close by wells from DOE - the SEPA is invalid and this appeal should stand.
4. The majority of the over 40 wells ON 13th ST AND VERY NEARBY are not on public record. The Dept. of Ecology, Camas and the County have **<u>no record</u>** of these wells. They have no tags or identification numbers for or public record.

5. With these legal wells not on the county, state or public record, there is no reporting of the Aquifer and the impact of the gas station effect on drinking water, the SEPA is greatly flawed for the gas station/ car wash. At particular risk is the first one under 100ft away. The aquifer for these wells is directly under the gas station

   Stormwater and water contamination risk is also not being fully addressed, the SEPA is invalid.

   The distances of this environmentally risky business is not only too close to the over 40 wells and drinking water resources, but also the gas station/ car wash would sit above Lacamas Prairie, Lacamas Creek and Lacamas Lake. All the pollutants from this project will flow directly downward to these important "protected" critical environmentally sensitive areas. Measurements to these critical areas needs to be documented and recorded properly by 3rd party independent professionals not hired by developer. This has not not been determined or documented under the SEPA prepared previously for Camas.

According to Center for Watershed Protection an arm of DOE, like Water Resource Board:

"Across our urban and suburban watersheds, hidden culprits are polluting our waterways. "

The Illicit Discharge Detection & Elimination (IDDE) Program as part of The Dept. of Ecology finds and fixes hidden stream polluters.

On record regarding this location:
IDDE Inspector **Merck Strand has** identified this area as a

"Special Wellhead Protection Area and is in a Critical Aquifer Recharge Area. "

If PTIR was prepared in accordance with Ecology's *Stormwater Management Manual and in accordance with Dept of Ecology approved mapping, then why are they proposing this project in a* **Critical Aquifer Recharge Area** clearly identified as a "Special Wellhead Protection Area" as identified by the Inspector -

6. Another issue with the SEPA is that Offsite boundaries for Wetland A were estimated by visual observations "no recorded measurements and actual buffer determinations are included in the report.
7. Bradshaw Lomatia, which only recently came off endangered species list and was written about in The Columbian paper recently stated that it could easily come back on endangered species list and it is in very close proximity.

8. Safety of Children - by having this business at this location, heavy, traffic, alcohol, litter, and unsavory loitering are concerns.

9. Across the country and in other states hundreds of new gas stations have been forbidden to be built for many of these reasons.
   1) If this business into bankruptcy in the near future (as who will do the estimated $200 million dollar cleanup for the City of Camas? An insurance bond should be a strong consideration.
   2) Gas station numbers have been decreasing at a sharp rate in the past three decades and the trend is expected to continue in the coming years, according to Shubhendra Anand, vice president of research and strategy at Market Research Future. In fact, at least a quarter of service stations globally are at risk of closure by 2035 without significant business model tweaks, according to consulting firm BCG.

1. **Property Values**: Studies have shown that properties located near gas stations can experience a decrease in value. This decline can affect homeowners' investments and the overall appeal of the neighborhood, which is a concern for many

2. The owners of homes of with wells have property value risk with their precious water resources in danger with a gas station over their aquifer.

3. **Impact on Local Businesses**: The introduction of a gas station and car wash may drive business away from our local establishments, which are essential to fostering a strong community. Supporting local businesses helps maintain the character of our

neighborhood and contributes to our economic stability.

Community Character: Our neighborhood is known for its family-friendly atmosphere and community-oriented spaces.

4. The establishment of a gas station and car wash may detract from this appeal, changing the character of our area in a way that many residents may find undesirable.

In light of these concerns, I urge the City Council to reconsider the approval of this project. We need to prioritize the well-being of our community and look for solutions that align with our vision for a sustainable, healthy, and vibrant neighborhood. Thank you for taking the time to consider my perspective. I hope you will take the necessary steps to protect our community's interests.

Sincerely,

Russell Wegner

Russell Wegner

Barbara Wegner

Barbara Wegner

BEFORE THE LAND USE EXAMINER
FOR THE CITY OF CAMAS, WASHINGTON

Regarding an appeal of an administrative decision conditionally approving a gas station, convenience store, and car wash at 20101 NE 13th Street in the City of Camas, Washington	))))	**PROCEDURAL ORDER** **SPRV23-06/APPEAL24-1001** **(13th Street Gas Station- Appeal)**

A. SUMMARY

1. PLS Engineering, representing the property owner, Pak USA Camas, LLC, (the applicant) requested approval of an eight-pump gas station, a 4,100 square-foot convenience store, and a drive-thru car wash on a 0.97-acre parcel located at 20101 NE 13th Street; also known as Clark County Assessor parcel number 176148000 (the "site").

a. The site and abutting properties to the south and east are located in the City of Camas and zoned BP (Business Park). Properties to the west are located in unincorporated Clark County and zoned R1-10 (Residential, 10,000 square foot minimum lot size). Properties to the north, across NE 13th Street, are located in unincorporated Clark County and zoned R1-20 (Residential, 20,000 square foot minimum lot size).

2. On August 15, 2024, the City of Camas published a revised SEPA threshold determination of Non-Significance (DNS) for this project.[1] (Exhibit 90). The 14-day comment period expired on August 29, 2024.

3. On September 16, 2024, the City of Camas Planning Director (the "director") issued a Type II decision approving the application subject to conditions of approval. (Exhibit 103).

4. On September 30, 2024, the City received an appeal of the Director's decision filed by Karin L Nosrati "On behalf of the residents of Morning Meadows Estates, residents of Katie's Hill and residents of Evergreen Acre Tracts…" The appeal further provided that "The following neighbors would like to be included in the appeal and receive an invitation to the hearing:" and listed 49 individuals (34 households), including Ms. Nosrati and her husband. (Exhibit 105). The appeal included the following statement:

> This project has potential to
> - Pollute open waters in the vicinity, increasing concerns about management of the Lacamas Lake watershed.
> - Endanger safe drinking water supply of immediate neighbors on wells
> - Create noise and light pollution that would interfere with the quiet enjoyment of residences in nearby neighborhoods

[1] The City originally published a DNS on February 22, 2024, with a comment period closing on March 7, 2024. (Exhibit 35). However, the applicant submitted a revised SEPA Checklist and supporting documents on July 15, 2024. (Exhibit 81). Therefore, the City reissued the DNS to allow comments on the revised documents.

- Permit the construction of a car wash in a BP zoning, potentially violating zoning requirements. Camas has previously only permitted car washes in CC zoning. A car wash is not listed in the City of Camas Code of Ordinances
- Create a dangerous intersection with multiple safety concerns: Ingress and egress is proposed where there is poor visibility due to the topography of the Goodwin Road hill and it's near 90 degree turn; insufficient braking distance to avoid a crash; disrupt traffic including school bus traffic to nearby high school
- Expose the City of Camas to liability for granting an exception to the posted Access
- Standards if permitting a left turn access shorter than 660 ft into the parcel.
- Disrupt recreational use of the designated bicycle route; create a hazardous crossing for pedestrians, including students

5. The City scheduled a public hearing before City of Camas Hearing Examiner Joe Turner (the "examiner") on November 14, 2024, to consider the appeal. At the hearing, issues were raised regarding:

a. Whether Ms. Nosrati is the sole appellant or whether the 49 individuals listed in the appeal are also appellants;

b. Whether the appeal only addressed the City's substantive decision or also included an appeal of the City's SEPA determination of Non-Significance (DNS) published on August 15, 2024 (Exhibit 91); and

c. What procedures apply to the appeal hearing, including:

i. Whether the appeal hearing is an open or closed record hearing;

ii. Who may testify in support of the appeal;

iii. Which party carries the burden of proof on appeal; and

iv. What exhibits are included in the record for the appeal.

6. The examiner accepted limited argument from the parties regarding these issues and substantive testimony from one witness at the initial hearing on November 14, 2024. Pursuant to the applicant's request, the examiner continued the hearing until 4:30 p.m. on Thursday, December 12, 2024. The examiner order the parties to submit any new documents to the City, subject to the following schedule:

a. All parties must submit initial arguments regarding the appeal procedural issues listed above no later than 5:00 p.m. on November 21, 2024;

b. All parties must submit rebuttal arguments regarding the appeal procedural issues listed above no later than 5:00 p.m. on November 27, 2024; and

c. All parties must submit arguments and evidence regarding the substantive issues and the examiner must submit an interim procedural order addressing the issues listed above and setting out the procedural rules for the appeal hearing no later than 5:00 p.m. on December 6, 2024.

7. This Procedural Order is limited to the procedural issues listed above and discussed in this Procedural Order. The examiner will expressly incorporate this Procedural Order into the Final Order. This Procedural Order is not subject to appeal except as part of the subsequent Final Order.

B. DISCUSSION

1. The examiner finds that the appellant is the unnamed informal organization of 49 neighbors listed in the appeal.

a. Karin L. Nosrati filed the appeal expressly stating, "On behalf of the residents of Morning Meadows Estates, residents of Katie's Hill and residents of Evergreen Acre Tracts, I am appealing the approval…" and listed the names and addresses of 49 individuals. (Exhibit 105 at 1). In response to Ms. Nosrati's question "Can one person submit the appeal or should it be submitted by some or all of the neighbors" (Exhibit 131 at 16) the City replied, "You can file one appeal with others to join." (Exhibit 131 at 19). The City's online appeal filing system only allowed for a single appellant signature. (Exhibit 131 at 29-25).

b. Given the above, the examiner finds that the appellant informal organization clearly intended to file a single appeal on behalf of all 49 "members" of the organization listed in the appeal. This is no different than an attorney filing an appeal on behalf of a group of neighbors. Ms. Nosrati filed and signed the appeal as the designated representative and contact person for the unnamed informal organization of residents listed in the appeal.

c. As the appellant's designated representative and contact person, any documents or information provided to the organization, including service of any LUPA appeal required by RCW 36.70C.040(2), shall be directed to Ms. Nosrati, unless the appellant expressly designates in writing a different contact person for this appeal and submits that written designation to the City and the applicant. The designation must include the new representative's name, telephone number, mailing and email addresses.

2. The examiner finds that the appellant filed a timely appeal of both the City's SEPA determination and substantive administrative decision.

a. CMC18.55.165(E) provides:

1. All SEPA appeals shall be filed in writing with the City of Camas clerk accompanied by the required filing fee.

2. The notice of appeal shall identify the appellant, establish standing, and set principal points of the appeal.
3. The notice of appeal shall be filed no later than fourteen days after the threshold determination has been issued.

b. CMC 18.55.200 provides, in relevant part:

A. Type II decisions may be appealed to the hearings examiner.
B. The following decisions may be appealed to the City Council: (1) Shoreline master program permits; (2) SEPA decisions; (3) civil regulatory orders, and (4) civil fines. For all other decisions under this chapter, there is no appeal to any other decision maker within the city.
C. All appeals are initiated by filing a notice of appeal with the director within fourteen days of issuance of the decision being appealed.

…

c. CMC 16.13.060 provides:

> Except for permits and variances issued pursuant to the Camas shoreline master program and consolidated appeals pursuant to Section 18.55.265(C), when any proposal or action is conditioned or denied on the basis of SEPA by a nonelected official, the decision shall be appealable to the hearings examiner. Such appeal may be perfected by the proponent or any aggrieved party by giving notice to the city of Camas clerk within fourteen days of the date the decision was issued.

d. RCW 43.21C.075(2) requires that SEPA appeals be combined with the associated decision and that SEPA appeals are subject to the same filing deadline as the associated decision, in this case within 14 days from the date of the City's administrative decision approving this application.

e. The Notice of Decision does not clearly distinguish between the director's SEPA determination and the substantive Type II administrative decision.

i. The Notice of Decision identifies the director's decision as "13TH STREET GAS STATION (FILE NO. SPRV23-06) (CONSOLIDATED FILES: ARCH23-07, CA23-08, DR23-09, SEPA23-12). (Exhibit 104 at 1). The Notice of Decision provides "**THIS IS TO SERVE AS NOTICE** that a decision of APPROVAL has been rendered for a Type II Site Plan Review Application for the **13th Street Gas Station**." (*Id*. All emphasis in original). The Notice of Decision refers to the SEPA determination as one of the "consolidated files" addressed in the decision and makes no

mention of a separate process for appeals of the director's SEPA determination. The "APPEAL PROCEDURES" section of the decision merely states "Decisions may be appealed to the hearing examiner." This implies that that the "decision" includes the director's decision approving the Site Plan Review (SPR) as well as all of the listed "consolidated files", ARCH23-07, CA23-08, DR23-09, SEPA23-12, are subject to appeal to the examiner.

(A) This interpretation is also consistent with the use of the plural term quoted above, stating "Decisions may be appealed to the hearing examiner" (*Id*. Underline added) rather than the singular phrase "This decision may be appealed…"

f. The appellant filed the appeal within 14 days from the date of the director's decision. Therefore, the appeal was timely.

g. The appeal narrative provides the appellant is "[a]ppealing the approval of a project called 13TH STREET GAS STATION (FILE NO. SPRV23-06)." (Exhibit 105). However, the appeal clearly objects to several issues addressed in the director's SEPA determination, demonstrating the appellant's intent to appeal both the director's SEPA determination and the director's decision approving the site plan application.

h. The City argues that "[t]he appellant would need to indicate that they are appealing the SEPA determination, and they must explicitly raise issues regarding the environmental review." (Ex 128 at 1). However, the City failed to provide any support for this assertion.

i. Given the City's failure to clearly establish separate appeal procedures distinguishing between substantive and SEPA appeals and the appellant's clear intent to object to the City's SEPA determination, the examiner finds that this appeal must be treated as an appeal of both the SEPA and substantive decisions.

3. As this is an appeal of an administrative decision, with no prior open record hearing, the examiner will conduct the hearing as an open record appeal hearing. This is consistent with RCW 36.70B.050(2), which provides "Except for the appeal of a determination of significance as provided in RCW 43.21C.075, [local governments shall] provide for no more than one open record hearing and one closed record appeal", and RCW 36.70B.020, which provides, in relevant part:

> (1) "Closed record appeal" means an administrative appeal on the record to a local government body or officer, including the legislative body, following an open record hearing on a project permit application when the appeal is on the record with no or limited new evidence or information allowed to be submitted and only appeal argument allowed.
> …
> (3) "Open record hearing" means a hearing, conducted by a single hearing body or officer authorized by the local government to conduct such hearings, that creates the local government's record through testimony and submission of evidence and

> information, under procedures prescribed by the local government by ordinance or resolution. An open record hearing may be held prior to a local government's decision on a project permit to be known as an "open record predecision hearing." An open record hearing may be held on an appeal, to be known as an "open record appeal hearing," if no open record predecision hearing has been held on the project permit.

(Underlines added).

In this case the City reviewed the application through its Type II review process, issuing an administrative decision without a hearing after providing public notice and an opportunity for written comments. Therefore, a closed record hearing is not allowed in this case, as the appeal is not "[f]ollowing an open record hearing on a project permit application…" RCW 36.70B.020(1).

4. The examiner will bifurcate the appeal hearing in this matter, first considering the SEPA procedural appeal and then the substantive appeal of the director's site plan review decision. The following procedures apply to the SEPA appeal portion of the hearing.

a. The City has the initial burden of proof to demonstrate that it actually considered relevant environmental factors "in a manner sufficient to be a *prima facie* compliance with the procedural dictates of SEPA" before issuing a SEPA determination. *Boehm v. City of Vancouver,*111 Wn. App. 711, 718, 47 P.3d 137 (2002). *Prima facie* compliance requires a showing "that there is evidence of sufficient circumstances which would lead to a logical and reasonable inference of the facts sought to be proved." *State v. Vangerpen,* 71 Wn. App. 94, 98, 856 P.2d 1106 (1993). There is no obligation to examine every remote and speculative impact. *Cheney v. Mountlake Terrace*, 87 Wn.2d 338, 344-45, 552 P.2d 184 (1976).

b. If the City makes this *prima facie* showing, the burden shifts to the appellant to establish a violation of SEPA. The examiner must consider the appeals based on the "clearly erroneous" standard of review. *Chuckanut Conservancy v. Dep't of Natural Resources*, 156 Wash.App. 274, 286, 232 P.3d 1154 (2010). The examiner is required to give substantial weight to the threshold determination by the City's determination. RCW 43.21C.090. The examiner may only reverse the SEPA Official's decision if he is, "[l]eft with the definite and firm conviction that a mistake has been committed." *Norway Hill Pres. & Prot. Ass'n v. King County,* 87 Wash.2d 267, 274, 552 P.2d 674 (1976) (quoting *Ancheta v. Daly,* 77 Wash.2d 255, 259, 461 P.2d 531 (1969)).

c. CMC18.55.165(E) requires that SEPA appeals must "set principal points of the appeal." Therefore, the examiner will limit the appeal to the specific SEPA issues raised in the appeal. (Exhibit 105).

d. The examiner will take testimony from parties to the appeal in the following order:

i. From the City, as the City has the initial burden of proof to demonstrate that it actually considered relevant environmental factors.

ii. From the appellant, as the appellant bears the burden of proof on appeal;

iii. From the applicant.

iv. Rebuttal testimony from the appellant.

v. The examiner will not accept testimony from the general public (persons who are not listed in the appeal). (Exhibit 105).

e. The examiner will then close the SEPA appeal portion of the hearing and proceed with the hearing regarding the appeal of the director's substantive decision.

f. The examiner will swear in all witnesses prior to taking any testimony, as required by RCW 43.21C.075(3)(c).

5. The examiner is serving in an appellate capacity for purposes of this appeal of the Community Development Director's permit decision. Therefore, the appellant continues to bear the burden of proof for this portion of the appeal; the appellant must show that the proposed development does not comply with the Code.

a. The examiner will accept testimony regarding the substantive appeal in the following order:

i. From the appellant, as the appellant bears the burden of proof on appeal;

ii. From the applicant in response to the appeal;

iii. From the City in response to the appeal; and

iv. Rebuttal testimony from the appellant.

v. The examiner will not accept testimony from the general public (persons who are not listed in the appeal). (Exhibit 105).

b. Gas stations and associated accessory uses are permitted uses in the BP zone. Therefore, the substantive portion of the hearing will be limited to whether the proposed development does or can comply with the relatively objective approval criteria set out in the Staff Report: CMC 16.31 (Archeological Preservation), CMC 16.51 (Critical Areas), CMC 18.18 (Site Plan Review, and CMC 18.19 (Design Review), and whether the proposed car wash facility is allowed in the BP zone. Concerns regarding the potential adverse environmental and health impacts of the proposed gas station are not relevant to this portion of the review.

6. The hearing the examiner will close the hearing at the conclusion of the substantive appeal portion of the appeal.

E. CONCLUSION

The examiner will conduct the continued hearing regarding this appeal at 4:30 p.m. on December 12, 2024, subject to the procedures set out in this Procedural Order.

DATED this 2nd day of December 2024.

Joe Turner, AICP
City of Camas Land Use Hearings Examiner

THIS "PROCEDURAL ORDER" IS NOT A "FINAL DECISION" SUBJECT TO APPEAL TO SUPERIOR COURT. The examiner will issue a subsequent Final Order ruling on the SEPA and substantive appeals after the close of the record in this case. The examiner will expressly incorporate this Procedural Order into the Final Order. This Procedural Order may be appealed as part of the subsequent Final Order in this case.

CHARBONNEAU ENGINEERING LLC

MEMORANDUM

Date: November 14, 2024

To: Travis Johnson, PE
PLS Engineering
604 West Evergreen Blvd
Vancouver WA 98660

From: Frank Charbonneau, PE, PTOE

Subject: Traffic Response to Public Comments (Exhibit #108) FL2491
Camas Gas Station
NE 13th Street, Camas

Attached is Charbonneau Engineering's response to the public review comments contained in Exhibit #108 (Haines).

If you should have any questions, please contact Frank Charbonneau, PE, PTOE at 971.322.8003 or email Frank@CharbonneauEngineer.com.

11/14/24 FL2490

Charbonneau Engineering Responses to Haines Public Comments - #108

Neighborhood Review Comment
TIS report does not follow format requirements specified by City of Camas which is as follows:

EXECUTIVE SUMMARY
INTRODUCTION & SUMMARY
EXISTING CONDITIONS
IMPACTS
MITIGATION

Charbonneau Response to comment

1. The traffic report contains all the pertinent documentation to satisfy the City's engineering and planning departments and is formatted in a way that has been acceptable to the City on previous traffic studies. The TIA Guidelines outline the required contents, however the order is not specified.

Neighborhood Review Comment
The existing zoning is 'Business Park'. Does a gas station fit into that zoning? Does the proposed use require a zoning change or is it a conditional use? The City of Camas TIS guidelines have extra trip generation requirements if either of those conditions exist.

Charbonneau Response to comment

2. The trip generation applied in the analysis followed ITE's guidelines for determining the site's trips for the weekday and AM & PM peak hours. The proposed development is a permitted outright use(s) so trip generation comparisons to other land use categories was not necessary.

Neighborhood Review Comment
City of Camas TIS Guidelines require the preparer to discuss the scope of the study prior to beginning the study. This report mentions a pre-application staff report and file number, but it is not included as an appendix within the report itself - unable to verify if the report meets these requirements.

Charbonneau Response to comment

3. The pre-app staff report is not typically attached to the traffic report. It is available through the City's website. Having conducted numerous TIA's within Camas we are very familiar with the City's traffic study guidelines and specifications. This traffic report has met the scoping requirements.

Neighborhood Review Comment
City of Camas TIS guidelines require a section on mitigation measures for site access and transportation system improvements. This report lacks a narrative of mitigations entirely. If no mitigations are recommended, it should still acknowledge this. However, this development is not currently meeting two City of Camas requirements:
1. The need for a left turn lane due to access directly from a collector/arterial street, and

2. The access point being hundreds of feet short of the minimum access spacing requirements mandated by the city.

At the very least, some mitigation measures should be proposed to address these two shortcomings.

Charbonneau Response to comment

4. A specific mitigation section was not included in the report mainly because there were no major mitigation measures recommended. Mitigation for intersection sight distance was discussed on page six of the report and within the summary section on page 12. No study intersections required mitigation as discussed on page five and within the summary on page 12.

   The need for a westbound left turn lane at the site's access on NE 13th Street was not originally proposed in the traffic report due to not meeting the left turn lane warrant. However, the condition was later reversed for safety purposes as documented in the 4/9/24 Charbonneau memo.

   Access spacing was discussed on page seven of the traffic report. It was documented that the intersection spacing would not meet the standard. The supporting reasons to allow the access location are presented on page 7.

Neighborhood Review Comment

City of Camas TIS requirements state that 24-hour traffic volume and speed data must be collected near proposed access points. If such a study was conducted, it was neither mentioned in the report narrative nor included in the report appendices.

Charbonneau Response to comment

5. Yes, the City's TIA Guidelines state that a 24-hour volume count and speed data will be conducted. It does not state the surveys are a requirement. We elected to not collect a 24-hour traffic count on NE 13th Street because there was absolutely no need for the information in determining the development's impacts on the transportation system (the traffic analysis is based on peak hour volumes and not ADT's). No speed survey was conducted as it was decided to use the posted speed on NE 13th Avenue in determining the required intersection sight distance. If the sightlines were questionable due to the street's alignment, then perhaps a speed survey would have been conducted.

Neighborhood Review Comment

The description of the roadway and intersections within the study area appear to be inadequate. City of Camas TIS guidelines require an array of traffic parameters be described. The report appears to be missing quite a few of these parameters, including roadway classifications, some posted speed limits, the widths of each roadway, a full description of existing bike/pedestrian facilities, parking conditions, and a list of existing geometric deficiencies.

Charbonneau Response to comment

6. Page two of the traffic report presents a detailed description of the street network and study intersections and references Figure `c` in the report's appendix. This figure illustrates the lane configurations and traffic control to the level necessary for the study. Additionally, page 2 documents additional details for the critical street (NE 13th Street) including the posted speed, street classification, lane configuration, street and shoulder surfacing, and alignment description.

Neighborhood Review Comment

One geometric deficiency along the site frontage is the lack of an eastbound left turn lane at 202nd Ave. Compounding this is the yellow trap condition that exists at the traffic signal that has been mitigated by an overhead warning sign ONCOMING TRAFFIC HAS EXTENDED GREEN. Yellow trap conditions have been shown to be a significant crash risk.

Charbonneau Response to comment

7. There was no evidence this condition has contributed to a traffic safety issue based on further research of the crash history (see Response #17, all reported crashes were single-vehicle accidents).

Neighborhood Review Comment

City of Camas TIS says left-turn storage required on all... collector streets. NE 13th at the site location is considered a collector C-2cb in the Clark County Arterial Atlas. Additionally, "Direct lot access to collector... streets is subject to approval... and is discouraged..."

Charbonneau Response to comment

8. A westbound left turn lane will be added on NE 13th Street at the site's access in conjunction with the proposed development. Although direct access to NE 13th Street may be discouraged, the developer has no other options to serve the property.

Neighborhood Review Comment

It appears a signal warrant analysis was conducted, but the written report makes no mention of it. It does not appear that an all-way stop analysis was conducted. Though an all-way stop would not be appropriate in this context, the report should acknowledge this given is a required component of the TIS per City of Camas guidelines.

Charbonneau Response to comment

9. A discussion of the traffic signal warrant performed for NE 13th Street at the site access was unintentionally omitted from the report's main text section. However, the warrant findings were documented in the report's summary section on page 12. The report's appendix includes the actual warrant plot and volume data. The signal warrant was not met.

Neighborhood Review Comment

This is technically reasonable, though it would be best to confirm this data with actual counts during school activity.

Charbonneau Response to comment

10. This comment is in reference to using modeled school data in the analysis. To confirm the modeled school traffic was appropriate a supplemental traffic count at NE 13th Street and NW Friberg-Strunk Street was conducted in May 2024 when Union High School was in session. The Charbonneau memo dated 6/12/24 documented that the modeled data was accurate as the with-school traffic counts were within one percent of the modeled data.

Neighborhood Review Comment

Where did 2% come from? There is no reference that justifies using this number. If there is evidence that 2% is accurate, that should be included in the report. It does not seem to account for the development in the area, and recent changes to local business uses (i.e. Interstate Batteries warehouse).

Charbonneau Response to comment

11. Several of the local agencies including Vancouver and Clark County typically accept a 2%/year traffic growth rate. Camas normally doesn't use a growth rate and instead depends on in-process traffic to cover for the future conditions. However, in this case the growth rate was applied to satisfy the City of Vancouver's standard since one of the study intersections (NE 13th Street at 192nd Avenue) is located within their jurisdiction. In-process traffic was also included in the study.

Neighborhood Review Comment

It would be helpful to understand the basis of these estimates in notes 3 & 4.

Charbonneau Response to comment

12. The comment is in regards to the Trip Generation – Table 1 on page 4 of the traffic report. Several footnotes are used. Footnote #3 estimates the site's ADT trip generation as 10 times the PM peak hour number of generated trips. This rate was used only for the car wash use as it is common practice when the ITE Trip Generation manual does not provide a daily trip rate for a specific land use. Again, for the car wash use, ITE does not provide an AM peak hour trip rate. The City of Vancouver specifies using 70% times the PM peak hour rate, which is a reasonable assumption.

Neighborhood Review Comment

The report lists "engineering judgment" behind trip distribution and trip assignment, but provides no explanation or documentation of how these values were determined. This is inadequate given City of Camas TIS guidelines which require all assumptions and data sources to be documented.

Charbonneau Response to comment

13. The City's TIA Guidelines state that the site trips should be logically distributed and assigned, and based on recently collected traffic data taking into account the surrounding land use patterns. These parameters were applied to the analysis. The guidelines did not specify that travel demand model information such as RTC select zone projections must be applied.

Neighborhood Review Comment

The report neglects to mention how eastbound queuing on NE 13th St will interact with the proposed driveway. If queues extend near to or through this driveway, it could negatively impact traffic operations and safety. This is especially important considering the proposed driveway is well below the minimum access spacing specified by the City. This information is critical in helping determine if additional mitigation measures such as left turn lanes or access management are prudent.

This queuing may be only considering vehicles attempting to get into the site and seem to ignore the drivers behind the queued vehicle as this is a one lane approach. Additionally, it does not appear to take into account the queuing at the signal in the eastbound direction.

Charbonneau Response to comment

14. Charbonneau's memorandum dated 6/12/24 presents documentation and discussion regarding the eastbound queuing on NE 13th Street within the 7-9 AM & 4-6 PM peak hour periods. A queuing survey was conducted in May 2024. The findings confirmed that the proposed access was blocked by traffic only twice during the two-hour AM period and once during the two-hour PM period. These frequencies were not considered problematic for traffic accessing the site. The addition of a westbound left turn lane will provide an added safety benefit.

Neighborhood Review Comment
This analysis should include 85th and 95th percentile speeds. Additionally, a decision sight distance study should be completed based on the speed and curvature of the roadway.

Documentation should be provided for evidence of this assessment. Sight distance to the east appears to have a finite distance closet to 500 feet given the horizontal curvature and large trees. This limitation should be documented per AASHTO requirements as required by the City of Camas TIS guidelines.

Charbonneau Response to comment

15. Upon review of the conditions in the field, including the NE 13th Street alignment and posted speed it was determined that conducting speed studies were not necessary. The sightlines at the access to the east exceeds the ASHTO standard of 390 feet, and to the west (upon moderate frontage vegetation control/maintenance) will also exceed the 390 foot standard.

Neighborhood Review Comment
This analysis appears to be using the WSDOT design manual instead of the required AASHTO green book according to Camas TIS guidance. The left turn lane seems to be warranted under AASHTO guidance.

City of Camas TIS guidelines state that direct lot access to a collector or arterial is subject to approval by the city and is discouraged where reasonable alternatives exist. This lot does not appear to have a reasonable alternative unless major site changes are made. The applicant should be required to mitigate any risks of the access point by widening for a left turn lane and/or adding access management.

Charbonneau Response to comment

16. Regardless of the appropriate left turn lane warrant standard, a westbound left turn lane is proposed on NE 13th Street at the site's access. Reference the Charbonneau memo dated 4/9/24.

Neighborhood Review Comment
The collision history analysis seems inadequate. The analysis mentions only total crashes and calculates a crash rate, but that leaves out important specifics such as what types of crashes are occurring and if there are any patterns to the crashes that could be indicative of a problem that could be exacerbated by additional traffic volume. There should be additional detail provided as part of this analysis including any mitigations to address increased safety risks associated with the site development.

Charbonneau Response to comment

17. Upon further research of the crash data provided by WSDOT and contained in the original traffic study, it has been determined that of the three reported crashes, all of them were single-vehicle related and included the vehicles striking fixed objects. Two crashes involved striking a roadside metal sign post and one crash involved hitting a tree stump. Therefore, other than constructing the proposed westbound left turn lane at the site's access no, other mitigation measures are recommended.

Neighborhood Review Comment

There is an eastbound bike lane along 13th street within 300 feet of the Friberg St intersection. Queuing in the eastbound direction along the site frontage could introduce an increased risk to people biking and walking near the access point of the development.

Charbonneau Response to comment

18. The proposed street improvements on the south side of NE 13th Street will construct sidewalk along the property frontage. A five-foot wide bike lane will be incorporated into the design to account for continuation of bicycle flow in the eastbound direction. The improvements are illustrated on the PLS Engineering site plan.

Neighborhood Review Comments - Queuing

This analysis does not include any drivers entering the site in the westbound or eastbound directions.

It seems highly unlikely that only one vehicle will leave the site in the entire AM peak hour

This analysis assumes only one driver will enter the site from NE 13th in the EB direction. It also assumes no other vehicles will enter/exit the site during the PM peak hour (Westbound left, Northbound left/right)

Similar comment from above - the demand numbers here are not an adequate representation of the actual impact of the site development.

Charbonneau Response to comments

19. Unfortunately the reviewer was looking at the Synchro queuing results for the traffic scenarios (Existing & Background traffic) pertaining to the existing house and driveway volumes, and not the total traffic scenarios that included the development's site trips. Therefore, the traffic volumes shown on the related Synchro printouts are indeed correct.

Community Development Department

Notice of Continuance of Public Hearing

Appeal of Decision for SPRV23-06: 13th Street Gas Station

Planning Case APPEAL24-1001

Notice hereby given that the City's Hearings Examiner, on Thursday, November 14, 2024, continued the public hearing to consider the appeal of the decision for the 13th Street Gas Station (SPRV23-06) to **Thursday, December 12, 2024, at 4:30 p.m.,** or soon thereafter. The proposal includes the construction of an 8-pump gas station, a 4,100 square-foot convenience store, and a drive-thru car wash, located at 20101 NE 13th Street, in the BP - Business Park Zone. The application was determined technically complete on November 7, 2022. A Notice of Decision for the project approval was issued on September 16, 2024. An appeal of the decision was received on September 30, 2024.

Application Materials: The application included the following: project narrative, development plans and environmental reports, as required for a complete application pursuant to Camas Municipal Code (CMC) §18.55.110. The application materials are also available for viewing at the Community Development Department (616 NE 4th Avenue, Camas, WA) during regular business hours Monday – Friday 8 a.m-5 p.m.

Participate: All citizens are entitled to have equal access to the services, benefits, and programs of the City of Camas. Please contact the **City Clerk at (360) 817-1591** for special accommodations if needed. The city will provide translators for non-English speaking persons who request assistance at least three working days prior to a public meeting or hearing.

More Information: The public hearing agenda and supporting documents will be available for review on the City's website at the "Minutes, Agendas & Videos" link within the drop-down menu that is labeled "Your Government" or follow this link: http://www.cityofcamas.us/yourgovernment/minuteagendavideo.

Published in the Post Record on December 5, 2024 Legal Publication# 966790
Posted at Camas City Hall, Camas Library, City of Camas website at: http://www.cityofcamas.us

Carey Certo

From: Nicolle Sicilia <nicolle@plsengineering.com>
Sent: Thursday, December 5, 2024 1:04 PM
To: Carey Certo
Cc: Yvette Sennewald
Subject: 13th Street Gas Station

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Hi Carey,

We would like the below email chain to be entered into the record for the 13th Street Gas Station project, Appeal 24-1001.

Thanks,

Nicolle Sicilia
Planner
604 W. Evergreen Blvd.
Vancouver, Washington 98660
www.plsengineering.com | 360.944.6519

From: Johnson, Deborah L (DOH) <deborah.johnson@doh.wa.gov>
Sent: Monday, November 25, 2024 10:24 AM
To: Karin Nosrati, DC <bforback@gmail.com>
Cc: Alan Peters <APeters@cityofcamas.us>; Rob Charles <RCharles@cityofcamas.us>; McCoy, Catherine (COM) <catherine.mccoy@commerce.wa.gov>; Nikki.Guillot@cityofvancouver.us
Subject: RE: Important CARA map question about proposed Camas gas station

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Dr. Nosrati,
Thank you for your inquiry.

DOH regulates public water systems, such as the City of Camas's own system. Public water systems must incorporate source water protection programs into their overall system planning (WAC 246-290-100 & -135). From there, my own role bridges these programs with the local critical

areas regulations required by the state Growth Management Act (GMA). While I can advise local jurisdictions on developing & updating their critical areas regulations, including the extent of critical aquifer recharge areas (CARAs) in their communities, DOH does not have regulatory authority over how those local codes are implemented. Local jurisdictions' GMA actions are presumed valid upon adoption unless an appeal finds otherwise (RCW 36.70A.320), & Camas's critical areas code has been in effect for many years. The next periodic review/update is due next year (RCW 36.70A.130).

I understand there is controversy & disagreement about this gas station project, but the answer to your question rests with the City. I can tell you it's pretty common to ask for or require a hydrogeo study for certain types of projects within CARAs, but as for how the City uses that study & how the permit review or any associated appeal proceeds, that will ultimately be up to them. I hope this is helpful to you in understanding the limits of DOH's involvement. I've cc'd City staff if you have any additional questions.

Deborah Johnson
Wellhead Protection Program Coordinator
Office of Drinking Water
Environmental Public Health Division
deborah.johnson@doh.wa.gov
doh.wa.gov | 253-433-4054

Washington State Department of HEALTH

From: Karin Nosrati, DC <bforback@gmail.com>
Sent: Sunday, November 24, 2024 11:36 AM
To: Johnson, Deborah L (DOH) <deborah.johnson@doh.wa.gov>
Subject: Important CARA map question about proposed Camas gas station

External Email

Dear Ms. Johnson,

Thank you for informing the City of Camas on 11-14-2024 about the outdated CARA maps on their website which may affect whether they can issue a permit for a gas station. File No. SPRV23-06

We are a group of over 50 residents on one acre lots, half of which draw their drinking water from individual wells, immediately adjacent to the parcel on which the City of Camas wants to permit a gas station, convenience store and car wash. We are in Unincorporated Clark County thus the City does not take us into consideration. The initial and revised SEPA commissioned by the developer do not address our drinking water safety concerns.

In their own Municipal code they have language that states that fuel stations are prohibited in Critical Aquifer Recharge Areas (they do not specify a category). Per the GIS map, the parcel which is requesting the gas station permit, is listed as Category 2 Recharge Areas

https://library.municode.com/wa/camas/codes/code_of_ordinances?nodeId=TIT16EN_CRAR_CH16.55CRAQREAR

https://gis.clark.wa.gov/gishome/Property/?pid=findSN&account=176148000#

The developers have indicated that they are planning to obtain a geohydrologic study. (There are also wetlands and a stormwater pond draining down the hill to Lacamas Lake within 300'.)

Would such a study be able to grant them a permit in this area? They initially granted a hearing, but are now together with the applicant's attorney using strategies to limit the scope of the appeal.

We would appreciate any resources or information.

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Community Development Office, City of Camas
(communitydevelopment@cityofcamas.us)
Regarding: Appeal of Proposed Project 13th Street in Camas (Clark County Tax Parcel 176148000, SPRV23-06)
From: *M. Kristin Price (Evergreen Tract Acres, Camas WA.) 12/4/2024*

In anticipation of the public hearing on December 12, 2024, I am submitting additional written comments as an appellant to the proposed project. My comments relate to items as listed on the SEPA Environmental Checklist.

Item B-2. Air. The SEPA submission and associated documents fail to provide specific data related to long-term emissions on site. The SEPA submission and associated documents do not provide data related to environmental risks and do not address fully the potential for increased fire risk.

Item B - 3. The SEPA submission does not address preservation of the aquifer for this residential area and for the environmentally sensitive areas within Lacamas Prairie and Lacamas Creek. As an owner of a nearby property on 13th Street with a tagged well, I am concerned about the risk involved in installation of underground storage tanks with potential for leakage.

> The SEPA submission fails to provide complete and accurate responses specific to the proposed car wash within the facility (SEPA submission, B - Environmental Elements).

B - Environmental Elements, Noise. The SEPA submission does not provide adequate response regarding hours of operation and any proposed measures to reduce or controlling noise impacts.

B- 4 - Plants. The SEPA submission does not provide adequate description of landscaping elements to preserve the natural habitat.

B - Environmental Elements, lighting. The proposal is not responsive in terms of hours of operation and mitigation of light and glare.

7. Environmental Health

'Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.'

Although possible risk of spills and flammable materials is acknowledged, the project does not address environmental health hazards - specifically health risks to residents in nearby neighborhoods.

B - 12 - Recreation. The proposal does not address disruption of recreational activities. The area is currently used for walking, cycling and running as it has been a safe route for transit. The quality of life for residents would be significantly impacted by the loss of this resource and safety risks for individuals engaged in recreational activities.

Item 14 - TRANSPORTATION

SEPA item: *Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).*

The developer does not adequately describe modifications to assure that the intersection provides safe transit for pedestrians, bicyclists and safe passage for children crossing the street. The proposed project increases risks for drivers, pedestrians and bicyclists. Notably the design directs a bicycle route through traffic at the entry/exit point for the project. The project does not acknowledge impact for scheduled school bus routes with nearby school bus stops on 13th Street.

References:

In 2022, the Washington State Legislature added a Complete Streets requirement in RCW 47.04.035. This directs WSDOT that "in order to improve the safety, mobility and accessibility of state highways, it is the intent of the Legislature that the department must incorporate the principles of complete streets with facilities that provide street access with all users in mind, including pedestrians, bicyclists and public transportation users" and "integrate the state route into the local network" for "state transportation projects starting design on or after July 1, 2022 and that are $500,000 or more."

https://wsdot.wa.gov/construction-planning/complete-streets

Complete Streets means planning, designing, building, operating and maintaining the transportation system that enables comfortable and convenient access to destinations for all people, and includes specific requirements for the pedestrian, bicyclist and transit rider experience. It is an approach to making our transportation system work for all of us, strengthening communities, expanding options for non-drivers, and making travel more predictable for everyone. Planning and designing Complete Streets projects uses a set of tools or treatments with a focus on the pedestrian and bicyclist level of traffic stress, connectivity, route directness and a safe system approach.

H. SEPA checklist: *'Proposed measures to reduce or control transportation impacts'*

No measures to reduce, control or manage transportation impacts are listed.

The project design is atypical. All other gas stations surveyed in the Camas area include separate entry and exit. The current design combines entry/exit on a busy street and impermissibly close to the intersection. In the event of a collision at the entry, vehicles would be trapped within the project site. In the event of an emergency on-site, ambulance and fire response would encounter untenable delays to access the facility.

Access to the gas station would invite the practice of U-Turns (using residential driveways) for vehicles heading west on 13th Street and turning to access the gas station. This turn-around practice is a current hazard during delays in traffic on 13th Street. (In May 2024, a driver attempting a U-turn on 13th Street to return to the intersection and crashed into a school bus with children aboard.) The proposed left-hand turn lane will not be effective: if vehicles are queued for a left-hand turn lane, drivers will inevitably attempt turn-arounds on 13th Street to access the station. (Please see NHTSA crash data reference in addendum)

Requested Hearing Outcomes

Require detailed response related to environmental impacts - impact on ground water and air and health risks associated with a gas station at this site. Consider relocation of storage tanks further away from residential areas and well sites.

Require responses to all SEPA interrogatories specifically pertaining to the inclusion of the carwash facility on the proposed project.

Require an updated and accurate traffic study, in accordance with Camas City requirements

Require project design to include separate ingress/egress from the facility. Recommend elimination of the proposed left-hand turn lane from 13th Street as it disrupts an existing right turn lane at the intersection. Require project to adhere to guidelines for proximity to the intersection; no exception should be granted..

Require detailed description of traffic flow - including entry/exit of service trucks during working hours, management of vehicles in queue and estimates of traffic flow for each enterprise within the facility (store, carwash and service station). Proposal should address traffic flow during peak when Union High school buses travel through this intersection.

Require design to provide safety for pedestrians and bicyclists, including provisions for street crossings and sidewalks and an extended sidewalk on the north side of 13th Street to provide access for pedestrians.

Require preservation of the White Oak on site and/or providing mitigation within the community where the project is located. Require detail on plans for including vegetation at the project site.

Require retaining structure to the west of the property to limit noise/light impacts to adjacent residential area.

Require specific plan for decommissioning if use of project site changes.

Recommend that developer consider alternative plans for development at this location.

Provide for additional public comment period after changes or revisions in the project plan are submitted.

Additional Reference Material pertaining to Item 14, Transportation.

Data from the National Highway Traffic Safety Administration (NHTSA) reveals that improper U-turns were the critical pre-crash event in around 14% of the road traffic accidents in the United States. Almost half a million accidents in the United States each year are caused by left turns at intersections. This makes left turns one of the leading causes of car accidents.

About 22% of all car accidents involve a left-turning vehicle. Approximately, 22% of all car accidents involve a left-turning vehicle and 53% of all cross-path accidents are the result of left turns. According to the U.S. Federal Highway Administration, about 50% of all motor vehicle accidents involving injuries and fatalities occur at or near intersections.

A FEW NEIGHBORS OPPOSE THIS 13TH ST. GAS STATION/CARWASH/CONVENIENCE STORE COMPLEX

1. WHAT IS PROPERTY ZONED ?

2. WHAT HAS BEEN BUILT OR BEING BUILT ON FRIBERG + 13TH ST. ?

3. WHY HAS THIS PROJECT BEEN APROVED 2 OR 3 TIMES IN RECENT PAST ?

1 UNION HIGH SCHOOL - ?
2 POWER STATION ? + STORAGE FACILITY ?
3. FOOD CART LOCATION ?
4 MULTIPLE OFFICE + RETAIL LOCATIONS UNDER CONSTRUCTION AND OCCUPIED ?
5. LARGE BATTERY DISTRIBUTION CENTER WITH 20 OR 30 SEMI TRUCKS - DIESEL TRUCKS PLUS CARS ACCROSS STREET IN FULL OPERATION ?
6. WHY IS CLARK COUNTY NOT REQUIRED TO COMPLETE SIDE WALKS ON 13TH ST THIS PAST 10 YEARS ?
7. WHY IS CLARK COUNTY DIRECTING 11TH STREET RUN WATER OFF ALL HOMES DOWN TO STORM DRAINS ON 11TH ST NORTH TO 13TH ST ~~INSTEAD~~ GOING EAST INTO CANALS BECAUSE CLARK COUNTY ~~POLLED~~ PULLED OUT STORM PIPE TO ON 11TH TO 13TH ST. CHECK THIS OUT ? APROX 5-7 YEARS AGO ?

Exhibit 138 APPEAL24-1001

8. WHY IS LADY WHO IS LIVING ON NORTH SIDE OF 11TH ST. WHICH IS IN CLARK COUNTY WHO I BELIEVE HAS A HOME BUSINESS IN A RESIDENTIAL AREA CAUSING MOST OF THIS PROTEST IS SHE ILLEGAL ? CHECK THIS OUT

9. ALL PROPERTY ON EAST SIDE OF FRISBEE IS READY FOR COMPANIES WHO WILL EMPLOY JOBS. WHY ARE YOU DOING THIS TO PLEASE A FEW [redacted] NEIGHBORS WHO SHOULD BE TRYING TO GET CLARK COUNTY TO TAKE CARE OF ALL RESIDENTS WHO HAVE CHILDREN GOING TO UNION HIGH SCHOOL WITH NO SIDE WALKS ON 13TH ST. ?

10 WE NEED A CONVIENCE STORE WE NEED GAS STATION WE NEED A CAR WASH.

11. CONCENTRATE ON IMPROVING 13TH ST + STORM WATER CONTROL IN CLARK COUNTY

12. LOOK UP PAST ISSUES ON 11TH ST + 13TH ST BEFORE ALL THIS OTHER ISSUES ONE NEIGHBOR HAS STARTED

ADAM KLUKA
2319 NE 232ND AVE 360 904-5567
CAMAS, WASH 98607

PAGE 3

13. I AM PAST OWNER OF 7021 NW FRIBERG STRUCK ST.

I LIVED THERE SINCE 1979

I AM A RETIRED REAL ESTATE AGENT

I SOLD UNION HIGH SCHOOL SITE
COSTCO SITE
ARCHERY PROPERTY
REZONED PROPERTY ON
LAKE ROAD + FRIBERG

ADAM KLUKA
2319 NE 232ND AVE
CAMAS, WASH 98607
360 904-5567

BERKSHIRE HATHAWAY HomeServices

Adam Kluka
Real Estate Broker
360-904-5567 ✓

Northwest Real Estate
1498 SE Tech Center Place, Suite 290
Vancouver, WA 98683
~~O: 360-256-0088~~

akluka@bhhsnw.com
www.akluka.bhhsnw.com

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Carey Certo

From: Karin Nosrati, DC <bforback@gmail.com>
Sent: Friday, December 6, 2024 11:40 AM
To: Community Development Email
Subject: Fwd: Just FYI- response from Charbonneau to your assessment

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Hi, Carey,

Below please find the response from V-Naught, the traffic engineers who analysed the traffic study by Charbonneau, responding to Charbonneau's comment letter.

Please enter this email as an exhibit and confirm receipt.

Thank you,

Karin

---------- Forwarded message ---------
From: **V-Naught Traffic Solutions** <info@vnaught.com>
Date: Thu, Dec 5, 2024 at 3:11 PM
Subject: Re: Just FYI- response from Charbonneau to your assessment
To: Randy Nosrati <randynos1@gmail.com>
Cc: Karin Nosrati, DC <bforback@gmail.com>, Mike Ogden <mogden@westernconstruction.com>, Lisa Ogden <lisaogden.11@gmail.com>

Hi there,

I performed a quick review of their responses. It appears that some of the comments were addressed while others they are not willing to address. I would recommend following up with the City on these responses and ask for a more thorough study. I can pick apart the TIS, but at the end of the day the City needs to decide if it's adequate. I think Global Transportation Engineering and our assessment are in line with each other so that's telling. Here are my comments on their responses:

- 2: Is it a permitted outright use?
- 4: Mitigation wasn’t recommended but it should be and that’s why there should be a section here & Access spacing should be questioned with the City
- 5: Speed is a concern here based on the geometry of NE 13th and the nearby intersection & A speed study/24 hour count would serve as additional evidence for an access exception they’re asking for
- 6: The descriptions are incorrect or incomplete in the TIS and should be reevaluated
- 8: The response states that the "...developer has no other options..." which I think can be questioned. How could the site be reimagined so access was on Friberg-Strunk instead?

- 10: Ask to see the data, the time(s) at which the data was collected, and the model results using the new data - does this include the hour overlapping school and PM traffic?
- 11: 2% may be an ok long term estimate for an established area but it still seems low for this area, so I would push back on this and request to the city that an accurate growth rate is used
- 14: The neighbors can take video during am and pm peak hours listed in this response to provide proof to the city if you think this response is inaccurate
- 15: I would recommend asking for a speed study and a decision sight distance study and using the 85th and 95th percentile speeds - I'm assuming most people are traveling over the speed limit here
- 19: I see where I was looking at the wrong sheet for this comment. However, the model, which is based on data and assumptions I have low confidence in, still puts the 95th percentile queue EB in model year 2023 for the signal near the site right about where the existing driveway is (page 155). The model shows in model year 2026 that the EB 95th percentile queuing increases to ~100ft (page 161) longer than model year 2023. The left turn lane may help drivers entering the site, but drivers exiting may have a difficult time during peak hours . The model shows an assumed gap between vehicles required ~6s for a two-way road with a 5 lane cross section (page 134), that seems difficult with two through vehicle lanes, a bike lane, WB left turn lane into the site and EB right turn lane plus any sidewalk activity. The delay for drivers exiting the site shown on pages 134 and 142 are also concerning - 31.1s each driver for 81 drivers an hour. With a 95th %tile queue of 1.8 vehicles out of the site. It may be difficult to access the site based on these numbers.

I hope this is helpful, please let me know you need any additional support.

Thanks,

Mark Haines, PE, PTOE
Principal
V-Naught Traffic Solutions

971.317.8668
info@vnaught.com
www.vnaught.com

On Thu, Dec 5, 2024 at 8:17 AM Randy Nosrati <randynos1@gmail.com> wrote:

> Hi Mark,
>
> We need to correspond to the City by tomorrow, 12/6/2024.
>
> Could you please let us know if the responses from Charbonneau are not accurate or justifies further clarification from them?
>
> I am not sure if we did not have enough time to do our due diligence or the response from them in the attached is not valid?!
>
> Thanks for your help,
>
> Randy Nosrati
> (360) 954-6757
>
> On Wed, Dec 4, 2024 at 11:56 PM Karin Nosrati, DC <bforback@gmail.com> wrote:
>
> > Hi, Mark,

We saw that the developer had requested a response from Charbonneau. I am attaching it for your reference.

Thanks for everything,

Karin Nosrati

Excerpts from

Department of Ecology State of Washington Critical Aquifer Recharge Areas Guidance

Revised March 2021 Publication 05-10-028

(Page numbers are from the document, as printed on the bottom of the page)

Page 2: The Centers for Disease Control and Prevention5 (CDC) has information about public drinking water contamination and health effects: The presence of contaminants in water can lead to adverse health effects, including gastrointestinal illness, reproductive problems, and neurological disorders. Infants, young children, pregnant women, the elderly, and people whose immune systems are compromised because of AIDS, chemotherapy, or transplant medications, may be especially susceptible to illness from some contaminants.

Remediation of contaminated groundwater is overwhelmingly expensive and often takes a long time. A contamination event can cause city wells to be shut down, result in expenses for new wells, and incur costs for cleaning up contaminated soil and ground water.

Prevention of groundwater contamination is far less expensive than cleanup. Environmental Protection Agency (EPA) studies have shown that investing funds for groundwater protection is cost-effective compared to groundwater cleanup at a ratio that runs anywhere from 1:5 to 1:200 (U.S. EPA, 1995).

The Growth Management Act requires protection of public groundwater drinking supplies so that contamination events and their associated costs can be prevented.

Page 4: Critical Aquifer Recharge Areas Critical Aquifer Recharge Areas (CARA) are defined under the GMA as “areas with a critical recharging effect on aquifers used for potable water, including areas where an aquifer that is a source of drinking water is vulnerable to contamination that would affect the potability of the water, or is susceptible to reduced recharge.”

The Washington Administrative Code (WAC) Chapter 365-190-10012 further enumerates requirements for local jurisdictions to determine classification and designation of Critical Aquifer Recharge Areas.

Identifying “areas with a critical recharging effect on aquifers used for potable water,” depends on understanding aquifer recharge and what is meant by “a critical recharging effect.”

Aquifer recharge occurs where rainfall, snowmelt, infiltration from lakes, wetlands and streams, or irrigation water infiltrates into the ground and adds to the underground water that can supply a well. On the other hand, discharge areas are where groundwater meets the ground surface and ultimately flows out from a spring, wetland, stream, lake, estuary, or ocean shore.

Wells can also serve as discharge areas, especially those that pump larger volumes, such as those used by municipalities. Most of a watershed is typically a recharge area, with discharge areas occurring to a

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
WASHINGTON, DC 20410-8000

ASSISTANT SECRETARY FOR HOUSING
FEDERAL HOUSING COMMISSIONER

Special Attention of:
All FHA-Approved Mortgagees
All Direct Endorsement Underwriters
All Eligible Submission Sources
for Condominium Project Approvals
All FHA Roster Appraisers
All FHA-Approved 203(k) Consultants
All FHA-Approved Title I Lenders
All HUD-Approved Housing Counselors
All HUD-Approved Nonprofit Organizations
All Governmental Entity Participants
All Real Estate Brokers
All Closing Agents

Transmittal: Handbook 4000.1
Issued: October 31, 2023
Effective Date: April 29, 2024

1. This Transmits:

Handbook 4000.1, FHA Single Family Housing Policy Handbook, Title II Insured Housing Programs Home Equity Conversion Mortgages (HECM), Origination through Servicing.

2. Explanation of Materials Transmitted:

This update to the FHA Single Family Housing Policy Handbook, or Handbook 4000.1, is to incorporate guidance for FHA's Title II Insured HECM program.

The following sections have been added to Handbook 4000.1:

- II.B.1 Origination/Counseling Requirements
- II.B.2 Origination/Processing
- II.B.3 Allowable Mortgage Parameters
- II.B.4 Underwriting the Property
- II.B.5 Performing the Financial Assessment of the Borrower
- II.B.6 Closing
- II.B.7 Post-closing and Endorsement
- II.B.8 Programs and Products
- III.B.1 Servicing of FHA-Insured HECMs
- III.B.2 Default Servicing
- III.B.3 Programs and Products
- Appendix 9.0 Assumed Loan Periods for Computations of Total Annual Loan Cost Rates

Existing content in the following sections has been updated to incorporate HECM guidance:

- II.D.1 Commencement of the Appraisal
- II.D.3 Acceptable Appraisal Reporting Forms and Protocols

Exhibit 140 APPEAL24-1001

The Appraiser must note the deficiency of MPR or MPS if the subject Property contains a well located within the foundation walls of an existing dwelling, unless there is evidence that:

- the local jurisdiction recognizes and permits such a location;
- it is common for the market area; and
- it does not adversely affect marketability.

A well located within the foundation walls of a dwelling is not acceptable for New Construction except in arctic or subarctic regions.

The Appraiser must report when water to a Property is supplied by dug wells, cisterns or holding tanks used in conjunction with water purchased and hauled to the site. The Appraiser must report whether such systems are readily accepted by local market participants.

The Appraiser must note the deficiency of MPR or MPS if the subject Property has a water source that includes a mechanical chlorinator or is served by springs, lakes, rivers, sand-point or artesian wells.

A pressure tank with a minimum capacity of 42 gallons must be provided. However, pre-pressured tanks and other pressurizing devices are acceptable if delivery between pump cycles equal or exceed that of a 42-gallon tank. Tanks must be equipped with a clean-out plug at the lowest point and a suitable pressure relief valve.

The Appraiser must note any readily observable deficiencies regarding the well and require test or inspection if any of the following apply:

- the water supply relies upon a water purification system due to the presence of contaminates;
- corrosion of pipes (plumbing);
- areas of intensive agricultural uses within one quarter mile;
- coal mining or gas drilling operations within one quarter mile;
- a dump, junkyard, landfill, factory, gas station, or dry cleaning operation within one quarter mile; or
- an unusually objectionable taste, smell, or appearance of well water.

The Appraiser must also be familiar with the minimum distance requirements between private wells and sources of pollution and, if discernible, comment on them. The Appraiser is not required to sketch or note distances between the well, property lines, septic tanks, drain fields, or building Structures but may provide estimated distances where they are comfortable doing so. When available, the Appraiser should obtain from the homeowner or Mortgagee a copy of a survey or other documents attesting to the separation distances between the well and septic system or other sources of pollution.

Exhibit 140 APPEAL24-1001

(C) Required Analysis and Reporting

The Appraiser must:

- report any readily observable or known deficiencies with the water;
- notify the Mortgagee when water is determined to be unsafe, report, and provide a cost to cure; and
- address any impact on value and marketability, and make the appropriate adjustments.

iv. Community Water Systems

(A) Definition

A Community Water System refers to a central system that is owned, operated, and maintained by a private corporation or a nonprofit property owners' association.

(B) Standard

A Community Water System must comply with local jurisdiction requirements.

(C) Required Analysis and Reporting

If the Property is on a Community Water System, the Appraiser must note the name of the water company on the appraisal report.

v. Individual Water Supply Systems

(A) Definition

An Individual Water Supply System refers to a potable water source providing water to an individual Property.

(B) Standard

When an Individual Water Supply System is present, water quality must meet the requirements of the health authority with jurisdiction. If there are no local (or state) water quality standards, then water quality must meet the standards set by the EPA, as presented in the National Primary Drinking Water regulations in 40 CFR §§ 141–142.

(C) Required Analysis and Reporting

The Appraiser must report on the availability of connection to a public and/or Community Water System and any jurisdictional conditions requiring connection.

When the Appraiser obtains evidence that any of the water quality requirements are not met, the Appraiser must notify the Mortgagee and provide an estimated cost to cure.

more limited extent in topographically lower areas. Recharge areas and discharge areas can be mapped using hydrogeologic techniques to determine where groundwater is and where it is flowing. Aquifers used for potable water are identified by looking at existing and future planned uses.

Existing wells and their protection areas, sole source aquifers, and aquifers otherwise identified as important supplies, are examples of "aquifers used for potable water."

DEPARTMENT OF ECOLOGY
State of Washington

Critical Aquifer Recharge Areas Guidance

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Critical Aquifer Recharge Areas

Guidance

Water Quality Program

Washington State Department of Ecology

Olympia, Washington

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Abstract

The Growth Management Act (GMA) requires all cities and counties in Washington State to protect public groundwater drinking supplies so that tragic contamination events and their associated costs can be prevented. Public drinking water supply also depends on groundwater availability. Without replenishment, the amount of water in aquifers can be diminished or even depleted.

This guidance document helps local jurisdictions and the public understand what is required for the protection of local groundwater resources under the Growth Management Act. It includes guidance for planning, ordinances, and for including the Best Available Science (BAS) as these relate to Critical Aquifer Recharge Areas.

This guidance will also explain how the laws and rules of the state of Washington for water quality, pollution prevention, and water resources relate to Critical Aquifer Recharge Area protection.

We are revising the guidance to update it in response to changes in laws and rules that have occurred since 2005, and to clarify concepts in response to comments.

In 2010, the Washington State Department of Commerce significantly updated the sections of the Washington Administrative Code (WAC) they administer under the Growth Management Act. A summary of the changes can be found in Appendix 1.A. of the Critical Areas Handbook.

Access the Critical Areas Handbook from the Department of Commerce Critical Areas web page[1].

The updated Critical Areas Handbook is a indispensable resource for local jurisdictions updating their Critical Areas plans, programs, and ordinances. Much information in the Critical Areas Handbook that is important for Critical Aquifer Recharge Areas is not repeated here, so these two guidances should be used together.

[1] https://www.commerce.wa.gov/serving-communities/growth-management/growth-management-topics/critical-areas/

Section 1 - Introduction

This guidance document helps local jurisdictions and the public understand what is required for the protection of local groundwater resources under the Growth Management Act. It includes guidance for planning, ordinances, and for including the Best Available Science (BAS) as these relate to Critical Aquifer Recharge Areas.

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The updated Critical Areas Handbook is an indispensable resource for local jurisdictions updating their Critical Areas plans, programs, and ordinances. Much information in the Critical Areas Handbook that is important for Critical Aquifer Recharge Areas is not repeated here, so both guidance documents should be used together.

Although the vast majority of drinking water wells produce clean uncontaminated water, there are places around the state where groundwater has been contaminated, either with industrial/agricultural chemicals, or with nitrates from various sources (fertilizer, human waste, animal waste). Appendix B shows a map of confirmed and suspected contaminated groundwater and soil sites across the state. The Washington Nitrate Prioritization Project[3] (Morgan, 2016) was completed to analyze what we know about the occurrence of nitrates in groundwater and the on-the-ground conditions that are sensitive to contamination. For a summary, see the Story Map[4] for this project.

[2] https://www.commerce.wa.gov/serving-communities/growth-management/growth-management-topics/critical-areas/
[3] https://fortress.wa.gov/ecy/publications/SummaryPages/1610011.html
[4] https://waecy.maps.arcgis.com/apps/MapSeries/index.html?appid=95af1d23b76a45e48abcb891b1791ba2

When a public drinking water supply is compromised, the community faces the potential of health risk and great expense. Contaminated water may lead to the ingestion of toxic chemicals or other harmful substances, which could cause illness or adverse health effects.

The Centers for Disease Control and Prevention[5] (CDC) has information about public drinking water contamination and health effects:

> The presence of contaminants in water can lead to adverse health effects, including gastrointestinal illness, reproductive problems, and neurological disorders. Infants, young children, pregnant women, the elderly, and people whose immune systems are compromised because of AIDS, chemotherapy, or transplant medications, may be especially susceptible to illness from some contaminants.

Remediation of contaminated groundwater is overwhelmingly expensive and often takes a long time. A contamination event can cause city wells to be shut down, result in expenses for new wells, and incur costs for cleaning up contaminated soil and ground water.

Prevention of groundwater contamination is far less expensive than cleanup. Environmental Protection Agency (EPA) studies have shown that investing funds for groundwater protection is cost-effective compared to groundwater cleanup at a ratio that runs anywhere from 1:5 to 1:200 (U.S. EPA, 1995).

The Growth Management Act requires protection of public groundwater drinking supplies so that contamination events and their associated costs can be prevented.

In addition, public drinking water supply depends on groundwater availability. Without replenishment, the amount of water in aquifers can be diminished or even depleted.

A good groundwater protection program involves:

- Identifying groundwater resources at risk,
- Identifying threats to groundwater
- Having an implementation plan for rules to be protective, and
- Monitoring to make sure a condition that could cause an unacceptable risk is not occurring and taking action when necessary.

[5] https://www.cdc.gov/healthywater/drinking/public/water_diseases.html

The Growth Management Act and Critical Areas

The Growth Management Act[6] (GMA) requires comprehensive land use planning by counties and cities. The act, commonly known as the GMA, specifies 13 overall planning goals.

These goals include urban growth, transportation, economic development, natural resource industries, public facilities, open space and recreation, historic preservation, environmental planning, and others.

The environmental planning goal is to "protect the environment and enhance the state's high quality of life, including air and water quality, and the availability of water" (RCW 36.70A.020[7]).

Further, the land use element of comprehensive plans must "provide for protection of the quality and quantity of groundwater used for public water supplies" (RCW 36.70.330[8]).

The GMA requires the designation and protection of "Critical Areas" to prevent harm to the community from natural hazards and to protect natural resources.

- Natural hazards are frequently flooded areas and geologically hazardous areas.
- Natural resources are wetlands, fish and wildlife habitat conservation areas, and Critical Aquifer Recharge Areas, which are areas with a critical recharging effect on aquifers used for potable water.

The goal of establishing Critical Aquifer Recharge Areas is to protect the ***functions and values*** of a community's drinking water by preventing pollution and maintaining supply.

This guidance document is developed for Critical Aquifer Recharge Area management.

Groundwater is a major component of other critical areas. County wide planning policies as well as comprehensive plans are the major planning and policy documents for local governments to ensure the protection of natural resources such as groundwater, surface water, and wetlands, as well as hazards such as flooded areas, and landslide hazards.

[6] https://apps.leg.wa.gov/RCW/default.aspx?cite=36.70A&full=true
[7] https://app.leg.wa.gov/RCW/default.aspx?cite=36.70A.020
[8] https://app.leg.wa.gov/RCW/default.aspx?cite=36.70.330

Examples of comprehensive plans that integrate various environmental components include: Thurston County (2019)[9], Pierce County (2015)[10], and Spokane County (2017)[11].

Critical Aquifer Recharge Areas

Critical Aquifer Recharge Areas (CARA) are defined under the GMA as "areas with a critical recharging effect on aquifers used for potable water, including areas where an aquifer that is a source of drinking water is vulnerable to contamination that would affect the potability of the water, or is susceptible to reduced recharge."

The Washington Administrative Code (WAC) Chapter 365-190-100[12] further enumerates requirements for local jurisdictions to determine classification and designation of Critical Aquifer Recharge Areas.

Identifying "areas with a critical recharging effect on aquifers used for potable water," depends on understanding aquifer recharge and what is meant by "a critical recharging effect."

Aquifer recharge occurs where rainfall, snowmelt, infiltration from lakes, wetlands and streams, or irrigation water infiltrates into the ground and adds to the underground water that can supply a well. On the other hand, **discharge areas** are where groundwater meets the ground surface and ultimately flows out from a spring, wetland, stream, lake, estuary, or ocean shore. Wells can also serve as discharge areas, especially those that pump larger volumes, such as those used by municipalities.

Most of a watershed is typically a recharge area, with discharge areas occurring to a more limited extent in topographically lower areas. Recharge areas and discharge areas can be mapped using hydrogeologic techniques to determine where groundwater is and where it is flowing.

Aquifers used for potable water are identified by looking at existing and future planned uses. Existing wells and their protection areas, sole source aquifers, and aquifers otherwise identified as important supplies, are examples of "aquifers used for potable water."

Setting priorities for the most critical supplies helps jurisdictions make decisions about where to focus their efforts. Areas may be categorized to reflect these priorities.

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[9] https://www.thurstoncountywa.gov/planning/planningdocuments/Chapter_09_Environment and Recreation_Nov2019_FINAL_clean.pdf
[10] https://www.co.pierce.wa.us/950/Comprehensive-Plan
[11] https://www.spokanecounty.org/DocumentCenter/View/22928/2017-Comprehensive-Plan?bidId=
[12] https://apps.leg.wa.gov/WAC/default.aspx?cite=365-190-100

An example would be to apply stricter regulations and monitoring within the one-year time of travel of a public water supply well, as opposed to more sparsely developed areas of the county. Stricter regulations should be applied in an area where the aquifer is shallow and vulnerable to contamination more than an aquifer that is deep and protected.

King County Best Available Science for Critical Aquifer Recharge Areas[13] (King County, 2004) includes a discussion of recharge and discharge areas, drinking water, and prioritization of areas that are "critical".

Maps and performance standards

The GMA discusses the use of both mapping and performance standards to identify critical areas.

Maps are highly useful for Critical Aquifer Recharge Areas because they can show the location of public water supply wells, single residential wells, and aquifer boundaries. They can also be used to show the location of areas that have been rated for susceptibility to contamination, and where potential sources of contamination are located. Maps can be used to see where pollution prevention is most needed and to help plan development. Known Critical Aquifer Recharge Areas should be mapped.

Performance standards are the criteria for designation of a critical area. The Dept. of Commerce Critical Areas Handbook defines "performance standards" as the criteria or characteristics of the land that determine that it is a critical area. A performance standard is applied when reviewing development projects to determine what category of Critical Aquifer Recharge Area the proposal is in and what the applicable site conditions are.

Local policies, planning, ordinances, and programs are applied based on the outcome of the evaluation of the proposal using performance standards.

Chapter 365-190-040(5)(b)[14] states: Inventories and maps should indicate designations of natural resource lands. In circumstances where critical areas cannot be readily identified, these areas should be designated by performance standards or definitions, so they can be specifically identified during the processing of a permit or development authorization.

The purpose of a performance standard is to have an objective standard for comparison (WWGMHB, 1997).

To use performance standards, local jurisdictions need sufficient information to:

[13] https://your.kingcounty.gov/dnrp/library/2004/kcr1562/BAS-Chap6-04.pdf
[14] https://apps.leg.wa.gov/WAC/default.aspx?cite=365-190&full=true#365-190-040

- Make an informed determination as to whether or not critical areas are present on the site.
- Determine whether or not the proposed activity will impact those critical areas.

The Critical Areas Handbook[15] (Washington Dept. of Commerce, 2018) states that:

> The Minimum Guidelines in Chapter 365-190 WAC are minimum requirements for critical areas classification and designation. The Guidelines reference the statutory requirement to include best available science, and recommend that counties and cities designate critical areas using maps and performance standards. Designation is usually done with a map such as a zoning map. However, there is usually not enough on-the-ground information to do an effective job of designating critical areas using this method. Critical areas designation is typically done through performance standards. The term "performance standards" means the criteria or characteristics of the land that determine that it is a critical area.
>
> Adopting performance standards provides a way to designate critical areas without requiring a prohibitively expensive inventory and mapping before the requirements for protecting the critical area would apply. Instead, the legislative act of designation is the adoption of criteria, or performance standards, that are used to determine whether a particular area is a critical area by applying the criteria on the ground. This typically happens during local project review.

Voluntary Stewardship Program

The Voluntary Stewardship Program (VSP) was adopted into the Growth Management Act in 2011. The intent of this program is to provide a voluntary means for protection of critical areas that intersect with agricultural activities in VSP opt-in counties.

Chapter 36.70A.705 RCW[16] establishes the program. Chapter 365-191 WAC[17] enumerates the regulations for program approval.

The Washington State Conservation Commission administers the Voluntary Stewardship Program, with technical support from other state agencies, including Ecology. Both the Washington State Conservation Commission[18] and the Critical Areas Handbook[19] have detailed information about this program.

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[15] https://www.commerce.wa.gov/serving-communities/growth-management/guidebooks-and-resources/
[16] https://app.leg.wa.gov/rcw/default.aspx?cite=36.70A.705
[17] https://apps.leg.wa.gov/wac/default.aspx?cite=365-191
[18] https://scc.wa.gov/vsp/
[19] https://www.commerce.wa.gov/serving-communities/growth-management/growth-management-topics/critical-areas/

Some things to keep in mind about groundwater protection and the way the Voluntary Stewardship Program is designed:

1. The best chance for a county VSP work plan to succeed for groundwater quality protection would be by having a high rate of participation and implementation of best management practices, like precision agriculture.

2. The VSP defines protection as no further loss compared to conditions that existed in July 2011. This fits in with no net loss of wetlands because wetlands are visible at the ground surface and can be inventoried.

   The problem for groundwater with defining protection as of a certain date is that there often is not groundwater sampling for that date.

   In addition, groundwater moves and transports contaminants with it. If there are no new contaminants, upgradient groundwater and local recharge would mix with the contaminated water. This would move contaminated water away and dilute it. Contaminant concentrations should decrease (if upgradient sources aren't continuing to pollute). To keep polluted groundwater to the same concentration level as existed in July 2011 would require continuing loading of pollutants, which is illegal (RCW 90.48.080[20]).

   The prudent thing to do is to monitor groundwater quality at wells that have detected contamination over time and control polluting activities.

3. The VSP is voluntary and cannot address operators with polluting activities who do not voluntarily participate. In counties that opt-in to VSP, the county VSP work plan takes the place of the critical area ordinance for that county as they pertain to agricultural activities. However, all other regulations, ordinances, laws and rules apply. If there is a polluter in the county, and VSP would apply to that polluter (the agricultural activity that the polluter is engaged in is in a portion of the county that has opted-in to VSP), a county would not be able to use their critical area ordinance to regulate the polluter. Rather, the county would work with other regulators to enforce existing regulations (i.e. Department of Ecology water quality regulations, Clean Water Act, etc.) to stop the pollution.

   The county VSP work group would also work to adaptively manage their VSP work plan to attempt to ameliorate any decrease in the critical area function and values as they implement the VSP.

4. The VSP relies on establishing benchmarks to track progress on whether the program is successful. Without a groundwater monitoring program, or data from

[20] https://app.leg.wa.gov/RCW/default.aspx?cite=90.48.080

a groundwater monitoring program, it would be difficult to determine whether groundwater quality is improving as a result of the program.

5. The VSP metric for success is that there is no net loss or there is an improvement on a watershed basis. Groundwater pollution occurs at a particular location from a particular activity. Averaging groundwater quality for wells across an entire watershed does not indicate improvement or success if there still is ongoing unaddressed pollution at a location, even if other locations are not polluted.

Groundwater and Other Critical Areas

Groundwater is inextricably linked with all of the critical areas including wetlands, fish and wildlife habitat, critical aquifer recharge areas, frequently flooded areas, and geologically hazardous areas.

Groundwater is a source of water to streams, lakes, estuaries, wetlands, and springs; and therefore serves a critical function for wildlife and fish habitat. Some plants that provide habitat, like willows, depend on shallow ground water.

Groundwater is often a key factor in flooding and geologic hazards.

The GMA also requires that local jurisdictions give special consideration to conservation or protection measures necessary to preserve or enhance anadromous fisheries. Since groundwater is an important component of stream flow, it is necessary to maintain the groundwater supply to streams where needed to protect salmon and other anadromous species. Watershed planning under the Streamflow Protection law supports this goal. See Section 3 for more information.

Qualified Professional Assistance

Professional hydrogeologic work for the establishment of Critical Aquifer Recharge Areas should be performed by a hydrogeologist licensed in the state of Washington (RCW 18.220[21] and WAC 308-15[22]). In particular, the delineation and characterization of aquifers and the analysis of environmental fate and transport of potential contaminants should be performed by a qualified professional hydrogeologist licensed in the state of Washington.

Many activities associated with Critical Aquifer Recharge Areas may be done by others (who are not licensed professional hydrogeologists) such as planning, pollution prevention, education and outreach, ordinance enforcement, and other activities

[21] https://app.leg.wa.gov/RCW/default.aspx?cite=18.220&full=true
[22] https://apps.leg.wa.gov/WAC/default.aspx?cite=308-15

associated with city and county programs (see RCW 18.220.190: Permitted activities—Certificate of licensing not required[23]).

The Growth Management Hearings Board and Washington State Courts

GMA Hearings Boards were created by the legislature to hear cases related to the Growth Management Act. The three GMA Hearings boards - Eastern Washington, Western Washington, and Central Puget Sound - were consolidated into a single board by the legislature in 2010. Critical Areas planning and ordinance decisions are subject to review by the board. The board hears cases when a "Petition for Review" is filed. Chapters 36.70A.280[24] and 36.70A.290[25] RCW dictate conditions for appealing a city's or county's noncompliance with the Growth Management Act, including provisions for the protection of critical areas (Chapter 36.70A.060 RCW[26]). Growth Management Hearings Boards Final Decisions and Orders may be appealed to Superior Court.

The GMA Hearings Board website[27] contains a wealth of information about the board and how it works. There is a decision digest[28] through June 30, 2010 for each of the Regional Boards prior to consolidation. This website also has a case and decision search for cases after June 30, 2010, where decisions that affect Critical Aquifer Recharge Areas (CARAs) and other growth management issues can be viewed on-line.

The website also has practice and procedure information for appeals.

As of 2019, eleven counties and their included cities in Washington are not required to plan fully under the GMA (Chapter 36.70A.130[29]). These jurisdictions must still plan for Critical Areas and Natural Resources Lands. These counties are Adams, Asotin, Cowlitz, Grays Harbor, Klickitat, Ferry, Lincoln, Okanogan, Skamania, Wahkiakum, and Whitman. Appeals of Critical Areas actions under the GMA for these eleven counties and their included cities do not go to the Growth Management Hearings Board, but instead are heard by Superior court.

[23] https://app.leg.wa.gov/RCW/default.aspx?cite=18.220.190
[24] https://app.leg.wa.gov/RCW/default.aspx?cite=36.70A.280
[25] https://app.leg.wa.gov/RCW/default.aspx?cite=36.70A.290
[26] https://app.leg.wa.gov/RCW/default.aspx?cite=36.70A.060
[27] http://www.gmhb.wa.gov/
[28] http://www.gmhb.wa.gov/Global/Reader?title=Digests&path=Digests
[29] https://app.leg.wa.gov/RCW/default.aspx?cite=36.70A.130

Section 2 - Basic Groundwater Concepts

This section lists basic concepts that help with understanding the occurrence and movement of ground water.

The Hydrologic Cycle

The hydrologic cycle is how water moves in the environment. Water evaporates from the oceans, gathers in clouds, and rains or snows onto the land. After it rains or the snow melts, the water may evaporate, be used by plants, run off to streams, lakes, or the ocean; or infiltrate into the soil. Some of the water that infiltrates into the soil will reach the underground water table and will **recharge** the aquifer.

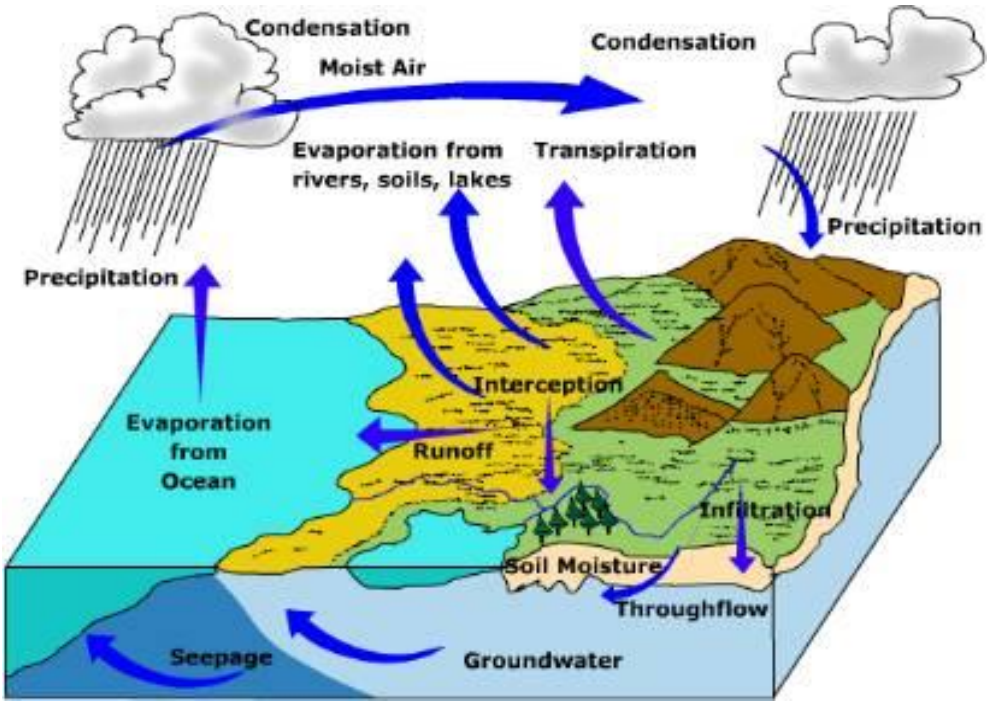

Figure 1: The Hydrologic Cycle

Aquifers

Aquifers are created when water saturates, or fills, the soil or rock matrix underground where it is permeable enough to yield useable quantities of water to a well. Underground soil/rock layers that are not permeable enough to yield useable quantities of water to a well are called aquitards. Common types of aquifers are sand and gravel, fractured bedrock, and karst (limestone).

In the Puget Sound region, the landscape that defines aquifers is made up mainly of deposits of sand and gravel related to the movement of glaciers during the last ice age. In eastern Washington, there are several types of geologic settings that contain aquifers. The largest type of aquifer in eastern Washington are the flood basalts of the Columbia Basin. In the Columbia Basin, irrigation has created aquifers by saturating the sands and gravels that overlay the Columbia Basin basalts.

A **confined aquifer** is an aquifer that lies beneath an aquitard. This condition can cause the water to be under pressure, resulting in a well that has a water level above the bottom of the aquitard (known as artesian conditions). Sometimes this pressure is great enough to cause the water in the well to flow out at the surface. Groundwater in confined aquifers flows from the direction of the highest hydraulic pressure to the lowest hydraulic pressure.

A **water-table aquifer** is water under normal atmospheric pressure, and thus is able to rise and fall. This aquifer is not capped by an aquitard and as such is impacted by surface contamination sooner than a confined aquifer. Water-table aquifers flow generally in accordance with the topography from higher elevations to lower elevations.

There may be a whole system of multiple confined aquifers and a water-table aquifer in an area. Sometimes the water table aquifer and confined aquifers beneath are connected and water from one aquifer flows into another.

Recharging Aquifers

Recharge is water that is added to groundwater, whether it is from rainfall or snowmelt that infiltrates through the ground, or some other source. Recharge can come from quite a distance through the ground over a long period, or it can come from relatively local and more recent sources.

Recharge can also carry contaminants into aquifers from the land surface. Therefore, recharge is at the center of preventing pollution and maintaining supply both for drinking water aquifers and for freshwater habitats.

Infiltration is water that soaks into the ground. All recharge is infiltrated, however, infiltration can also evaporate, flow along a shallow zone and surface downslope, or be taken up by plants instead of adding to recharge. Infiltration that reaches the water table becomes recharge.

Impervious surfaces prevent infiltration and therefore prevent recharge from occurring. Instead, rainwater or snowmelt may run off to surface water more quickly than it otherwise would. The stream's peak flow may be higher in magnitude and closer in time

to rainfall events. While increasing peak flow during rainy times, the lack of recharge can deprive streams of groundwater inflow when the streams need it the most.

Groundwater Discharge

Groundwater flows through the ground from where it is recharged to where it is discharged. **Discharge** is where water moves from underground to the land surface, either by flowing out to the top of the land surface, or by pumping from wells. Springs are a familiar example of a local groundwater discharge. Groundwater can also discharge naturally to more dispersed areas such as lakebeds and stream banks or stream beds.

In fact, in Washington, groundwater can make up a majority of stream flow, especially in late summer and early fall (Pitz and Sinclair, 1999). This is why groundwater discharge is such an important aspect of maintaining or restoring freshwater habitat.

Discharge of groundwater, whether by pumping or by seeping into streams and springs, can lower the water table if the recharge does not keep up. The effect can be to drop the water level down below the bottom of a well or to dry up a stream.

Sometimes the water table rises and discharges above the land surface. This can fill lakes and streams, create and support wetlands, or even cause flooding if the water has nowhere to drain.

Safe yield (Fetter, 1980) is the amount of naturally occurring groundwater that can be economically and legally withdrawn (discharged) from an aquifer on a sustained basis without impairing the native groundwater quality or creating an undesirable effect such as environmental damage. It cannot exceed the amount of recharge and/or leakage from adjacent strata minus the amount of discharge caused by pumping and natural sources.

The Water Table

In an unconfined aquifer, the water table is the top of where the underground is saturated with water. This is where water levels are measured if groundwater is in a water table aquifer (unconfined or at atmospheric pressure). The water table rises when recharge is greater than discharge.

People can cause the water table level to lower directly by removing groundwater from wells. A second method is by reducing the quantity of recharge. This happens where there is too much paved area (impervious surface) and storm water cannot infiltrate where it formerly did. Lack of recharge, for example during a drought, can also lower the water table level.

Figure 2 (modified from a USGS illustration[30]) shows the effects of a declining water table and why recharge is so important.

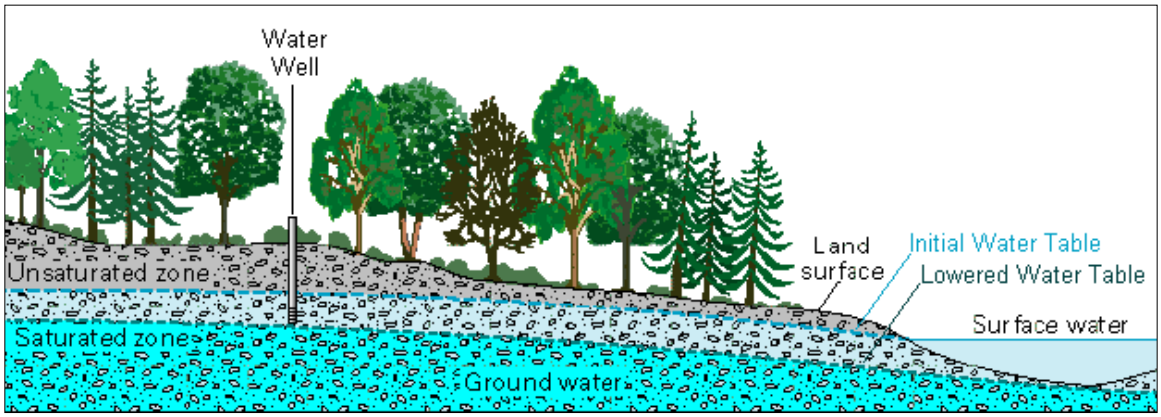

Figure 2: If the groundwater table drops to the lower dashed line, both the stream and the well go dry. The water table lowers when discharge (water out) is greater than recharge (water in).

Hydrogeologic Setting and Susceptibility to Pollution

How do contaminants get to a well? Contaminants may be spilled onto the ground or may leak from an underground tank and travel downward to the aquifer. After reaching the aquifer, contaminants may be carried along with the groundwater flow to a well.

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How groundwater flows through an aquifer – the direction and rate of flow - affects whether a contaminant will show up at a water well. Groundwater flow direction and rate can change seasonally and is impacted by pumping wells.

Although the fate and transport of contaminants are much more complex than an illustration can show, it is useful for explaining concepts.

Figure 3 is an illustration of spills travelling through the ground and reaching groundwater The large arrows indicate regional groundwater flow. The well pumping creates a local zone where groundwater flows to the well (small arrows). The area within an aquifer where groundwater flows to a well is called the capture zone.

The contaminants would be carried along with the flow of groundwater to a well, where a sample would detect contamination. Notably, contamination in groundwater that is

[30] https://www.usgs.gov/special-topic/water-science-school/science/aquifers-and-groundwater?qt-science_center_objects=0#qt-science_center_objects

downgradient of the well, but within the capture zone, can be drawn to the well because of pumping.

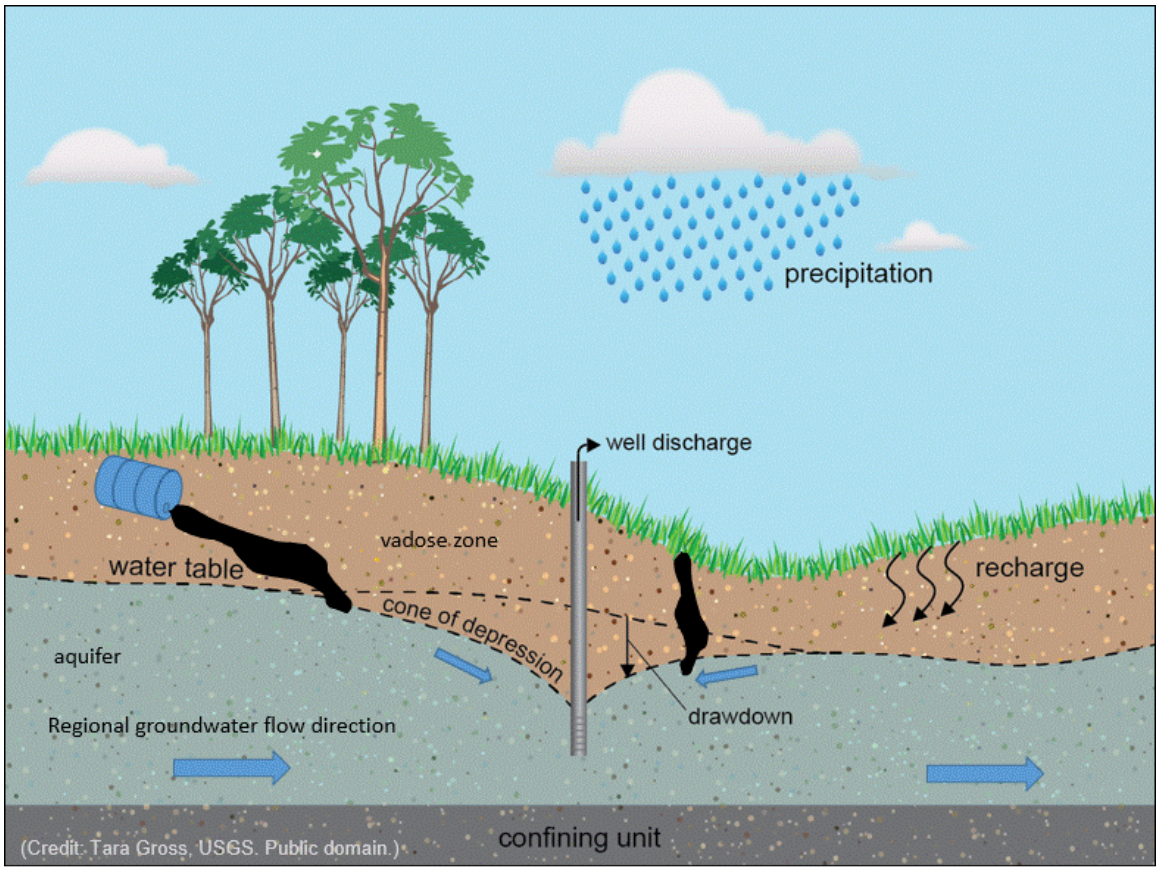

Figure 3: Cross-section illustration of groundwater flow and contaminant paths to a well.

Wellhead protection area time-of-travel zones are generally based on a broad estimate of groundwater flow to a well within an estimated period of time. Some wellhead protection areas are based on groundwater modeling and are more accurate.

The **hydrogeologic setting** is the framework that controls groundwater occurrence and movement. Where groundwater flows, the rate at which it flows, where it recharges and discharges, and how deep it occurs are all functions of what the land is like – the soil, sediments, and rocks that groundwater moves through make up the hydrogeologic setting. The hydrogeologic setting also includes the topography and the weather patterns that control recharge.

Knowledge of hydrogeologic settings is essential for establishing critical aquifer recharge areas. Prioritization of Critical Aquifer Recharge Areas can be based on the susceptibility of those settings to contamination or water quantity impacts.

Susceptibility refers to how easy (or difficult) it is to contaminate groundwater. This is related to what the geology is like. When water can move readily through the ground, it can carry contaminants to groundwater more quickly. Sandy, shallow unconfined aquifers are more susceptible than deep aquifers that are overlain by an aquitard.

Susceptibility is relative. All groundwater used for drinking water is susceptible - Some conditions are more sensitive to contamination than others.

Vulnerability refers to the risk of contamination combined with the risk from the susceptibility of the aquifer. Inventories of potential sources of contamination are helpful for establishing the vulnerability of the aquifer that supplies the critical local drinking water supply.

Because these terms are often used interchangeably, it is important to be sure of the author's meaning when encountering these terms.

Susceptibility factors

- The vadose zone consists of the unsaturated earth materials above an aquifer. Water infiltrates underground through the vadose zone to recharge water table aquifers. Factors of the vadose zone that effect susceptibility are thickness, or depth to water, and travel time.

  Depth to water is the distance through the vadose zone a contaminant must travel to reach the water table.

  In the vadose zone, travel time is the amount of time it takes a contaminant to travel from its release point to the top of the water table. Travel time is affected by the depth to water and the material through which it must pass. The deeper the water table or the more fine-grained material (silt and clay), the longer the travel time.

  Preferential flow paths, such as through fault zones, buried channels, macropores, and poorly constructed wells, can cause travel times to be much shorter than would be expected from the depth to the water table or the amount of fine materials.
- Permeability refers to how easily a liquid or gas passes through a material. Low permeability layers, such as clay or glacial till, may occur between the land surface and an aquifer, either within the vadose zone or within an aquifer system. These layers would restrict downward migration of contaminants and would provide a measure of protection to the aquifer. Low permeability layers can also be referred to as aquitards when they confine an aquifer under pressure. Care should be taken with presuming a confining layer is protective, because layers may not be laterally extensive and may have some feature that allows leakage.
- Infiltration rate is a measure of how fast water and pollutants can move downwards through the earth materials of the vadose zone. The more permeable the ground is, the faster water moves down through it, the more the underlying groundwater is

susceptible to contamination. Coarse sands and gravels allow water to pass through much more quickly than fine silts and clays.

- Chemical retardation is a measurement of how clays and organic matter react with some chemicals to slow their passage or change them chemically.
- Adsorption is a measurement of the tendency of ions dissolved in water to "stick" to particles of silt or clay. The particle size and the amount of soil organic matter affect the adsorption. A sand with no organic matter may not adsorb at all, while an organic silt or clay may adsorb well. In short, a contaminant can be captured or slowed down by adsorbing to clay.
- Hydraulic conductivity is a measure of how fast a quantity of water can move through an aquifer (for a given gradient through a unit area). The higher the hydraulic conductivity, the faster the flow.
- Gradient is the difference in water level elevation between two locations of the water table or the difference in pressure between two locations in a confined aquifer. The higher the gradient, the faster the flow.
- Just as a ball rolls downhill, water flows downhill – from higher water table elevations to lower water table elevations. Water also flows in the direction that pressure is moving it. Just as you can push a ball uphill, high-pressure conditions can push water upwards. Both pressure differences and elevation differences create gradients.
- Groundwater flow direction is determined by gradients, which in turn are influenced by pumping, discharge to surface water, topography, and geologic setting.
- Groundwater flow rate depends on the nature of the geologic materials that water flows through along with the pressure on the water. Coarser materials allow faster flow and higher pressures induce faster flow.

Seawater Intrusion

Seawater, or saltwater, intrusion is a special case that applies to jurisdictions with saltwater shorelines where seawater intrusion is a concern. Near the shore, there is an interface where the denser saltwater underlies fresh groundwater.

Groundwater extraction by a well can cause this interface to be pulled upward toward the well to the point where well water becomes salty. The aquifer in an area where seawater intrusion has occurred may become unusable for drinking water. Seawater intrusion is a difficult and expensive problem to manage, especially in the face of development pressures for shoreline properties.

The Critical Areas Handbook[31] (Washington Department of Commerce, 2018) discusses saltwater intrusion in detail, along with a detailed summary of the Growth Management Hearings Board decision that found that Jefferson County must protect the functions and values of Critical Aquifer Recharge Areas from seawater intrusion. To quote the Handbook: "The Board held the County must classify and designate seawater intrusion areas as critical areas, including best available science in a substantive way."

An excellent source of information is the Seawater Intrusion Topic Paper[32] (Kelly, 2005) that was completed for the Island County WRIA 6 Watershed Planning Process. Please consult these references on seawater intrusion for more detailed information.

Groundwater Monitoring

Groundwater monitoring is used to measure water levels and to obtain water samples for groundwater quality testing. Hydrogeologists use water levels from several wells to estimate the rate and direction of flow, and to track declines or increases in the amount of water in the aquifer.

Hydrogeologists also use water levels and the **well log** to determine whether the well is a water table well or if it is confined.

Water quality samples are used to establish background conditions, find areas that have groundwater contamination, and to track the increase or decrease of contaminants over time. If a well has contamination, it is important to look at potential sources in areas that contribute water to the well (either from recharge, from upgradient sources, or from the capture zone), and make sure that good pollution prevention practices are being followed.

[31] https://www.commerce.wa.gov/serving-communities/growth-management/growth-management-topics/critical-areas/
[32] https://fortress.wa.gov/ecy/publications/SummaryPages/1203271.html

Section 3 - Streamflow, Water Availability, and Permit-Exempt Wells

Efforts to maintain instream flow and efforts to protect Critical Aquifer Recharge Areas share some common goals with respect to water availability, anadromous fisheries, and best available science.

In January 2018, the Legislature passed the Streamflow Restoration law (Chapter 90.94 RCW[33]) that helps restore streamflows to levels necessary to support robust, healthy, and sustainable salmon populations while providing water for homes in rural Washington. The law was in response to the Hirst decision, a 2016 Washington State Supreme Court decision that limited a landowner's ability to get a building permit for a new home when the proposed source of water was a permit-exempt well. The law directs local planning groups to develop watershed plans that offset impacts from new domestic permit-exempt wells and achieve a net ecological benefit within the watershed.

Much of the information developed during streamflow restoration planning efforts can also be used to delineate Critical Aquifer Recharge Areas:

- Understanding where permit-exempt wells are being used for residential water supply helps define locations where groundwater needs to be protected for drinking water supply purposes.
- Knowledge of the relationship between groundwater and streamflows, provides the linkage between groundwater use and instream flows that are necessary to maintain healthy anadromous fisheries.
- Understanding patterns in shallow versus deep groundwater use and how those differences effect the way groundwater pumping depletes streamflow, permits a better understanding of different critical aquifer recharge area needs within the same geographic areas.
- Aquifer mapping and the identification of where groundwater discharges to streams provides basic information required during the identification and mapping of Critical Aquifer Recharge Areas.

[33] https://app.leg.wa.gov/RCW/default.aspx?cite=90.94&full=true

Section 4 - Protecting the Functions and Values of Critical Aquifer Recharge Areas

The **functions and values** of Critical Aquifer Recharge Areas are to provide the public with clean, safe, and available drinking water. In order to accomplish this goal, information is needed about the location and extent of aquifers that supply public drinking water, the susceptibility of these supplies to contamination, and potential contamination risks. In addition, planning, programs, and ordinances are needed to prevent contamination from occurring.

Preventing pollution depends on controlling land use activities to prevent contaminant spills and leaks. Critical Aquifer Recharge Areas are designated so that greater control can occur where land use activities are a high-risk for polluting sensitive aquifers.

Prioritization of Critical Aquifer Recharge Areas can be accomplished by identifying where high-value water resources are located in highly susceptible areas (King County, 2004[34]).

The following steps characterize where groundwater resources are important to the community and how to protect them.

1. **Identify** where groundwater resources are located.
2. **Analyze** the susceptibility of the natural setting where groundwater occurs.
3. **Inventory** existing potential sources of groundwater contamination.
4. **Classify** the relative vulnerability of groundwater to contamination events.
5. **Designate** areas that are most at risk to contamination events.
6. **Protect** by minimizing activities and conditions that pose contamination risks.
7. **Ensure** that contamination prevention plans and best management practices are implemented and followed.
8. **Manage** groundwater withdrawals and recharge impacts to:
    - Maintain availability for drinking water sources.
    - Maintain stream base flow from groundwater to support in-stream flows, especially for salmon-bearing streams.

The following section provides more details about each one of these steps.

[34] https://your.kingcounty.gov/dnrp/library/2004/kcr1562/BAS-Chap6-04.pdf

Step 1: Identify where groundwater resources are located

Identifying the location and extent of drinking water supply aquifers is an essential step in protecting the functions and values of Critical Aquifer Recharge Areas.

Critical Aquifer Recharge Area maps are delineations of where a community's groundwater supply meets criteria such as susceptibility, potential for contamination, and priority.

This section provides explanations of various resources that are useful for identifying the location and extent of drinking water aquifers. A list of internet links to helpful resources is at the end of this section.

Aquifer Maps

Aquifer boundaries are important to identify to give jurisdictions information about where groundwater resources are. When new wells are needed, knowledge of where aquifers may supply water is critical. This knowledge is used in water system planning and is a vital consideration for long-term planning.

Mapping drinking water supply aquifers makes use of well location and well log information as well as the location and characteristics of aquifers.

Aquifer maps are developed during hydrogeologic studies. The main source for aquifer maps are USGS studies.

Well locations are important to identify to help prioritize risk and guide local ordinances and planning near active public wells and areas where residents rely on single domestic wells for drinking water.

The Department of Ecology well log map provides approximate well locations in the center of the Township, Section, Range, Quarter-quarter square. The actual well location may be anywhere within that 40-acre square.

Public Water Supply Wells

Public drinking water supply systems are regulated by the Department of Health under the Safe Drinking Water Act (SDWA). Generally, the state regulates systems with 15 or more residential connections (Group A), and the local health jurisdiction regulates systems with 3 to 14 connections (Group B). Chapter 246-290 WAC[35] is the regulation

[35] https://apps.leg.wa.gov/WAC/default.aspx?cite=246-290&full=true

for Group A Public Water Supplies, and Chapter 246-291 WAC[36] is the regulation for Group B Public Water Supplies.

The SDWA also includes the Source Water Protection Program[37]. Under this program, wellhead protection zones are defined and the susceptibility of the well to contamination is rated. Potential contamination sources within the protection zones are also inventoried.

Wellhead protection zones are delineated as the areas where contamination in the aquifer could reach a well within a specified time period. Time-of-travel periods used by the Department of Health Drinking Water Program are six months, one year, five years, and ten years.

Zones based on these time periods are known as time-of-travel zones. Methods of delineating wellhead protection zones vary from the least accurate method of drawing a circle around the well at a fixed radius to modeling actual travel times based on aquifer characteristics.

These mapped wellhead protection zones may be designated as a category of Critical Aquifer Recharge Area (Chapter 365-190 WAC[38]). A jurisdiction may have stricter requirements for facilities closer to a water supply well. For example, some uses may be prohibited within the one-year time-of-travel zone that are allowed with mitigation in the ten-year time-of-travel zone.

Domestic Wells

Residences that are located too far from a public water supply system must rely on individual wells, springs, or surface water to supply their drinking water. Individual domestic wells are an important and widespread source of drinking water supply in Washington.

Maps of domestic well locations together with well logs help with identifying the location, extent and use of drinking water supply aquifers.

To find information about domestic wells, contact the Department of Ecology Water Resources Program.

State law requires that a well log be filed with the Department of Ecology when a well is constructed. Well log information includes location by address and/or

[36] https://apps.leg.wa.gov/WAC/default.aspx?cite=246-291&full=true
[37] https://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/SourceWater/SourceWaterProtection
[38] https://apps.leg.wa.gov/wac/default.aspx?cite=365-190&full=true#365-190-100

township/range/section/quarter-quarter section. Figure 4 illustrates how the Township and Range system relates to locations on the ground.

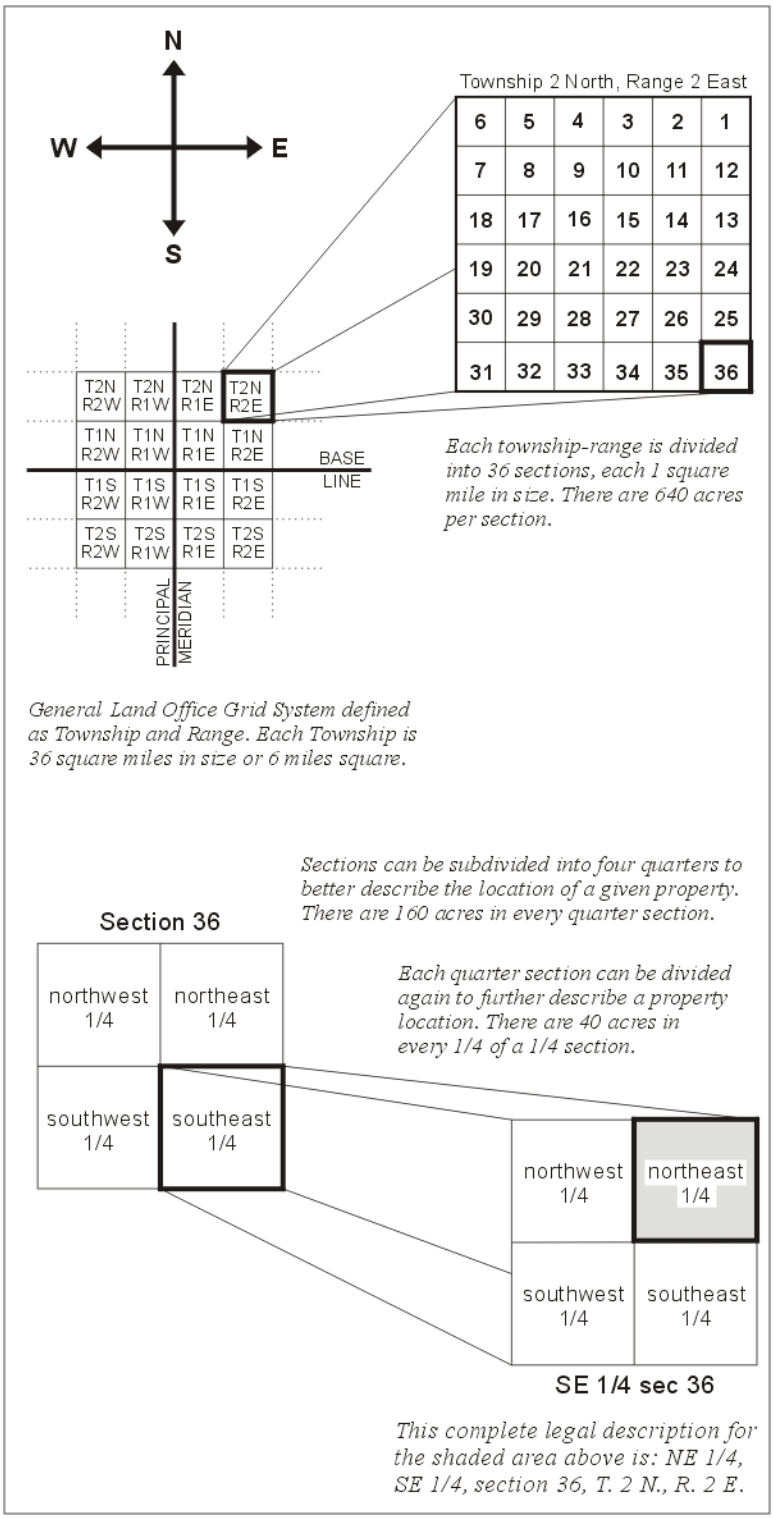

Figure 4: Township, range, section, quarter-quarter, and well location illustration from the Washington Department of Natural Resources

The following should be kept in mind when locating water supply wells when using Ecology's well log map[39]:

- The well locations were created by placing a point at the center of the township/range/section/quarter-quarter square. The actual location of the well is anywhere within that 40-acre square.

  For example, if the center of the square is in a lake, and the actual well location is on shore, the map will plot the well in the lake. The well IS NOT in the lake. There are thousands of well logs, and the locations have not been adjusted individually.

- There are many wells for which well logs have not been submitted, and therefore do not appear on this map.
- Sometimes the location information written on the well log is incorrect, and so the location shown for the well on the map is inaccurate.
- It is up to the well driller to provide accurate information on the well log. The well owner should make sure the location information is correct.

[39] https://appswr.ecology.wa.gov/waterresources/map/WCLSWebMap/default.aspx

Figure 5 is an example map that shows:

- Public water supply wells (Group A) and their protection zones
- Smaller public water supply wells (Group B)
- Wells that serve one or two households
- The location and the extent of a local aquifer

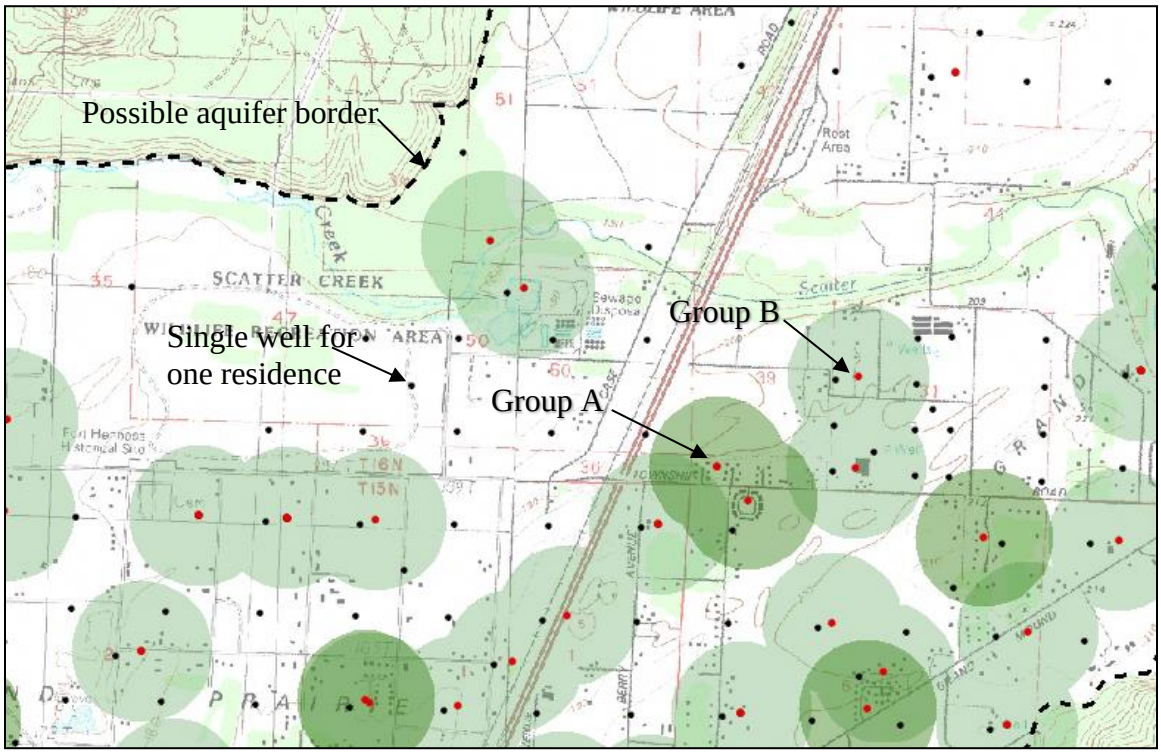

Figure 5: Location, extent, and uses of a drinking water supply aquifer

Note: The single domestic residential wells on this map appear at the nearest quarter-quarter section, NOT where they are actually located on the ground. This is because well logs report locations this way, and that is what we have to use for mapping.

Exhibit 140 APPEAL24-1001

Some of the Methods Hydrogeologists Use to Identify and Characterize Aquifers

Well logs, geologic, topographic, and soil maps, well testing, and field reconnaissance are some of the tools used to identify aquifers.

Figure 6 is a hydrogeologic cross-section. It shows well locations and depths, as well as the geologic formations that the wells draw water from. Hydrogeologists use a combination of methods to understand where groundwater occurs, where it is moving, and how fast. The cross-section depicts the conceptual model developed from this information.

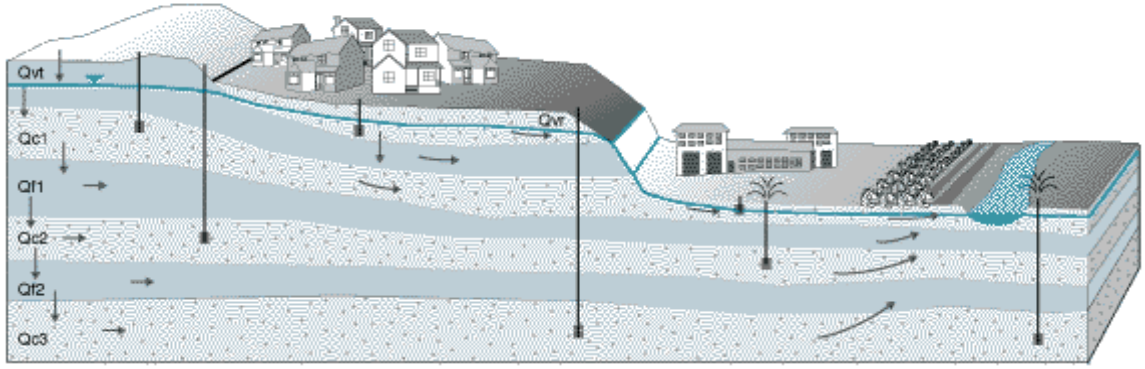

Figure 6: Representation of an aquifer system (Jones, 1999)

Figure 6 Legend

Qvt – Vashon Till semi-confining layer

Qvr – Vashon recessional outwash shallow aquifer

Qc1, Qc2, Qc3 – Confined aquifers

Qf1, Qf2 – Semi-confined units

Water well

Artesian water well

Water table

Vertical or horizontal groundwater flow direction

Well logs contain a variety of information about items that are useful for CARA designation and protection, such as:

- Location of the well
- The kinds and depths of underground materials encountered at the well location (sand, gravel, silt, clay, bedrock, etc.)
- Depth to the aquifer from which well water is being pumped
- Water level in that aquifer at the time of drilling
- An estimate of the amount of water that can be pumped from the well.
- Where the aquifers are and how far they extend. (Many well logs are needed for this analysis.)

Figure 7 is an example of a water well report, or well log for the City of Lacey. The well log shows the geologic materials and water bearing zones encountered while drilling, the well construction details, the water level in the well, and the well yield that was determined during the well test.

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. W11448
UNIQUE WELL I.D. # ACR 769
Water Right Permit No. Appl. → G2-29165 - Prelim Permit

(1) OWNER: Name CITY OF LACEY Address P.O.Box 3400, 420 College St. Lacey, WA 98509-3400

(2) LOCATION OF WELL: County Thurston - NW 1/4 NW 1/4 Sec 24 T. 18 N. R. 1W W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) MADRONA PARK SUBDIVISION

(3) PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal ☒ ☐ Irrigation ☐ Test Well ☐ Other ☐ ☐ DeWater

(4) TYPE OF WORK: Owner's number of well (If more than one) "C"
Abandoned ☐ New well XX Method: Dug ☐ Bored ☐ Deepened ☐ Cable XX Driven ☐ Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 16 inches. Drilled 334 feet. Depth of completed well 333 ft.

(6) CONSTRUCTION DETAILS:
Casing Installed: 16" Diam. from +2 ft. to 265 ft.
Welded ☒ Liner installed ☐ Threaded ☐ " Diam. from ft. to ft.
" Diam. from ft. to ft.

Perforations: Yes ☐ No ☒
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Westco
Type Stainless steel Model No.
Diam. 14" Slot size 150/120 from 265 ft. to 282 ft.
Diam. 14" Slot size 150 from 294 ft. to 306 ft.
14" 150/100 313 326

Gravel packed: Yes ☐ No ☒ Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 130 ft.
Material used in seal ~~Cement Grout~~ Quick Grout
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 219.53 ft. below top of well Date 6/4/97
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☒ No ☐ If yes, by whom? Hokkaido
Yield: 1025 gal./min. with 2.01 ft. drawdown after 1 hrs.
" 1025 " 2.00 " 2 "
" 1025 " 2.21 " 4.23 "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
0	221.75	10m	219.77	120m	219.7
1 min.	219.69	30m	219.76		
5 min.	219.81	60m	219.70		

Date of test 6/4/97
Bailer test gal./min. with ft. drawdown after hrs.
Airtest gal./min. with stem set at ft. for hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☒ No ☐

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Brown gray sandy till, hard	0'	10'
Gray brown sandy till w/cobbles	10'	69'
Dirty sand and gravel, moist	69'	76'
Brown gray till	76'	79'
Brown clay with gravel	79'	87'
Brown waterbearing sand & gravel	87'	121'
Brown silty sand with gravel	121'	123'
Blue gray clay	123'	133'
Brown silty sand, H_2O	133'	153'
Brown silty sand with clay and gravel, H_2O	153'	163'
Brown sandy silt with gravel, H_2O	163'	195'
Yellowish Sand & Gravel with binder, waterbearing	195'	306'
Brown Sand and gravel with clay lenses	306'	328'
Brown, fine to medium sand with gravel	328'	331'
Brown silty sand with binder	331'	334'
Bottom hole	334'	

Work Started March 21, 1997 Completed June 11, 1997

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME HOKKAIDO DRILLING & DEVELOPING CORP. (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address P.O. BOX 100, GRAHAM, WA 98338-0100

(Signed) (WELL DRILLER) License No. 1146

Contractor's Registration No. HOKKADD178D3 Date JUNE 24, 1997

(USE ADDITIONAL SHEETS IF NECESSARY)

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Figure 7: Well logs include observations about aquifers and the earth materials that overlie the aquifers.

Maps of different types are used to help define the boundaries of aquifers.

Topographic maps show landscape changes that are often associated with aquifer boundaries. (For example, the boundary for a river valley water table aquifer is often where the bedrock slopes up from the valley floor. See Figure 8 below.)

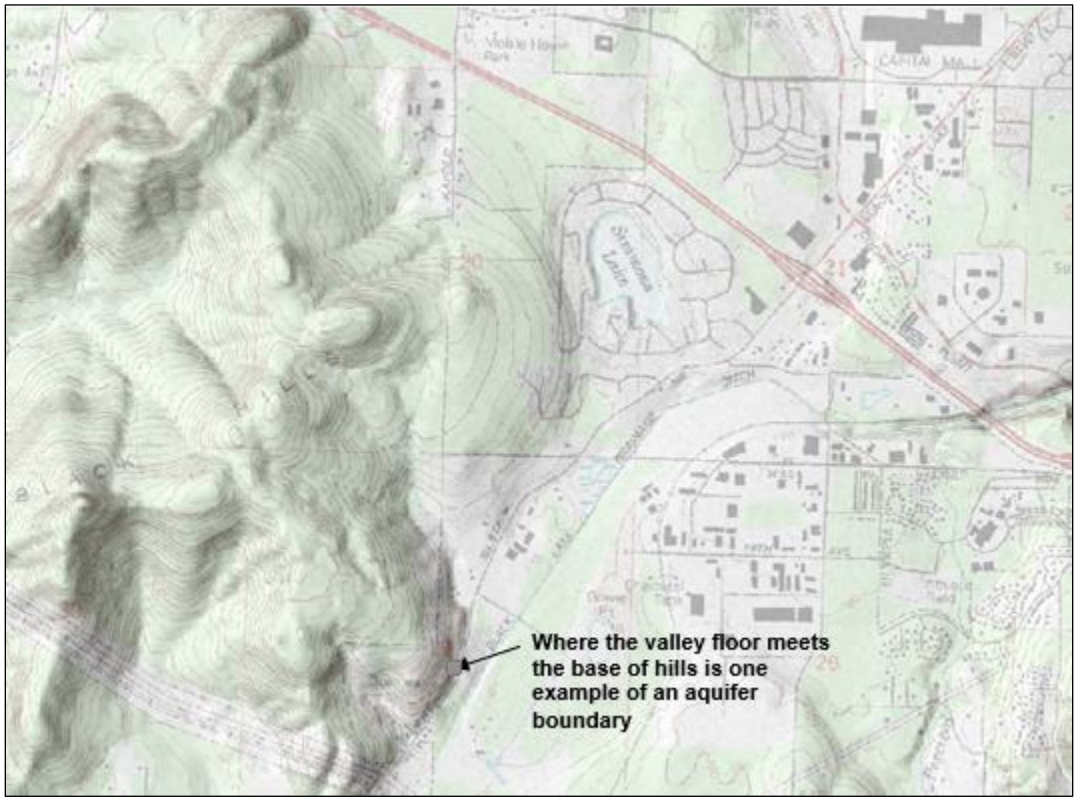

Figure 8: This topographic map shows hilly bedrock next to a flatter river valley. The boundary of the water table aquifer is likely to be where the hills slope up from the valley.

Surficial geology maps show where geologic materials are located that are likely to contain aquifers, such as alluvial deposits. An example is presented in Figure 9 below.

Many testing methods help hydrogeologists to identify and characterize aquifers. For example, aquifer tests involve pumping water out of a well at a known rate and measuring the effect in other nearby wells over time. These tests show how much water can be pumped from a well and how far away other wells may be affected. They may also show to what extent water from one aquifer may leak into another.

Geophysical methods are used to determine underground characteristics such as the nature and geometry of geologic materials, the extent of aquifers, depth to water, and water quality.

Modeling takes all of the available information and observations that a hydrogeologist has and uses the computer to simulate known conditions. It allows a hydrogeologist to model different

(what-if) scenarios and to find out what may happen when various choices are made. Example questions that modeling can address are:

- What would the effect of pumping from a well field be on stream flow?
- If a spill occurred in location A, how long would it take for the contaminants to reach the well at location B?
- How would a drought affect water table levels and stream flows?

Hydrogeology studies look at all the available resources to map and describe aquifers. Consultants, state agencies, academic studies, the U.S. Geological Survey (USGS) and other agencies are sources of this type of information. Numerous environmental firms can be contracted to do these studies for areas where there is not an existing study. These studies can be used to support the identification and characterization of Critical Aquifer Recharge Areas. Figures 9 and 10 show a hydrogeologic map and cross-section from a USGS study in Jefferson County (Simonds, 2004).

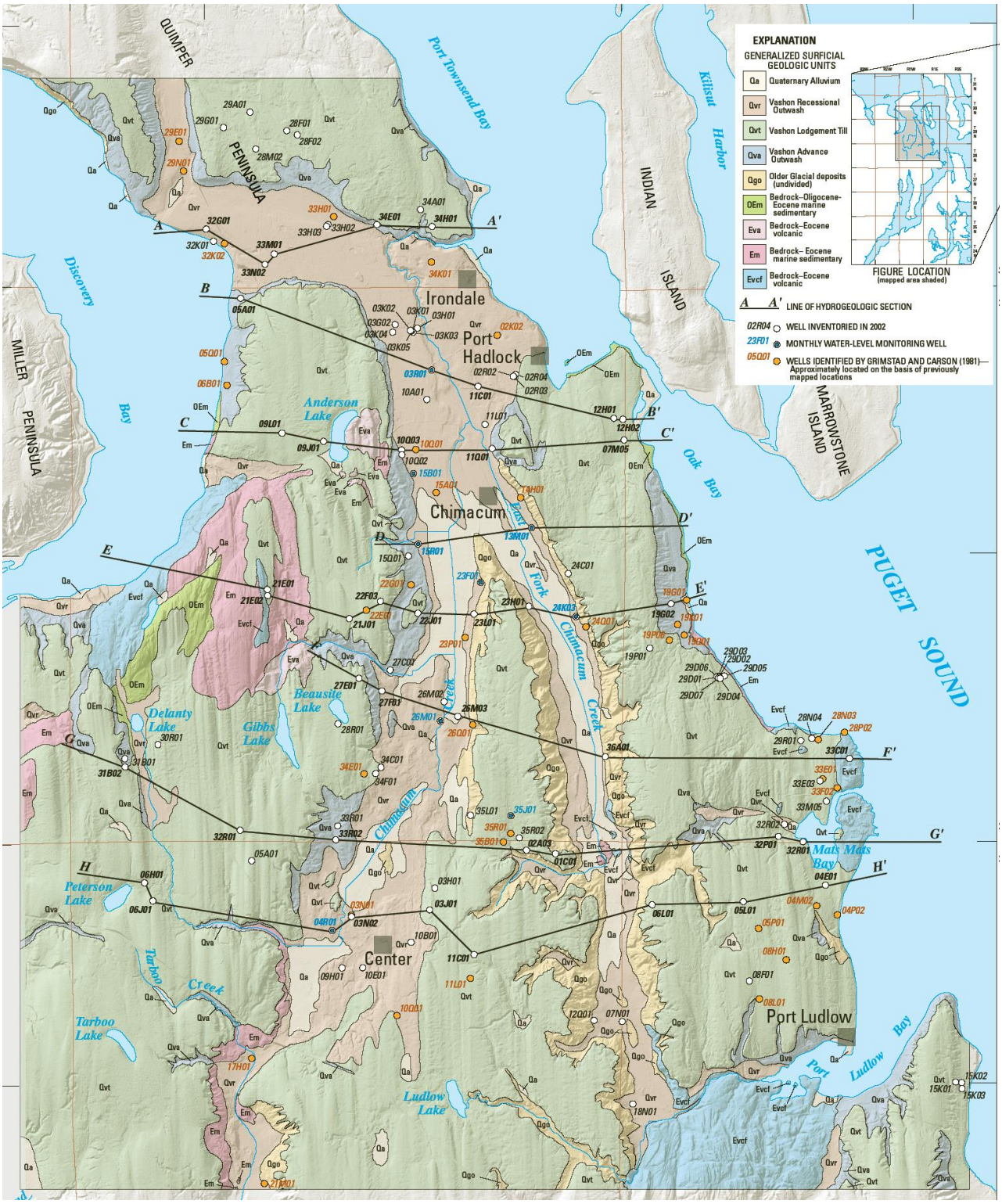

Figure 9: Hydrogeologic map of the Chimacum Basin (Simonds, 2004)

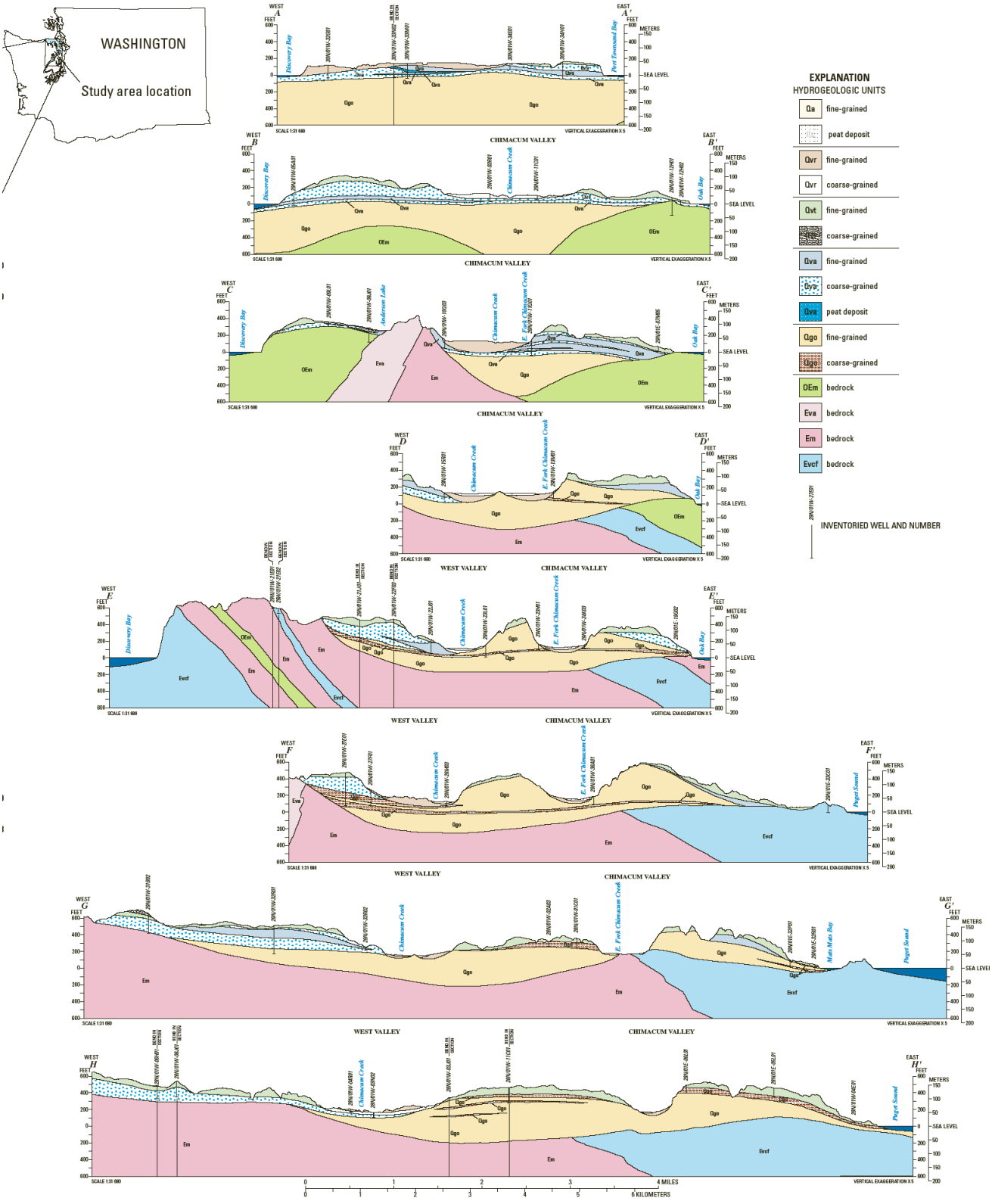

Figure 10: Hydrogeologic cross-sections of the Chimacum Basin (Simonds, 2004)

Resources

The first step is to determine what is already available for the city or county in determining where water resources are located. Here are some useful resources. More resources are listed in Section 5 under Sources for Best Available Science.

- USGS Washington State Groundwater Projects[40]
- USGS Glacial Aquifer System Groundwater Availability Study[41] (maps and data for Washington[42]) (Bayless, 2017)
- Information developed as part of streamflow restoration efforts (e.g. St. Godard (2019), discussed in the Watershed Planning section below) can be useful during identification of Critical Aquifer Recharge Areas.
- Maps of public water supply wells and their protection zones are available on the internet at both of the following websites:
    - Washington State Department of Health Source Water Assessment Program (SWAP) Map[43]
    - Washington State Department of Ecology Facility/Site Application[44]
- Another way of identifying private wells is to compare a parcel map of existing residences with public water supply service areas. Parcels outside of public water supply service areas are likely on individual wells. Parcel maps are generally available from the assessor's office or Washington State Geospatial Open Data Portal[45] (search for parcel), and the public water supply service areas are available on the Washington State Department of Health Source Water Assessment Program (SWAP) Map[46].
- Well logs and maps of well log locations are available online at the Department of Ecology Well Log Viewer[47] internet site has downloadable well logs, well records, and maps of well locations. It is important to read and understand the limitations of the well log application[48]. Hard copies of well logs are also available at the Department of Ecology Regional Offices in Lacey, Yakima, Spokane, and Bellevue. Many counties also maintain copies.
- Environmental monitoring data for both surface water and groundwater is available from the Department of Ecology Environmental Information Management (EIM) system[49].

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[40] https://webapps.usgs.gov/wawscgw/
[41] https://doi.org/10.3133/sir20155105
[42] https://mi.water.usgs.gov/projects/WaterSmart/MapPages/mapWA.html
[43] https://fortress.wa.gov/doh/swap/
[44] https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Facility-Site-database
[45] https://geo.wa.gov/
[46] https://fortress.wa.gov/doh/swap/
[47] https://fortress.wa.gov/ecy/wellconstruction/map/WCLSWebMap/WellConstructionMapSearch.aspx
[48] https://fortress.wa.gov/ecy/wellconstruction/map/WCLSWebMap/siteinformation.htm
[49] https://ecology.wa.gov/Research-Data/Data-resources/Environmental-Information-Management-database#:~:text=Go%20to%20the%20EIM%20Help%20Center%20Use%20the,sediments,%20river%20and%20stream%20water%20quality,%20and%20more.

Keep in mind that any information system may have missing or inaccurate information.

Step 2: Analyze the susceptibility of the natural setting where groundwater occurs.

Susceptibility is a term indicating the relative ease with which a release of contaminants to the land surface may contaminate groundwater. Although the underground is complex, we rely on information about the geologic setting to make some basic judgements about susceptibility. We know, for example, that aquifers in areas made up of coarse unconsolidated geologic materials (such as sand and gravel), have a higher susceptibility than aquifers in areas that have finer grained materials (such as silts and clays) above them.

Along with the characteristics of the contaminant, the characteristics of the vadose zone determines how easily a spill of a contaminant could get down to the water table. Characteristics important for the susceptibility assessment typically include soil type, surficial geology, depth to water, infiltration rate, permeability, chemical retardation factors, adsorption, and the presence or absence of an impermeable layer.

Keep in mind that **Preferential Flow** allows contaminants to travel through the ground faster than expected from the susceptibility factors alone. Because of the complexity of the underground soils and geology, preferential flow is difficult or impossible to take into account. This is another reason why pollution prevention is the best course for protecting groundwater supplies.

In general, information from the following sources can be collected and used to support determinations for Critical Aquifer Recharge Area designation and to document best available science for the record.

Further, it is helpful to look at what other jurisdictions have done. The following are good examples of susceptible drinking water aquifers:

- Spokane County: Spokane Aquifer[50]

  The Spokane County Joint Aquifer Board website has information about the aquifer and what is being done to protect it.

- Thurston County: Scatter Creek Aquifer[51]

  “The goal of the project was to make sure water in the Scatter Creek Aquifer is safe to drink now and in the future. The three-year project included groundwater monitoring, scientific modeling, and community input. A citizen advisory committee evaluated

[50] https://www.spokaneaquifer.org/
[51] https://co.thurston.wa.us/health/ehsc/index.html

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scientific data and modeling for potential impacts on the aquifer and made recommendations to the Thurston County Board of Health and Board of County Commissioners. Funding for this project was provided by the Washington State Department of Ecology."

- Walla Walla County: The Gravel Aquifer[52]

  Golder and Associates produced a series of maps of the gravel aquifer in support of Walla Walla County's update of their Critical Aquifer Recharge Area best available science.

The following information is useful for getting a relative indication of the susceptibility of drinking water aquifers to contamination sources.

Groundwater quality sample results

A primary indicator of susceptibility is groundwater samples showing contamination from man-made sources. This means that contaminants have travelled from the land surface to a well already.

The Washington State Department of Health drinking water database (SENTRY[53]) records groundwater quality sampling results for public water systems.

Many jurisdictions require a water well sample when a property is sold.

The USGS National Water Information System (NWIS[54]) has groundwater sample results for wells sampled for USGS studies.

The Ecology Environmental Information Management system (EIM[55]) has a groundwater map and a data application that includes groundwater monitoring data produced by Ecology studies. Data produced from Ecology grant funded studies may also be in EIM.

Source water protection susceptibility rating and travel time

The Department of Health requires that Group A public water supply purveyors complete a susceptibility assessment that results in a susceptibility rating for each public water supply well,

[52] https://www.co.walla-walla.wa.us/document_center/commdev/planning/critical%20areas/SGA%20Figure%201A%20-%209A%20dec%2011.pdf

[53] https://www.doh.wa.gov/DataandStatisticalReports/EnvironmentalHealth/DrinkingWaterSystemData/SentryInternet

[54] https://waterdata.usgs.gov/wa/nwis/nwis

[55] https://apps.ecology.wa.gov/eim/search/default.aspx

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based on a number of factors (WAC 246-290-135[56]). These factors include whether or not there is a protective confining layer above the aquifer. This rating and information is a key component of any susceptibility assessment.

The Washington State Department of Health Source Water Protection online map[57] shows time-of-travel zones for public water supply wells and susceptibility ratings.

A susceptibility rating applies to the well with the rating. Nearby wells can have different susceptibilities. For example, a public water supply well may have a susceptibility rating of low due to being a deep well beneath a confining layer, while nearby residential wells are shallow and draw water from above the confining layer.

Individual residential wells are often significantly shallower than public water systems. Many residents rely on individual residential wells for drinking water. The susceptibility analysis to support Critical Aquifer Recharge Area designation should include consideration of susceptibility in areas with these wells.

Along with susceptibility ratings, time-of-travel estimates provide information about how fast a contaminant could move toward the well.

Soil type

The National Resource Conservation Service (NRCS) develops and maintains county soil surveys. County soil surveys are the result of rigorous soil sampling, testing, and mapping. This information is housed in the NRCS' Soils Survey database. This database houses the physical characteristics and spatial distribution of soils.

The NRCS hosts an online tool called Web Soil Survey[58], which gives a user access to soil characteristics and maps. The Washington State NRCS soil survey page[59] has a table that lists areas that can be accessed with the Web Soil Survey, and areas that have an archived electronic copy (pdf) of the soil survey instead.

Important information to be collected from soil surveys includes the infiltration rate and permeability of the surface soils. Some soil surveys may also supply data on chemical retardation factors (such as organic matter content), depth to the seasonal high water table, and the presence or absence of an impermeable layer.

Soil surveys contain information for soil layers to a depth of as much as six feet.

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[56] https://app.leg.wa.gov/wac/default.aspx?cite=246-290-135
[57] https://fortress.wa.gov/doh/swap/index.html
[58] http://websoilsurvey.nrcs.usda.gov/app/
[59] https://www.nrcs.usda.gov/wps/portal/nrcs/surveylist/soils/survey/state/?stateId=WA

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Surficial geology

The Washington State Geological Survey maps the geology of the State of Washington in coordination with the USGS.

The Geology Portal[60] is an online map application that displays surficial geology, geologic structure (like faults), and subsurface information[61] (well logs, boring logs).

Geologic maps, cross-sections, well logs, and boring logs have information about geologic materials at depth. Cross-sections often depict the water table and the well locations the cross-sections are based on. The same information sources used for identifying where groundwater resources are located (see Step 1) are useful for analyzing susceptibility.

Well logs

Ecology's Water Resource Program maintains a well log database[62] for wells drilled around the State. The database can be searched by use of text for a location or by a map.

Information from well logs related to susceptibility includes depth to water at the time of well construction, the presence of coarse materials, and the presence or absence of an impermeable layer. Sometimes enough data is reported so that aquifer properties can be determined.

Publications

The same publications that help identify where groundwater resources are located also have information helpful for susceptibility analysis (Step 1, Resources).

Other types of publications that may have useful information include Environmental Impact Statements (EIS), as well as groundwater reports for regulated facilities. See additional links to publications under Section 5.

Step 3: Inventory existing and potential sources of groundwater contamination.

Anywhere that a potential pollutant is used, handled, transferred, or stored is a potential source of groundwater contamination. The release of contaminants from leaks or numerous spills over time creates the potential for groundwater contamination.

Transferring chemicals from one container to another can result in groundwater contamination from many small spills over time.

[60] https://www.dnr.wa.gov/geologyportal
[61] https://geologyportal.dnr.wa.gov/#subsurface
[62] https://appswr.ecology.wa.gov/wellconstruction/map/wclswebMap/

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Examples are transferring chemicals from trucks to tanks, floor washing where chemicals are used that goes down the drain to infiltrate into the ground, pumping chemicals from a drum, or leaky pipes that convey chemicals. These might not be noticeable day to day, until a drinking water well sample shows contamination or the site becomes a toxic cleanup site.

Nitrate has contaminated groundwater in many areas of the state above the Maximum Concentration Level of 10 mg/L as N (Morgan, 2016). Nitrate comes from fertilizers, manure, spreading biosolids, and onsite sewage systems.

Fertilizers and pesticides must be carefully managed to avoid contributing to nonpoint contamination of groundwater.

High densities of onsite sewage systems in areas where conditions are susceptible to the migration of contaminants to groundwater pose a risk, especially where there are drinking water wells in the vicinity.

The Ecology online map "What's In My Neighborhood[63]" shows toxic cleanup sites that have been identified and are in the Ecology information system. The Ecology Toxic Cleanup Program Web Portal[64] has links to other reports, such as the Confirmed and Suspected Contaminated Sites List. With this list, sites with confirmed and suspected groundwater contamination can be mapped in relation to aquifer boundaries and proximity to drinking water wells. See Appendix B for a map of these sites as of January, 2020.

Many of these facilities are constructed, maintained, and operated in a way that prevents spills and leaks from getting to the ground as much as is feasible. Some operations, however, are inherently more risky for pollution than others. These would include facilities that handle a large quantity of toxic materials, especially where these toxic materials are transferred or handled, increasing the possibility of an incident leading to a spill.

Stormwater Infiltration

Stormwater that infiltrates into the ground is important for recharging groundwater. Stormwater that washes over roads, parking lots, industrial areas, and even roofs picks up contaminants before the water flows into surface water or infiltrates into the ground. It is important to remove contaminants so that groundwater does not become polluted.

The state has an extensive stormwater permit program that uses stormwater manuals to guide pollution prevention efforts and flow control. These manuals provide extensive guidance on construction stormwater, industrial and municipal stormwater best management practices and stormwater infrastructure requirements to remove contaminants from stormwater before it is

[63] https://apps.ecology.wa.gov/neighborhood/
[64] https://apps.ecology.wa.gov/tcpwebreporting/

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released to the environment. These requirements and best management practices also apply to discharges to underground injection control wells (UIC wells) under the state Underground Injection Control (UIC) Program[65].

All stormwater discharge using UIC wells must be registered with the state, including the locations, and meet groundwater protection requirements. Counties and cities also have to register their UIC wells. The state has an online database and query tool for UIC registrations[66].

The UIC program requires the same best management practices for discharge to a UIC well that are required for surface water in the stormwater manuals. All new UIC wells are required to have some form of treatment for stormwater discharges.

Since UIC wells can be a conduit for contamination, it is important to know where they are and be aware of the surrounding land uses and potential contamination sources. It is important to apply BMPs to stormwater discharges to UIC wells to prevent groundwater contamination.

Source water protection contaminant inventories

Public water supply systems with 15 or more connections are regulated by the Washington State Department of Health under Chapter 246-290 WAC[67]. A key requirement of this regulation is a wellhead protection program is that public water systems must inventory potential contamination sources around their water supply wells. The Department of Health works with the Department of Ecology to provide web-based maps of potential contamination sources along with locations of wellhead protection zones. This online tool is the Facility/Site atlas[68].

The GIS cover of facilities and sites regulated by the Department of Ecology can be accessed from the GIS Data website[69], along with many other GIS data sets. These facilities include toxic cleanup sites where releases have contaminated the environment.

Critical Material Inventories

Many jurisdictions require businesses that handle chemicals to submit a critical material inventory so that the jurisdictions know what chemicals are on site. The fire department requires similar reporting. These efforts may be coordinated. See the City of Redmond fire code[70] for a great example.

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[65] https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Underground-injection-control-program
[66] https://apps.ecology.wa.gov/uicsearch/
[67] https://apps.leg.wa.gov/wac/default.aspx?cite=246-290
[68] https://apps.ecology.wa.gov/facilitysite/
[69] https://ecology.wa.gov/Research-Data/Data-resources/Geographic-Information-Systems-GIS/Data
[70] https://www.codepublishing.com/WA/Redmond/municode/Redmond15/Redmond1506.html#15.06.020

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Spokane County Critical Materials ordinance[71] (Chapter 3.15) is an excellent example of an ordinance for the purpose of preventing groundwater contamination from chemicals. See Appendix C for more information about Critical Materials and links.

Step 4: Classify the relative vulnerability of groundwater to contamination events.

All groundwater is vulnerable; some areas where strategic public groundwater resources are located are more vulnerable than other areas. The concept of using criteria to create classifications or categories of vulnerability helps local jurisdictions apply the appropriate measures for the risks involved.

The base classification of Critical Aquifer Recharge Areas can be based on susceptibility, and an overlay of existing contamination sources used to give the community an idea of where its strategic groundwater supplies may be most vulnerable (at risk) under current land use conditions.

For new development, classification based on natural conditions (aquifer susceptibility) allows a jurisdiction to make decisions about the type of land uses that should or should not be allowed, or which may be allowed with conditions.

There is more than one way to classify Critical Aquifer Recharge Areas. Here some examples:

- Categories based on susceptibility
    - Water table sand and gravel aquifers
    - Deeper less susceptible aquifers
    - Confined aquifers
- Categories based on set priorities and risk
    - Group A public water supply systems one-year time of travel wellhead protection zone
    - Densely populated areas that rely on ground water
    - Group B public water supply systems wellhead protection zones
    - Rural areas with a high dependence on ground water
    - Discontinuous local drinking water aquifers of limited extent
    - Sole Source Aquifers

71 https://library.municode.com/wa/spokane_county/codes/code_of_ordinances?nodeId=TIT3BUST_CH3.15CRMA&searchText=#TIT3BUST_CH3.15CRMA_3.15.070CRMALI

- Categories based on areas that have the same policies, plans, ordinances, and programs that will be applied.

These examples are not meant to be exhaustive. The categories depend on local hydrogeologic settings, use of the drinking water aquifers, and the actions that a local jurisdiction needs to set in place to protect the public potable groundwater resource.

Step 5: Designate areas that are most at risk to contamination events.

The next step in establishing Critical Aquifer Recharge Areas is to designate areas where the public drinking water supply has been determined to be at risk for contamination. This is done by combining the results of steps 1 through 4 above.

CARA designation is so that local planning and regulation can be guided appropriately, to make it clear:

- Where these areas are located (map) and what the performance standards are (criteria).
- Why these areas are at risk (susceptibility and potential contaminant sources).
- What the importance of this area is to the public drinking water supply (prioritization).

Step 6: Protect by minimizing activities and conditions that pose contamination risks.

There are all too many examples of groundwater contamination here in Washington. Municipal water supplies have been contaminated by industrial or commercial use of chemicals. The city of Tumwater, the city of Vancouver, and the city of Lakewood all have had public water supply wells contaminated. In Eastern Washington, well water turned yellow from Dinoseb, an herbicide spilled at a farm. These events have been expensive to remediate and distressing to the public.

Appendix B is a map of the Department of Ecology Suspected and Confirmed Groundwater Contaminated Sites showing the extent of locations across the state with known contamination.

Anywhere chemicals are stored, handled, transferred, or used is a potential spill or leak risk.

Well owners do not have the regulatory authority that cities and counties do to stop contamination risks or events. Public Water Supply Systems and residents on single wells rely on cities and counties to implement regulations that clearly address protection of the aquifer resource for new developments and existing land uses.

Typically, cities and counties have different departments that administer different aspects of protecting Critical Aquifer Recharge Areas. These include planning, development

services/building permits, public works, and water resources protection (stormwater, groundwater, surface water). Ideally, the relevant departments work together so that everyone involved knows about projects early.

Cities and counties can minimize risk of groundwater contamination by conditioning chemical and land uses and prohibiting very high risk uses in critical areas where such a risk is unacceptable. Some jurisdictions use a table to list land uses that are allowed, allowed with conditions, or prohibited. Two examples are given in Appendix C.

Best management practices (BMPs) are meant to prevent spills and leaks from occurring and potentially infiltrating into the ground. These typically include secondary containment, using covers over outdoor structures where chemicals are used, stored or transferred to prevent contact with rainwater, having a spill plan, and many others. The following resources provide information on pollution prevention (see also Section 6).

- The Washington State Department of Ecology provides guidance on preventing pollution from dangerous waste[72]. This information also applies to the hazardous materials before they become waste, while they are being handled, stored, treated, or transported.
- Hazardous waste collection facilities and programs – Kittitas County Moderate Risk Waste[73].
- The Washington State Department of Ecology Stormwater Manuals for Eastern and Western Washington each have a chapter on BMPs for source control. For the Eastern Washington Stormwater Manual[74], Chapter 8 is on source control (Washington State Department of Ecology, 2019a). For the Western Washington Stormwater Manual[75], Volume IV is on source control (Washington State Department of Ecology, 2019b).
- Municipal Stormwater General Permit Guidance for Cities and Counties[76]: Writing Regulations to Prohibit Illicit Discharges, Dumping, and Illicit Connections.
- The City of Spokane Critical Materials Handbook[77] includes information about best management practices to prevent pollution of the Spokane Aquifer. Much of this information can be applied to other areas.
- The Thurston County Nonpoint Program[78] has an abundance of information. Fact sheets for various pollution prevention practices are on this page, including floor drains[79], secondary containment[80], and others.

[72] https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Dangerous-waste-guidance/Common-dangerous-waste
[73] https://www.co.kittitas.wa.us/solid-waste/moderate-risk.aspx
[74] https://fortress.wa.gov/ecy/publications/SummaryPages/1810044.html
[75] https://fortress.wa.gov/ecy/publications/SummaryPages/1910021.html
[76] https://fortress.wa.gov/ecy/publications/documents/0810061.pdf
[77] https://spokaneaquifer.org/wp-content/uploads/2012/09/2009-City-of-Spokane-Critical-Materials-Handbook.pdf
[78] https://www.co.thurston.wa.us/health/ehhw/nspo.html
[79] https://www.co.thurston.wa.us/health/ehhw/pdf/fact_sheets/floor_drains.pdf
[80] https://www.co.thurston.wa.us/health/ehhw/pdf/fact_sheets/SecContainmt.pdf

As an example of actions to help minimize contamination, Figure 11 is a poster for preventing Dangerous Waste from spilling or leaking. The same items apply to hazardous materials drums that store chemicals for use, especially when transferring chemicals from the drum to another container.

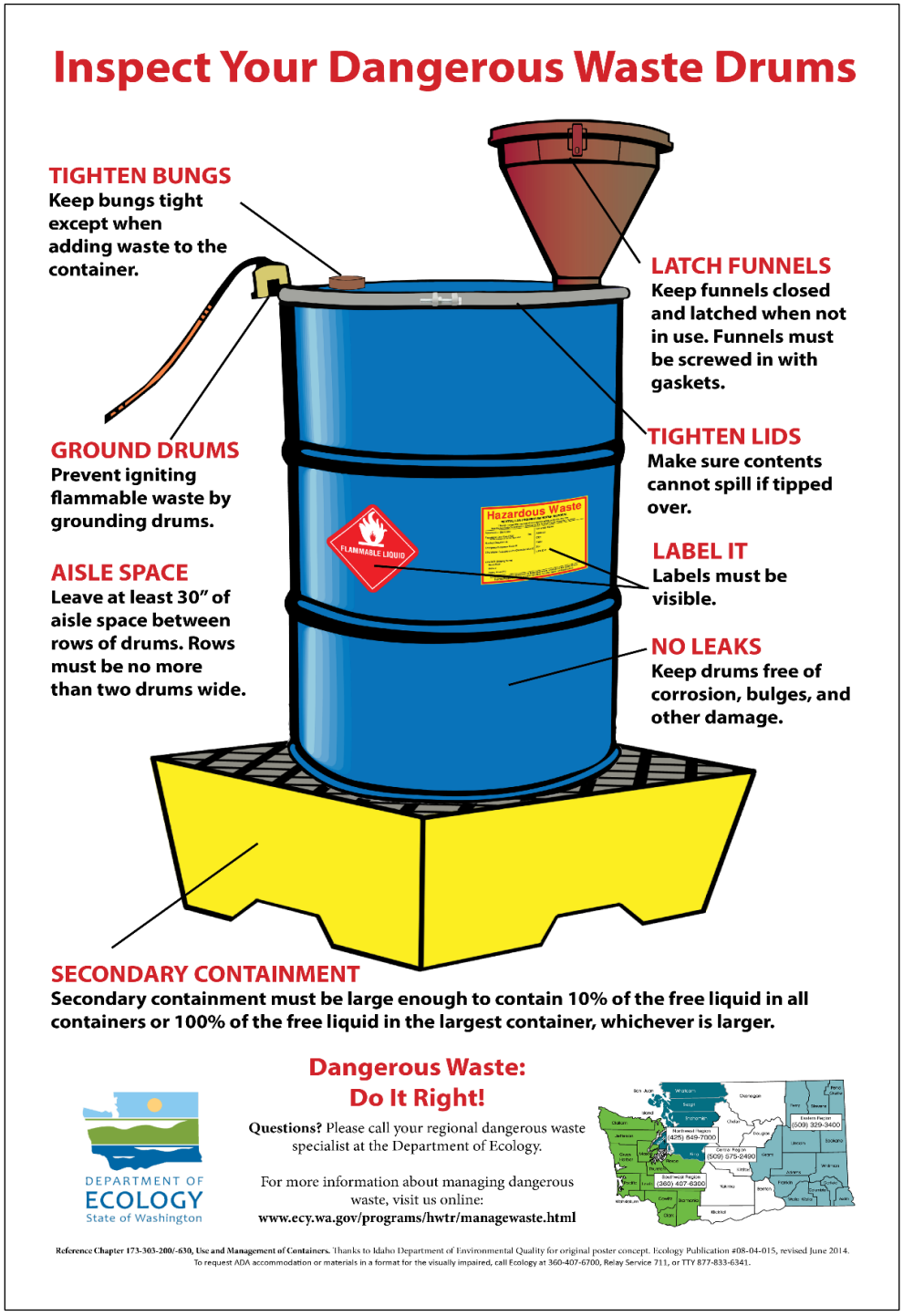

Figure 11: Requirements for Dangerous Waste Drums Poster. For more information, phone 360-407-6700 or email hwtrpubs@ecy.wa.gov.

Step 7: Ensure that contamination prevention plans and best management practices are followed.

Voluntary compliance is very important for pollution prevention. Compliance saves resources both for land owners and jurisdictions. Many jurisdictions have programs to assist land owners and operators in preventing pollution.

The best plans and practices, however, cannot prevent contamination if they are not used. The ability to inspect, obtain compliance, and enforce is needed to make sure that the county or city can stop a threat to groundwater when the land user is negligent or uncooperative.

Local codes need to be written to grant the jurisdiction regulatory authority so that they can require pollution prevention and obtain compliance before a situation contaminates the local drinking water supply.

Ordinances can be specific to the jurisdiction, or a jurisdiction may choose to adopt state or federal laws or rules by reference. Adoption by reference needs to include local authority to enforce, along with any additional ordinances needed to make adoption by reference effective.

Often, county or city hazardous materials pollution prevention programs with associated regulations are operated to prevent local land use activities from creating major toxic cleanup sites.

The City of Redmond has a robust groundwater protection program[81]. Along with development review, the city monitors groundwater quality, groundwater table levels, and monitors contaminated site cleanups. The city also coordinates with Ecology, carries out pollution prevention inspections of businesses, and does outreach to the community.

Step 8: Manage groundwater withdrawals and recharge.

The goals of managing groundwater withdrawals and recharge are to:

- Maintain availability for drinking water sources.
- Maintain adequate recharge so stream-base flow from groundwater to support instream flows is retained, especially for salmon-bearing streams.
- Initiatives under watershed planning, streamflow restoration, aquifer storage and recovery, and stormwater support the GMA goals for water availability.

Recharge

Development has a profound effect on the hydrology of an area. Increases in impervious surfaces and disturbance of natural vegetation result in increasing runoff and decreasing

[81] https://www.redmond.gov/831/GroundwaterWellhead-Protection

recharge. Local jurisdictions can improve recharge by encouraging methods that maintain or increase recharge. Methods include limiting impervious surfaces and promoting stormwater infiltration.

Methods of stormwater infiltration, such as low impact development, storm water infiltration ponds, rain gardens, and underground injection wells are described in the stormwater manuals and in guidance on Low Impact Development (LID).

Many organizations have information about Low Impact Development (LID) resources, including the Department of Ecology Low Impact Development Guidance[82] and the Puget Sound Partnership. The Washington Stormwater Center[83] is a good central place to access LID resources from many different sources.

Water supply planning

The GMA requires that critical areas give special consideration to anadromous fisheries. This overlaps in objectives with the Streamflow Restoration Act of 2018 (codified in Chapter 90.94 RCW[84]) and other watershed planning initiatives. Water supply planning studies typically have information useful for Critical Aquifer Recharge Areas, both for comprehensive plans and best available science.

Streamflow Restoration

The Washington State legislature passed the Streamflow Restoration Act to help restore streamflows to levels necessary to support robust, healthy, and sustainable salmon populations while providing water for homes in rural Washington. This law directs local planning groups[85] in 15 Water Resources Inventory Planning Areas (WRIAs) in the state to create watershed plans that achieve these goals, and Ecology's Water Resources Program has a Streamflow Restoration Section that works with these planning groups on implementation of this law.

Jurisdictions that are planning and implementing plans aimed at streamflow restoration may use the information generated to meet the requirements of the Growth Management Act for Critical Aquifer Recharge Areas, as applicable. Studies related to those plans may be particularly helpful for:

- Watershed planning for water availability for in-stream flow, which applies to the requirement that critical areas plans and ordinances give "special consideration to anadromous fisheries."

[82] https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Low-Impact-Development-guidance
[83] https://www.wastormwatercenter.org/lid-manuals-guides/
[84] https://app.leg.wa.gov/RCW/default.aspx?cite=90.94&full=true
[85] https://ecology.wa.gov/Water-Shorelines/Water-supply/Streamflow-restoration/Streamflow-restoration-planning

- Determining where permit-exempt wells are currently used to supply drinking water for homes.
- Determining where new permit-exempt wells will be located in the future.

A good example of a study that has been used in support of Streamflow Restoration Act efforts was completed by Stevens County for WRIA 59 (St. Godard, 2019). That report includes information on the location of and groundwater use by permit-exempt domestic wells; aquifer characteristics; the relationships between groundwater and surface water; and domestic dependence on aquifers for drinking water both now and in the future. This report also provides a good example of how information on Best Available Science for Critical Aquifer Recharge Areas with special consideration for anadromous fisheries may be obtained from a study designed to address streamflow restoration and permit-exempt well issues.

Watershed Planning

In addition to recent watershed planning conducted in response to the 2018 Streamflow Restoration Act, the 1998 Watershed Planning Act[86] (codified in Chapter 90.82 RCW) provided for water supply planning by local entities within the state's WRIAs. Local entities that formed a WRIA planning unit were required to include at least the counties, the largest city or town within the WRIA, and the water utility that uses the most water. Many of the WRIA planning units engaged in watershed planning between 1998 and 2012. Ecology maintains an archive of watershed planning/management documents[87].

Groundwater Management Areas

Groundwater Management Areas[88] (GWMA) may be established by either the state or local government under RCW 90.44.400. Criteria for identifying potential Groundwater Management Areas include (among others): Aquifer systems that are declining due to restricted recharge or over-utilization, aquifers identified as the primary source of supply for public water supply systems, and geographical areas where land use may result in contamination or degradation of the groundwater quality. Rules governing Groundwater Management Areas and Programs[89] are set forth in WAC 173-100.

Water System Planning

Larger, Group A, water systems regulated by the Department of Health are required to have a water system plan. This plan includes analyses of future water demand and supply, and source water assessment requirements. Public Water Supply Systems must have wellhead protection areas delineated, must do contaminant inventories within those areas, and must notify

[86] http://apps.leg.wa.gov/rcw/default.aspx?cite=90.82
[87] https://ecology.wa.gov/Water-Shorelines/Water-supply/Streamflow-restoration/Watershed-plan-archive
[88] https://apps.leg.wa.gov/RCW/default.aspx?cite=90.44&full=true#90.44.400
[89] https://apps.leg.wa.gov/WAC/default.aspx?cite=173-100&full=true

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landowners of potential contaminant sources, as well as state and local agencies of the findings. Smaller water systems are required to have a small water system management program.

Guidance is provided by the Dept. of Health Water System Planning Requirements web page[90]. This includes the Water System Planning Guidebook[91] (Washington State Dept. of Health, 2020).

Drinking water suppliers do not have land use or pollution prevention authority, unless the drinking water purveyor is a government entity like a city. Landowners and regulatory agencies do have the ability to take action to protect water supplies from contamination.

Water Planning under the Growth Management Act

Local governments also include water planning in their comprehensive plans and must meet water supply planning requirements under the Growth Management Act. Mandatory elements of comprehensive plans[92] in RCW 36.70A.070 includes a land use element, which must "provide for protection of the quality and quantity of groundwater used for public water supplies."

Chapter 1 of the Dept. of Commerce Growth Management Services Critical Areas Handbook[93] has a section on Regional Planning Efforts. This section includes information about various state watershed initiatives. Since aquifers often span more than one jurisdiction, counties and cities need to work together to protect the public drinking water resource.

County wide planning policies and inter-local agreements are often necessary in unincorporated portions of the UGA. For example, cities have a vested interest in the type of development that occurs as they may ultimately annex the unincorporated lands within the UGA, but counties often oversee the development and issue the permits. As a result, some jurisdictions develop countywide planning policies or inter-local agreements to ensure the city can review development proposals before they are finalized. Local governments could apply the same model for wellheads and other Critical Aquifer Recharge Areas. For local governments who have GIS capacity, they would include inter-local jurisdictions on maps to ensure areas of concern are easily identified during the county review period and permitting.

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90 https://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/WaterSystemDesignandPlanning/PlanningRequirements

91 https://www.doh.wa.gov/Portals/1/Documents/Pubs/331-068.pdf

92 https://apps.leg.wa.gov/rcw/default.aspx?cite=36.70A.070

93 https://www.commerce.wa.gov/serving-communities/growth-management/growth-management-topics/critical-areas/

Section 5 - Best Available Science

Best available science to protect the functions and values of Critical Aquifer Recharge Areas

Protecting the functions and values of Critical Aquifer Recharge Areas involves knowing:

- Where drinking water aquifers are
- What the underground characteristics are that transmit recharge and any associated contaminants, to the extent that is practical and available
- Where groundwater is currently used for drinking water
- Where groundwater will be needed for drinking water in the future
- What contamination threats to drinking water already exist
- What measures need to be in place to protect recharge availability
- What measures need to be in place to prevent contamination of recharge
- And for special consideration for anadromous fisheries, how surface water depends on groundwater

Best available science laws and rules

Best available science for Critical Aquifer Recharge Areas is required by the Growth Management Act and is defined by the Washington Administrative Code.

- Chapter 36.70A.172 RCW[94] - Critical areas, designation and protection, best available science to be used.

  In designating and protecting critical areas under this chapter, counties and cities shall include the best available science in developing policies and development regulations to protect the functions and values of critical areas. In addition, counties and cities shall give special consideration to conservation or protection measures necessary to preserve or enhance anadromous fisheries.

- Chapter 365-195-905 through 925 WAC[95]

  Chapter 365-195-905(5)(a) WAC discusses the characteristics of a valid scientific process:

  In the context of critical areas protection, a valid scientific process is one that produces reliable information useful in understanding the consequences of a local government's

[94] https://app.leg.wa.gov/RCW/default.aspx?cite=36.70A.172
[95] https://apps.leg.wa.gov/wac/default.aspx?cite=365-195

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regulatory decisions and in developing critical areas policies and development regulations that will be effective in protecting the functions and values of critical areas.

The rule goes on to list the characteristics of a valid scientific process, including peer review, methods, logical conclusions and reasonable inferences, quantitative analysis, context, and references. It then lists sources, including research, monitoring, inventory, survey, modeling, assessment, synthesis, and expert opinion. This section of the WAC is particularly applicable to Critical Aquifer Recharge Areas.

Chapter 365-195-020 WAC[96] discusses using a precautionary approach to address inadequate scientific information, along with using an interim effective adaptive management approach.

In the absence of information, using the precautionary approach to prevent contamination at the land surface is especially important. By the time a contaminant is detected at a well, groundwater is already contaminated. Preventing contamination at the land surface is of paramount importance.

See the Critical Areas Handbook[97] for more on the precautionary approach, which among other things references a court decision where it states: "In the absence of scientific information, the county should adopt a precautionary or no risk approach."

Best available science guidance

Best available science guidance has been published by the Department of Commerce Growth Management Services in the Critical Areas Handbook, which is available online at the Department of Commerce Critical Areas resources web page[98].

The Critical Areas Handbook should be consulted to obtain a good knowledge of how the concept of best available science functions within the Growth Management Act.

The following contains excerpts from the Critical Areas Handbook:

Objective of best available science

The objective of best available science is "to protect the functions and values of critical areas." Science plays a central role in delineating critical areas, identifying functions and values, and

[96] https://apps.leg.wa.gov/WAC/default.aspx?cite=365-195-920
[97] https://www.commerce.wa.gov/serving-communities/growth-management/growth-management-topics/critical-areas/
[98] https://www.commerce.wa.gov/serving-communities/growth-management/growth-management-topics/critical-areas/

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recommending strategies to protect their functions and values. (Washington Department of Commerce, 2018).

Availability of best available science

With respect to the **availability** of science, the Western Washington Growth Management Hearings Board found that the best available science is science that is presently available as well as practically and economically feasible.

The Central Puget Sound Growth Management Hearings Board reasoned "that the "best available science" requirement includes the word "available" as an indicator that a jurisdiction is not required to sponsor independent research but may rely on competent science that is provided from other sources . . ."

See also Chapter 365-196-050 WAC Regional and Local Variations[99] for important distinctions related to availability of best available science with respect to smaller jurisdictions. The GMA recognizes the variability of population and available resources across the state.

When Should Best Available Science Be Applied?

1. The Critical Areas Handbook recommends applying best available science upfront, during the planning process.

   Local governments' understanding of where on the landscape critical areas occur, how they naturally function, and how best to regulate land uses that may impact them is important in ensuring that zoning and project permit decisions are being made without the need to complete expensive environmental review and new studies at the permit level. Good upfront planning and the adoption of scientifically defensible development standards should lead to quicker permit decisions.

2. Best available science should also be applied at the time of application.

   Project review may entail that the applicant provides the county or city with information that is supported by best available science. An example would be a hydrogeologic report. This information is especially important to evaluate projects against performance-based standards.

[99] https://apps.leg.wa.gov/wac/default.aspx?cite=365-196&full=true#365-196-050

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What are the potential consequences if best available science is not applied?

Failure to apply best available science for critical areas under the Growth Management Act may be appealed to the Growth Management Hearings Board. When the board finds a county or city in noncompliance with the Growth Management Act, the board issues a Compliance Order. Failure to comply with a board order can result in state sanctions and loss of funding. See Appendix D for where to find more information about the Growth Management Hearings Board decisions and court cases related to the GMA and best available science.

Best available science for special consideration of anadromous fish species

Critical Areas requirements of the GMA requires best available science to be used for **special consideration of anadromous fish species**. Science is used to establish where and how groundwater affects streams and other surface water habitats.

Chapter 365-195-925 WAC[100] - Criteria for demonstrating "special consideration" has been given to conservation or protection measures necessary to preserve or enhance anadromous fisheries.

> (1) RCW 36.70A.172(1) imposes two distinct but related requirements on counties and cities. Counties and cities must include the "best available science" when developing policies and development regulations to protect the functions and values of critical areas, and counties and cities must give "special consideration" to conservation or protection measures necessary to preserve or enhance anadromous fisheries. Local governments should address both requirements in RCW 36.70A.172(1) when developing their records to support their critical areas policies and development regulations.

Groundwater quality and quantity

The Growth Management Act requires protection of **water quality and quantity**:

Planning goals include water quality and availability.

- RCW 36.70A.020 – Planning goals[101]
  - Protect the environment and enhance the state's high quality of life, including air and water quality, and the availability of water.

[100] https://apps.leg.wa.gov/wac/default.aspx?cite=365-195&full=true#365-195-925
[101] https://app.leg.wa.gov/RCW/default.aspx?cite=36.70A.020

- Comprehensive plans should address groundwater quality and quantity protection in the land use element.

- RCW 36.70A.070 Comprehensive plans – Mandatory Elements[102]
  - The land use element shall provide for protection of the quality and quantity of groundwater used for public water supplies.

Best available science for Critical Aquifer Recharge Areas, therefore, should address both quality and quantity.

Sources for Best Available Science for Critical Aquifer Recharge Areas

Groundwater scientists rely on a number of standard methods for characterizing the occurrence and movement of groundwater. These methods involve everything from topographic maps, aerial photos, on-the-ground mapping, use of existing maps for soils and geology, well log analysis, aquifer tests, geophysics, water quality testing, water level measurements, monitoring well installations, testing for seepage of groundwater into streams (or from streams into groundwater), and modeling.

There are also dozens of approaches to assessing groundwater vulnerability or susceptibility to contamination in the professional literature. Pollution prevention and best management practices for preventing contamination are widely published.

These methods have **standards of practice**. Some examples, just to name a few, are:

- Quality assurance standards for water quality sampling
- Standard methods for measuring water levels
- Aquifer test methods and standards
- Field methods

The USGS has issued an internal memo describing their role and use of best available science[103] when they are involved in studies involving wellhead protection, groundwater vulnerability, and identification of aquifer recharge areas.

Existing Sources of Information

Local government can use information that local, state or federal natural resource agencies have determined represents the best available science. They can also use information provided by a qualified scientific expert or team of qualified scientific experts.

[102] https://app.leg.wa.gov/RCW/default.aspx?cite=36.70A.070
[103] https://water.usgs.gov/admin/memo/GW/gw00.01.html

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Sources that provide scientifically valid information useful for Critical Aquifer Recharge Areas include:

Public water supply data and source water protection information

- The Department of Health Office of Drinking Water Source Water Protection Program[104] is an important and valuable resource. Notable topics that are accessible from this website include:
    - The Source Water Protection Map[105] shows public water supply system time-of-travel zones. Pop-ups show the system name and ID, and lists information about the system, including the well tag ID, well depth, and susceptibility rating.

      The pop-up also has a link to the SENTRY[106] data base, where there is more information, including water quality data. With the well tag ID, you can look for the well log in Ecology's well log database[107].

      Use this map to find public water supply systems in your jurisdiction and associated information.
    - Free source water protection technical assistance;
    - Elements of wellhead protection programs;
    - SENTRY[108], the online database that has water system data, including source well information and water quality data.
- Public Water Supply Systems

  The Department of Health requires public water systems to develop water system plans, complete contaminant inventories, to determine susceptibility, and to coordinate with local government. These are great information sources.

  The easiest way to obtain water system plans is from the public water supply system. Use the Department of Health Source Water Protection (SWAP) map site[109] to identify public water supply systems and sources (wells, springs, etc.) within their area of interest. Then

104 https://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/SourceWater/SourceWaterProtection
105 https://fortress.wa.gov/doh/swap/index.html
106 https://www.doh.wa.gov/DataandStatisticalReports/EnvironmentalHealth/DrinkingWaterSystemData/SentryInternet
107 https://appswr.ecology.wa.gov/wellconstruction/map/WCLSWebMap/default.aspx
108 https://www.doh.wa.gov/DataandStatisticalReports/EnvironmentalHealth/DrinkingWaterSystemData/SentryInternet
109 https://fortress.wa.gov/doh/swap/index.html

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use SENTRY[110] to obtain contact information for the water supply systems, and obtain information directly from the water supply system.

Alternatively, contact the Department of Health Office of Drinking Water. However, they may not have all the information needed and one may need to reach out to the water supply system anyway.

State, federal, local, academic, and consultant studies

- USGS studies:
  - Washington State Groundwater Projects interactive map[111]
  - USGS Publications[112]
- National Resource Conservation Service (NRCS)
  - Washington NRCS[113] home page
  - NRCS Web Soil Survey[114]
- Ecology information resources:
  - Ecology has information about groundwater resources[115], including many local groundwater programs[116].
  - Ecology groundwater publication search[117], or use the Environmental Information System EIM Groundwater Map Search[118] report finder.
  - Environmental Impact Statements (EIS) are completed for large projects may have groundwater information. The Ecology SEPA Register[119] is the place to look for these types of projects.

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110 https://www.doh.wa.gov/DataandStatisticalReports/EnvironmentalHealth/DrinkingWaterSystemData/SentryInternet
111 https://webapps.usgs.gov/wawscgw/
112 https://www.usgs.gov/centers/wa-water/publications
113 https://www.nrcs.usda.gov/wps/portal/nrcs/site/wa/home/
114 https://websoilsurvey.nrcs.usda.gov/app/HomePage.htm
115 https://ecology.wa.gov/Water-Shorelines/Water-quality/Groundwater/Groundwater-resources
116 https://ecology.wa.gov/Water-Shorelines/Water-quality/Groundwater/Groundwater-resources/Groundwater-information
117 https://ecology.wa.gov/Research-Data/Monitoring-assessment/Groundwater-quality-assessment/Find-groundwater-publications
118 https://fortress.wa.gov/ecy/eimreporting/Map/Map.aspx?MapType=Groundwater&MapLocationExtent=-13873343.3370313%2c5711716.7542974%2c-13028904.807647%2c6275200.77356957&WellsOnlyFlag=True
119 https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-Register

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  - Consultant studies for a state-regulated facility, such as toxic cleanup sites, landfills, and Aquifer Storage and Recovery (ASR) projects. To find facilities regulated by Ecology, see the online Ecology Facility/Site application[120].
- Washington State Geological Survey[121]
  - The Washington State Geological Survey at the Department of Natural Resources is an essential source for geologic information, the identification of drinking water aquifers, and their susceptibility.
  - The Geologic Information Portal[122] has a series of online geologic maps that show surficial geology, geologic structure (like faults and folds), and subsurface information[123].
- Consultant studies for local government
- Academic studies

Information developed for other requirements

Information developed for other requirements, such as stormwater studies, the Streamflow Restoration Program (see Section 3), watershed planning, or Ground Water Management Areas, is useful also for best available science for Critical Aquifer Recharge Areas. Use of these sources should be documented for the record.

Smaller jurisdictions can rely on the information generated by public water supply systems, state, and federally required studies for facilities located within their jurisdiction, and other studies as listed above. A literature review helps to document best available science for the record. Asking for volunteers in the community, technical assistance from the state, and applying for grants are ways to augment local resources. (See WAC 365-195-910 (2)[124]).

120 https://apps.ecology.wa.gov/facilitysite/SearchData/ShowSearch.aspx?ModuleType=FacilitySite&RecordSearchMode=New
121 https://www.dnr.wa.gov/geology
122 https://www.dnr.wa.gov/geologyportal
123 https://geologyportal.dnr.wa.gov/#subsurface
124 https://apps.leg.wa.gov/WAC/default.aspx?cite=365-195-910

Section 6 - Working with State and Federal Laws and Rules

The Washington State Growth Management Act and rules refer to how local authorities should coordinate with other government authorities in several places. Three of the concepts contained in the GMA rules that apply to laws and rules follow.

- Local government should consider existing state, federal, and other authority's laws, rules, and permits (WAC 365-196-735 - State and Regional Authorities[125]).
- Local plans and policies may in some respects be adequately implemented by adopting the provisions of such other programs as part of the local regulations (WAC 365-196-830 – Protection of Critical Areas[126]).
- Projects may be approved based on compliance with other local, state or federal rules or laws, providing environmental concerns are mitigated (RCW 43.21C.240 – Project Review Under The Growth Management Act[127]).

The GMA allows jurisdictions to avoid duplication of effort by making use of what is already being done by others. The functions and values of Critical Aquifer Recharge Areas should still be protected.

Success, then, depends on identifying potential contamination sources, identifying other laws, rules, and planning efforts that are relevant to Critical Aquifer Recharge Areas and identifying where local action is needed to ensure protection.

Local jurisdictions need to grant themselves regulatory authority to require pollution prevention and to obtain compliance before a situation contaminates the local drinking water supply. Ordinances can be specific to the jurisdiction, or a jurisdiction may choose to adopt state or federal laws or rules by reference. A county or city may coordinate several programs and codes that prevent pollution, such as stormwater source control, hazardous waste and hazardous materials pollution prevention programs, and fire department regulations. Appendix A is an example of coordinated programs from the City of Issaquah.

State Pollution Prevention Laws and Rules

Washington State Department of Ecology

State laws and rules to prevent pollution are housed under various programs at the Department of Ecology. These include Water Quality, Hazardous Waste and Toxics Reduction,

[125] https://apps.leg.wa.gov/wac/default.aspx?cite=365-196-735
[126] https://apps.leg.wa.gov/wac/default.aspx?cite=365-196&full=true#365-196-830
[127] https://app.leg.wa.gov/rcw/default.aspx?cite=43.21C.240

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Toxics Cleanup, Solid Waste, and Water Resources. Ecology lists the rules it administers online[128]. Some jurisdictions adopt some state rules by reference, and some jurisdictions explicitly require that state laws and rules be complied with.

Water Quality Program

The Water Quality Program[129] administers laws and rules for preventing pollution of waters of the state, including underground water.

Water Pollution Control Act

Chapter 90.48 RCW, the Water Pollution Control Act[130], authorizes the Department of Ecology "to control and prevent the pollution of streams, lakes, rivers, ponds, inland waters, salt waters, water courses, and other surface and underground waters of the state of Washington."

Chapter 90.48.080 prohibits discharge of polluting matter in waters of the state[131]:

> It shall be unlawful for any person to throw, drain, run, or otherwise discharge into any of the waters of this state, or to cause, permit or suffer to be thrown, run, drained, allowed to seep or otherwise discharged into such waters any organic or inorganic matter that shall cause or tend to cause pollution of such waters according to the determination of the department, as provided for in this chapter.

Groundwater Quality Standards

Water Quality Standards for Groundwaters of the State of Washington, Chapter 173-200 WAC[132], are rules "to maintain the highest quality of the state's groundwaters and protect existing and future beneficial uses of the groundwater through the reduction or elimination of the discharge of contaminants to the state's groundwaters."

Along with the listed criteria, other important aspects of these standards include antidegradation, technology-based treatment requirements, special protection areas, and implementation and enforcement. The Implementation Guidance for the Groundwater Quality Standards[133] has more information.

[128] https://ecology.wa.gov/About-us/How-we-operate/Laws-rules-rulemaking
[129] https://ecology.wa.gov/About-us/Get-to-know-us/Our-Programs/Water-Quality
[130] https://app.leg.wa.gov/RCW/default.aspx?cite=90.48
[131] https://app.leg.wa.gov/RCW/default.aspx?cite=90.48.080
[132] https://apps.leg.wa.gov/WAC/default.aspx?cite=173-200
[133] https://fortress.wa.gov/ecy/publications/summarypages/9602.html

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Stormwater Pollution Prevention

Stormwater ordinances can be written to prevent pollution of both surface water and groundwater. They can be written to coordinate with state stormwater permits[134] and the underground injection control (UIC) regulations (Chapter 173-218 WAC[135]).

- Illicit Discharge Detection and Elimination (IDDE/ICID) Field Screening Manual[136]
- Underground Injection Control Program[137]

  The guidance for stormwater facilities regulated under the Underground Injection Control program describes the best management practices (BMPs) to reduce solids, metals, and oil from injection wells used along roads and parking areas, or used to collect roof runoff at non-industrial settings.

  The UIC best management practices (BMPs)[138] are now housed in Ecology's stormwater management manuals.

- Stormwater Management Manual for Eastern Washington (2019) - Chapter 5.6[139]
- Stormwater Management Manual for Western Washington, Volume 1.4[140]

  These manuals include requirements for deep UIC wells that are constructed for the purpose of stormwater management:

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[134] https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources
[135] https://apps.leg.wa.gov/WAC/default.aspx?cite=173-218
[136] https://www.wastormwatercenter.org/illicit-connection-illicit-discharge/
[137] https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Underground-injection-control-program
[138] https://fortress.wa.gov/ecy/ezshare/wq/Permits/Flare/2019SWMMEW/2019SWMMEW.htm#Topics/Chapter5_RunoffTreatmentBMPDesign/SubsurfaceInfiltrationUICWells/SubsurfaceInfiltrationUICWells_MiniTOC.htm%3FTocPath%3D2019%2520SWMMEW%7CChapter%25205%2520-%2520Runoff%2520Treatment%2520BMP%2520Design%7C5.6%2520Subsurface%2520Infiltration%2520(Und
[139] https://fortress.wa.gov/ecy/ezshare/wq/Permits/Flare/2019SWMMEW/2019SWMMEW.htm#Topics/Chapter5_RunoffTreatmentBMPDesign/SubsurfaceInfiltrationUICWells/SubsurfaceInfiltrationUICWells_MiniTOC.htm%3FTocPath%3D2019%2520SWMMEW%7CChapter%25205%2520-%2520Runoff%2520Treatment%2520BMP%2520Design%7C5.6%2520Subsurface%2520Infiltration%2520(Underground%2520Injection%2520Control%2520Wells)%7C_____0
[140] https://fortress.wa.gov/ecy/ezshare/wq/Permits/Flare/2019SWMMWW/2019SWMMWW.htm#Topics/VolumeI/UICProgram/UICProgram_MiniTOC.htm%3FTocPath%3D2019%2520SWMMWW%7CVolume%2520I%2520-%2520What%2520Requirements%2520Apply%2520to%2520My%2520Site%253F%7CI-4%2520UIC%2520Program%7C_____0

UIC wells that extend below an upper confining layer and discharge into the underlying vadose zone are designated by Ecology as deep UIC wells. This includes drywells where drilling extends through a surficial till layer into the vadose zone below. Local jurisdictions may impose additional limits on the total depth of these UIC wells based on specific hydrologic conditions and other considerations.

Other considerations that would inform a decision to impose additional limits include whether a site is at an increased risk of accidents or spills; the difficulties inherent in cleaning up vadose zone or groundwater contamination should it occur; and the difficulty ensuring the land use that was originally cited in the UIC well authorization does not change to a higher risk use.

Nonpoint Program

Ecology's Water Quality Program developed Washington's Water Quality Management Plan to Control Nonpoint Sources of Pollution[141] (Nonpoint Plan, Washington State Department of Ecology, 2015). The Nonpoint Plan explains the impact of nonpoint pollutions sources, the regulatory framework, Ecology's efforts toward preventing nonpoint pollution of the waters of the state, and Ecology's role in coordinating with various agencies and entities to control nonpoint pollution.

Ecology's Nonpoint staff work with local landowners, local jurisdictions, and Conservation Districts to prevent nonpoint pollution and correct nonpoint pollution discharges. Ecology provides technical assistance, grant funding, and regulatory backstops while working with landowners on voluntary compliance to implement best management practices. The Nonpoint Plan has chapters on many topics, including sources of nonpoint pollution, and groundwater.

Pollution Identification and Control (PIC) programs identify sources of pollution and works with landowners to control the source. PIC programs, and other nonpoint source control programs, have been adopted by multiple counties. One example of a successful program is the one administered by Kitsap County. The Kitsap County PIC program resulted in re-opened shellfish beds by identifying sources of fecal coliform bacteria and addressing them (Success Story[142], Washington State Department of Ecology, 2017). The same concept of identifying potential sources and addressing them is applicable to nonpoint sources of groundwater pollution. Kitsap County has written the Pollution Identification and Correction (PIC) Program Guidance[143] (Kitsap County, 2014) that describes funding sources and how to implement a program.

[141] https://fortress.wa.gov/ecy/publications/documents/1510015.pdf
[142] https://fortress.wa.gov/ecy/publications/documents/1710011.pdf
[143] https://kitsappublichealth.org/environment/files/PIC_Guidance_Document.pdf

Ecology is working on the Voluntary Clean Water Guidance for Agriculture[144]. Several chapters relate to practices that can help protect groundwater from nonpoint pollution.

The Voluntary Stewardship Program (see Section 1) has overlapping goals with the Nonpoint Plan, which states:

> An effective Voluntary Stewardship Program could complement the protection and pollution reduction goals of federal and state clean water laws by helping to implement the best management practices needed to meet the water quality standards and clean water laws.

Hazardous Waste and Toxics Reduction Program

The Hazardous Waste and Toxics Reduction program enforces Washington's toxics laws, including the Dangerous Waste regulations that many businesses need to comply with. They also offer technical assistance to businesses to reduce or eliminate their use of hazardous chemicals, work to identify safer chemical alternatives, support the development of green chemistry, and test consumer products for toxic chemicals.

The web page lists Hazardous Waste and Toxic Reduction programs and services[145]. These include technical assistance to businesses in partnership with local governments, inspecting large quantity hazardous waste generators, and pollution prevention planning.

The program administers Chapter 173-303 WAC - Dangerous Waste Regulations[146].

Reducing and Eliminating Use of Toxic Chemicals Prevents Groundwater Contamination

The Hazardous Waste and Toxics Reduction Program plays a crucial role in reducing the amount of toxic chemicals used in Washington State by:

- Providing technical assistance to businesses[147] so that they can reduce or eliminate their use of toxic chemicals;
- Working on reducing the amount and toxicity of chemicals used in the state through research and providing information needed to support legislation.

Reducing the amount and toxicity of chemicals used reduces the risk of groundwater contamination.

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144 https://ecology.wa.gov/About-us/Our-role-in-the-community/Partnerships-committees/Voluntary-Clean-Water-Guidance-for-Agriculture-Adv
145 https://ecology.wa.gov/About-us/Get-to-know-us/Our-Programs/Hazardous-Waste-Toxics-Reduction
146 https://apps.leg.wa.gov/WAC/default.aspx?cite=173-303
147 https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Preventing-hazardous-waste-pollution

For example, Ecology is working on reducing PFAS compounds in the environment. Ecology's web page explains what PFAS are[148]:

> PFAS are a large group of perfluorinated and polyfluorinated alkyl substances. These very stable, manufactured chemicals remain in the environment for a long time without breaking down, and some of them build up in people and the environment.
>
> PFAS are water soluble and highly mobile, meaning they can easily contaminate groundwater and can be hard to filter out. Many PFAS transform into highly persistent perfluorinated chemicals in the environment. There are no natural processes that can break down these substances. Exposures could continue for hundreds or thousands of years.

Ecology and the Washington State Department of Health have been developing a Chemical Action Plan[149]. The Chemical Action Plan includes sources of PFAS, exposure routes, health effects, and recommended actions. Actions include rules for drinking water, recommendations for legislation for notifications and restrictions, and managing PFAS contamination in soil and groundwater.

Toxics Cleanup

The Toxics Cleanup Program[150] works to clean up contaminated land and water. Under the Model Toxics Control Act (MTCA)[151], the program also works to prevent pollution from underground storage tanks.

The Toxic Cleanup Program web page is your portal to find out about the cleanup process, regulations, and the online map of cleanup sites: "What's in Your Neighborhood[152]."

Solid Waste Management

The Solid Waste Management program[153] coordinates solid waste and recycling programs in Washington. The program also provides permitting and regulatory oversight for major industrial facilities in Washington. The Solid Waste Management program administers several laws, including Chapter 36.58 RCW - Solid waste disposal[154], and Chapter 70.95J RCW – Municipal

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148 https://ecology.wa.gov/Waste-Toxics/Reducing-toxic-chemicals/Addressing-priority-toxic-chemicals/PFAS
149 https://fortress.wa.gov/ecy/publications/documents/1804005.pdf
150 https://ecology.wa.gov/About-us/Get-to-know-us/Our-Programs/Toxics-Cleanup
151 https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Rules-directing-our-cleanup-work/Model-Toxics-Control-Act
152 https://apps.ecology.wa.gov/neighborhood/
153 https://ecology.wa.gov/About-us/Get-to-know-us/Our-Programs/Solid-Waste-Management
154 http://app.leg.wa.gov/RCW/default.aspx?cite=36.58

sewage sludge – Biosolids[155]. Regulations for solid waste management includes Chapter 173-350 WAC[156].

Water Resources

In addition to administering water rights and the streamflow restoration program, the Water Resources program[157] also administers laws and rules for well construction and for Ground Water Management Areas.

Well Construction:

- Chapter 18.104 RCW – Water Well Construction[158]
- Chapter 173-162 WAC – Minimum Standards for Construction and Maintenance of Wells[159]

Ground Water Management Areas:

- Chapter 90.44.400 through 90.44.430 RCW - Ground Water Management Areas[160]
- Chapter 173-100 WAC - Ground Water Management Areas[161]

Washington State Department of Health

Office of Drinking Water

The mission of the Office of Drinking Water[162] is to protect the health of the people of Washington by ensuring safe and reliable drinking water.

The department administers regulations for various public water supplies. Large systems (15 or more connections) are regulated under Chapter 246-290 WAC[163].

The purpose of this chapter is to ensure

> (a) Adequate design, construction, sampling, management, maintenance, and operation practices; and
>
> (b) Provision of safe and high quality drinking water in a reliable manner and in a quantity suitable for intended use.

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[155] http://app.leg.wa.gov/RCW/default.aspx?cite=70.95J
[156] https://apps.leg.wa.gov/WAC/default.aspx?cite=173-350
[157] https://ecology.wa.gov/About-us/Get-to-know-us/Our-Programs/Water-Resources
[158] https://app.leg.wa.gov/RCW/default.aspx?cite=18.104
[159] https://apps.leg.wa.gov/WAC/default.aspx?cite=173-160
[160] https://app.leg.wa.gov/RCW/default.aspx?cite=90.44
[161] https://apps.leg.wa.gov/WAC/default.aspx?cite=173-100
[162] https://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/TheOfficeofDrinkingWater
[163] https://app.leg.wa.gov/wac/default.aspx?cite=246-290&full=true

Smaller systems, with less than 15 connections, are regulated under Chapter 246-291 WAC[164]. A few other public water system types are nonresidential where the public uses water, like campgrounds, stores, and schools (see WAC 246-290-020(4)).

In addition to regulating public water supplies, the department administers the Source Water Protection Program[165] (see this website for extensive information). This program includes wellhead protection requirements and contaminant inventory requirements for public water supply purveyors.

Wastewater Management

The department administers regulations for Large Onsite Sewage Systems (LOSS) and Onsite Sewage Systems (OSS). OSS are onsite systems with a design capacity of up to 3,499 gallons per day or less, and LOSS are systems with a design capacity of 3500 gallons per day up to 100,000 gallons per day.

The Local Health Officer has authority and approval over systems with design flows through any common point up to 3,499 gallons per day.

Washington State Department of Health LOSS Program per Chapter 70.118B RCW[166], has authority and approval over:

- Wastewater treatment systems receiving domestic strength sewage at design flows from 3,500 to 100,000 gallons per day that use subsurface treatment or disposal. May include mechanical treatment.
- Any LOSS for which jurisdiction has been transferred to DOH from Ecology in accordance with the statute.

Systems that receive industrial wastewater discharges or that have a design capacity of greater than 100,000 gallons per day are regulated by the Department of Ecology.

Local Health Jurisdictions regulate OSS under local rules that must be at least as stringent as state rules. The state administers the OSS program under Chapter 246-272A WAC[167].

Washington State Department of Agriculture

The Washington State Department of Agriculture (WSDA) administers regulatory programs for pesticide and nutrient management[168] that are important for the prevention of groundwater contamination.

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[164] https://app.leg.wa.gov/wac/default.aspx?cite=246-291&full=true
[165] https://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/SourceWater/SourceWaterProtection
[166] https://app.leg.wa.gov/rcw/default.aspx?cite=70.118B
[167] https://app.leg.wa.gov/wac/default.aspx?cite=246-272A&full=true
[168] https://agr.wa.gov/departments/pesticides-and-fertilizers

WSDA is the State Lead Agency (SLA) for administering the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). WSDA is responsible for developing pesticide use regulations and managing pesticide use and distribution in Washington State. WSDA has the authority to regulate pesticides and to prevent contamination of surface and groundwater from pesticides statutorily through Washington's Pesticide Control and Pesticide Application Acts (Chapters 15.58 RCW and 17.21 RCW). WSDA's Pesticide Management Division and Natural Resources Assessment Section work together to implement FIFRA at the state level.

Pesticide Management Division

Registration Services Program – Fertilizers and Pesticides

Following federal and state regulations the Registration Services Program reviews and registers pesticide and fertilizer products for distribution and use in Washington State. Fertilizer Compliance is a branch within Registration Services and enforces state regulations relating to the registration, distribution, storage, and guarantee of analysis of fertilizers.

State pesticide regulations related to pesticide registration are found in the Washington Pesticide Control Act Chapter 15.58 RCW[169] and General Pesticide Rules Chapter 16-228 WAC[170]. State fertilizer regulations related to fertilizer registration and compliance are found in Fertilizers, Minerals and Limes Chapter 15.54 RCW[171] and Chapter WAC 16-200[172]. Fertigation rules (the application of plant nutrients through irrigation systems) is found at WAC 16-202[173] Part 6.

Pesticide Compliance Program

The Pesticide Compliance Program enforces state and federal pesticide laws and rules, and structural pest inspection rules. Compliance staff work out of six locations across the state: Moses Lake, Olympia, Spokane, Tri-Cities, Wenatchee and Yakima. The primary Compliance activities are inspection, investigation and providing regulatory update presentations to licensed applicators, growers and other stakeholders at winter conferences and meetings. The program conducts inspections of pesticide applicators (Ag and Non-Ag), dealers, pesticide manufacturers and marijuana growing operations. Investigations are conducted when pesticides are alleged to have been misused causing human exposure or property damage, improper distribution, improper licensing or other violations of pesticide laws and rules. Inspection and investigation authority is based on FIFRA, the Washington Pesticide Control and Pesticide Application Acts (Chapters RCW 15.58 and RCW 17.21), General Pesticide Rules Chapter 16-228 WAC, Rules Relating to Chemigation Chapter 16-202-1001 WAC, Secondary and Operational

[169] https://apps.leg.wa.gov/RCW/default.aspx?cite=15.58
[170] https://apps.leg.wa.gov/WAC/default.aspx?cite=16-228
[171] https://apps.leg.wa.gov/RCW/default.aspx?cite=15.54
[172] https://apps.leg.wa.gov/WAC/default.aspx?cite=16-200
[173] https://apps.leg.wa.gov/wac/default.aspx?cite=16-202

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Containment for Bulk Pesticides Chapter WAC 16-229, Rules Relating to Restricted Use Herbicides Statewide Chapter 16-230-600 WAC, Rules relating to Applications in sixteen Eastern Washington Counties (Chapters 16-230-800, 16-231, 16-232 WAC), Worker Protection Standards Chapter 16-233 WAC, and Rules relating to Wood Destroying Organisms Chapter 16-228-2005 WAC.

Licensing and Recertification Program

The Licensing and Recertification Program is responsible for implementation of the Federal Certification and Training (C&T) Rule, 40 CFR 171, through the Pesticide Control and Application Acts (Chapter 15.58 RCW and 17.21 RCW) and the General Pesticide Rules (Chapter 16-228 WAC). This program oversees the initial and continued certification of pesticide applicators throughout the state of Washington in accordance with state and federal regulations. Pesticide applicators must meet specific competency and recertification standards in their areas of work to obtain and maintain their certification.

In 2017, EPA updated the C&T Rule to include expanded competency standards specifying ground and surface water contamination prevention. Competency standards are in place to establish a baseline knowledge in the safe application of pesticides for the protection of human and environmental health and prevention of misapplication, reducing the risk of contamination of drinking water resources particularly in critical areas.

Secondary Containment Requirements

Chapter 16-201 WAC - Bulk Fertilizer[174]

This state rule established uniform standards for secondary containment of permanent bulk fertilizer storage sites. These rules were put in place to ensure that surface water and groundwater are protected.

Chapter 16-229 WAC - Bulk Pesticides[175]

This state rule established uniform standards for secondary containment of permanent bulk pesticide storage, operational areas and permanent mixing load sites. These rules were put in place to ensure that surface water and groundwater are protected.

Dairy Nutrient Management Program

Through Chapter 90.64 RCW Dairy Nutrient Management Act[176], the Dairy Nutrient Management Program (DNMP) regulates water quality associated with licensed cow dairies. DNMP requires dairies to obtain nutrient management plans[177], prevent discharges to surface

[174] https://apps.leg.wa.gov/WAC/default.aspx?cite=16-201&full=true
[175] https://apps.leg.wa.gov/WAC/default.aspx?cite=16-229&full=true
[176] https://agr.wa.gov/washington-agriculture/laws-and-rules/livestock-nutrients
[177] https://agr.wa.gov/departments/land-and-water/livestock-nutrients/nutrient-management-plans

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and groundwater, and to maintain records to demonstrate an agronomic application of nutrients.

Chapter 16-611 WAC Nutrient Management[178] defines recordkeeping requirements and specifics regarding penalties for violations of the Dairy Nutrient Management Act.

A Memorandum of Understanding[179] with the Washington State Department of Ecology outlines the responsibilities of the two agencies to protect water quality from livestock impacts.

Natural Resources Assessment Section

The WSDA Natural Resources Assessment Section (NRAS) focuses on the impacts of agricultural chemicals on Washington State's natural resources. NRAS works with the agricultural community and regulators to protect the environment and support agricultural viability.

To support the protection of water quality, NRAS collects data on commodity specific pesticide usage from agricultural producers and pesticide applicators. Additionally, NRAS's Agricultural Land Use Program[180] maps agricultural production at the field scale (greater than 0.5 acres). Georeferenced data collected in this program includes (but is not limited to) acreage, crop type, crop group, and irrigation method. This information can be used to estimate the geographic locations that pesticide applications may occur. These two databases influence the implementation of the Washington State Pesticide Management Strategy[181] (Cook and Cowles, 2009) Water Quality Protection plan.

Pesticide Management Strategy

As the SLA for administering FIFRA, WSDA is required to assess the impact of pesticides that have the potential to occur in surface and groundwater at concentrations approaching or exceeding a human health or ecological reference point.

WSDA NRAS has limited monitoring and data resources available to adequately evaluate pesticide occurrences in groundwater or explore (via monitoring) areas identified as vulnerable to pesticides of concern. Public water supply system (PWSS) sampling as required by the Washington State Department of Health (DOH) is the only consistent, on-going, statewide groundwater monitoring effort at this time. NRAS relies on groundwater data collected by PWSS and supplements that data with that collected by other agencies and organizations, which employ strict quality control and quality assurance measures, as a baseline for assessing the presence of pesticides in groundwater.

[178] https://app.leg.wa.gov/WAC/default.aspx?cite=16-611
[179] https://agr.wa.gov/fp/pubs/docs/mouagricultureecology2011final.pdf
[180] https://agr.wa.gov/departments/land-and-water/natural-resources/agricultural-land-use
[181] https://agr.wa.gov/getmedia/0c325688-56e5-44c9-8789-ebd35c315fcb/comprehensivepesticidemanagementstrategy.pdf

NRAS reviews the PWSS data annually to compare pesticide detections to EPA established drinking water standards. As funding allows, NRAS will conduct groundwater investigations based on the confirmed pesticide detections from PWSS. For example, NRAS has been investigating occurrences of DCPA (herbicide, trade name Dacthal) in Eastern Washington where DCPA concentrations have been detected at levels approaching an EPA established drinking water standard.

The state Pesticide Management Strategy outlines the process to protect groundwater from pesticides. The concentration of pesticide detections are compared to the EPA established drinking water standards (reference points). Initial actions include evaluating the extent of the pesticide occurrence, working with registrants and producers to determine the source, and identifying voluntary Best Management Practices in partnership with local conservations districts. For pesticides with confirmed detections between 75-100% of a drinking water standard, final actions WSDA may consider include use prohibition areas or other enforcement actions.

Groundwater Pesticide Detection levels are characterized as follows:

Table 1: Washington State Department of Agriculture groundwater detection levels

Level	Percent Detection of an EPA reference point
Level 1	Confirmed detection between 10-20% of an EPA reference point
Level 2	Confirmed detection between 20-50% of an EPA reference point
Level 3	Confirmed detection between 50-75% of an EPA reference point
Level 4	Confirmed detection between 75-100% of an EPA reference point

Washington State Conservation Commission and Conservation Districts

The Washington State Conservation Commission[182] (SCC) is the coordinating state agency for all 45 conservation districts[183] in Washington State. Together, the SCC and conservation districts provide voluntary, incentive-based programs that empower private landowners to implement conservation on their property (website excerpt[184]).

Conservation Districts provide a wide range of services that are non-regulatory and voluntary. These include helping land owners manage nutrients and pesticides, as well as implementing

[182] https://scc.wa.gov/about-the-commission/
[183] https://scc.wa.gov/about_conservationdistricts/
[184] https://scc.wa.gov/about-the-commission/

irrigation efficiencies. Conservation Districts manage grants that help landowners implement best management practices.

Conservation Districts also conduct research and studies that are important for understanding the state of natural resources, obtaining grants from various funding sources to do this work.

The Conservation Districts are typically the lead entity for the Voluntary Stewardship Program (see Section 1).

Identifying Gaps in Protection

Federal and state laws and rules do not replace local planning, ordinances, and programs.

Local government can focus on local conditions in a way that the state cannot. Local jurisdictions should maintain the ability to protect groundwater under their own authority by including that authority in local ordinances.

Land use planning at the local level is the most effective way to influence where facilities choose to locate. Local government planning can influence the types of future developments that occur in various areas and may be able to encourage potentially contaminating facilities to locate in areas where the aquifer has a lower susceptibility if contaminants are released.

- Counties and cities:
    - Regulate land use through comprehensive planning, zoning, and ordinances.
    - Have authority to ensure a landowner does not pollute the public drinking water supply.
    - Are able to track conditions and adapt to local concerns much more readily than the state.
- Federal and state laws, rules, and programs are often targeted toward larger facilities. For example, pollution prevention plans are required by the state if a facility generates 2,640 pounds of hazardous waste a year. A much smaller quantity of hazardous chemicals can cause contamination, especially if improper disposal into a septic system or a dry well occurs. The local jurisdiction should consider requiring pollution prevention plans where needed and not already required.
- Compliance depends on state resources to enforce. The state covers a large area and a large number of facilities, and therefore illegal activities may occur that are not detected by the state until contamination has occurred. Local attention can focus on facilities in their immediate jurisdiction and respond much faster to potential contamination issues.

This underlines why it is so important for a local jurisdiction to have included authority to act when there is a contamination threat to the local drinking water supply.

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Prohibited and Conditioned Uses

Some land use activities, such as landfills, have been found to be a high-risk for groundwater contamination. Although a high-risk use may be regulated by other authorities, local jurisdictions should consider prohibiting these uses from being located within high-risk high-priority Critical Aquifer Recharge Areas. Where these uses are already sited, they should be closely monitored and strict pollution prevention requirements followed.

Examples of uses that should be considered for prohibition in Critical Aquifer Recharge Areas are landfills, wood treatment facilities, metal platers, tank farms, and facilities that treat, store, or dispose of hazardous waste. Chemical facilities that transfer or use large amounts of chemicals should also be considered to be a risk for groundwater contamination.

Some uses that have a moderate to low risk for contamination can be allowed within Critical Aquifer Recharge Areas conditionally on meeting certain requirements for approval. These are typically pollution prevention measures such as secondary containment for chemical storage areas, spill prevention measures, and contingency plans for emergencies.

Here are some questions the local jurisdiction should consider when coordinating their planning and ordinances with federal and state laws, rules, and programs.

- Does the local jurisdiction know where potentially polluting activities are located?
- Are effective protective requirements for potentially polluting activities in place?
- Is there provision for compliance monitoring?
- Is there a means to obtain compliance if there is a violation?
- Does the jurisdiction have a plan for ensuring that existing land uses are protective of groundwater?

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Section 7 - Adapting to Local Conditions and Settings

The Growth Management Act allows for differences in regional or local conditions.

See WAC 365-196-050 Regional and Local Variations[185] and the Department of Commerce Critical Areas Handbook[186].

Washington has varied landscapes and populations, from sparsely populated rural areas to large cities, from dry desert to rain forest.

Ferry County has a population of 7,830 (2019 estimate). Republic, the county seat, has a population of 1,100 people. Ferry County is located in the mountainous Okanogan region where ponderosa pines flourish in the dry climate.

King County has both populous and rural areas and has varied landscapes, from the Puget Sound to the high plateau in the shadow of Mount Rainier. The total population of King County was 2,226,300 (2019 estimate).

The settings in which groundwater recharge occurs, the resources for programs, and the resources at risk vary in different parts of the state. This means that a program that protects the functions and values of Critical Aquifer Recharge Areas in one part of the state will not necessarily look like a program in another.

The Western Washington GMA Hearings Board (WWGMHB) states:

> The GMA does not require a "one size fits all" approach. A GMHB is to be guided by a common sense appreciation of the size and resources of a local jurisdiction and the magnitude of the problems to be addressed. *MCCDC v. Shelton* 96-2-0014 (FDO 11-14-96).
>
> The fundamental requirement of the Growth Management Act is that the functions and values of the critical area should be protected. For Critical Aquifer Recharge Areas, that means that public drinking water quality and quantity should be addressed in planning and ordinances.

A good critical aquifer recharge area program:

- Identifies groundwater resources at risk.
- Identifies threats to groundwater.
- Requires pollution prevention.
- Supports recharge.
- Monitors to make sure a condition that could cause an unacceptable risk is not occurring.
- Educates and informs people so that they can do their best to protect groundwater
- Takes action when necessary!

[185] https://apps.leg.wa.gov/wac/default.aspx?cite=365-196&full=true#365-196-050
[186] https://www.commerce.wa.gov/serving-communities/growth-management/guidebooks-and-resources/

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Section 8 - Adaptive Management – Change Happens

The GMA requires periodic review and update of plans and ordinances for critical areas. In addition, when the scientific information for addressing critical areas is inadequate, it requires that adaptive management be used in order to determine the impacts on the critical areas from development regulations, and to reduce those impacts to protect the functions and values of the critical areas - Chapter 365-195-020 WAC[187].

Adaptive management involves strategic testing of hypotheses and related monitoring to see how well plans, ordinances, and programs are protecting Critical Aquifer Recharge Areas. Changes to permits, permitting, programs, and policies are then made as conditions change, or to improve or correct a method of protection as needed. Monitoring data results can also lead to changes in how monitoring is done and what is monitored. The comprehensive plan and development regulations should include an iterative process for amendments as new information becomes available.

Examples of new information are hydrogeologic studies that provide more information about the boundaries and characteristics of aquifers, significant land use changes and the associated groundwater contamination risks, and the results of the evaluation of voluntary and regulatory programs. A fundamental component of adaptive management is the commitment to change based upon the outcome of testing hypotheses through strategic monitoring.

Examples of adaptive management that protects the functions and values of Critical Aquifer Recharge Areas also can include:

1. Being able to correct or prevent a polluting activity by inspections, requests for compliance, and enforcement if needed.

2. Changing ordinances in response to additional knowledge about a polluting activity. For example, the City of Vancouver prohibits several activities that are a high risk for contaminating water resources (see Chapter 14.6 Water Resources Protection[188], Section 14.26.115). One of these is hard chrome plating operations. Such a facility became a toxic cleanup site and threatened the groundwater quality for city wells (See the Final Closure Plan for the Boomsnub toxic cleanup site, Section 1.1 Site Background, available from the Document Repository for Boomsnub Airco Superfund Site[189]).

[187] https://apps.leg.wa.gov/WAC/default.aspx?cite=365-195-920

[188] http://www.cityofvancouver.us/sites/default/files/fileattachments/public_works/page/1033/finalwrpordinancerevised2016.pdf

[189] https://apps.ecology.wa.gov/gsp/CleanupSiteDocuments.aspx?csid=586

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3. Developing new information about an area sensitive to contamination and adapting programs, plans, and ordinances appropriately to address risks. A great example is the Scatter Creek Aquifer Septic System Management Project[190]. This project convened a Citizen's Advisory Committee to evaluate groundwater contamination risk from septic systems. The committee recommended not increasing regulatory action at the time, but recommended keeping watch over groundwater quality so that action can be taken if necessary.

   The Scatter Creek Aquifer is the sole source of drinking water for that area and is vulnerable to contamination.

See the Critical Areas Handbook[191] for more information on adaptive management.

[190] https://www.co.thurston.wa.us/health/ehsc/index.html
[191] https://www.commerce.wa.gov/serving-communities/growth-management/guidebooks-and-resources/

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Section 9 - Critical Aquifer Recharge Area Reports

Many jurisdictions require that those applying for new development permits submit reports that demonstrate that the functions and values of Critical Aquifer Recharge Areas will be protected.

Reports apply to both identifying Critical Aquifer Recharge Areas and to pollution prevention. The report should support the documentation of best available science. If the jurisdiction has identified drinking water aquifers and characteristics, this information would not need to be duplicated by a permit applicant. The applicant should report critical materials (chemicals that are potential pollutants), and demonstrate that their project prevents pollution and allows recharge as applicable. The permit application can include a checklist to make sure the correct best management practices are identified and included in the permit conditions. The proponent should also identify existing drinking water wells near their site.

Protecting the functions and values of Critical Aquifer Recharge Areas depends on knowing.

- On an area-wide basis:
  - The location and extent of drinking water aquifers
  - The location of wells used for drinking water, including Group A wells, Group B wells and residential wells
  - Hydrogeologic conditions:
    - General depth to water of the water table aquifer or aquifer nearest the land surface
    - General flow direction
    - General overburden properties (glacial outwash? Clay layers? Drainage?)
  - Where streams are that have anadromous fisheries
  - Where there are (or have been) cleanup sites
  - Where there has been known groundwater contamination

  This information is applicable to sites to the extent that the area-wide information is adequate for specific sites.

- On a site-specific basis:
  - Information listed above if it is not available from the local jurisdiction
  - What critical materials are on site or are planned to be on site
  - How critical materials are kept from spilling or leaking
  - What preparations are to contain critical materials in case of a fire
  - Plans (such as a spill plan, emergency plan with contacts)

Emergency plans should include contacting public water supply purveyors, and neighbors, as well as the fire dept.

- Recharge
  - How recharge will be maintained or enhanced
  - If recharge is not conducive given site conditions, how stormwater will otherwise be discharged in accordance with legal requirements and best practices
  - How recharge of stormwater will be kept clean or treated. If treated, what the mechanisms are to inspect and maintain treatment effectiveness

Section 10 – Interjurisdictional Coordination

Since aquifers often span more than one jurisdiction, counties and cities need to work together to protect the public drinking water resource. Ordinances and implementation that protect the water supply in each other's jurisdiction is needed when the Critical Aquifer Recharge Area that protects a jurisdiction's drinking water supply is outside of its jurisdictional boundaries and therefore outside of its regulatory authority.

Interjurisdictional coordination starts with the comprehensive plan.

> RCW 36.70A.100 Comprehensive plans—Must be coordinated.
>
> The comprehensive plan of each county or city that is adopted pursuant to RCW 36.70A.040 shall be coordinated with, and consistent with, the comprehensive plans adopted pursuant to RCW 36.70A.040 of other counties or cities with which the county or city has, in part, common borders or related regional issues.

The Critical Areas Handbook states:

> County wide planning policies and inter-local agreements are often necessary in unincorporated portions of the Urban Growth Area (UGA). For example, cities have a vested interest in the type of development that occurs as they will ultimately annex the property, but counties often oversee the development and issue the permits.
>
> As a result, some jurisdictions develop countywide planning policies or inter-local agreements to ensure the city can review development proposals before they are finalized. Local governments could apply the same model for wellheads and other Critical Aquifer Recharge Areas. For local governments who have GIS capacity, they would include inter-local agreements on maps to ensure areas of concern are easily identified during the county review period and permitting.

The mere existence of an inter-local agreement does not guarantee coordination. Agreements and plans must be implemented to be useful. Comprehensive plans may be written to include implementation in ordinances and programs.

One example of an inter-local agreement to protect the drinking water supply that is sourced from groundwater is an agreement between the City of McCleary and Grays Harbor County[192]. McCleary is a small city in Grays Harbor County (Figure 12). The aquifer on which McCleary depends extends into Grays Harbor County.

[192] https://cityofmccleary.com/vertical/sites/%7B6900A7D9-59CE-4612-823A-FA3E5F25F431%7D/uploads/%7B1B4F9EEA-86BC-47D6-B2F2-9FC2FD00353E%7D.PDF

The inter-local agreement was formulated based on the report Wildcat Creek Aquifer Hydrology, Regulatory Alternative, and Recommendations Final Report[193], prepared for Grays Harbor County and the City of McCleary (Arthur, 2008). This report details the hydrogeology, development, and wells; regulatory alternatives (including under the GMA); and recommendations for Grays Harbor County, the City of McCleary, and both together.

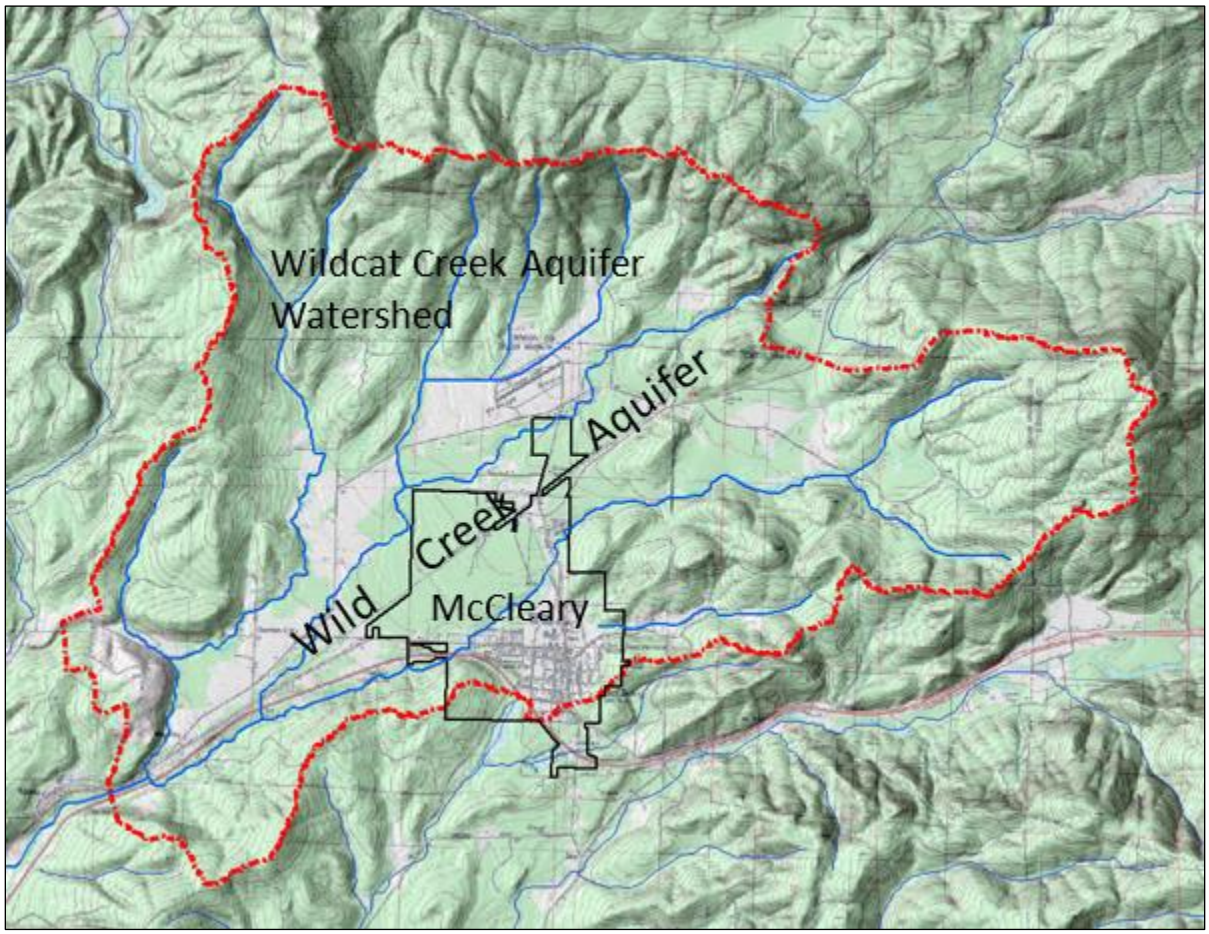

Figure 12: The drinking water aquifer for McCleary lies both in city boundaries and outside city boundaries in Grays Harbor County.

Chapter 1 of the Dept. of Commerce Growth Management Services Critical Areas Handbook[194] has a section on Regional Planning Efforts. This section also includes information about various state watershed initiatives.

[193] https://cityofmccleary.com/vertical/sites/%7B6900A7D9-59CE-4612-823A-FA3E5F25F431%7D/uploads/%7B214968EF-BDC3-44B0-9F8F-2CE99BAFC056%7D.PDF
[194] https://www.commerce.wa.gov/serving-communities/growth-management/growth-management-topics/critical-areas/

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Section 11 – Implementation – Authority, Monitoring, and Program Integration

Funding and Resource Challenges

It is important to recognize resources that cities and counties have varies widely. Some counties and cities have expertise on staff, some have groundwater monitoring programs, and many have inspection programs. Other city and counties are extremely limited in resources. See also Section 7 - Adapting to Local Conditions and Settings Section 7. Funding sources jurisdictions use have included permit fees, grants, general fund, stormwater utility fees, building/development fees, and water rates.

Here are a few of important considerations for protecting the functions and values of Critical Aquifer Recharge Areas.

Authority

Cities and Counties should give themselves authority to act in their ordinances in case of a threat to groundwater resources. Jurisdictions need to have authority to inspect businesses for compliance with ordinances, and to detect and correct situations that are a threat to groundwater quality. See Appendix C – Code Examples.

Monitoring

Monitoring is important for ensuring compliance to protect groundwater resources, and for detecting contamination that has occurred in groundwater. Monitoring helps jurisdictions adaptively manage the protection of Critical Aquifer Recharge Areas and to understand what is important to address during updates.

Compliance Monitoring and Program Integration

Ordinances and plans by themselves do not protect the functions and values of Critical Aquifer Recharge Areas – Protection requires monitoring for compliance, together with technical assistance and, if necessary, enforcement. Monitoring for compliance also requires having the authority to inspect and require correction.

Inspections serve to follow-up on whether permit requirements were implemented, for code enforcement, and to detect and require correction of pollution threats. Inspections can be done in conjunction with other inspection programs for pollution prevention such as for surface water, stormwater, and for hazardous waste/materials. Fire department inspections are also good candidates for helping with resource efficiency, especially with respect to contaminant (or

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"critical materials") inventories and fire prevention where a fire would cause release of contaminants.

Regulations can also be integrated for efficiency. Stormwater regulations, hazardous waste/material regulations, building and fire codes, are examples of regulations that can be incorporated into protection for Critical Aquifer Recharge Areas. Voluntary programs such as hazardous waste and pharmaceutical drop-offs also help to prevent groundwater contamination.

The City of Issaquah has developed and implemented a highly integrated program – See Appendix A: Focus on Implementation - Issaquah Gains Efficiency by Integrating Programs.

The City of Vancouver developed ordinances for the protection of water resources that includes groundwater, surface water, and storm water.

Appendix D – The Growth Management Hearings Board and Selected Decisions – includes two cases that are relevant to the need to monitor for compliance.

The county wide planning policies and comprehensive plan are important for program integration. Together with an implementation plan, cities and counties may coordinate the various departments that administer different aspects of protecting the functions and values of Critical Aquifer Recharge Areas. These include planning, building permits, development services, public works, and programs for inspecting and enforcing. It is important that different departments work together so that development proposals are shared early in the process.

Groundwater Monitoring

Groundwater monitoring is useful for understanding where contaminants have reached groundwater from land use activities, and for identifying contamination sources and requiring correction. Groundwater monitoring is also useful for identifying whether concentrations are increasing or decreasing. Counties and cities should have plans and procedures to follow-up with source identification and correction when groundwater monitoring detects contamination. This would typically include working with state regulatory programs.

Two ways of obtaining groundwater monitoring data include using existing groundwater monitoring data collected by others, and implementing a local groundwater monitoring program. Jurisdictions without resources for a locally run groundwater monitoring program can still use data produced by others.

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Using existing groundwater monitoring data

- The Washington State Department of Health drinking water database (SENTRY)[195] records groundwater quality sampling results for public water systems.
- The USGS National Water Information System (NWIS)[196] has groundwater sample results for wells sampled for USGS studies.
- Some jurisdictions contract with consultants to perform studies that include groundwater monitoring data.
- The Ecology Environmental Information Management system (EIM)[197] has a groundwater map and data application includes groundwater monitoring data produced by Ecology studies. Data produced from grant funded studies may also be in EIM.

Local groundwater monitoring programs

- Dedicated groundwater monitoring (where there are resources for this).
- Well sample results from property transfers – Many jurisdictions require a water well sample when a property is sold.

A very few jurisdictions have hydrogeologists on staff who can design and maintain groundwater monitoring programs. Some jurisdictions contract with the USGS to do a groundwater study that results in water level measurements and groundwater quality assessments. The USGS does nationally supported regional studies through the National Water Quality Assessment program (NAWQA). This provides a number of jurisdictions with groundwater information. Some jurisdictions contract with a consultant to do a study that includes groundwater monitoring.

Jurisdictions that do not have capacity to support groundwater monitoring can still make use of existing groundwater monitoring data that is available online.

195 https://www.doh.wa.gov/DataandStatisticalReports/EnvironmentalHealth/DrinkingWaterSystemData/SentryInternet

196 https://waterdata.usgs.gov/wa/nwis/nwis

197 https://apps.ecology.wa.gov/eim/search/default.aspx

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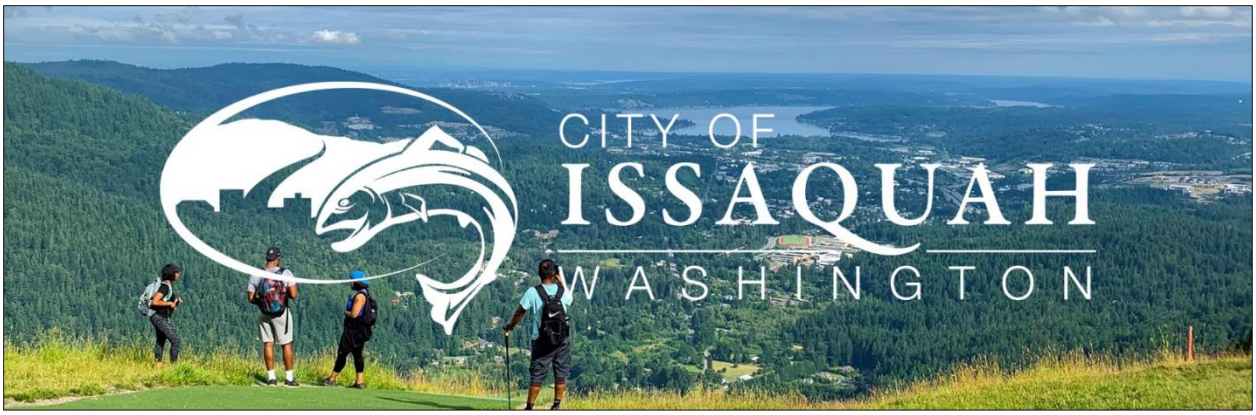
Appendices

Appendix A: Focus on Implementation - Issaquah Gains Efficiency by Integrating Programs



The City of Issaquah is located within King County and spans approximately 61-square miles and is bordered by steep upland areas including Tiger, Squawk, and Cougar Mountains. Drinking water wells located within the valley floor provide Issaquah with approximately 50% of the City's drinking water supply from groundwater. Drinking water to the nearby Sammamish Plateau is also supplemented from wells located on the Issaquah valley floor. As a result, a significant portion of the City is a critical aquifer recharge area (CARA), under the requirements of the Growth Management Act (GMA).

Issaquah Gains Efficiency by Integrating Programs

The City of Issaquah has a well-developed groundwater and pollution prevention protection program that integrates and aligns state requirements, city ordinance, inspections, and site visits with education and outreach opportunities for both businesses and residents. Effectiveness and efficiency is obtained through overlap in programs and staff. Issaquah does this by requiring businesses and development within the City and CARA to adhere to a higher standard of pollution prevention through the collection of Hazardous Materials Management Plans for both hazardous waste and hazardous materials, complying with the National Pollution Discharge and Elimination System (NPDES) stormwater permit, illicit discharge identification and prevention, and protection of our CARA.

Programs

Integration of pollution prevention goals enables programs to make use of shared resources for administration, funding, information, inspections, and public outreach and education.

- Spill Response
- Illicit Discharge Investigation
- Hazardous Materials Management Plans
- Hazardous Materials Management Inventories
- Pollution Prevention Technical Assistance

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- Fats Oils and Grease management review
- Septic Inspection Verification
- Private Storm System Inspections
- NPDES Storm System Inspections
- Ambient Water Quality Sampling

Program Administration

Issaquah's environmental programs are managed by a small group of staff that are cross trained in all environmental protection aspects. Efficiencies include:

- Overlap in function and specialties
- Staff ownership over programs and improvement opportunities
- Standardizing data and information management tools, whenever possible
- Handouts and educational material by topic

Funding

- Issaquah receives some funding for elements of our pollution prevention programs and business outreach through a Local Source Control partnership with the Department of Ecology.
- Additional funding for Issaquah's pollution prevention programs comes from utility taxes, paid for by Issaquah residents and businesses.
- Our businesses may qualify for funding from King County and/or The Department of Ecology, if they choose to transition to safer choice business practices or to use safer chemicals; for example, changing from PERC dry-cleaning to professional wet cleaning.

Information

Purpose: To identify candidates for inspection and to make sure pollution prevention is being accomplished at sites with potential for contaminating, to follow up on complaints and enforcement, and to meet requirements of the NPDES Phase II stormwater permit to identify illicit discharges.

- Hazardous materials
- Reported Toxic Releases and Spills
- Toxic Cleanup Sites
- Well Head Protection Contaminant Inventories
- Ecology Facility/Site web app
- ERTS

Inspections

- Inspections and technical assistance visits serve as many purposes as possible in a single visit.
- A single inspector is trained in multiple areas of environmental compliance.
- Joint inspections between the City and other entities, such as the fire department, the Department of Ecology, the Health Department, or King County, are encouraged to insure a comprehensive application of regulations is conveyed. Often City regulations are more prescriptive.
- A single data system can be used to track inspections for multiple purposes. Issaquah uses TRAKiT as a central depository for record keeping and environmental tracking.

Communicates with the Public and Regulated Businesses

- Lets businesses know what is required and how to comply.
- Lets the regulated community know how to access technical assistance.
- Makes sure those who are regulated understand Issaquah's inspection and enforcement authority and how these are carried out.
- Lets citizens have a way to report environmental issues locally.

Appendix B: Map of Ecology Cleanup Sites for Groundwater and Soils Contamination

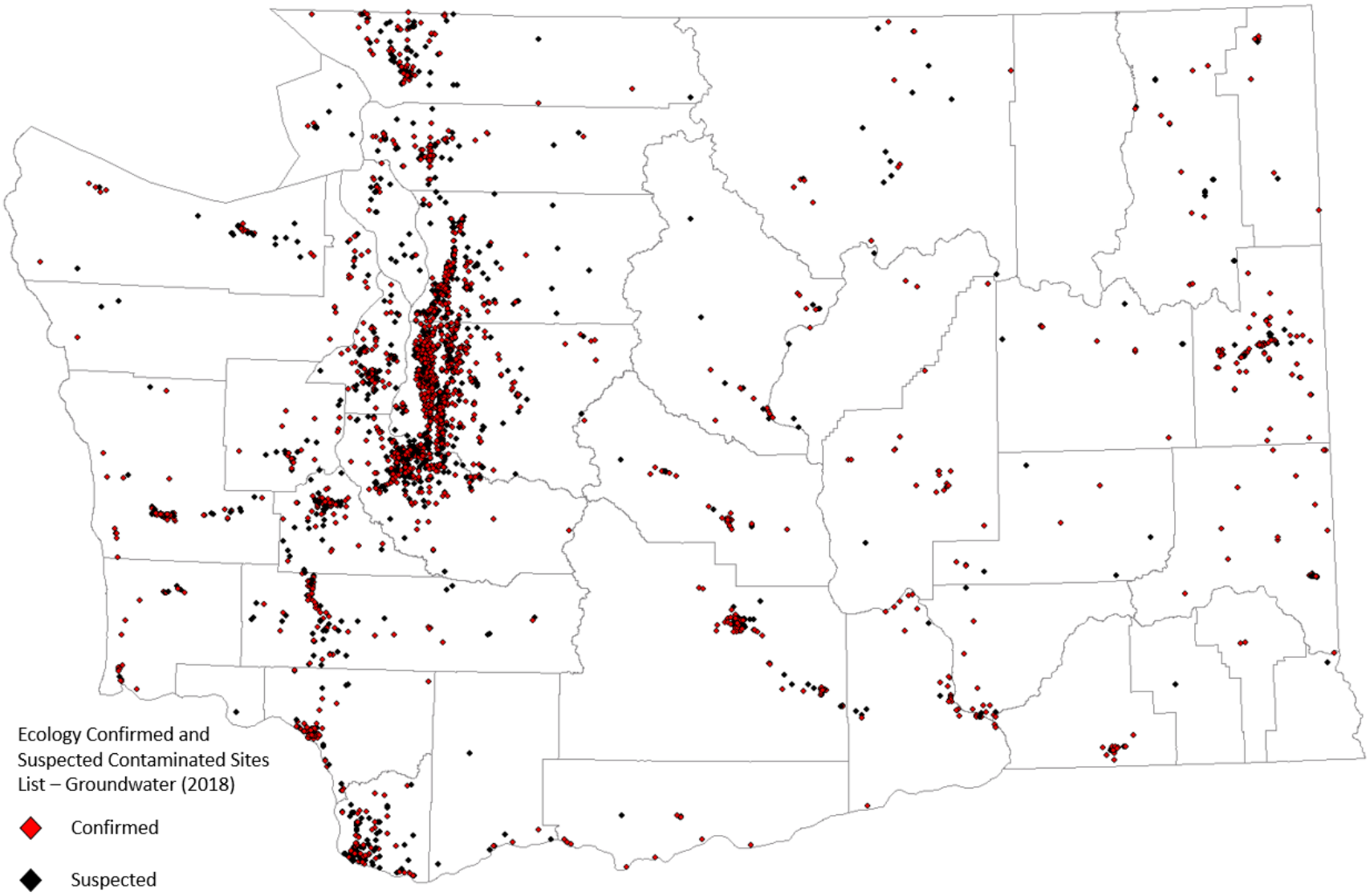

Figure 13: Washington State Department of Ecology Confirmed and Suspected Contaminated Sites Map (2018)

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Appendix C: Code Examples

Integrated programs

The City of Vancouver deserves special mention because the City's Water Resource Protection Program[198] is an outstanding example of program integration to protect rivers, lakes, streams, and groundwater.

The City of Issaquah is an outstanding example of gaining efficiencies and good outcomes by integrating programs - See Appendix A.

Authority to Act and to Inspect

- Benton County has given themselves authority to prevent contamination of critical aquifer recharge areas. Benton County's critical aquifer recharge area ordinance Chapter 15.06[199] requires that:

  (a) The applicant shows that the proposed activity will not cause contaminants to enter the aquifer and that the proposed activity will not adversely affect the recharging of the aquifer;

  (b) The applicant provides evidence that the proposed water source is physically and legally available and meets drinking water standards.

  (c) Groundwater uses, withdrawals, and recharge must be consistent with RCW 90.44.050[200] (permit to withdraw groundwater) and with applicable rules adopted pursuant to RCW 90.22[201] (minimum instream flows) and RCW 90.54[202] (Water Resources Act of 1971) when making decisions under RCW 19.27.097[203] (evidence of adequate water supply) and RCW 58.17.110[204] (Approval or disapproval of subdivision).

- The City of Vancouver explicitly prohibits polluting discharges into the water resources of the city (Chapter 14.6 Water Resources Protection[205], Section 14.26.117). Section 14.26.145 on Enforcement gives the City authority to enforce, and explicitly lays out what the City may do in case of violations.

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198 https://www.cityofvancouver.us/publicworks/page/water-resources-protection-program
199 https://www.co.benton.wa.us/files/documents/CH1506BCC148013709092718PM.pdf
200 https://apps.leg.wa.gov/RCW/default.aspx?cite=90.44.050
201 https://apps.leg.wa.gov/RCW/default.aspx?cite=90.22
202 https://apps.leg.wa.gov/RCW/default.aspx?cite=90.54
203 https://apps.leg.wa.gov/RCW/default.aspx?cite=19.27.097
204 https://app.leg.wa.gov/rcw/default.aspx?cite=58.17.110
205 http://www.cityofvancouver.us/sites/default/files/fileattachments/public_works/page/1033/finalwrpordinancerevised2016.pdf

Having the authority to enforce in case of a polluting discharge to water resources allows the City to stop a pollution event, or prevent an imminent discharge. This goes beyond requiring pollution prevention at the permitting stage, and allows the City to respond after a permit has been issued.

The City of Vancouver Water Resources Protection ordinance also has code for owner/operators to inspect their facilities to prevent contaminated discharges, and for the city to inspect.

Allowed, permitted with conditions, and prohibited uses

Table 24.10-1 in Chapter 24.10.020[206] of the Thurston County code lists land use activities that are allowed without a permit, permitted with conditions, or are prohibited, depending on the category of Critical Aquifer Recharge Areas. The table links to applicable standards for land use activities. Here is a partial excerpt (see the ordinance[207] for the full table):

RESTRICTED USES AND ACTIVITIES	AQUIFER RECHARGE AREA CATEGORY				
	I			II	III
	Wellhead Protection Areas		Other CARA I		
	1-year time of travel zone	5- and 10-year time of travel zones			
Abandoned wells (decommissioning of wells) (TCC 24.10.040)	A	A	A	A	A
Asphalt plants/cement and concrete plants (TCC 24.10.070)	X	X	X	P	P
Boat refinishing	P	P	P	P	P
Cemeteries (TCC 24.10.090)	X	P	P	P	P
Chemical manufacturing/processing, mixing and remanufacturing (TCC 24.10.100)	X	X	X	P	P
Chemical storage facilities (not including fuel) (TCC 24.10.100)	X	P	P	P	P

Figure 14: Image of Table 24.10-1. Prohibited and Restricted Uses and Activities Within Critical Aquifer Recharge Areas

LEGEND:

A = Allowed without a critical area permit, subject to requirements of this title

206 https://library.municode.com/wa/thurston_county/codes/code_of_ordinances?nodeId=TIT24CRAR_CH24.10CRAQREAR_24.10.020STREPRUS

207 https://library.municode.com/wa/thurston_county/codes/code_of_ordinances?nodeId=TIT24CRAR_CH24.10CRAQREAR_24.10.020STREPRUS

P = Permitted, subject to critical area permit and requirements of this title

X = Prohibited

X/P = As determined by the approval authority, small scale uses or those using nonhazardous materials may be permitted when the quantity, nature of materials processed and mitigation methods are determined to contain no significant risk to groundwater.

Section 11.20.075 of Spokane County's critical aquifer recharge area ordinance[208] includes a similar type of table.

[208] https://library.municode.com/wa/spokane_county/codes/code_of_ordinances?nodeId=TIT11EN_CH11.20CRAR_11.20.075CRAQREAR

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Critical Materials

City of Spokane Critical and Hazardous Materials List Information[209] guide sheet.

City of Spokane Business & Development Resources[210] – The Critical and Hazardous Materials topic includes the following resources:

- Critical and Hazardous Materials List Application[211] (PDF 25 KB)
- Critical and Hazardous Materials List Information[212] (PDF 22 KB)
- Critical Materials Handbook[213] (PDF 908 KB)
- Critical Materials List[214] (PDF 29 KB)
- Hazardous Materials Inventory[215] (PDF 32 KB)

Nonpoint Ordinance

- Article VI – Rules and regulations of the Thurston County Board of Health governing nonpoint source pollution[216].

Reports

- Spokane County Section 11.20.075 – Critical aquifer recharge areas[217], has a section on procedures for when a hydrogeologic report or study is required. This section is quite good, and provides for an important alternative:

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[209] https://static.spokanecity.org/documents/business/resources/guidesheets/hazardousmaterials/critical-hazardous-materials-list-information.pdf
[210] https://my.spokanecity.org/business/resources/
[211] https://static.spokanecity.org/documents/business/resources/guidesheets/hazardousmaterials/critical-hazardous-materials-list-application.pdf
[212] https://static.spokanecity.org/documents/business/resources/guidesheets/hazardousmaterials/critical-hazardous-materials-list-information.pdf
[213] https://static.spokanecity.org/documents/business/resources/guidesheets/hazardousmaterials/critical-materials-handbook.pdf
[214] https://static.spokanecity.org/documents/business/resources/guidesheets/hazardousmaterials/critical-materials-list.pdf
[215] https://static.spokanecity.org/documents/business/resources/guidesheets/hazardousmaterials/hazardous-materials-inventory.pdf
[216] https://www.co.thurston.wa.us/health/ehadm/pdf/Article_VI.pdf
[217] https://library.municode.com/wa/spokane_county/codes/code_of_ordinances?nodeId=TIT11EN_CH11.20CRAR_11.20.075CRAQREAR

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> An applicant may elect to meet the appropriate performance standards in lieu of preparing a hydrogeologic report if the environmental services director or hearing examiner finds the performance standards provide adequate aquifer protection.

- City of Redmond (King County), Zoning Code (RMC title 21), Appendix 1. – Critical Areas Reporting Requirements[218] details critical aquifer recharge areas reporting. The following paragraph provides a good example of an objectives statement:

  > A critical aquifer recharge area report must be submitted to the City. The purpose of the report is to evaluate the actual presence of geologic conditions giving rise to the critical aquifer recharge area; determine the appropriate wellhead protection zone; evaluate the safety and appropriateness of proposed activities; and recommend appropriate construction practices, monitoring programs, and other mitigation measures required to ensure achievement of the purpose and intent of these regulations. The information required by this report should be coordinated with the study and reporting requirements for any other critical areas located on the site.

Incentives

The Clark County Critical Aquifer Recharge Areas Ordinance, Title 40.410[219], includes incentives for using best management practices to avoid having to provide additional geologic and hydrologic characteristics of the property:

> Incentives
>
> Best Management Practices (BMPs). Individuals who implement BMPs to safeguard groundwater may not be required to provide additional geologic and hydrologic characteristics of the subject property, pursuant to Sections 40.410.030(B) and (C). Individuals shall implement the Washington Department of Ecology's Stormwater, Water Quality, Hazardous Waste, Wetland, and Solid Waste Programs BMPs; Chapter 13.26A; and BMPs from the Washington Departments of Health, Agriculture, Transportation, and State Conservation District Office.

[218] http://online.encodeplus.com/regs/redmond-wa/doc-viewer.aspx?secid=2017#secid-4221
[219] https://www.codepublishing.com/WA/ClarkCounty/?comp-ClarkCounty40/ClarkCounty40410/ClarkCounty40410.html

Appendix D – The Growth Management Hearings Board and Selected Decisions

Each GMA Hearings Board published a digest[220] of decisions that makes it easier to find decisions related to various topics. The digests contain case summaries through June 30, 2010. After that, the Boards were consolidated, and a tool to look for cases and decisions[221] was developed. In addition, the GMA Hearings Board has published a digest of decisions from July 1, 2010 onward[222], after board consolidation.

The Critical Areas Handbook[223] Appendix 1.B contains summaries of appellate court and Growth Management Hearings Board decisions related to critical areas requirements under the Growth Management Act.

In addition to the case law summaries for Critical Areas in general, the Handbook summarizes several cases related to critical aquifer recharge areas. Please refer to the Handbook to see these case summaries in full. These cases include:

- Using best available science for determining risk from pre-existing uses
- Updating maps using updated best available science
- Not relying exclusively on public water supply mapped well head protection zones because it does not protect individual drinking water wells nor the larger aquifer
- The GMA does not necessarily require designation of an entire aquifer – However, "the extent of these designated critical recharge areas, as distinct from the underlying aquifer itself, is determined through a substantive consideration of Best Available Science"
- Seawater intrusion critical aquifer recharge area designation and adaptive management

The Handbook cautions:

> Users of the Digest are reminded that decisions of the Board may be appealed to court and thus some of the excerpted cases may have been impacted by subsequent court and/or Board rulings. It is the responsibility of the user to research the case thoroughly prior to relying on holdings of a decision.

[220] http://www.gmhb.wa.gov/Global/Reader?title=Digests&path=Digests
[221] http://www.gmhb.wa.gov/search/case
[222] http://www.gmhb.wa.gov/pages/Documents/2010-Present_Joint_Digest_July2019_Update.pdf
[223] https://www.commerce.wa.gov/serving-communities/growth-management/growth-management-topics/critical-areas/

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The cases mentioned in this appendix are only a partial selection. Please refer to the GMA Hearings Board website for guidance on finding relevant cases. The Washington State Judicial Opinions Public Access Web site has an online search tool[224] to find opinions and decisions.

On the following pages are some examples of decisions from the digests from the Central Puget Sound, Western Washington, and Eastern Washington Growth Management Hearings Boards that are relevant for Critical Aquifer Recharge Areas.

Mapping and performance standards

Central Puget Sound

> "The use of performance standards is recommended in the Minimum Guidelines for … circumstances where critical areas (e.g., aquifer recharge areas, wetlands, significant wildlife habitat, etc.) cannot be specifically identified." WAC 365-190-040(1). However, where critical areas are known, cities and counties cannot rely solely upon performance standards to designate these areas. [Pilchuck II, 5347c, FDO, at 41-42.]

Local government discretion and the GMA framework

Western Washington

> The GMA provides that ultimate planning decisions rest with the local government. Such decisions are not unfettered but must be within the range of discretion allowed by the GMA. A GMHB does not substitute its judgment as to the best alternative available, but reviews the local government action to determine if it complies with the goals and requirements of the GMA. CCNRC v. Clark County 92-2-0001 (FDO 11-10-92).

Eastern Washington

> The Act requires protection of critical areas, and the county is given the opportunity to select the manner of that protection. Their choice is given great deference. Easy, et al. v. Spokane County, EWGMHB 96-1-0016, Order on Compliance (Sep. 23, 1997).

What protecting Critical Areas (CA) means

Central Puget Sound

> The Act's directive that local governments are to "protect" critical areas means that they are to preserve the structure, value and functions of wetlands, aquifer recharge areas

224 https://advance.lexis.com/container?config=00JABiZDFhYmU0My03MTRiLTQ1OTYtOGFjYi02Yjg0MWYzZTYzNGMKAFBvZENhdGFsb2f9AmKsL25rOJ32peBAlAS6&crid=c60d5fbe-e7a0-4462-b45b-9216a88b15aa&prid=74bee516-c191-45d6-b571-e34bc0824230

used for potable water, fish, and wildlife habitat conservation areas, frequently flooded areas and geologically hazardous areas. [derived from WAC 365-195-825(2)(b)] [Pilchuck II, 5347c, FDO, at 20.]

Western Washington

The GMA requirement to protect CAs directs a local government to adopt appropriate and specific criteria and/or standards. Willapa v. Pacific County 99-2-0019 (FDO 10-28-99).

Compliance monitoring and enforcement

Western Washington

If BMPs are relied upon for protection of CAs some form of monitoring and enforcement must be included to ensure that the plans are actually implemented and followed. ARD v. Shelton 98-2-0005 (FDO 8-10-98).

Eastern Washington

Further, laws can be so vague that they simply are unenforceable. That is the case here. Such an ordinance cannot satisfy GMA's duty to adopt enforceable "development regulations" to "protect" critical areas. A person should be able to determine what the law is by reading the published code. Ordinance no. 109-2003 (ICAO) relies on language too vague to create an enforceable standard and therefore cannot not operate to "control" land use activities and does not satisfy the county's GMA obligation to adopt "development regulations" to protect critical areas. The enforcement measures adopted by the county provide only for ad hoc enforcement. This does not constitute a reasoned adaptive management program, particularly where, as here, there is no provision for the monitoring of compliance. Larson Beach Neighbors and Jeanie Wagenman v. Stevens County, EWGMHB 00-1-0016, EWGMHB, Order on Compliance, November 13, 2003.

Critical Aquifer Recharge Areas

Eastern Washington

The GMA directs counties to designate, classify and protect areas with a "critical recharging effect on aquifers used for potable water." It is necessary to determine the location of recharge areas as a first step in designating and protecting them. The county must provide criteria necessary to indicate when an area needs specific scientific analysis to determine whether it is a critical aquifer recharge area. Save Our Butte Save Our Basin Society, et al. v. Chelan County, EWGMHB 94-1-0015, Compliance Hearing Order (Apr. 8, 1999).

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Appendix E – Contamination is Costly

Groundwater contamination can cost millions of dollars for a single site. It often takes a long time for contamination to be detected at a drinking water well. Often, this is the first indication that groundwater has been contaminated. By the time contamination shows up at a well, the contamination has travelled from the source, through the underground, to groundwater, and has migrated in the direction of groundwater flow.

The ongoing occurrence of contamination is not obvious – It takes attention to prevent contamination. Best management practices for prevention of releases along with inspections and response plans are critical for keeping groundwater clean and safe for drinking water.

After contamination shows up at a well, cleanup can take a long time, and sometimes the water has to be treated for decades.

Currently, we do not have a readily available catalog of costs associated with groundwater contamination. Potentially liable persons do not report their costs.

Here are some of the main categories of costs associated with contamination:

1. Identifying the contamination source(s)
2. Determining what has been contaminated (soil, groundwater) and where the contaminants are going
3. Determining the feasibility of cleaning up
4. Remediating soils
5. Remediating groundwater
6. Identifying and testing wells in the area to determine what needs to happen to protect public health
7. Providing alternative sources of drinking water
    - Bottled water
    - New well or deepened well
    - Interties with another drinking water system
8. Treating drinking water to remove contaminants prior to delivery to consumers, or blending the water with a cleaner source to lower the concentration to acceptable levels
9. Suffering a decline in property values and difficulty selling or getting a bank loan
10. Lawsuits

Example costs can be obtained when the state or federal government does the cleanup.

In addition, grants and loans to local government for remedial investigation and cleanup offer a window into the kinds of costs faced by both the parties responsible for cleanup and the community when groundwater is contaminated and must be cleaned up.

Grants and loans for public drinking water systems are another source for understanding the kind of costs incurred.

Here are three examples of costs related to contaminated groundwater.

Contamination in the Freeman School District Well

Freeman is a small, rural town about 12 miles south of Spokane Valley, Washington. Freeman has both a middle school and a high school, located next to each other. Across the highway from the high school are grain silos. Wells supply drinking and irrigation water to the schools.

The grain handling facility at Freeman[225] has leached carbon tetrachloride[226] into soil and groundwater.

[225] https://apps.ecology.wa.gov/gsp/Sitepage.aspx?csid=12540
[226] https://www.atsdr.cdc.gov/toxfaqs/TF.asp?id=195&tid=35

Figure 15: Area around Freeman Cleanup Site.

Carbon tetrachloride was found in the high school well, and a treatment system was installed to remove contaminants so that the water is safe to drink and to use for irrigation. After further investigation, residential wells were sampled and the well water found to have unsafe levels of carbon tetrachloride.

Carbon tetrachloride is a man-made chemical that does not break down quickly in the environment. It was widely used as an agricultural pesticide and fumigant to kill insects and rodents in grain storage facilities. It was also used to make refrigerants and propellants for aerosol cans, metal degreasing, as a dry-cleaning agent, and other uses.

In 1985, the U.S. Environmental Protection Agency (EPA) banned the use of carbon tetrachloride for agricultural and other uses, except some industrial applications.

Costs include soil sampling, groundwater monitoring, an air stripper treatment system for drinking water treatment, monthly drinking water well sampling, and a pump and treat system to clean up groundwater.

Costs for groundwater treatment alone for 17 years range from $7 million to $10 million dollars.

Christ Community Fellowship Water System Consolidation due to High Nitrates

The Washington Department of Health Office of Drinking Water publishes a list of recipients of low interest loans from the Washington State Drinking Water State Revolving Fund[227], published in July 2020. The following is excerpted from this publication[228] to illustrate types of costs:

This project continues a project funded in 2016 and 2017. Christ Community Fellowship (CCF) has been under DOH enforcement action for years to address high nitrates (17 mg/L) in its well. The project will consolidate the CCF Water System with City of College Place.

Improvements are proposed to be constructed in two phases, and include development of a replacement city-owned well on CCF property drilled into the same Columbia River Basalt Group Aquifer that the city's existing wells are completed within.

Project components include installation of 4,500 feet of 12" water main (any additional costs of increasing line size above 8" to be borne by city funding) to connect the proposed well and CCF to the existing water system and consolidation of the city's water rights as they relate to the new well location.

Subsidy Award: $1,756,391 for a new well and water mains.

227 https://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/WaterSystemAssistance/DrinkingWaterStateRevolvingFundDWSRF

228 https://www.doh.wa.gov/Portals/1/Documents/Pubs/331-534.pdf

Hamilton – LaBree Roads EPA Superfund Site

The Hamilton – LaBree Superfund site is located about two miles southwest of Chehalis in Lewis County. The EPA fact sheet[229] provides an overview.

Figure 16: Hamilton-LaBree Superfund Site area (after U.S. EPA, 2017).

The following is an excerpt from the EPA web page for this site[230]:

The Hamilton/LaBree Roads Groundwater Contamination site) is located about two miles southwest of Chehalis, Washington. The site is contaminated with PCE. PCE is also called PERC, perchloroethylene, or tetrachloroethene. It's a chemical used for dry cleaning, metal degreasing, and other industrial processes. PCE and its byproducts can present a risk to people's health and the environment.

[229] https://semspub.epa.gov/work/10/100243654.pdf

[230] https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.Cleanup&id=1002174#bkground

In the past, PCE was spilled and dumped in Berwick Creek. Also, drums and other containers of assorted hazardous chemicals were buried in the area of what is now known as the Livestock Market. Release of the chemical from the buried and dumped containers contaminated soil, sediment, groundwater, and surface water.

EPA and the State conducted early cleanup actions to address immediate threats. Risks to people's health and the environment remain. In 2013, EPA selected an interim remedy for the site. Remedial design is underway.

The site includes two areas where releases of hazardous wastes are known to have occurred: the 10-acre Hamilton Road Impacted Area (HRIA) and the 11-acre area now known as the Livestock Market. The site also contains an area called the Thurman Berwick Creek Area where a release is likely to have occurred. Contaminated groundwater plumes originating from these areas extend to the North/Northwest of Hamilton Road (which is downgradient) as well as west of LaBree Road.

For administrative purposes, the site has been divided into two units, called Operable Units, or OUs. The HRIA is OU-1. The Livestock Market area, Thurman Berwick Creek Area, and downgradient areas outside of the HRIA are OU-2.

Contamination was first identified at the site in late 1993-early 1994 by the Washington State Department of Health (WDOH). Out of 18 water-supply wells sampled, PCE was detected in six.

EPA conducted removal actions, or short-term cleanups, to address immediate threats to human health and the environment. Actions included removing drums, pails and cans from beneath Building B on the property known as the Livestock Market area; supplying bottled water to affected well owners for drinking and cooking; and expanding the Chehalis municipal water supply system to affected residents.

The site's interim remedy for operable unit (OU) 1 includes:

- Temporarily rerouting Berwick Creek around contaminated areas;
- Removing PCE from the areas with highest concentrations, by heating the PCE-contaminated soil and sediment then collecting the contaminants before discharging either the air or water, and by treating contaminated groundwater using bioremediation;
- Placing limits on future activities at the site; and
- Site monitoring.

All of these activities are extremely costly, especially compared to what prevention would have cost.

Here are EPA Region 10 cost estimates:

- **Alternative sources of drinking water, $7 million**: EPA Region 10 responded to community needs for clean drinking water in 2001 by providing bottled water ($1 million) and connecting the community to the public water system ($6 million).
- **Drum removal and investigation, $7 million**: The additional work during that time for drum removal and investigation was around $7 million more.

- **Interim Action Feasibility Cost, $14 million**: The work EPA is doing right now is summarized in the Record of Decision for the Operable Unit 1 interim action has the Feasibility Cost in more detail and that is around $14 million.
- **Costs for the remainder of the site, $14 million**: The site is split into two operable units. Operable Unit 1 is about half of the contaminated area. EPA has not started investigation of Operable Unit 2. EPA estimates that cost to be about the same as the cost for Operable Unit 1 of $14 million.
- **Total estimated costs, $42 million:** The total cost for cleaning up this site will be about $42 million.

Appendix F – Acronyms and Glossary

This is a limited glossary of terms. For more complete explanations of terminology common to groundwater science, please refer to the USGS Water Basics Glossary[231].

Aquifer - A geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable[232] material to yield significant quantities of water to springs and wells.

Aquitard – See confining layer.

Artesian conditions – When water rises up above the level of the well intake, sometimes above ground level, it is because a confining layer causes water pressure to rise.

Confined aquifer (artesian aquifer) - An aquifer that is completely filled with water under pressure and that is overlain by material that restricts the movement of water.

Confining layer – A body of impermeable or distinctly less permeable (see permeability) material stratigraphically adjacent to one or more aquifers that restricts the movement of water into and out of the aquifers.

Precautionary approach – A precautionary approach is one that prevents harm or damage in the face of uncertainty or lack of scientific information. See the Critical Areas Handbook[233] for multiple references to the precautionary approach as it relates to the Growth Management Act.

Preferential Flow – Water flows through the least resistant path. Preferential flow occurs when there is a path for water to flow through that allows greater flow volume and shorter travel time than the surrounding material. For example, clay is very resistant to water flow, however clay can develop cracks that allows water to flow through faster than expected for clay.

Qualified licensed professional – Washington State Law, Chapter 18.220 Revised Code of Washington[234] (RCW) contains the legal requirements for licensure of geologists. Further, this RCW defines the practice of hydrogeology. A hydrogeology specialty license is required in addition to the geologist license.

"Practice of hydrogeology" means the performance of or offer to perform any hydrogeologic service or work in which the public welfare or the safeguarding of life, health, environment, or property is concerned or involved. This includes the collection of geological data, and

[231] https://water.usgs.gov/water-basics_glossary.html#top
[232] https://water.usgs.gov/water-basics_glossary.html#Permeability
[233] https://www.commerce.wa.gov/serving-communities/growth-management/growth-management-topics/critical-areas/
[234] https://app.leg.wa.gov/RCW/default.aspx?cite=18.220&full=true

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consultation, investigation, evaluation, interpretation, planning, or inspection relating to a service or work that applies hydrogeology.

SDWA – The federal Safe Drinking Water Act.

Sole Source Aquifer – According to EPA's website[235], EPA defines a sole source aquifer (SSA) as one where:

- The aquifer supplies at least 50 percent of the drinking water for its service area
- There are no reasonably available alternative drinking water sources should the aquifer become contaminated

The SSA program enables EPA to designate an aquifer as a sole source of drinking water and establish a review area. EPA then reviews proposed projects that will both:

- Be located within the review area
- Receive federal funding

The review area includes the area overlying the SSA. It may also include the source areas of streams that flow into the SSA's recharge zone. EPA's review is intended to ensure that the projects do not contaminate the SSA.

The federal sole source statute only applies to federal review. However, some state laws and rules, as well as some local ordinances, list sole source aquifers as being subject to those laws, rules, or ordinances. Not all aquifers that are functionally sole source aquifers in the state are federally designated as such.

Unconfined aquifer - An aquifer which has a water table.

U.S. EPA - United States Environmental Protection Agency

USGS - United States Geological Survey

Water Table – The water level measured when water in the aquifer is at atmospheric pressure. To put it another way, when you measure water in a water table (unconfined) well, that is where the water actually is in the aquifer. On the other hand, when you measure water in a well that takes water from a confined aquifer, the water level is a measure of the pressure pushing the water up into the well, and not an indication of where the water in the aquifer is.

Well log – A written record of the geologic material through which a well was drilled. A well log normally includes the type of materials used for construction of the well itself and the depth at which the well screen is set.

[235] https://www.epa.gov/dwssa/overview-drinking-water-sole-source-aquifer-program#What_Is_SSA

Exhibit 140 APPEAL24-1001

Appendix G – Response to Comments on the 2005 Critical Aquifer Recharge Area Guidance

Here are the answers we received from the survey, organized by topic and question, (without blank responses).

Challenges

Have you encountered issues complying with the Growth Management Act for Critical Aquifer Recharge Areas? If yes, what would you consider the top three to be?

- **Pacific Groundwater Group submitting for King County Water District #90**

  Comment: KCWD 90 has one site of concern as there is an asphalt batch plant located within the wellhead protection area for its main wellfield. While low risk due to only indirect pathways for contamination, the District believes that the CARA requirements are not firm enough regarding allowing potential contaminant sources within sensitive areas.

  Response: During the review of the draft updated guidance, it would be good to hear from the District what they believe would be firm enough CARA requirements with respect to potential contaminant sources within sensitive areas. The guidance is not a rule – The GMA laws and rules plus local ordinances govern.

  It would be up to the Water District to work with the county or city where the wellfield is to upgrade CARA ordinance requirements. If the District believes the ordinance is not in compliance with the GMA, then the remedy is appealing to the Growth Management Hearings Board or the court.

- Jurisdictions who indicated no issues encountered in response to this question include: City of Tumwater, City of Walla Walla, City of Spokane, Clark County, Thurston County, and King County.
- **Four Horsemen Brewery**

  1. Local county codes do not have acceptable surface materials listed as pervious and exempt from permitting for new or new plus replaced surfaces. Counties should not be allowed to word codes in a manner that require critical area reviews for any change of use or for using your property for economic vitality.

     Counties are using the GMA as a trigger for permits without being required to have rules set for how they are allowed to make requirements, or what must be exempt because of how long it has existed and not data shows any change to aquifer recharge or contamination, which if true would necessitate monitoring.

Currently if an existing driveway is even raked or smoothed out, the county claims that is a change of surface material, and thus requires a permit for surface water management (SWM FEE).

2. There are no exemptions for land uses and parking areas to be exempt from contaminants of customer vehicles for home businesses when local county roads do not have sewer drainage systems or processing facilities for vehicle contaminants currently allowed on roads.
3. There is no square footage minimum table for pervious surfaces compared to impervious surface calculations. Ex. Does a 1500 sq ft impervious surface need 1500 sq ft of natural vegetation to constitute full infiltration? Does it need 1500 sq ft of natural vegetation located on the lower elevation from impervious surfaces.

   Response: The state Critical Aquifer Recharge Area guidance is not specific to localities enough to answer your question. This guidance does not address surface water management fees. This guidance defers to other guidance that reflects expertise for impervious surfaces, such as stormwater guidance. The Ecology stormwater manuals have material on parking areas. This guidance cannot specifically exempt land use practices because that is a function of local planning and ordinances. Local ordinances are deemed valid unless successfully appealed before the Growth Management Hearings Board or the court. It is possible that the Department of Commerce Growth Management Services could provide more information about land use regulation and critical areas, especially when it comes to what counties may or may not do.

- **Constance Ibsen**

  Comment: Deliberate lack acknowledgement of CARAs by decision makers, i.e. No implementation or enforcement of WWGMHB decisions.

  Response: Ecology does not directly regulate the implementation or enforcement of Growth Management Hearings Board decisions. Ecology provides guidance and review and comment when resources allow.

  The GMHB decisions apply to the jurisdiction under appeal. The Department of Commerce Critical Areas Handbook[236] Chapter 1 discusses the applicability of Court and Growth Management Hearings Board decisions to other jurisdictions:

  The GMA affords local government significant discretion in how they achieve compliance. While this provides a significant degree of flexibility, it also creates a lack of certainty. In reviewing critical area protection programs for compliance, local governments are encouraged to review decisions made by the Growth Management Hearings Board and Washington state courts. While Hearings Board decisions are not binding on jurisdictions not subject to a particular appeal, they provide guidance on

[236] https://www.commerce.wa.gov/serving-communities/growth-management/growth-management-topics/critical-areas/

how the Board may decide future appeals. Court of Appeals decisions are binding on jurisdictions within their district, and provide persuasive precedent for other jurisdictions. Supreme Court decisions are binding on all jurisdictions in the state. Local government consideration of court and hearings board decisions can help build defensible and effective critical area protection programs.

- **City of Redmond**

  Comment: The City of Redmond is complying with the GMA for CARAs. Two challenges faced by the City include:

  1. **Reclaimed water and source control**: The Department of Health is tasked with encouraging the use of reclaimed water and protecting source water. There is no guidance on how to balance the two issues in CARAs that are shallow and unconfined, such as Redmond's, that may be impaired if reclaimed water infiltrates into the aquifer.

     Response: This sounds similar to a situation in Thurston County, where there is a reclaimed water infiltration project by LOTT, the wastewater utility. Due to concerns within the community with reclaimed water and potential impacts to groundwater quality, LOTT initiated a multi-year infiltration study[237]. Thurston County is awaiting the results of that study prior to proposing critical area regulations (Chapter 24.10.190 – Reclaimed Water[238]).

  2. **Temporary Construction Dewatering**: The withdrawal of groundwater for temporary construction dewatering (TCD) is not considered a beneficial use and therefore does not need a water right. TCD can have an impact on a local jurisdiction's ability to manage groundwater withdrawals to maintain availability for drinking water sources. With no water right necessary, it is up to the local jurisdiction alone to regulate TCD. To provide a context of scale, three of the City of Redmond supply wells have pumped 4.5 billion gallons of groundwater over the past nine years. During that same time period, TCD projects have pumped more than 13 billion gallons of groundwater out of the aquifer.

     Response: Given that the state does not regulate temporary construction dewatering via water rights, it would be up to the local jurisdiction to develop plans and ordinances. The guidance does not currently address dewatering. You are welcome to suggest language on this topic during review of the draft.

[237] https://lottcleanwater.org/projects/reclaimed-water-infiltration-study/

[238] https://library.municode.com/wa/thurston_county/codes/code_of_ordinances?nodeId=TIT24CRAR_CH24.10CRAQREAR_24.10.190REWA

Best Available Science

What are the challenges your jurisdiction faces for including Best Available Science for designating and protecting Critical Aquifer Recharge Areas? What would help?

- **Pacific Groundwater Group submitting for King County Water District #90**

  Comment: The watershed could benefit by new groundwater-surface water modeling. There are no recent basin-level studies of the water resources in WRIA 9.

  Response: We agree with this comment. It relates to best available science, water availability, and anadromous fisheries. Other jurisdictions have used grant funding from Ecology to study stream flow and permit-exempt well issues. Stevens County did such a study that is useful for stream flow restoration, water availability, and best available science for critical aquifer recharge areas. We are referencing their study as an appendix to the guidance as an excellent example of best available science.

- **City of Tumwater, Public Works Department**

  Comment: Our entire jurisdiction is designated as a CARA. I assume this is because all of our soils have extreme, high, or moderate sensitivity and designating the whole city as such is easier than having a patchwork. Might also have something to do with the history Tumwater has with groundwater contamination and sensitivity around that issue.

  Response: City-wide protection of the underlying aquifer often makes sense, especially when there are municipal wells at risk of contamination plus commercial and industrial activities that need to prevent contamination.

- City of Walla Walla

  Comment: I would say the technical expertise. Our CARA's were identified as part of the original CAO in 2008 but if an update were needed then resources to assist with the technical side.

  Response: Resources to assist with the technical side are very important. The question is where the funding comes from and who would do the work. Ecology provides grants that may be used for technical Critical Aquifer Recharge Area best available science development, although applications for grants must compete against other proposals. Consultants and the USGS have been used for technical assistance. Ecology has limited resources to assist when resources are available.

- **City of Spokane**

  Comment: The City of Spokane utilizes critical aquifer recharge areas designated by Spokane County.

  Response: This is a good approach.

- **Sammamish Plateau Water & Sewer District**

  Comment: Best Available Science (BAS) is appropriate for designation of CARA areas, but not necessarily for protection.

  Response: Protecting critical aquifer recharge areas depends on keeping contaminants from going onto or into the ground. This typically involves standard best management practices like secondary containment, spill and leak prevention, and many others. It also involves best available science for understanding treatment technology effectiveness and strategies such as using Low Impact Development.

  Comment: The current emphasis on the Quantity of water to be recharged in the CARA, and less emphasis on Quality of the water being recharged. Quality is included in the guidance, but Quantity without associated quality consideration and/or monitoring seems to dominate local regulations and reviews.

  The review of quality of water proposed for recharge into a drinking water CARA needs to include performance requirements and monitoring, or not being allowed.

  Low Impact Development (LID) requirements frequently require or favor infiltration of stormwater (quantity).

  Equal weight needs to be provided to the quality, particularly those stormwater systems that collect for roads or areas where herbicides and pesticides are likely to be in use.

  Response: The Critical Aquifer Recharge Area guidance is statewide and does include both quality and quantity. In the case of stormwater, much effort has gone into monitoring stormwater to determine what the contaminants generally are, and what treatment technologies remove contaminants. The monitoring and technology components of stormwater management are extensively dealt with by the Ecology Stormwater manuals and the UIC program. The UIC program is statewide, while the stormwater permits cover populous counties and cities across the state.

  Local regulations can be commented on and appealed during updates. Project reviews are up to local jurisdiction requirements and are subject to the State Environmental Protection Act[239] (SEPA) and the Land Use Procedures Act[240] (LUPA).

- **Four Horsemen Brewery**

  Comment: Counties do not provide what aquifer levels are, and there is no bench mark for what they should be maintained at.

239 https://apps.leg.wa.gov/RCW/default.aspx?cite=43.21C
240 https://app.leg.wa.gov/RCW/default.aspx?cite=36.70C

Response: Some Counties do monitor aquifer levels – However that is a resource intensive activity.

Comment: King county uses the GMA to trigger permits for the counties revenues and has no limits on what they can require. The amount of rainfall in western Washington far exceeds the eastern side of the state, where wells and water use is very limited and completely dependent on the aquifer levels and its recharge. Adjustments should be based on average rainfall, soil type, and if impervious surfaces allowance should be adjusted to the soil types surrounding the surface. No chart exists for minimum infiltration rates needed and what soil types exceed that, and should not require permitting for X (sq ft) amount of impervious surface per X (sq ft) of surrounding soil types.

Response: Impervious surfaces are regulated at the state level by the stormwater program, which issues permits, develops guidance, and develops tools. The Critical Aquifer Recharge Area Guidance draft refers to the Ecology Stormwater program and points out the importance of recharge for groundwater quality and quantity. For more information about how impervious surfaces are regulated at the state level, see the Ecology Stormwater web page[241] that also has a link to the Ecology contact for stormwater.

- **City of Vancouver**

  Comment: A standardized list of best available science actions/submittals would provide consistency across WA. The wetlands and stormwater guidance manuals provide a list. This recommend listing provides support to the community as staff incorporate those actions into policy.

  Response: Volume IV of the 2019 Stormwater Manual for Western Washington, and Chapter 8 of the 2019 Stormwater Manual for Eastern Washington[242] are on pollution prevention using source control BMPs. Most of these BMPs are applicable to groundwater protection, since preventing contamination at the ground surface prevents groundwater contamination. See Section 4, Step 6 of the newly revised guidance for more information.

- **Constance Ibsen**

  Comment: BAS is not used. Decision makers state there is no agreement on BAS. Withhold planning funds till jurisdiction demonstrates implementation of existing CARA ordinance.

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[241] https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources

[242] https://fortress.wa.gov/ecy/ezshare/wq/Permits/Flare/2019SWMMEW/2019SWMMEW.htm#Topics/Chapter8_SourceControl/Chapter8_TitlePage.htm%3FTocPath%3D2019%2520SWMMEW%7CChapter%25208%2520-%2520Source%2520Control%7C_____0

Response: Ecology does not distribute or control planning funds, that is a function of the Department of Commerce. In addition, the Growth Management Hearings Board or the court may impact planning funds for jurisdictions who do not comply with orders.

- **City of Redmond**

  Comment: The City of Redmond used Best Available Science (BAS) to designate our CARA and currently uses BAS to protect our CARA. Challenges occur during implementation of the conclusions from the BAS when there are conflicting interests, such as reclaimed water and source control as noted in the answer to question 1. More references or links within Section 4 of the CARA guidance would be helpful for municipalities with less resources that have trouble using BAS. For example, provide links to example wellhead protection zone plans, USGS studies, state studies, etc. instead of a list (page 28 of the guidance).

  Response: We agree with this comment and have added more specific information and links to resources.

Permit Process

How could the guidance help with the review and approval process?

- **Thurston County**

  Comment: Our county struggles with the different authorities between the health officer and building official, and we are probably not alone. Guidance could provide some case studies of jurisdictions (counties and cities) that have successfully bridged this gap in their review process.

  Response: This is a really important point and we would like to include more information on this. We need more input from jurisdictions who have tackled this issue successfully.

  Comment: At the state level there are all kinds of requirements that concern water and should be related, but state regulators are compartmentalized and don't coordinate (even within Ecology). County staff are always trying to balance requirements, and different pieces of the state may be providing different direction: storm water, health, water use, GMA, etc., etc. Guidance could help by acknowledging/understanding the role of other existing water-related requirements, and provide tips on how to effectively and efficiently integrate them where they overlap or complement.

  Response: We strongly agree with this comment. We have tried to include helpful information in the guidance. The review of the draft may produce some additional recommendations. If there were resources and authorization, it would be a good idea for Ecology to work on this more between programs together.

- **Four Horsemen Brewery**

Comment: Guidance is not helpful when permitting staff does not offer guidance, but only offers enforcement and overcharging for permits. A county can claim that once a property has above 5,000 (sq ft) of impervious surface, it will always require a permit for any addition, even when no evidence shows aquifer recharge rates being affected. It would be helpful if properties and structures with approved BMP's, could be considered pervious because they have the flow control needed to make them pervious. Staff is trained to always use the GMA and surface water management as a trigger for permitting for staff and county revenues.

Response: The requirement for a permit and fees is a county decision that has to go through proper procedure to be enacted. The critical aquifer recharge area guidance cannot really address this.

- **Constance Ibsen**

  Comment: Add Ecology to the permitting process until County demonstrates understands and is implementing its CARA ordinance.

  Response: There are many aspects of development that are regulated on the local level. Ecology does not have a way to be added to the local permitting process, except through already established authorities, such as through SEPA.

- **City of Redmond**

  Comment: The CARA Guidance could help with the review and approval process by including an additional topic in Section 5 to specifically focus on what some jurisdictions require for land-use applications within a CARA.

  For example, the critical areas regulations found in the City of Redmond's zoning code (RZC 21.64.050) includes a list of prohibited activities within wellhead protection zones and wellhead protection zone performance standards that are applied to properties and new land-use activities within the CARA.

  Response: This is a very good idea. I have included example code for allowed, permitted with conditions, and prohibited uses from Thurston County in Appendix C – Code Examples.

  Comment: The City of Redmond also requires a Critical Aquifer Recharge Area report for all new land-use proposals located within the CARA. The Critical Aquifer Recharge Area report includes either a Level I or Level II hydrogeological assessment with the level of study commensurate to the risk to wellhead protection areas associated with the proposed land-use activities (RZC 21.64.050 Appendix 1,F.).

  The CARA report evaluates the existing condition of the proposed development parcel, proposed changes to the parcel that may impact groundwater quality and quantity, and

proposed measures to mitigate or prevent impacts to groundwater as a result of the project.

Response: I have added the City of Redmond code for reports to Appendix C – Code Examples. I have also added a section on reports to the guidance.

Comment: The City of Redmond also prohibits infiltration of storm water from pollution generating hard surfaces within portions of the CARA. This information is included in the City's Stormwater Technical Notebook which is the approved storm water manual for projects in Redmond.

All of the previous types of development review requirements could be useful examples to any jurisdiction looking for guidance on implementing effective CARA regulations.

Response: We appreciate this comment and recommend that other jurisdictions look at the City of Redmond's groundwater protection programs, plans, and ordinances.

Mapping

Does your jurisdiction map Critical Aquifer Recharge Areas? If not, what does your jurisdiction need to map them?

(Please see overall response at the end of this section.)

- **Pacific Groundwater Group submitting for King County Water District #90**: No, [we] rely on King County.
- City of Tumwater, Public Works Department: The county has a pretty high resolution of critical recharge areas. Does not really matter for us since the entire city boundary is a CARA, but we do map our wellhead areas. We did this in 2016 using a numerical modelling approach.
- **City of Walla Walla**: Yes
- Thurston County: Yes, we map them. Current maps were made based on soils data. It would be desirable to be able to map based on surficial geologic map and newer LiDAR, rather than soils, and have a way to update with new information from reports that come in for specific sites.
- **City of Spokane**: The City of Spokane utilizes maps created by Spokane County.
- **Sammamish Plateau Water & Sewer District**: Yes
- **Four Horsemen Brewery**: Yes, it does have pretty colors to show the CARA, but this is not actually based on surrounding properties with wells needing aquifer water and does not adjust to parcels having city water lines, and no buffers are made around existing wells that depend on surface water BMP's. It is just an overdrawn boundary to require permits for an over-permitting scheme.

- **Constance Ibsen**: Political will.
- City of Redmond: Yes, Redmond's CARAs are mapped. Redmond has a GIS section and mapping is not an obstacle.

Overall Response: The guidance includes information about mapping and resources that are helpful for mapping. This question helped us get an idea of mapping of Critical Aquifer Recharge Areas by local jurisdictions.

Data Resources

What data resources would be helpful to you?

- **City of Tumwater, Public Works Department:** A centralized list of potential contaminant sites would be nice.

  Response: Ecology's Facility/Site Atlas is an online map of facilities and sites that Ecology regulates. The Department of Health uses Facility/Site to show potential sources of contamination within wellhead protection zones. The guidance references both the source water protection online map of wellhead protection zones, as well as the Facility/Site Atlas. The Ecology online map "What's In My Neighborhood[243]" shows toxic cleanup sites that have been identified, which will give a good idea of what has caused groundwater contamination in the past.

- **Thurston County**: It would be helpful to provide technical support for updating maps (including updated data layers)

  Response: We strongly agree with this statement and we think it would be a good idea to develop a GIS/online map of drinking water aquifers, which depends on resources. The Washington State Department of Natural Resources and the USGS have been working together toward subsurface mapping. There are many mapping resources at Geologic Information Portal | WA - DNR[244].

- **City of Spokane**: More in-depth information on business activity risk potential would be helpful.

  Response: Business activity risk potential depends on the chemicals in use, the quantities, how they are stored, how they are transferred from one container to another, how releases are prevented during use, the structural components of pollution prevention (such as secondary containment), the training employees have to address spills and leaks, and on-going maintenance of pollution prevention structures and practices.

[243] https://apps.ecology.wa.gov/neighborhood/
[244] https://www.dnr.wa.gov/geologyportal

Ecology's 2019 Stormwater Management Manual for Eastern Washington Chapter 8 – Source Control[245] has information about potential polluting sources. In addition to outdoor controls to prevent stormwater contamination, pollution prevention controls should be applied to indoor activities as well.

We also recommend looking at the contaminated sites list referenced in the guidance to see what land use activities have resulted in cleanup sites.

- **Four Horsemen Brewery:** It would be helpful to have data on impervious surface (types and depth) on the quality of aquifer recharge rates and contamination levels based on soil types.

  Response: Impervious surfaces retard aquifer recharge rates and separate water infiltration from the underlying soil. The impact of soil characteristics on aquifer recharge rates and contamination levels would be another question. There is a wide variety of conditions across the state that factor into aquifer recharge rates, as well as contamination levels. Contamination levels depend on the contaminant as well as surface and subsurface conditions. A good source for the rate at which soils transmit water is the Washington NRCS Soil Survey. The Soil Survey also has soil properties relevant for contaminant transport, such as organic matter content and cation exchange capacity. The draft guidance refers and links to the Washington NRCS online Soil Survey application.

- **City of Vancouver**: A comprehensive contaminated sites layer that's accessible and can be incorporated into local GIS (City/County). The City of Vancouver keeps a separate database which duplicates efforts and requires significant effort to stay up-to-date.

  Response: Several online data resources are included in the draft guidance, including the Washington State Department of Ecology Facility/Site Application[246] and the Ecology online map "What's In My Neighborhood[247]" that shows toxic cleanup sites.

- **Constance Ibsen**: CARA parcel maps, inventory of existing hazardous sites on GIS layer, monitoring & compliance activities notes.

  Response: Parcel maps are available in GIS, so it would depend on whether the CARAs are mapped in GIS. If so, they would be overlain on the parcel map. One city actually mapped CARAs using parcel boundaries. For hazardous sites, see the above response to the City of Vancouver. Monitoring has two elements: 1) Monitoring for compliance and 2)

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245 https://fortress.wa.gov/ecy/ezshare/wq/Permits/Flare/2019SWMMEW/2019SWMMEW.htm#Topics/Chapter8_SourceControl/App_UrbLandUsesAndPollutionGenSources/ManufacturingBusinesses.htm%3FTocPath%3D2019%2520SWMMEW%7CChapter%25208%2520-%2520Source%2520Control%7CAppendix%25208-A%253A%2520Urban%2520Land%2520Uses%2520and%2520Pollution-Generating%2520Sources%7C_____2

246 https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Facility-Site-database

247 https://apps.ecology.wa.gov/neighborhood/

environmental monitoring. The guidance has information on where to find groundwater monitoring data. Monitoring for compliance is a local function. You may find Appendix A of the draft guidance illumining – It includes Issaquah's program for inspections and tracking.

- **City of Redmond**

  Comment: Updated list of emerging contaminants, their source activities and monitoring techniques.

  Response: This is a very large and complex question that deserves to be developed. The draft does not currently address emerging contaminants. Reclaimed water facilities with extensive groundwater studies are good sources of information – such as the LOTT facility in Thurston County. Ecology's web page for more information: Reclaimed water - Washington State Department of Ecology[248], and Contaminants of Emerging Concern - Washington State Department of Ecology[249]. Ecology also has numerous publications on reclaimed water, and at least one on emerging contaminants (search Ecology publications[250]). The USGS has done numerous studies on emerging contaminants.

  Comment: Table 1 (page 31) could be updated to include regulation and guidance for LID, specifically related to recharge.

  Response: The draft guidance refers to the Ecology Stormwater program for information on LID.

  Comment: High density growth within the CARA can provide challenges to monitoring the groundwater. Standards for conducting groundwater monitoring near basements, etc. in the water table would be helpful to ensure monitoring efforts are providing accurate results.

  Response: Groundwater monitoring is a vast topic. The specific case of groundwater monitoring near basements and understanding potential interference for obtaining accurate results would require specific research or finding such research, and the draft guidance doesn't have anything that specific.

Implementation – Question 1

How does your jurisdiction address groundwater protection beyond building permits?

(Please see overall response at the end of this section.)

[248] https://ecology.wa.gov/Water-Shorelines/Water-quality/Reclaimed-water
[249] https://ecology.wa.gov/Water-Shorelines/Water-quality/Wastewater/Contaminants-of-Emerging-Concern
[250] https://apps.ecology.wa.gov/publications/UIPages/SearchPublications.aspx

- **City of Tumwater, Public Works Department**: Stormwater regs. Also… our CARA rules restrict certain land uses and on top of that our WHPA regs restrict others. With the help of Thurston County, we inspect businesses to make sure they have BMPs in place to reduce the potential for discharges. We also have a groundwater monitoring program, where we take quarterly samples throughout our WHPAs as an early detection tool.
- **City of Walla Walla**: Primarily building permits but we do have CARA's mapped so if a project is proposed within the boundary our CAO provides guidance on what can and can't be done.
- **Thurston County**: We have a hazardous waste program with limited funding and we have some monitoring.
- **City of Spokane**: The City has several activities that are aimed at protecting ground water. These include hazardous waste drop off, storm water handling and disposal, and sewering requirements. Business are also required to comply with the critical materials ordinance and above ground and underground storage tank requirements.
- **Sammamish Plateau Water & Sewer District**: Not a land use agency, so we do not issue building permits, but as a water purveyor we work to monitor applications for development (building permits, tenant improvements, subdivisions, etc.), to verify any activities associated with the development that might impact groundwater quality, particularly in our Wellhead Protection areas. We look for proposals to inject and/or infiltrate stormwater and also to the type of development and whether they may have hazardous materials on site when completed that need to be included in the contaminant inventory.
- **Four Horsemen Brewery**: It requires permits for ANY SURFACE change, considers Grassed Modular Grid Pavement impervious, and even requires a permit for me to maintain my driveway when grading it sustainably for 30 years. It words its code in a way that mowing my lawn can be considered a surface material change retarding water infiltration rates if over 2,000 sq ft and requires a permit.
- **Constance Ibsen**: In reality, Mason county does not even consider CARAs in building permits.
- **City of Redmond**: Development review, groundwater quality monitoring, water table monitoring, contaminated site cleanup monitoring, coordination with Ecology, pollution prevention inspections to businesses and outreach to community.

Overall response: Thank you for this information, it is valuable and much appreciated. We have added a section on implementation that discusses authority, compliance monitoring, program integration, and groundwater monitoring. If you have suggestions for improvement, please let us know.

Implementation – Question 2

What are the challenges you see with respect to implementation?

- **City of Tumwater, Public Works Department**: I am not sure if it presents a challenge, but one thing I wish we had was better communication across different departments within our jurisdiction. Would be nice know we're catching wind of all development projects that could create problems. This is partly a data/software thing. I'm sure our permit program could facilitate knowledge sharing, but it does not do that too well in this regard.

  Response: We agree with this comment. It would be helpful if there was grant funding for a project to address this and the results shared, since this is common to many jurisdictions. We have added a section to the draft that includes sharing information across departments (Section 11).

- **City of Walla Walla**: If additional requirements are included as a result of the guidance update what resources may be available to assist or does it become an unfunded mandate.

  Response: We have added to the draft recognition of funding and resource limitations and that funding and resources vary widely across the state. Grants can help.

- **Thurston County**:

  Comment: Focus should shift away from new regulations to provide more support for the existing regulations. There is no requirement for ongoing monitoring or inspections, and very limited funding to support it, so counties can't follow up unless they get a complaint.

  Response: We have added a section on Implementation – Authority, Monitoring, and Program Integration that addresses monitoring and inspections, with recognition of funding/resource limitations.

  Comment: Limited technical expertise when doing reviews to identify issues.

  Response: This is a significant problem across the entire state, especially for small jurisdictions.

  Comment: We need a better process to keep CARA-based assessments up-to-date. Modern data are not included in CARA-base assessments. No mechanism appears to exist to factor in modern data, or on-goingly include additional data:

  1) Wellhead protection area assessments: groundwater flow and transport information from modern and updated WHPAs
  2) Recent groundwater sampling and monitoring results,
  3) Hazardous materials locations,
  4) Known contaminated sites,
  5) Updated knowledge of chemistry/chemicals of concern,
  6) Modern soils mapping,
  7) 3D geologic mapping,

8) Confining layers' extents,

9) Water/wastewater systems' information,

10) Groundwater modeling,

11) LiDAR,

12) Pumping location/rate knowledge

All of these are highly beneficial to CARA-based site assessments, but are often excluded from reviews. Data we have are not routinely part of the CARA assessment process.

Response: I strongly agree that these are very useful to have and ought to be developed so that people can access and use them more easily. I think it would greatly help groundwater protection, and would also help surface water/stormwater pollution prevention and understanding the groundwater/surface water regime. It would take dedicated resources to accomplish a better information integration. Some of these items are available online and we have detailed them in the draft guidance. The Washington Geological Survey is involved with a 3D geologic mapping project with the USGS. The USGS has developed groundwater models for large areas of the state, and information from these models and the accompanying reports are very useful.

- **City of Spokane**

  Comment: Aquifers cross jurisdictional boundaries. Need to have uniform regulations.

  Response: We have added a section on Interjurisdictional coordination (Section 10). In addition, Chapter 1 of the Dept. of Commerce Growth Management Services Critical Areas Handbook[251] has a section on Regional Planning Efforts.

  Comment: Unclear overlap of regulations intra-media and inter-media (i.e. Municipal NPDES, Industrial NPDES, UIC, SDWA, etc.). A diagram or flowchart visually identifying the overlap and the agency responsible for regulation would be helpful to the user of the guidance document.

  Response: We agree with this comment and have revised the section on working with state and federal laws and rules to be more complete. A diagram is a good idea.

- **Sammamish Plateau Water & Sewer District:** Since we are not a land use agency, and do not have certain police powers, implementation depends on the land use agency having regulations that clearly address protection of the aquifer resource for new developments and existing land owners.

  Response: This situation makes it difficult for purveyors to protect groundwater they depend on. We have added a paragraph in Section 4, Step 6 highlighting this concern.

[251] https://www.commerce.wa.gov/serving-communities/growth-management/growth-management-topics/critical-areas/

- **Four Horsemen Brewery**: The county codes are designed as a means to overcharge citizens for permits. It needs to be changed to allow citizens to construct with due diligence and awareness of infiltration rates for projects or changes of use or property use to allow maintaining your property and lessen the overcharging for permits. It should instead offer the BMP's as a guide for citizens to use for projects less than the max impervious surface allowed on a parcel, and permitting staff could be paid permitting fees for people who want guidance and lack experience with such control measures.

  Response: The requirement for a permit and fees is a county decision that has to go through proper procedure to be enacted. The critical aquifer recharge area guidance cannot really address this.

- **City of Vancouver**: There are multiple actions that have no clear oversight triggers for the CARA responsible staff. See the next #8 response for particular challenges: NPDES, secondary permittees, federal projects in Sole Source Aquifer areas, etc.

  Response: The city would need to develop oversight triggers through the comprehensive plan and development ordinances. See our response to the comment you mention. We have added a section on implementation to the draft.

- **Constance Ibsen**: NO political will.
- **City of Redmond**: Monitoring - keeping up with pace of development and changing source areas for municipal water supply wells during temporary construction dewatering activities. Urban environments become complex to monitor. There are challenges in balancing development and preservation of natural resources.

  Response: These are very challenging areas to deal with especially in light of how limited resources are.

Implementation – Question 3

What would you like to see addressed in the guidance revision with respect to implementation?

- **City of Tumwater, Public Works Department**: It would be cool to see some guidance about groundwater monitoring. What would a robust, mid-range, and a basic monitoring program look like? Also, I wish it was easier to get a good inventory of potential contaminant sites. As is its kind of difficult to compile this information.

  Response: This subject deserves an entire manual – the draft guidance will not be able to be completely detailed, but we can offer an overview. We have added information about groundwater monitoring options to the draft guidance.

  The draft guidance contains information about online resources to inventory potential contamination sources.

- **City of Walla Walla**: Better understanding if there is technical assistance available at DOE and navigating to know who to speak with.

  Response: Ecology provides technical assistance mainly through Water Quality Program Regional Office Senior Hydrogeologists, when resources allow. Contacts are listed on Ecology's web page for Critical Aquifer Recharge Areas.

- **Thurston County**: Solutions to address those challenges.

  Response: We have done what we can in the draft and welcome further suggestions.

- **City of Spokane**: Some kind of state minimum standards so that could be some consistency across jurisdictional boundaries.

  Response: The draft guidance refers to the Growth Management Act Minimum Guidelines in Chapter 365-190 WAC, and we have added a section on Interjurisdictional coordination. The GMA allows for differences in local conditions – See Section 7 – Adapting to Local Conditions and Settings.

- **Sammamish Plateau Water & Sewer District**: Our water service area includes 3 jurisdictions, each with different practices for existing sites with potential contaminant sources. While each jurisdiction includes CARAs in the Critical Area Ordinances, only one jurisdiction has a program for source control inspections for businesses with quantities of hazardous materials over a certain threshold. Requiring source control inspections would be an added benefit.

  Response: We agree with this comment and have added a section on inter-jurisdictional coordination to the draft.

- **Four Horsemen Brewery**: Guidance should be given for projects that change a soil topography with more than 3' and affect infiltration rates while giving materials exempt from needing Clearing and grading permits for Surface Water Management.

  Here is a recent result from the hearing examiner of king county. 23. Source - (https://www.kingcounty.gov/~/media/independent/hearing-examiner/documents/case-digest/appeals/code-enforcement/2018/2018%20august/ENFR170114Supp_Butler.ashx?la=en)

  Thus, anyone who works any ground or vegetation in King County, in almost any manner, would presumptively have "cleared" or "graded." Each person who mows the lawn in the summer, prunes back the hedges in the fall, or adds some gravel to fill in a walkway's wet low spots in the winter, would have the burden to affirmatively demonstrate a narrowly-interpreted exemption to the requirement to obtain a permit.

  Response: This is up to the local jurisdiction and more detailed than the draft guidance can address at this time.

- **City of Vancouver**: We'd also like to see the guidance talk more about oversight of other NPDES permits like sand and gravel and industrial general permits plus the secondary permittees like the Port and other permitted agencies like WSDOT. They don't typically require our oversight through the land use/planning process but in the name of protecting groundwater, we would want them to come in for a review.

  Response: This is going to require more research - I believe local jurisdictions can require that permittees submit a copy of the application to the city, and that the city can inspect and require compliance with the permit if the city gives itself authority in its ordinances. Some jurisdictions require compliance with state laws and regulations. Some jurisdictions adopt state laws and rules by reference. It would be a function of the local ordinance to require that permittees with a state permit submit information to the city. In addition to the GMA, Title 35, Chapter 35.88 RCW[252] gives towns and cities broad authority to protect water supplies from pollution.

- **Constance Ibsen**: Using example of SMP, Ecology review and approve and enforce CARAs, not Commerce.

  Response: From Ecology's website:

  The Shoreline Management Act[253] (SMA) requires all counties and most towns and cities with shorelines to develop and implement Shoreline Master Programs[254]. The law also defines our role in reviewing and approving local programs. The SMA was passed by the Washington Legislature in 1971 and adopted by voters in 1972. Its overarching goal is "to prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines."

  It would require legislation, rule development, program development, and resources to have a similar program for Critical Aquifer Recharge Areas.

- **City of Spokane**: An implementation plan of rules to be protective of the aquifer should be a bullet in Section 1 as an element of a good groundwater protection program.

  Response: Good comment, we have added a bullet for this in Section 1 as an element of a good groundwater protection program. We have also added a section on implementation to the draft guidance. We welcome any additional suggestions you may have.

- **City of Redmond**: More emphasis on health of aquifer, not just the time-of-travel zones, to set up the context for the guidance in the introduction. Consideration of how source area for supply wells may change due to external forces, such as temporary construction

[252] https://app.leg.wa.gov/RCW/default.aspx?cite=35.88
[253] http://apps.leg.wa.gov/RCW/default.aspx?cite=90.58
[254] https://ecology.wa.gov/Water-Shorelines/Shoreline-coastal-management/Shoreline-coastal-planning/Shoreline-Master-Programs

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dewatering. An example quality assurance planning checklist in Section 4 would be helpful. Solution planning for contaminant challenges.

Response: We hope we have made the need to prevent groundwater contamination across aquifers clear in the draft. We are not sure about the quality assurance planning checklist – Are you referring to a checklist for groundwater monitoring? It would help to understand more about what contaminant challenges you would like to see solution planning for.

Cross-Jurisdiction

If your jurisdiction has a well or a well protection area in another jurisdiction, what has been your experience with dealing with challenges and solutions for the associated Critical Aquifer Recharge Area protection?

(Please see overall response at the end of this section.)

- **City of Sumas, Kyle Christensen, Mayor**: When looking at our aquifer, the fear that always crosses my mind is in regards to contamination from runoff of farm manure and pesticides. The major feedback I would give is in regards to wellhead protection areas and the protection policies in place. Currently, we easily enough protect our wells located within City limits; however, we would have to rely on the County to safeguard our wells at May Rd and beyond. I would love if our City had a say in any developments that happen within proximity of those wells.

  Response: This is a very common concern that would be helpful to address. We have added Section 10 on Interjurisdictional coordination to the draft.

- **City of Tumwater, Public Works Department**: Parts of our WHPA's do bleed into the county (inside and outside the UGA). From my limited experience coordination has been good. I guess the worst case scenario would be where the county permitted some sort of problematic activity within our WHPA. I've never seen that, nor have I heard of that happening in the past.
- **City of Walla Walla**: Challenge would be within the urban growth area where the City does not have permitting authority. One change the City made in 2014 was to require annexation for connection to city utilities. On-going coordination with the County is key and something that requires constant work.
- **Thurston County**: Cities - who can require a business license, may not understand which new businesses may use hazardous materials or pose a threat to groundwater – [They] don't route the application to health officials to review. Even if they did, the county has no funding to do the review, and no resources. Here is a recent example: https://www.theolympian.com/news/local/article222965980.html.

  Response: This concern is common to many or most jurisdictions in the state. It takes resources to protect the functions and values of Critical Aquifer Recharge Areas. Prevention is expensive – Contamination is more expensive. We have added an appendix on the cost of

contamination to the draft. We have also added information on Critical Materials inventories that some jurisdictions require to be submitted.

- **City of Spokane**: There is a lack of communication between jurisdictions. Water districts do not always receive SEPA notifications of projects that within their wellhead protection areas. Jurisdictions are not always aware of the potential impacts to wellhead protection areas.
- **Sammamish Plateau Water & Sewer District**: See answer to questions 6-8.

  There was also an issue where the land use agency allowed and then took ownership of a UIC in an area that posed a threat to a drinking water well, and did not consult with our jurisdiction prior to development and implementation of the structure. It took legal action to manage the situation.

- **Four Horsemen Brewery**: Code enforcement officers use the code to burden responsible home owners and require them to get permits for anything you do on your property. Codes are written in a way that the change of use for a property would not have a path to compliance because a county can word its codes in a way that restricts any activity on a property without a minimum amount of exemptions they must offer in design of their policies. If the county does not have surface water management on its county roads, citizens should be exempt from surface water management on their properties.
- **Constance Ibsen**: Mason County does not recognize CARAs. Adjoining jurisdictions would need to address [them].
- **City of Spokane**: The guidance document would benefit from a cross-sectional view of 2 intersecting cones of depression to visually identify for the user of the manual how a single well can influence another, as well as promote contaminant migration.

  Response: This is a good idea. We have updated the contaminant transport schematic to illustrate the cone of depression and the concept that pumping wells can draw contamination toward the well within the capture zone.

- **City of Redmond**: The City of Redmond's CARA extends beyond the City boundaries. One challenge is the application of reclaimed water on the CARA. The City worked with King County to develop an MOU to establish a cooperative relationship regarding the use of reclaimed water within Redmond's CARA, including areas extending outside the City's boundaries.

Overall Response: Inter-jurisdiction coordination is a very common concern that is a significant challenge to address. The comments provide valuable insights into the difficulties local jurisdictions face and will be very useful for continuing discussions. We have added Section 10 on Interjurisdictional coordination to the draft. We welcome additional suggestions.

Funding

Please describe how your groundwater protection efforts are funded. If you do not have sufficient funding, please feel free to state what your funding needs are in order to meet the requirements of the Growth Management Act for Critical Aquifer Recharge Areas.

(Please see overall response at the end of this section.)

- **Pacific Groundwater Group submitting for King County Water District #90**: All efforts are included as part of the District's Group A water system planning requirements under the Department of Health. Additional efforts beyond this are difficult to undertake due to costs.
- **City of Tumwater, Public Works Department**: Water rates and occasionally grants. I don't think any funding issues are preventing us from meeting requirements.
- **City of Walla Walla**: Not a dedicated funding source. Probably through water plan update and then implementing the CAO through building permit review.
- **Thurston County**: All permitting staff are funded by permit fees. There are very limited options for general or proactive groundwater protection efforts, and very limited staff available to respond to compliance complaints. Groundwater protection programs cut off since the Site Hazard Assessment funding ended. Jurisdictions would need funding to update CARA maps and data.
- **City of Spokane**: The Water department conducts groundwater testing of the Spokane Valley Rathdrum Prairie Aquifer using utility fees. The Fire department has inspectors and storage tank permits funded from permit fees and the general fund. Storm water is funded by utility charges.
- **Sammamish Plateau Water & Sewer District**: Funds are provided through our water rates, and in some cases for new developments, through monies collected during development for review and approval of proposals within the CARA.
- **Four Horsemen Brewery**: I am a small business trying to gain economic vitality in the rural area. I am a school teacher and am actively working with hundreds of businesses that are affected by the county successfully "Complying" with the state GMA, but ignoring state laws regarding small business, rural economies, and increasing the economic vitality of rural area. We are not paid, but only affect with the closure of our businesses from permitting staff.
- **City of Redmond**: The City of Redmond is the water purveyor and uses money generated from the water rates to fund groundwater protection efforts.

Overall Response: We have added information on funding sources provided in these comments to the draft under Section 11 – Implementation – Authority, Monitoring, and Program Integration.

Long Range Plans – Question 1

When developing, or amending, long range plans does your jurisdiction consider the long term availability or protection of groundwater?

(Please see overall response at the end of this section.)

- **Pacific Groundwater Group submitting for King County Water District #90**: Only as related to 10, above.
- **City of Tumwater, Public Works Department**: Long term availability... yes. The specific example I am thinking of is our water system plan update we're currently working on. It has a section on climate impacts to our aquifer over the next many, many years. (One thing it does not do is consider the impacts of full UGA build-out, which would be interesting.) Looks like our comp plan deals with this some too. Also of note is the North Thurston County Groundwater Management Plan. Protection... also yes. The conservation element of our comp plan deals a lot with this.
- **Clark County**: Multiple long range plans address availability and protection of ground water in some fashion: The coordinated water system plan, stormwater management plan, comprehensive plan, and water resource management plans for WRIAs. The two WRIA plans are by far the most comprehensive and direct in addressing water supply. The county's stormwater plan and associated code addresses water quality the most comprehensively.
- **City of Walla Walla**: Long term availability is primarily addressed through our water system plan which is currently being updated.
- **Thurston County**: Yes, however this is a new area of focus since the Hirst decision and RCW 90.94 – Streamflow Restoration rule. Still working out how those would interact with Comprehensive Plan, ongoing streamflow restoration watershed planning, and CARA rules.
- **City of Spokane**: Yes, the comprehensive plan considers groundwater protection and availability.
- **Sammamish Plateau Water & Sewer District**: Yes, through our Water Comprehensive Plan.
- **Four Horsemen Brewery**: It thinks about groundwater, but does not have the education level to make proper decisions and the state does not require codes and implementation be designed in a manner to limit how much a county can burden its citizens with permitting fees. It is designed instead as a tool to force citizens comply with codes or have their property be taken forcefully or liens put on property for work done for disadvantaged people and fines assed without limits.
- **Constance Ibsen**: NO
- **City of Redmond**: The City of Redmond's Comprehensive Plan includes eight policies specific to the protection of the City's Critical Aquifer Recharge Areas. The policies focus on: encouraging cleanup of contaminated sites, protection of groundwater quality and quantity, prohibiting discharge of wastewater and potentially contaminated stormwater to

groundwater, retaining and enhancing aquifer recharge, promoting infiltration of clean runoff, and encouraging retention of open spaces.

Overall Response: Ecology appreciates the depth of information and experience on planning evident in these comments. We appreciate the use comprehensive planning to integrate between various planning elements and water planning, and the complexity of these efforts. We have included comprehensive plans in the draft guidance – Please feel free to offer further suggestions.

Long Range Plans – Question 2

Anything you would like to say about long range plans for the long term availability or protection of groundwater?

- **Pacific Groundwater Group submitting for King County Water District #90**: See 2 above.
- **City of Tumwater, Public Works Department**: Nothing specific, except to say that we're lucky because in general water resource protection is very important to the City. I think this is partly due to the first-hand experience we've had with groundwater contamination at our Palermo Wellfield (TCE and PCE contamination that knocked out our primary wellfield in the mid-90s). Also... our mayor is very knowledgeable about groundwater issues being that he was a professional environmental engineer at ECY for a long time.
- **City of Spokane**: Not at this time.
- **Sammamish Plateau Water & Sewer District**: Continue to emphasize protection and avoidance strategies, as clean-up is almost always more expensive, and may not be feasible.

  Response: We strongly agree with this comment and have addressed this in the draft.

- **Four Horsemen Brewery**: Ground water protection is important and people exist who will not think about the environment with regards to their business practices. People should have an exemption from needing permits when they agree to maintain and use a property using the best management practices as guides for property maintenance and home ownership.

  Response: Permits are a local requirement and jurisdictions have the flexibility to determine alternate ways of protecting the functions and values of Critical Aquifer Recharge Areas.

- **City of Vancouver**: Clarify permitting and working across disciplines as a project starts to be entertained in the planning process. We're particularly concerned that Planning isn't looking at water supply issues. Submitted projects are often far along a planning approval process before those with water protection duties get involved.

  Response: We have added language with respect to working across departments to the draft in the added Section 11 on implementation.

- **Constance Ibsen**: To ensure the quantity and quality of groundwater in Washington, Ecology will need to step in and do the work and enforce.

  Response: Enforcement is done at the local level under the GMA. Ecology's role is to provide technical guidance. Where resources allow, Ecology may review and comment on plans and ordinances.

- **City of Redmond**: As density increases, there are more challenges in protecting the CARA. The City of Redmond's Comprehensive Plan strives to focus development in two urban centers encouraging re-development of already developed land within the two urban centers while preserving open space in the more rural area of the City. This vision to focus development in the urban centers helps protect the CARA by:
  1. Promoting infiltration of clean runoff in the urban centers will ensure that groundwater recharge is enhanced.
  2. Preserving open space by concentrating development in the urban centers will help maintain groundwater quality and recharge.

  Response: Ecology appreciates the expertise of the City of Redmond and the City's efforts to protect Critical Aquifer Recharge Areas. It is important as various jurisdictions learn how to handle challenges to share knowledge, experience, and strategies.

General

Please share any other concerns or opinions about the Guidance revision – What would you like to see changed or added?

- **City of Tumwater, Public Works Department**: Not really. Will keep an eye out for draft documents to review.

  Response: We greatly value reviews, thank you!

- **Clark County**

  Comment: It seems like the current document is largely geared for jurisdictions to get some background on CARAs and the need to establish them. The guidance is not that helpful for jurisdictions that have had CARA policies and code for a while and it doesn't outline ways to improve them. Examples of great policies, code language, implementation processes, etc. would be useful guidance for the county, in addition to updated guidance regarding any new relevant statutes, court cases, and best available science.

  Response: We agree with your comment, and we have included more examples from counties and cities. The Department of Commerce updated their Critical Areas Handbook, which includes a thorough section on statutes and court cases. We have also updated the discussion on best available science. We hope this is greatly improved and value your additional review comments.

Comment: We would really like to see more guidance on helping us review uses in the use table in future reviews.

Response: We think that the City of Spokane and Spokane County have excellent procedures based on Critical Materials, so we think the Critical Materials Handbook is a good existing reference for this. See the updated Guidance Appendix C under Critical Materials. We would really like to hear from you more feedback on the updated guidance.

- **Thurston County**

  Comment: Important to use the term "hazardous materials" not "hazardous waste"

  Response: We agree with this and am making changes where it makes sense.

  Comment: Amend the restriction of businesses that are Medium Quantity Generator (MQG) of hazardous waste and Large Quantity Generator (LQG) businesses within certain CARA's or WHPA's. The problem is that your generator status is not known until you do business and start generating waste and also your generation status can change from year to year. We would have to kick businesses out of CARA's when their hazardous waste generation status reaches MQG or LQG status, instead of being able to restrict them from doing business there in the first place.

  Response: We agree with you in principal. It is up to the local jurisdiction to write their own ordinance to meet this type of need.

- **King County**

  Comment: Update Table 1. to reflect current Solid Waste Handling WAC (173-350).

  Response: We agree with this comment. We will change the WAC reference to the correct one. Just to mention, Table 1 is being replaced by Section 6 – Working with State and Federal Laws and rules. Ecology has listed laws and rules online[255], a better up-to-date resource.

  Comment: Add links to other Ecology NPDES permits such as Municipal and Industrial in Appendix B.

  Response: Appendix B has been replaced by information contained in Section 6 – Working with State and Federal Laws and Rules. Links to the Ecology web page where there are links to the Industrial Stormwater General NPDES Permit and the Municipal Stormwater General NPDES Permit have been added.

  Comment: Fix website links throughout document.

[255] https://ecology.wa.gov/About-us/How-we-operate/Laws-rules-rulemaking

Response: Done, although we will need to be checking and updating periodically because things change.

Comment: In reference to RCW 36.70A.200 (Siting of essential public facilities), King County would be interested in focusing on the permitting and water use as it pertains to the geographic limitations for siting essential public facilities including regional road maintenance facilities.

Essential public facilities that provide emergency response actions to the public such as snow and ice response, hazardous material spill response and cleanup, storm and emergency road repair are functions that are critical for public safety.

It would be beneficial to include resources and information within the CARA Guidance Document that may further allow jurisdictions to pursue siting of these facilities that King County views as essential public facilities as it relates to water use restrictions and groundwater protection within CARA designated locations.

Response: We think this is a function for local government to address in their comprehensive plan and ordinances. We don't think the draft guidance restricts these considerations.

- **City of Spokane**

  Comment: There needs to be more alignment between storm water and ground water protection.

  Response: We agree. We have tried to include more on storm water and pollution prevention. We would be interested in review comments on the draft.

  Comment: There needs to be more discussion on non-point source contribution of contaminants.

  Response: We agree. I have added a section on Ecology's nonpoint source program and information about the Voluntary Stewardship Program. We would be interested in discussing this more.

- **Sammamish Plateau Water & Sewer District**

  Comment: Include an emphasis on quality of water recharged as a primary tenet, that is mentioned in the general statements, over and over. It is covered under certain associated regulations, such as the UIC, but bringing the issues associated with the infiltration of stormwater to the forefront would be helpful. Consideration of water quality is often inferred, but not addressed directly.

  Response: We have added stormwater infiltration to Section 4, Step 3 on inventorying existing potential sources of groundwater contamination.

- **Anonymous**

  Comment: Guidance should be offered for citizens without farming experience, or college degrees.

  Response: This one guidance is written to be as understandable as we can since it is meant both for local planners, local elected persons, and residents. We agree that there are complexities to the Growth Management Act and its implementation. For more information and answers to questions I would contact the Department of Commerce Growth Management Services[256].

  Comment: It should also be offered to citizens with disabilities.

  Response: Ecology agrees and so the revised guidance is using an accessible template to help people with disabilities.

  Comment: It should not be required without government having requirements for its roads and practices first.

  Response: State agencies are required to comply with comprehensive plans and development regulations (RCW 36.70A.103[257]).

  Constance Ibsen

  Comment: Too much deference given to local jurisdictions. Lack of funding is used as an excuse not to implement.

  Response: The Growth Management Act is structured so that either the Growth Management Hearings Board or the court can order a jurisdiction to take specific actions to comply with the Act, and this only occurs after an appeal or suit has been brought.

  Discontinue giving planning dollars to jurisdictions which have a prevent record of non-implementation and enforcement of CARA regulations. Make "failure to Act" a real enforcement tool.

  Response: The distribution of funding for planning is a function of the Department of Commerce.

  Comment: Please develop sites guidelines for biosolids applications sites. Consider a time limit on that application. Do not allow any sewage sludge to be applied in CARAs.

[256] https://www.commerce.wa.gov/serving-communities/growth-management/
[257] https://app.leg.wa.gov/RCW/default.aspx?cite=36.70A.103

Response: Washington state has laws and rules regarding biosolids application to land. The biosolids general permit is currently under development because the current permit expires on September 4, 2020. There will be a public comment process. See Ecology's biosolids website[258] for information about the permit, laws and rules, and guidelines.

Comment: Also, mandatory that each jurisdiction have the county-wide water system planning document. Mason County and PUD1 need to have this done for them.

Response:

- Chapter 36.70A.070 Comprehensive Plans – Mandatory elements requires that "The land use element shall provide for protection of the quality and quantity of groundwater used for public water supplies." This requirement should include coordination with water system planning.
- Water systems are required to plan, and the Department of Health (DOH) Office of Drinking Water has drafted their Water System Planning Guidebook[259]:

  > All public water systems must develop and implement a technical, managerial, and financial plan appropriate to the system's size, complexity, and performance; expected demographic changes; community-specific resource constraints; and planning history (see WAC 246-290-100 and 105).

- Chapter 246-293 WAC – Water System Coordination Act. These are rules for implementing coordinated water system plans within a jurisdiction. The trigger for a jurisdiction to implement these rules is based on a preliminary assessment finding problems with inadequate water quality, unreliable service, or lack of coordinated planning.
- The Local Government Consistency Determination Form[260] lists requirements for water systems to be consistent with local jurisdiction plans and ordinances.

Comment: Change CTED to Dept. of Commerce in narrative of the document.

Response: Done.

- **City of Spokane**

  Comment: Language that harmonizes stormwater regulatory language and groundwater protection language should be revised and incorporated throughout the document. For example, discharge of groundwater is similar, but not synonymous with stormwater discharges and could be easily confused.

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[258] https://ecology.wa.gov/Waste-Toxics/Reducing-recycling-waste/Organic-materials/Biosolids

[259] https://www.doh.wa.gov/Portals/1/Documents/4200/DRAFT%20Water%20System%20Planning%20Guidebook.pdf

[260] https://www.doh.wa.gov/portals/1/documents/pubs/331-568.docx

Response: We agree with this comment. We will add definitions to the glossary and look for places where terminology could be confused. If you have further examples, or see where clarification would be helpful, please let us know.

Comment: Additionally, source control should be an element that incorporated into the document to add another protective layer of the aquifer in that if stormwater doesn't become impacted, the potential impacts to the aquifer are pre-mitigated.

Response: We agree with this comment, since source control is the first line of defense against groundwater contamination. Stormwater regulations and the manuals contain source control best management practices. Some jurisdictions are not required to follow stormwater regulations; however, the stormwater best management practices that are applicable to groundwater protection are very relevant. Source control is a main element of a precautionary approach.

The Industrial Stormwater General Permit[261], re-issued in January 2020, contains a section called the Conditional "No Exposure" Exemption. This section has a list of eleven questions related to whether stormwater would be in contact with pollutants. This would be a great list for local jurisdictions to use to prevent groundwater contamination. The Industrial Stormwater General Permit does not automatically apply to groundwater infiltration – See the permit for applicability. Local jurisdictions may be more stringent and use the "No Exposure" provisions to guide their pollution prevention provisions.

Comment: Treatment of stormwater should be an element identified in the manual to add a layer of protection to stormwater that is meant to be infiltrated.

Response:

Ecology implements two basic approaches to stormwater treatment at the state level.

- One is to manage water quality from roads and parking lots by removing solids, oils, and metals prior to discharge. The UIC guidance within the Eastern and Western Washington stormwater manuals allows the vadose zone to be used as part of the treatment train.
- The other is to implement stormwater treatment best management practices, as required by Section S.8(D) of the Industrial Stormwater General Permit[262]. Stormwater treatment prior to discharge is implemented in this permit as a corrective action after sampling has found pollutants in the discharge.

[261] https://fortress.wa.gov/ecy/ezshare/wq/permits/ISGP_PermitFINAL.pdf
[262] https://fortress.wa.gov/ecy/ezshare/wq/permits/ISGP_PermitFINAL.pdf

Requirements for treatment of stormwater discharge to UIC wells apply statewide. Requirements for treatment of stormwater discharge that is not to UIC wells apply where the stormwater permits[263] apply.

Comment: The term "salmon-bearing streams" is used in a few spots in the document, and limits the scope of why stream-base flows should be maintained. The scope of why stream-based flows should be maintained should be increased in breadth to encompass greater than only the salmonids.

Response: We agree that streamflow is important beyond salmon-bearing streams. Streamflow is important for wildlife and plants, including endangered species. The GMA supports using an ecological approach, and streamflow is a buttress of ecological systems. Groundwater is connected to other critical areas and natural landscape issues, including floods, landslide hazards; channel migration hazards; habitat; and surface water quality.

- **City of Redmond**

  Comment: It would be helpful to include a section providing methodology to determine the CARA, and guidance on suggested levels of protection for different time-of-travel zones within CARA.

  Response: The City of Redmond has completed an extensive review of Critical Aquifer Recharge Areas and has developed a map based on modeling and public review. Redmond has designated two Critical Aquifer Recharge Areas, I and II. Classification I is for the area of groundwater that travels to a city well within five years, and Classification II is for the area of groundwater that travels to a city from within five to ten years, plus additional sensitive areas.

  Redmond's municipal code requires additional protection in Classification I areas.

  Here are some comments I would have for jurisdictions who have not completed the excellent work that Redmond has.

  CARAs for cities are generally of two types. One is the well head protection area time-of-travel for wells, and the other is the boundary of the drinking water aquifer. For example, the City of Vancouver has designated two CARAs – One for wellhead protection zones and the other for the rest of the city, since the aquifer that provides their drinking water underlies the city.

  While the entire aquifer is not necessarily required to be designated as a CARA, the pragmatic and economic need to prevent pollution suggests that a city may want to

[263] https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Stormwater-general-permits

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designate the aquifer within city limits as a CARA, and require pollution prevention for uses that may generate contaminants if they leak, spill, or are otherwise released to the ground.

In the absence of science, that assesses where drinking water sources are located, the precautionary approach is needed to avoid contaminating the public drinking water supply, which includes individual residential wells, small water systems, and large water systems.

On time-of-travel zones: The closer to a water well a use is, the faster contaminants may reach the well. So many jurisdictions have stricter requirements in the one and five-year time-of-travel zone, and some use the ten-year time-of-travel zone. In my opinion, it is better to protect more and require pollution prevention more broadly, especially since many time-of-travel zones are calculated circles and do not account for groundwater flow rates or direction specifically.

So in summary, if it were me, I would prevent pollution throughout the city using ordinances that require best management practices where chemicals are used, handled, transported, or transferred between containers. I think there is a case for certain prohibitions or conditional approval with mitigation of high-risk uses within the five or ten-year time-of-travel zone to a well.

I would want the city to give itself authority to inspect and enforce to require corrective actions.

I would also want to have good maps of where drinking water is being used including both municipal and non-municipal users of groundwater. I would want good maps of aquifers within the city so I could let people know they are doing business over a drinking water aquifer. The guidance has suggestions for resources on how to do these.

Along with the City of Redmond, the City of Spokane and the City of Vancouver both have excellent programs as examples.

Comment: Some municipalities may need help to determine the proper level of effort for protection based on the time-of-travel.

Response: If it were me, I would follow the above response for development ordinances, and prioritize inspections and corrective action in well head protection areas.

Comment: Another major topic that would be of use to municipalities is guidance to address impacts on groundwater quantity from climate change.

Response: This is an evolving and complex topic. Major studies have been done to determine the impacts of climate change on groundwater. In my opinion, there are two main impacts: 1) Change in recharge regime that relates to timing and amount of recharge. This impacts groundwater discharge to streams and also flooding that occurs when groundwater levels are too high; 2) Groundwater mining during drought (or otherwise)

causes groundwater levels to drop. This is an increased risk when large water users must turn away from surface water sources to use groundwater. In addition, population growth requires more water.

Making development decisions about water availability in the face of climate change is not easy. The first step is understanding the water resources, tracking water levels, and tracking recharge sources. Some jurisdictions are turning to aquifer storage as a result. Water conservation requirements would be a good idea.

RCW 36.70A.172 Critical areas—Designation and protection—Best available science to be used. (1) In designating and protecting critical areas under this chapter, counties and cities shall include the best available science in developing policies and development regulations to protect the functions and values of critical areas. In addition, counties and cities shall give special consideration to conservation or protection measures necessary to preserve or enhance anadromous fisheries.

(2) If it determines that advice from scientific or other experts is necessary or will be of substantial assistance in reaching its decision, the growth management hearings board may retain scientific or other expert advice to assist in reviewing a petition under RCW 36.70A.290 that involves critical areas. [2010 c 211 s 3; 1995 c 347 s 105.]

Effective date—Transfer of power, duties, and functions—2010 c 211: See notes following RCW 36.70A.250.

Finding—Severability—Part headings and table of contents not law—1995 c 347: See notes following RCW 36.70A.470.

Protect Your **PRIVATE WELL**

Many Americans receive their drinking water from a private well. These wells are not regulated by EPA or required to follow EPA's standards. If you use a private well, there are steps you can take to protect your water and ensure the safety of your drinking water.

How to **PROTECT** Your Well

TEST YOUR WELL WATER ANNUALLY

Have your water tested annually for contaminants.

Always use a state certified laboratory for testing.

If contaminant levels exceed a drinking water standard, retest the water supply immediately and contact your public health department for assistance.

How to **PREVENT** Well Water Pollution

Keep hazardous chemicals out of septic systems and away from your well

Pump and inspect septic systems as recommended by your local health department

Install a sanitary seal and slope the area around the well to drain surface runoff

Hire a certified well driller for any new well construction or modification

How to **REMEDIATE** Your Well

If your well is contaminated or damaged, consult with your public health department, certified well inspector, and/or licensed well contractor to determine options for repair and remediation. Potential solutions include:

Disinfectants to remove germs and microbes.

Filters or other on-site treatment processes.

Identifying a new water source.

Digging a new, deeper well.

PAY ATTENTION to Your Well Surroundings and **ASK QUESTIONS**

Find out about facilities that may pollute your drinking water.

Attend planning or zoning meetings and ask questions about how your water sources will be protected.

Ask to see a project's environmental impact statement. Check if water sources have been addressed.

HOW WELLS CAN BECOME CONTAMINATED

Wells can become contaminated by sources around your well and your community. A few examples include:

AROUND YOUR WELL

Fuel tanks

Lawns—fertilizers, pesticides, and herbicides

Septic tanks and sewer lines

Swimming pool chemicals

AROUND YOUR COMMUNITY

Factories and industrial manufacturing

Farms and animal feedlots

New construction and mining operations

Cemeteries

For more information, visit: **epa.gov/privatewells**

Source Water Protection

Sanitary Control Area Protection

331-453 • Revised 11/30/2022

What is a sanitary control area?

The area immediately surrounding your well or spring that is most susceptible to contamination is called the sanitary control area (SCA). You must maintain an SCA of at least 100 feet around wells and 200 feet around springs.

The SCA is your first line of defense in keeping contaminants out of your drinking water system. You must control and monitor this area regularly to ensure that things going on closest to your source do not threaten your water quality. In the long run, prevention costs much less than installing treatment or a new source. This is not just a matter of regulation but can also expose you legally if, due to improper care or monitoring, contamination occurs and harms people.

Your SCA is part of a larger protective boundary called the source water or wellhead protection area. This area collects and transports not just water, but also potential contaminants, to your drinking water source.

Sanitary control area protection

You must control your SCA both legally and physically. This means you should either own the land around your water source or, if someone else owns it, have an enduring legal agreement in place that limits land uses and activities in that area. The resources list below includes a separate publication about this.

The SCA immediately surrounding a well or surface water intake is part of a larger protective boundary called the source water or wellhead protection area.

It also means that you cannot allow potential contaminant sources within the SCA. If you can't avoid or remove potential contaminant threats, we may require that you:

- Take steps to lessen the severity of the threat,
- Increase water quality monitoring,
- Install treatment, and/or
- Find a new drinking water source.

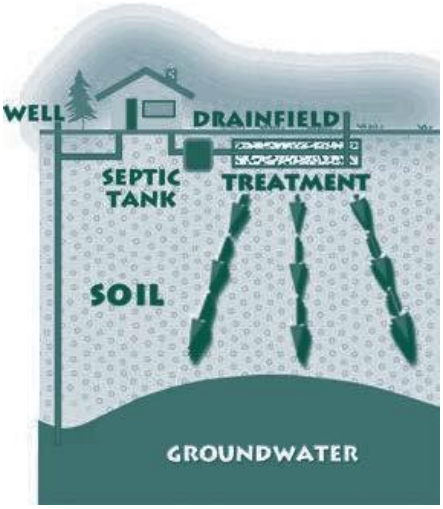
We consider the following factors when evaluating whether a potential contaminant source can remain in your SCA:

1. The nature of the potential contamination and the risk of release.
2. Source construction details including well depth, source construction, subsurface geology and other factors that could protect the source from contamination.
3. Distance from the potential contaminant source to the drinking water source.
4. Other relevant information.

Water systems must also develop a source water or wellhead protection plan to protect drinking water sources from contamination and loss of supply. The plan defines the protection area, identifies potential contaminant sources and includes management strategies to prevent contamination and loss of supply.

Common sanitary control area threats

Some common activities and land uses can threaten your source with contamination. Your well is more susceptible to contamination if it is shallow, poorly constructed, located in highly permeable soils, or served by surface water or groundwater under the influence of surface water. Below are some common threats to your SCA and some ways to protect your drinking water source. The best solution is to remove the threat. If that isn't possible, ask your regional office to help you find another workable solution.



Failing septic tanks can affect groundwater quality.

Sewer and septic systems

Sewer lines, drain fields, and septic tanks could leak and contaminate your drinking water source, resulting in severe illness or even death. Therefore, preventing this type of contamination is one of our highest priorities.

Ways to prevent or minimize the risk of contamination include:

- Remove the threat from your SCA, if possible.
- Sleeve the sewer line within another watertight line, or encase the sewer line in concrete.
- Increase coliform monitoring so you can detect problems early.
- Install disinfection treatment (with a CT of 6 according to agency requirements).

Do not store hazardous materials in the SCA.

Hazardous materials

Businesses, homeowners and water system personnel may use, store and dispose of hazardous wastes and materials. These include gasoline or diesel fuel, used motor oil, heating oil, cleaning products, pesticides, herbicides, and fertilizers. If they accidentally enter your drinking water supply, these hazardous wastes and materials are dangerous to public health.

To prevent or minimize contamination:

- Do not store chemicals there.
- Do not dispose of or apply hazardous waste or materials there.
- Install double-walled storage tanks, or provide other secondary containment.
- Install permanent on-site leak detection equipment.

Landfills and dumps

Everyday garbage can contain pathogens (bacteria, viruses, etc.); nutrients; and hazardous materials such as solvents, pesticides, fertilizers, pharmaceuticals, and paints. Leaks from landfills, dumps, and dumpsters could threaten nearby drinking water sources. Even properly constructed municipal landfills could leach hazardous materials, causing a plume, or large area of underground contamination, that could eventually reach your drinking water source.

To prevent or minimize contamination:

- Site wells and intakes at least 1,000 feet away from landfills.
- Remove dumpsters from your SCA.

Sewer waste by-products

Wastewater spray (sludge) irrigation or surface application of dry sludge is a way to recycle treated sewer waste. Even though the waste is treated, it can tend to increase nitrogen which then soaks into the soil and can contaminate groundwater. Do not apply sewer waste by-products in the SCA.

Cemeteries

Common burial practices use formaldehyde and other chemicals that pose a cancer threat for embalming. Studies show that these chemicals may leach from cemeteries into groundwater. If your SCA is near a cemetery, contact your regional office for guidance.

Animal waste, pens, feed lots and dead animals

If you see evidence of animals in your SCA, be concerned. Animal waste and dead animals could contaminate your source with bacteria and nutrients and make your customers ill.

To prevent or minimize contamination:

- Keep animals out of your SCA using fences or other means, which may include non-chemical controls to keep wild animals from invading your source.
- Install linings and walls around waste holding ponds.
- Increase coliform monitoring so you can detect problems early.
- Install disinfection treatment (with a CT of 6 according to agency requirements).

Unused and abandoned wells

All wells are a direct conduit to your groundwater and distribution system. Unused or abandoned wells that have not been properly decommissioned are often not monitored or maintained properly, increasing the likelihood of source contamination. Proper decommissioning means removing the well from active service and sealing it off from your distribution system and groundwater source. See resources listed below for more information.

Roads, parking areas, and landscaping strips

Petroleum products, chemicals, and metals can leak or be spilled and accumulate on paved surfaces like roads and parking lots, and chemicals can be used for landscaping maintenance.

To prevent or minimize contamination:

- Do not store vehicles or motorized equipment like lawn mowers in your SCA.
- Slope and pave surfaces away from the source.
- Install closed drainage systems. Do not install or allow stormwater infiltration ponds within your SCA.
- Install protective barriers (such as cones or poles) around the source to protect from vehicle damage.
- Post "no-spray" signs.

Noxious weeds

State law gives our state and local noxious weed control boards broad authority. Occasionally, a board might insist that a water system spray to kill noxious weeds in its SCA. Unfortunately, there's nothing in the law that requires them to consider or act in the best interests of source water protection. To avoid such conflicts, it's best for you to become familiar with both the state noxious weed lists (see WAC 16-750-005 through -015) and your local list, which varies by county. Continuously inspect your SCA(s) to remove any noxious weed starts before they establish.

Important: Giant Hogweed is highly phototoxic and requires special handling. Do not touch it without first looking up instructions for removal techniques to protect your employees or landscapers. Certain other weeds may be toxic as well. Do not compost noxious weeds; instead, place them in the trash.

For more information

Department of Health Office of Drinking Water
Eastern Regional Office 509-329-2100
Northwest Regional Office 253-395-6750
Southwest Regional Office 360-236-3030

Department of Ecology
Well Construction and Licensing (regional contacts on webpage)
Well Decommissioning

Free Technical Assistance
Evergreen Rural Water of Washington 360-462-9287

Relevant Rules and Publications
Washington Administrative Code citations.

- Chapter 173-160 WAC Minimum standards for construction and maintenance of wells.
- Chapter 246-203 WAC General sanitation.

- WAC 246-290-135 Source water protection (Group A).
- WAC 246-291-125 Groundwater source approval (Group B).

Our publications are online at doh.wa.gov/drinkingwater.

- *Legal Protections for your Sanitary Control Area* 331-048 (PDF).
- *Wellhead Protection Program Guidance Document* 331-018 (PDF).
- *Abandoned Wells: Problems and Solutions* 96-br-097 (PDF) Department of Ecology.

Washington State Department of Health

To request this document in another format, call 1-800-525-0127. Deaf or hard of hearing customers, please call 711 (Washington Relay) or email civil.rights@doh.wa.gov.

18.21.060 - Site development criteria.

LIGHT - cars exiting D

A. Site improvements are to be designed to result in a natural appearance that will blend with surroundings and be compatible with neighboring developments.

B. Grading and Drainage. Site grading and drainage are to be designed by a Washington licensed civil engineer. Grading and slopes are to be compatible with landscaping materials, shall not permit erosion, and shall minimize use of retaining walls to control slopes. Plans submitted for building permits shall include a construction phase mitigating procedure to control temporary situation runoff, erosion, sedimentation, or other objectionable effects.

C. Traffic and Parking.

1. All traffic and parking areas shall be paved with asphaltic concrete or portland cement concrete in conformance with approved design standards. The perimeter of all paving areas or landscaped areas shall have portland cement concrete curbs throughout.
2. No public parking is to be allowed on public streets within this zone.
3. All loading areas within parking areas shall be located to minimize viewing from adjacent properties and roadways. They shall be screened from horizontal view with the use of dense landscaping, mounds, view screen fencing, or other approved means.
4. Truck docks and loading areas are not permitted on the front elevation of the property, and are to be screened from the front view if located within the side yards.

D. Refuse/Storage. Refuse areas and service/storage areas are to be located under cover.

E. Utilities. All utility service lines are to be located underground. All pad-mounted equipment and other visible utility and service equipment are to be carefully located to minimize appearance, and shall be appropriately screened consistent with required access and safety requirements.

F. Fencing. Perimeter fencing shall be so constructed as to minimize visual impact. Walls or fences separating adjoining parcels may be located at the property line. No wall or fence taller than three feet shall be placed within the landscape setbacks along side or rear lot lines, and no wall or fence exceeding three feet in height shall be located on the property, except for security fencing. Security fencing shall blend into, and be compatible with landscaping. Fencing shall have earth tone colors of brown, tan, gray, or green. Walls shall be constructed of materials compatible with the building architecture.

G. Lighting. Site and building lighting shall be designed to minimize glare or objectionable effects to the adjacent properties. Residential neighborhoods are of particular concern. Site-lighting poles shall not exceed twenty feet in height and shall direct the light downward. Lighting sources viewed from above or below on adjacent property shall be shielded. Building lighting is to be concealed and indirect. Lighting in service areas is to be contained to conceal visibility of light

sources from street and adjacent property. Site lighting is to be designed to provide uniform distribution, and the light levels shall be adequate for reasonable security and safety on the premises.

H. Primary Uses. All primary uses permitted in the LI/BP district shall have no negative or undesirable atmospheric or environmental impacts. All such primary uses shall be developed in a campus-type setting featuring landscaping, off-street parking, architectural designs tending to minimize the industrial nature of the development, buffers between other uses, and such other amenities as are consistent with a campus setting.

I. Secondary Uses. All secondary commercial uses are subject to the following:

1. The commercial use is demonstrated to be clearly subordinate to industrial uses in the vicinity, and will primarily serves the daily retail and service needs of the surrounding industrial area.
2. On parcels over ten acres, secondary commercial uses shall be subordinate to primary uses on the parcel, and the cumulative gross floor area of all secondary commercial development on-site has a maximum floor area equal to twenty-five percent of the gross floor area of the primary uses.
3. Proof demonstrating the need for such use to serve other existing uses within the LI/BP district.
4. The development satisfies the parking, design and other development standards identified in this chapter.

(Ord. 2515 § 1 (Exh. A (part)), 2008: Ord. 2443 § 3 (Exh. A (part)), 2006)

Camas NOISE

ORDINANCE NO. 2546

AN ORDINANCE amending Section 9.32.050 of the Camas Municipal Code by revising the regulations for public disturbance noises.

The Council of the City of Camas do ordain as follows:

Section I

Section 9.32.050 of the Camas Municipal Code is amended to provide as follows:

9.32.050 Public disturbance noises.

A. It is unlawful for any person to allow sound to emanate from real or personal property that is a public disturbance noise. The following shall be considered public disturbance noises:

1. The use of a musical instrument, whistle, sound amplifier or other device producing or reproducing loud or raucous sounds emanating frequently, repetitively, or continuously from any building, structure or property so as to unreasonably disturb or interfere with the peace, comfort or repose of owners or possessors of neighboring or nearby real property.

2. The making of any loud or raucous sound within one thousand feet of any school, hospital, sanitarium, nursing or convalescent facility, which unreasonably interferes with the use of such facility, or with the peace, comfort or repose of persons therein.

3. The frequent, repetitive or continuous sounding of any horn or siren attached to a motor vehicle, except as a warning of danger or as specifically permitted or required by law.

4. The creation of frequent, repetitive or continuous sounds in connection with the starting, operation, repair, rebuilding or testing of any motor vehicle, motorcycle, off-road vehicle, or internal combustion engine so as to unreasonably disturb or interfere with the peace, comfort and repose of owners or possessors of neighboring or nearby real property, provided, however, that this subsection shall not apply to the operation of lawn mowers, garden tools, chain saws or other power equipment used for building repair or grounds maintenance between the hours of 7 a.m. and 10 p.m.

5. The use of equipment and activities producing intermittent or repetitive noise commonly associated with site improvements, or exterior new home construction:

a) Before 7 a.m. or after 7 p.m. Monday through Friday;

b) Before 7 a.m. or after 5 p.m. on Saturdays;

c) Anytime on Sundays or the following holidays: New Years Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, or Christmas Day.

B. A public disturbance noise shall not include a response to emergency situations or to specific allowances as determined by the City. For the purposes of this section emergencies include but are not limited to the use of generators during power outages, necessary immediate repair of public or private utilities, and police, fire and/or medical response.

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C. Any person violating the provisions of this section shall be guilty of a misdemeanor.

Section II

This Ordinance shall take force and be in effect five (5) days from and after its publication according to law.

PASSED BY the Council and APPROVED by the Mayor this 4th day of May, 2009.

SIGNED: _____
Mayor

ATTEST: _____
Clerk

APPROVED as to form:

_____
City Attorney

TRAFFIC Property value F

18.01.020 - Purpose.

A. The purposes of this title are: to implement the comprehensive plan for the city; to encourage the most appropriate use of land; to conserve and stabilize the value of property; to aid in rendering of fire and police protection; to provide adequate open space for light and air; to lessen the congestion on streets; to give an orderly growth to the city; to prevent undue concentration of population; to improve the city's appearance; to facilitate adequate provisions for community utilities and facilities such as water, sewerage, and electrical distribution system, transportation, schools, parks, and other public requirements; and in general to promote public health, safety and general welfare.

B. Since the public health, safety and general welfare is superior to the interests and pecuniary gains of the individual, this title may limit the use of property and prevent its most profitable gain. If some reasonable use of property is allowed by this title and the effect is not confiscatory, the city is exercising a proper use of police power.

(Ord. 2515 § 1 (Exh. A (part)), 2008: Ord. 2443 § 3 (Exh. A (part)), 2006)

TABLE 3 - ACCESS SPACING STANDARDS

RESOLUTION 17-005

ROADWAY CLASS	MINIMUM ACCESS SPACING***	MAXIMUM ACCESS SPACING	MINIMUM INTERSECTION & DRIVEWAY SETBACK	NEW RESIDENTIAL ACCESS PERMITTED
ARTERIAL	660-FEET	1,000-FEET****	300-FEET	NO**
COLLECTOR	330-FEET	600-FEET	110-FEET*	NO**
LOCAL	110-FEET	600-FEET	N/A	YES

* BASED ON TURN DESIGN SPEED OF 20 MPH
** TEMPORARY ACCESS MAY BE PERMITTED OR COMBINED FOR LANDLOCKED PARCELS
*** INCLUDES NON-RESIDENTIAL DRIVEWAYS
**** BLOCK LENGTHS IN EXCESS OF 600-FEET SHALL PROVIDE A MID-WAY PEDESTRIAN CONNECTION

would you give leeway

Exhibit 141 APPEAL24-1001

ENGINEERING DESIGN STANDARDS FOR STREETS

Section III Design Standards

Drawing submittals

Each sheet shall be clearly labeled as "Street" or "Street/Storm".

Subdivisions and Short Plats

- Design of the proposed streets shall incorporate the recommendations of the traffic study if one was required and shall meet the requirements of the current AASHTO A Policy on Geometric Design for Highways and Streets manual and the current MUTCD manual.

- Neighborhood Traffic Management (NTM) elements may be required on the existing or proposed streets based on projected traffic volumes.

- The pavement design and structural section shall be based on the soil type and the recommendations of the geotechnical report, but shall not be less than the current City standard minimum.

- Alleys, half-street improvements, and private streets shall meet the minimum City standard structural section.

Commercial, multifamily or Industrial

- The City engineer will give specific recommendations on pavement design, width, geometric requirements, safety, and pavement markings based on the submitted proposal.

INSTITUTE OF TRANSPORTATION ENGINEERS
COMMON TRIP GENERATION RATES (PM Peak Hour)

(Trip Generation Manual, 10th Edition)

Code	Description	Unit of Measure	Trips Per Unit	Setting/Location: General Urban/ Suburban	Setting/Location: Dense Multi-Use Urban
MEDICAL					
610	Hospital	1,000 SF GFA	0.97		
620	Nursing Home	1,000 SF GFA	0.59		
630	Clinic	1,000 SF GFA	→	3.28	5.18
640	Animal Hospital / Veterinary Clinic	1,000 SF GFA	3.53		
650	Free-Standing Emergency Room	1,000 SF GFA	1.52		
OFFICE					
710	General Office Building	1,000 SF GFA	→	1.15	0.87
712	Small Office Building	1,000 SF GFA	2.45		
714	Corporate Headquarters Building	1,000 SF GFA	0.60		
715	Single Tenant Office Building	1,000 SF GFA	1.74*		
720	Medical-Dental Office Building	1,000 SF GFA	3.46		
730	Government Office Building	1,000 SF GFA	1.71		
731	State Motor Vehicles Department	1,000 SF GFA	5.20		
732	United States Post Office	1,000 SF GFA	11.21		
733	Government Office Complex	1,000 SF GFA	2.82		
750	Office Park	1,000 SF GFA	1.07		
760	Research and Development Center	1,000 SF GFA	0.49		
770	Business Park	1,000 SF GFA	0.42		
RETAIL					
810	Tractor Supply Store	1,000 SF GFA	1.40		
811	Construction Equipment Rental Store	1,000 SF GFA	0.99		
812	Building Materials and Lumber Store	1,000 SF GFA	2.06		
813	Free-Standing Discount Superstore	1,000 SF GFA	4.33		
814	Variety Store	1,000 SF GFA	6.84		
815	Free Standing Discount Store	1,000 SF GFA	4.83		
816	Hardware / Paint Store	1,000 SF GFA	2.68		
817	Nursery (Garden Center)	1,000 SF GFA	6.94		
818	Nursery (Wholesale)	1,000 SF GFA	5.18		
820	Shopping Center	1,000 SF GFA	3.81	3.81	4.92
823	Factory Outlet Center	1,000 SF GFA	2.29		
840	Automobile Sales (New)	1,000 SF GFA	2.43		
841	Automobile Sales (Used)	1,000 SF GFA	3.75		
842	Recreational Vehicle Sales	1,000 SF GFA	0.77		
843	Automobile Parts Sales	1,000 SF GFA	4.91		
848	Tire Store	1,000 SF GFA	3.98		
849	Tire Superstore	1,000 SF GFA	2.11		
850	Supermarket	1,000 SF GFA	9.24		
851	Convenience Market (Open 24 Hours)	1,000 SF GFA	49.11		
853	Convenience Market with Gasoline Pumps	1,000 SF GFA	49.29		
854	Discount Supermarket	1,000 SF GFA	8.38		
857	Discount Club	1,000 SF GFA	4.18		
860	Wholesale Market	1,000 SF GFA	1.76		
861	Sporting Goods Superstore	1,000 SF GFA	→	2.02	1.65
862	Home Improvement Superstore	1,000 SF GFA	→	2.33	3.35
863	Electronics Superstore	1,000 SF GFA	4.26		
864	Toy/Children's Superstore	1,000 SF GFA	5.00		
865	Baby Superstore	1,000 SF GFA	1.82		
866	Pet Supply Superstore	1,000 SF GFA	3.55		
867	Office Supply Superstore	1,000 SF GFA	2.77		
868	Book Superstore	1,000 SF GFA	15.83		
869	Discount Home Furnishing Superstore	1,000 SF GFA	1.57		
872	Bed and Linen Superstore	1,000 SF GFA	2.22		
875	Department Store	1,000 SF GFA	1.95		
876	Apparel Store	1,000 SF GFA	→	4.12	1.12
879	Arts and Craft Store	1,000 SF GFA	6.21		
880	Pharmacy / Drugstore without Drive-Through Window	1,000 SF GFA	8.51		
881	Pharmacy / Drugstore with Drive-Through Window	1,000 SF GFA	10.29		
882	Marijuana Dispensary	1,000 SF GFA	21.83		
890	Furniture Store	1,000 SF GFA	0.52		
897	Medical Equipment Store	1,000 SF GFA	1.24		
899	Liquor Store	1,000 SF GFA	16.37		
SERVICES					
911	Walk-In Bank	1,000 SF GFA	12.13		
912	Drive-In Bank	1,000 SF GFA	20.45		
918	Hair Salon	1,000 SF GFA	1.45		
920	Copy, Print, and Express Ship Store	1,000 SF GFA	7.42		
925	Drinking Place	1,000 SF GFA	11.36		
926	Food Cart Pod	Food Carts	3.08		
930	Fast Casual Restaurant	1,000 SF GFA	14.13		
931	Quality Restaurant	1,000 SF GFA	7.80		
932	High-Turnover (Sit-Down) Restaurant	1,000 SF GFA	→	9.77	9.80
933	Fast Food Restaurant without Drive-Through Window	1,000 SF GFA	28.34		
934	Fast Food Restaurant with Drive-Through Window	1,000 SF GFA	→	32.67	78.74
935	Fast Food Restaurant with Drive-Through Window and No Indoor Seating	1,000 SF GFA	42.65		
936	Coffee/Donut Shop without Drive-Through Window	1,000 SF GFA	36.31		
937	Coffee/Donut Shop with Drive-Through Window	1,000 SF GFA	→	43.38	83.19
938	Coffee/Donut Shop with Drive-Through Window and No Indoor Seating	1,000 SF GFA	83.33		
939	Bread / Donut / Bagel Shop without Drive-Through Window	1,000 SF GFA	28.00		
940	Bread / Donut / Bagel Shop with Drive-Through Window	1,000 SF GFA	19.02		
941	Quick Lubrication Vehicle Shop	1,000 SF GFA	8.70		
942	Automobile Care Center	1,000 SF GFA	3.11		
943	Automobile Parts and Service Center	1,000 SF GFA	2.26		
944	Gasoline / Service Station	1,000 SF GFA	109.27		
945	Gasoline / Service Station with Convenience Market	1,000 SF GFA	88.35		
947	Self Service Car Wash	Wash Stalls	5.54		
948	Automated Car Wash	1,000 SF GFA	14.20		
949	Car Wash and Detail Center	Wash Stalls	13.60		
950	Truck Stop	1,000 SF GFA	22.73		
960	Super Convenience Market/Gas Station	1,000 SF GFA	69.28		
970	Winery	1,000 SF GFA	7.31		

Note: All land uses in the 800 and 900 series are entitled to a "pass-by" trip reduction of 60% if less than 50,000 ft² or a reduction of 40% if equal to or greater than 50,000ft².

edition, no PM peak hour in 10th

1712

Exhibit 141 APPEAL24-1001

INSTITUTE OF TRANSPORTATION ENGINEERS
COMMON TRIP GENERATION RATES (PM Peak Hour)

(Trip Generation Manual, 10th Edition)

Code	Description	Unit of Measure	Trips Per Unit	Setting/Location: General Urban/ Suburban	Setting/Location: Dense Multi-Use Urban
PORT AND TERMINAL					
30	Intermodal Truck Terminal	1,000 SF GFA	1.72		
90	Park-and-Ride Lot with Bus Service	Parking Spaces	0.43		
INDUSTRIAL					
110	General Light Industrial	1,000 SF GFA	0.63		
130	Industrial Park	1,000 SF GFA	0.40		
140	Manufacturing	1,000 SF GFA	0.67		
150	Warehousing	1,000 SF GFA	0.19		
151	Mini-Warehouse	1,000 SF GFA	0.17		
154	High-Cube Transload & Short-Term Storage Warehouse	1,000 SF GFA	0.10		
155	High-Cube Fulfillment Center Warehouse	1,000 SF GFA	1.37		
156	High-Cube Parcel Hub Warehouse	1,000 SF GFA	0.64		
157	High-Cube Cold Storage Warehouse	1,000 SF GFA	0.12		
160	Data Center	1,000 SF GFA	0.09		
170	Utilities	1,000 SF GFA	2.27		
180	Specialty Trade Contractor	1,000 SF GFA	1.97		
RESIDENTIAL					
210	Single-Family Detached Housing	Dwelling Units	0.99		
220	Multifamily Housing (Low-Rise)	Dwelling Units	0.56		
221	Multifamily Housing (Mid-Rise)	Dwelling Units	→	0.44	0.18
222	Multifamily Housing (High-Rise)	Dwelling Units	→	0.36	0.19
231	Mid-Rise Residential with 1st-Floor Commercial	Dwelling Units	0.36		
232	High-Rise Residential with 1st-Floor Commercial	Dwelling Units	0.21		
240	Mobile Home Park	Dwelling Units	0.46		
251	Senior Adult Housing - Detached	Dwelling Units	0.30		
252	Senior Adult Housing - Attached	Dwelling Units	0.26		
253	Congregate Care Facility	Dwelling Units	0.18		
254	Assisted Living	1,000 SF GFA	0.48		
255	Continuing Care Retirement Community	Units	0.16		
260	Recreation Homes	Dwelling Units	0.28		
265	Timeshare	Dwelling Units	0.63		
270	Residential Planned Unit Development	Dwelling Units	0.69		
LODGING					
310	Hotel	Rooms	0.60		
311	All Suites Hotel	Rooms	→	0.36	0.17
312	Business Hotel	Rooms	0.32		
320	Motel	Rooms	0.38		
330	Resort Hotel	Rooms	0.41		
RECREATIONAL					
411	Public Park	Acres	0.11		
416	Campground / Recreation Vehicle Park	Acres	0.98		
420	Marina	Berths	0.21		
430	Golf Course	Acres	0.28		
431	Miniature Golf Course	Holes	0.33		
432	Golf Driving Range	Tees/Driving Positions	1.25		
433	Batting Cages	Cages	2.22		
434	Rock Climbing Gym	1,000 SF GFA	1.64		
435	Multi-Purpose Recreational Facility	1,000 SF GFA	3.58		
436	Trampoline Park	1,000 SF GFA	1.50		
437	Bowling Alley	1,000 SF GFA	1.16		
440	Adult Cabaret	1,000 SF GFA	2.93		
444	Movie Theater	1,000 SF GFA	6.17		
445	Multiplex Movie Theater	1,000 SF GFA	4.91		
452	Horse Racetrack	Seats	0.06		
454	Dog Racetrack	Attendees	0.15		
460	Arena	1,000 SF GFA	0.47		
462	Professional Baseball Stadium	Attendees	0.15		
465	Ice Skating Rink	1,000 SF GFA	1.33		
466	Snow Ski Area	Slopes	26.00		
473	Casino/Video Lottery Establishment	1,000 SF GFA	13.49		
480	Amusement Park	Acres	3.95		
482	Water Slide Park	Parking Spaces	0.28		
488	Soccer Complex	Fields	16.43		
490	Tennis Courts	Courts	4.21		
491	Racquet/Tennis Club	Courts	3.82		
492	Health/Fitness Club	1,000 SF GFA	3.45		
493	Athletic Club	1,000 SF GFA	6.29		
495	Recreational Community Center	1,000 SF GFA	2.31		
INSTITUTIONAL					
520	Elementary School	1,000 SF GFA	1.37		
522	Middle School / Junior High School	1,000 SF GFA	1.19		
530	High School	1,000 SF GFA	0.97		
534	Private School (K-8)	Students	0.26		
536	Private School (K-12)	Students	0.17		
537	Charter Elemantary School	Students	0.14		
538	School District Office	1,000 SF GFA	2.04		
540	Junior / Community College	1,000 SF GFA	1.86		
550	University/College	1,000 SF GFA	1.17		
560	Church	1,000 SF GFA	0.49		
561	Synagogue	1,000 SF GFA	2.92		
562	Mosque	1,000 SF GFA	4.22		
565	Daycare Center	1,000 SF GFA	11.12		
566	Cemetery	Acres	0.46		
571	Prison	1,000 SF GFA	2.91		
575	Fire and Rescue Station	1,000 SF GFA	0.48		
580	Museum	1,000 SF GFA	0.18		
590	Library	1,000 SF GFA	8.16		

Exhibit 141 APPEAL24-1001

Chapter 18.45 - VARIANCES

ACCESS STANDARD

TRAFFIC SITE APPROACH

18.45.010 - Purpose.

A variance to any development standard contained in this title, other than density and lot area, may be granted when practical difficulties, unnecessary hardship, or results inconsistent with the general purposes of CMC Title 16, Environment, and CMC Title 18, Zoning, would result from the literal enforcements of its requirements. The sole purpose of any variance shall be to prevent such difficulties, hardship, or results and no variance shall be granted that would have the effect of granting a special privilege not shared by another property in the same vicinity and zone, except when necessary to avoid such difficulties, hardship, or results.

(Ord. 2515 § 1 (Exh. A (part)), 2008: Ord. 2443 § 3 (Exh. A (part)), 2006)

(Ord. No. 2612, § I(Exh. A), 2-7-2011; Ord. No. 2649, § I, 5-21-2012)

18.45.020 - Approval process.

A. Minor Variance. A minor variance is one that results in the modification of up to ten percent of a numerical development standard (other than lot area or density) that shall be subject to Type I procedure, pursuant to CMC Chapter 18.55 Administration and Procedures, and subject to the approval criteria contained in CMC Section 18.45.030(A).

B. Major Variance. A major variance is one that results in the modification of a numerical development standard by more than ten percent. The board of adjustment is generally the decision maker regarding major variances. Where a variance is consolidated with an application for a Type III decision, the decision maker shall be the same as that for the Type III application. A major variance shall not be approved unless findings are made by the approval authority that all of the approval criteria under CMC Section 18.45.030 are satisfied.

(Ord. 2515 § 1 (Exh. A (part)), 2008: Ord. 2443 § 3 (Exh. A (part)), 2006)

(Ord. No. 2612, § I(Exh. A), 2-7-2011)

18.45.030 - Minor variance.

The community development director may grant a minor variance upon demonstration by the applicant of compliance with the following approval criteria:

A. Unusual circumstances or conditions apply to the property and/or the intended use that do not apply generally to other property in the same vicinity or district;

B. The variance requested is the minimum necessary to relieve the unusual circumstances or conditions identified in subsection (A) of this section;

C. The granting of such variance will not be materially detrimental to the public welfare or injurious to property in the vicinity or district in which property is located;

D. The proposed variance does not exceed ten percent of the requested dimensional standard in which the variance is requested.

E. The unusual circumstances and conditions associated with the variance are not a result of the actions of the applicant or property owner.

(Ord. 2515 § 1 (Exh. A (part)), 2008: Ord. 2443 § 3 (Exh. A (part)), 2006)

(Ord. No. 2691, § I(Exh. A), 1-21-2014)

parking spaces

18.45.040 - Major variance.

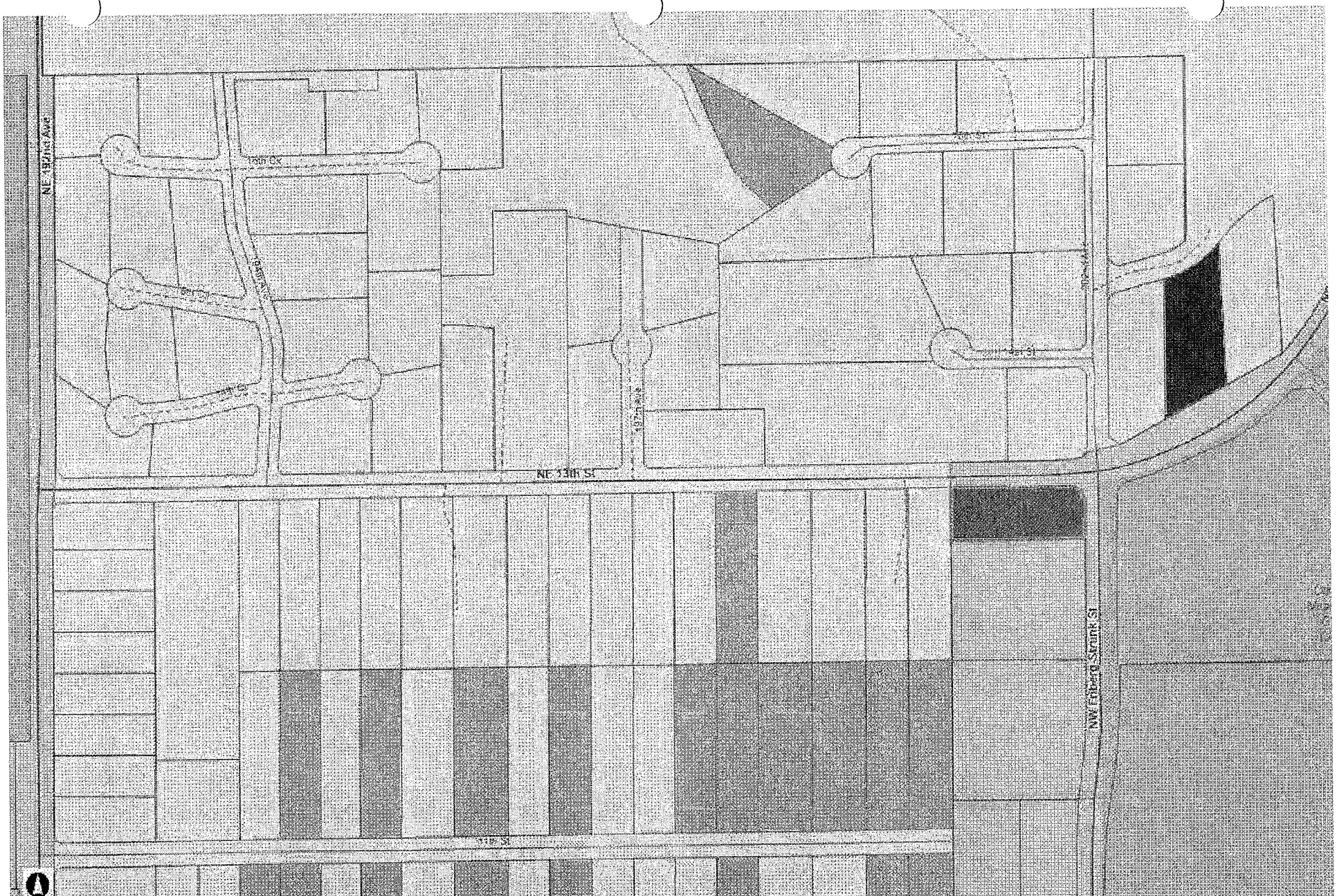
A. The board of adjustment (or hearing examiner, or planning commission, in accordance with Section 18.45.020(B)) shall consider all requests for major variances from the zoning code.

B. Approval of a major variance must demonstrate with findings of compliance with all of the following criteria:

1. The variance shall not constitute a grant of special privilege inconsistent with the limitation upon uses of other properties in the vicinity and zone in which the subject property is located;

2. That such variance is necessary, because of special circumstances or conditions relating to the size, shape, topography, location, or surroundings of the subject property, to provide it with use, rights, and privileges permitted to other properties in the vicinity and in the zone in which the subject property is located;

3. The granting of such variance will not be materially detrimental to the public welfare or injurious to the property or improvements in the vicinity and in the zone in which the subject property is located.



RECORDED WELLS SHADED GRAY

Exhibit 141 APPEAL24-1001

18.01.020 - Purpose. TRAFFIC Property value F

A. The purposes of this title are: to implement the comprehensive plan for the city; to encourage the most appropriate use of land; to conserve and stabilize the value of property; to aid in rendering of fire and police protection; to provide adequate open space for light and air; to lessen the congestion on streets; to give an orderly growth to the city; to prevent undue concentration of population; to improve the city's appearance; to facilitate adequate provisions for community utilities and facilities such as water, sewerage, and electrical distribution system, transportation, schools, parks, and other public requirements; and in general to promote public health, safety and general welfare.

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(Ord. 2515 § 1 (Exh. A (part)), 2008: Ord. 2443 § 3 (Exh. A (part)), 2006)

Table 17.19.040-2 Minimum Public Street Standards

Expand

Public Street	Right-of-Way	Pavement Width	Sidewalk
A. Street (by approval of City Engineer)	52′	28′	Five foot detached sidewalk on both sides, with planter strip, no parking on one side.
B. Street (two lane)	60′	36′	Five foot detached sidewalks required on both sides of the street, with planter strip. Bike lanes required on collectors and arterials, no on-street parking.
C. Street (three lane)	74′	46′ to include 12′ median	Six foot detached sidewalks required on both sides of the street, with planter strip, bike lanes, no on-street parking.
D. Street (five lane)/Arterial	100′	74′ to include 14′ median	Six foot detached sidewalks required on both sides of the street, with planter strip, bike lanes, no on-street parking.

Camas Police Dept

All dailylog - Query Applied

Date	D	S	Incident_Type	Location	Details	Case Number
11/01/2024	☐	☑	ACCIDENT	NE GOODWIN RD/NE INGLE RD	SEE ARCHER ENTRY	24-1336
11/01/2024	☐	☑	ACCIDENT	NE GOODWIN RD/NE INGLE RD	2-CHOEDON, SONAM 1-12-78 ARCHER PULLED OUT IN FRONT OF CHOEDON, NOT GRANTING RIGHT OF WAY. SEE REPORT. 3X56, 512	24-1336
10/28/2024	☐	☐	ACCIDENT	NE GOODWIN RD/ NW ALEXANDRA LN	WILLIIAM STRUYK TURNED LEFT ONTO NE GOODWIN RD FROM NW ALEXANDRA LN AND ENDED UP IN THE DITCH. MINIMAL DAMAGE TO HIS VEHICLE AND NO INJURIES SUSTAINED. I PUT A DRIVERS EVALUATION REQUEST IN TO DOL DUE TO PARKINSON'S DISEASE. BWC.	
09/16/2024	☐	☐	ACCIDENT	NE INGLE RD/NE GOODWIN RD	HOLLIE WAS REAR ENDED BY A RED PICK UP TRUCK CAUSING SOME PAINT SCRATCHING. PICK UP TRUCK DID NOT STOP TO EXCHANGE INFO, POSSIBLE PLATE OF D58042A.	24-1112
08/29/2024	☐	☐	ACCIDENT	NW GOODWIN RD/NW ALEXANDRA LN	X: CHERNENKO, VICTORIA 03-03-02 CHERNENKO COLLIDED WITH REAR OF SEVERSON-HOBSON'S VEHICLE AFTER SHE HAD TO STOP SUDDENLY. VERY MINOR DAMAGE AND CHERNENKO COULD NOT FIND SEVERSON-HOBSON AFTER BEING CAUGHT AT THE LIGHT. SHE CALLED IN TO REPORT COLLISION AND SEVERSON-HOBSON CALLED IN SHORTLY AFTER. NO HIT AND RUN AND ASSISTED WITH INFO EXCHANGE.	
08/29/2024	☐	☐	ACCIDENT	NW GOODWIN RD/NW ALEXANDRA LN	2: SEVERSON-HOBSON, ERIN S. 05-20-71 CHERNENKO COLLIDED WITH REAR OF SEVERSON-HOBSON'S VEHICLE AFTER SHE HAD TO STOP SUDDENLY. VERY MINOR DAMAGE AND CHERNENKO COULD NOT FIND SEVERSON-HOBSON AFTER BEING CAUGHT AT THE LIGHT. SHE CALLED IN TO REPORT COLLISION AND SEVERSON-HOBSON CALLED IN SHORTLY AFTER. NO HIT AND RUN AND ASSISTED WITH INFO EXCHANGE.	
05/20/2024	☐	☐	ACCIDENT	NW GOODWIN /FIRBERG-STRUNK	HIT & RUN COLISSION THAT OCCURRED 1 WEEK AGO. REPORT.	24-0570
01/26/2024	☐	☐	ACCIDENT	GOODWIN/ALEXANDRA	RIDING ELECTRIC BIKE STRUCK BY AUTO AND TRANSPORTED TO PHSWWMC. POSSIBLE HEAD/NECK INJURIES. NO CHARGES AT THIS TIME BIKE HAD NO LIGHT HE HAD LOW VIS CLOTHING NO HELMET. 321 CFD 3A2 337	24-0073
01/26/2024	☐	☐	ACCIDENT	GOODWIN/ALEXANDRA	PULLED OUT FROM ALEXANDRA STRUCK WESTBOUND BICYCLIST CHARLES WEGENER. NO VIOLATIONS.	24-0073
10/13/2023	☐	☐	ACCIDENT	GOODWIN/INGLE	TBONED IN INTERSECTION TOWED BY CHUCK'S.	23-1120
10/13/2023	☐	☐	ACCIDENT	GOODWIN/INGLE	FAIL TO YIELD TBONED IN INTERSECTION. CITED. BWC 512 348	23-1120
09/05/2023	☐	☑	ACCIDENT	GOODWIN / INGLE	JOSEPH WILLIS' VEHICLE STRUCK BICYCLIST TAMI GEE. WILLIS WAS N/B ON GOODWIN ATTEMPTING TO TURN W/B (LEFT) ONTO INGLE. GEE WAS RIDING S/B ON GOODWIN. GEE WAS TRANSPORTED WITH MINOR INJURIES. WILLIS CITED. BWC	23-0968
09/05/2023	☐	☑	ACCIDENT	GOODWIN / INGLE	JOSEPH WILLIS' VEHICLE STRUCK BICYCLIST TAMI GEE. WILLIS WAS N/B ON GOODWIN ATTEMPTING TO TURN W/B (LEFT) ONTO INGLE. GEE WAS RIDING S/B ON GOODWIN. GEE WAS TRANSPORTED WITH MINOR INJURIES. WILLIS CITED. BWC	23-0968
06/13/2023	☐	☑	ACCIDENT	2000 NE GOODWIN ROAD	2) DAVID A. ABAROA GOMEZ (8-23-1999) DAVID REAR ENDED CHARLES AS HE WAS ATTEMPTING TO MAKE A LEFT TURN INTO THE PARKING LOT. DAVID CITED FOR FOLLOWING TOO CLOSE. WSP COLLISION RPT COMPLETED. BWC.	23-0627
06/13/2023	☐	☑	ACCIDENT	2000 NE GOODWIN ROAD	2) CHARLES C. CHASE (5-1-1971) DAVID REAR ENDED CHARLES AS HE WAS ATTEMPTING TO MAKE A LEFT TURN INTO THE PARKING LOT. DAVID CITED FOR FOLLOWING TOO CLOSE. WSP COLLISION RPT COMPLETED. BWC.	23-0627
04/02/2023	☐	☑	ACCIDENT	2600 BLK NE GOODWIN RD	SINGLE VEHICLE COLLISION INTO DITCH. DRIVER FLED FROM SCENE AND POSSIBLY PICKED UP BY ANOTHER CAR. DRIVER DESCRIPTION SIMILAR OF R/O ROBERSON, WHO IS DWLS 2 AND HAD 6M, BUT NOBODY COULD POSITIVELY ID HIM. REPORTABLE DAMAGE TO CAR, BUT NOTHING ELSE DAMAGED. NO PC ANY CHARGE. VEHICLE IMPOUNDED BY CHUCKS. WSP COLLISION REPORT. 348, 501, 513, CWFD. BWC	23-0347

Camas Police Dept

All dailylog - Query Applied

Date	D	S	Incident_Type	Location	Details	Case Number
03/03/2023	☐	☐	ACCIDENT	GOODWIN/CAMAS MEADOWS	SINGLE CAR INTO DITCH UNOCCUPIED WHEN I ARRIVED TAPED IT OFF. 321	
01/12/2023	☐	☐	ACCIDENT	1400 BLOCK NW GOODWIN RD	SEE AKSOY, PINAR ENTRY.	23-0047
01/12/2023	☐	☑	ACCIDENT	1400 BLOCK NW GOODWIN RD	2: AKSOY, PINAR G. 12/31/74 HOGGAT WENT INTO DITCH, PASSERBY PULLED HIM OUT AND HOGGATT UNABLE TO BRAKE BEFORE ROLLING INTO AKSOY (STOPPED FOR TRAFFIC). CWFD	23-0047
12/24/2022	☐	☐	ACCIDENT	NW CAMAS MEADOWS DR / NE GOODWIN RD	**NOTIFY PW OF DAMAGED LIGHT POLE** FOUND LIGHTPOLE AT INTERSECTION THAT GOT RAN OVER. APPEARED VEHICLE WAS TRYING TO TURN ONTO CAMAS MEADOWS DR AND SLID INTO IT. ** PW ADVISED, 557***	22-2265
11/01/2022	☐	☐	ACCIDENT	1600 BLK GOODWIN RD	SEE SIVITS, AIDEN	22-2104
11/01/2022	☐	☐	ACCIDENT	1600 NE GOODWIN RD	SEE SIVITS, AIDEN	22-2104
11/01/2022	☐	☐	ACCIDENT	1600 NE GOODWIN RD	CROSSED CENTER LINE HEAD ON. ONE HALF X-PORTED. BOTH VEHICLE TOWED BY CHUCK'S. 329 CFD	22-2104
10/28/2022	☐	☐	ACCIDENT	NE GOODWIN RD/NE INGLE RD	SEE BENNETT, RYAN R. ENTRY. 3X19, 327	22-2087
10/28/2022	☐	☑	ACCIDENT	NE GOODWIN RD/NE INGLE RD	2: ALEXANDER, KANSAS K 06-10-92 BENNETT FAILED TO REMAIN STOPPED AT STOP SIGN AND COLLIDED WITH ALEXANDER. BOTH VEHICLES TOWED BY CHUCKS. BENNETT ISSUED NOI FOR THE VIOLATION. 3X19, 327, FIRE	22-2087
09/23/2022	☐	☐	ACCIDENT	NW ALEXANDRA LN/ NE GOODWIN RD	SEE MICHAEL ANDERSON ENTRY	22-1956
09/23/2022	☐	☐	ACCIDENT	NW ALEXANDRA LN/NE GOODWIN RD	X: HUFFMAN, HEATHER C 11-25-88 ANDERSON WAS IN A LINE OF 4 CARS HEADING WEST ON GOODWIN. THE VEHICLES TOOK TURNS PASSING HUFFMAN WHO WAS RIDING HER BIKE IN THE LANE. HUFFMAN DECIDED TO CROSS THE TRAFFIC WHICH GOT HER STRUCK BY A VEHICLE. SHE WAS TRANSPORTED TO PHSWMC AND ULTIMATELY ARRESTED ON PC AND A WARRANT.	22-1956
05/02/2022	☐	☐	ACCIDENT	NW GOODWIN RD / NW INGLE RD	2) AMANDA R. GREATWATER-RAMSAY (4-4-1959) REESE DID NOT SEE AMANDA AND PULLED OUT IN FRONT OF HER, CAUSING AMANDA TO TBONE HIS TRUCK. REESE CITED FOR STOP SIGN VIOLATION. OWNERS HANDLED THEIR OWN TOW AND INFO EXCHANGE. WSP COLLISION RPT COMPLETED. 501.	22-1430
05/02/2022	☐	☐	ACCIDENT	NW GOODWIN RD / NW INGLE RD	2) REESE J. BUTEL (1-4-1988) REESE DID NOT SEE AMANDA AND PULLED OUT IN FRONT OF HER, CAUSING AMANDA TO TBONE HIS TRUCK. REESE CITED FOR STOP SIGN VIOLATION. OWNERS HANDLED THEIR OWN TOW AND INFO EXCHANGE. WSP COLLISION RPT COMPLETED. 501.	22-1430
04/11/2022	☐	☐	ACCIDENT	GOODWIN/LACAMAS CREEK	CAR SLID OVER EMBANKMENT. DRIVER LEFT BUT CALLED WITH HIS INFO. FIRE TOWED LATER DUE TO POSSIBLE FUEL LEAK(CHUCK'S). WILL FOL UP WITH DRIVER.	
04/07/2022	☐	☐	ACCIDENT	NE GOODWIN RD/ NW ALEXANDRA LN	SEE TEEGAN F GORSUCH ENTRY	22-1346
04/07/2022	☐	☐	ACCIDENT	NE GOODWIN RD/ NW ALEXANDRA LN	SEE TEEGAN F GORSUCH ENTRY	22-1346
04/07/2022	☐	☐	ACCIDENT	NE GOODWIN RD/ NW ALEXANDRA LN	1) LAWRENCE C. WINTER - 02/02/1968 2) PATRICK W. LISTER - 07/05/1984 (PED) TEEGAN DRIFTED OVER THE FOG LINE AND HIT A PEDESTRIAN RUNNING ON THE SHOULDER, THEN WHILE LOOKING BACK REAR ENDED THE VEHICLE IN FRONT OF HIM. WSP COLLISION REPORT. CITED FOR NEG 2.	22-1346
03/29/2022	☐	☐	ACCIDENT	NE GOODWIN RD / NW ALEXANDRA LN	SEE MACMASTER ENTRY 3X45, 501, 506	22-1305
03/29/2022	☐	☐	ACCIDENT	NE GOODWIN RD / NW ALEXANDRA LN	MCMASTER WB AND WAS REAR ENDED BY GARNETT WHILE WAITING FOR A VEHICLE TO TURN ON ALEXANDRA LN. MALIA DID NOT SLOW DOWN IN TIME CAUSING THE COLLISION & CITED FOR FOLLOWING TOO CLOSE. HER VEHICLE TOWED BY CHUCK'S. COLLISION REPORT COMPLETED. 3X45, 501, 506	22-1305
03/04/2022	☐	☐	ACCIDENT	NE INGLE RD/NE GOODWIN RD	SINGLE VEHICLE NON INJURY ACCIDENT. COOK, DRIVING HOME FROM WORK, SWERVED AT AN ANIMAL CROSSING THE ROAD AND DROVE OFF THE ROADWAY INTO THE DITCH AND GOT STUCK. HAD FRIENDS AND MOTHER THERE WHO TOWED HIM OUT. DRIVER DID NOT APPEAR TO BE UNDER THE INFLUENCE, NO SIGNIFICANT DAMAGE TO VEHICLE. 337.	

Camas Police Dept

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Date	D	S	Incident_Type	Location	Details	Case Number
02/17/2022	☐	☐	ACCIDENT	NE INGLE RD/NE GOODWIN RD	WITNESS CALLED INTO REPORT NON-INJURY COLLISION OF BROKEN MIRRORS, REGARDING TWO INDIVIDUALS IN A ROAD RAGE. WITNESS HUNG-UP PRIOR TO ANSWERING DISPATCHES QUESTIONS. INVOLVED PARTIES LEFT THE SCENE WITH NO DESCRIPTION OR PLATES. NO OTHER CALLS FROM VICTIMS. INFO	
01/22/2022	☐	☐	ACCIDENT	1500 BLK NE GOODWIN RD	STODDARD STATED HE SWERVED TO MISS A DEER AND HIS BRAKES FAILED CAUSING HIM TO LAUNCH OVER THE GUARD RAIL AND ROLL HIS TRUCK. DID NOT INITIALLY REPORT TO 911 AS COUNTY FIRE HAD CONTACTED HIM AT THE TIME OF THE COLLISION AT APPROXIMATLEY 0752 HRS. NO OTHER OCCUPANTS OR WITNESSES OF COLLISION. WSP COLLISION RPT. 503	22-0064
12/15/2021	☐	☐	ACCIDENT	NE GOODWIN RD/ NE INGLE RD	DEVAN CITRON WAS TURNING OFF OF NE GOODWIN AND ONTO NE INGLE. HE MADE TO WIDE OF A TURN AND DROVE INTO THE DITCH. HE WAS NOT DK JUST MADE TO BIG OF A TURN. HE REQUESTED A TOW AND CHUCKS CAME OUT AND REMOVED HIS VEHICLE FROM THE DITCH. NO DAMAGE TO HIS VEHICLE.	
12/14/2021	☐	☐	ACCIDENT	2300 BLOCK NE GOODWIN RD	RAILING SLID OFF THE ROAD AND INTO A FLOODED DITCH DUE TO ICE. TOWED BY CHUCKS. SEE REPORT.	21-1159
11/02/2021	☐	☐	ACCIDENT	NE GOODWIN RD/ NW ALEXANDRA LN	STRUYK HAS PARKINSON'S DISEASE AND HAS BEEN RECIEVING VARIOUS ONGOING TREATMENTS AND TESTING, WHICH HAS REQUIRED HIM TO STOP TAKING HIS MEDICATION. FELL ASLEEP AT WHEEL AND CRASHED INTO DITCH, NO INJURIES. CAR TOWED BY CHUCKS, AND DRIVER'S RETEST REGARDING MEDICAL CONDITION SUBMITTED TO DOL	21-1020
09/06/2021	☐	☐	ACCIDENT	GOODWIN INGLE	SOME TIME LAST NIGHT A VEHICLE DIDNT STOP AT THE STOP SIGN AND TRAVELED 280 PAST GOODWIN FLIPPED AND SLAMMED A TREE. TOWED BY CHUCKS.	21-0819
08/01/2021	☐	☐	ACCIDENT	2000 BLK NE GOODWIN RD	BALDASSARE REPORTEDLEY FELL ASLEEP AND CRASHED INTO PUD POLE #37167 WITH CAR FULL OF OTHERS, NO INJURIES. NO IMPAIRMENT, NOI FOR NEG 2. PUD RESPONDED AS POLE WAS COMPLETLEY SHEARED OFF, CAR TOWED BY CHUCKS. 502 503 329	21-0726
06/18/2021	☐	☐	ACCIDENT	4800 NE GOODWIN RD	SEE GOODWIN	21-0579
06/18/2021	☐	☐	ACCIDENT	4800 NE GOODWIN RD	GOODWIN HAD A MEDICAL EPISODE AND DRIFTED INTO ONCOMING LANE HITTING DAVIS. CARS TOWED BY CHUCKS.	21-0579
05/10/2021	☐	☐	ACCIDENT	GOODWIN/INGLE	TA PULLED OUT GOT HIT	21-0419
05/10/2021	☐	☐	ACCIDENT	GOODWIN/INGLE	TA PULLED OUT INFRONT OF A CONCRETE TRUCK. CITED FOR FAIL TO REMAIN STOPPED.	21-0419
04/30/2021	☐	☐	ACCIDENT	NE INGLE RD AND NE GOODWIN RD	RESPONDED TO AN ACCIDENT WHERE THE DRIVER WAS FOUND TO BE INTOXICATED. DRIVER WAS ARRESTED AND MEDICS TRANSPORTED TO THE HOSPITAL. WHILE AT THE HOSPITAL A BLOOD WARRANT WAS SECURED. WAITING FOR THE BLOOD RESULTS TO RETURN. HE WAS ALSO ISSUED A CRIMINAL CITAITON FOR HIT AND RUN FROM A PRIOR ACCIDENT JUST OUT SIDE THE CITY LIMITS. THIS OCCURRED ON STATE ROUTE 500. WSP DID NOT HAVE A TROOPER AVAILABLE. 382, 376, 506, CWFD	21-0382
12/24/2020	☐	☐	ACCIDENT	NE GOODWIN RD / NE INGLE RD	GRABLE WAS SIDESWIPED LAST NIGHT DRIVING WEST ON NE GOODWIN RD. THE SUSPECT TRUCK KEPT ON DRIVING. DAMAGE TO THE SIDE OF GRABLE'S CAR.	20-1261
11/22/2020	☐	☐	ACCIDENT	GOODWIN/INGLE	PUT CAR INTO DITCH. TOWED BY CHUCK'S.	20-1151
05/05/2020	☐	☐	ACCIDENT	NE GOODWIN RD/NW ALEXANDRA LN	2) BLAKESLEY, THERESA M 12/4/65 KOVALENKO REAR ENDED BLAKESLEY WHILE SHE WAS STOPPED FOR TRAFFIC AT GOODWIN AND ALEXANDRA. NON INJURY. BOTH VEHICLES TOWED BY LANGLEYS PER THEIR REQUESTS. DRIVER 1 CITED FOR NEG 2.	20-0410
05/05/2020	☐	☐	ACCIDENT	NE GOODWIN RD/NW ALEXANDRA LN	2)KOVALENKO, DAVID V 4/23/02 KOVALENKO REAR ENDED BLAKESLEY WHILE SHE WAS STOPPED FOR TRAFFIC AT GOODWIN AND ALEXANDRA. NON INJURY. BOTH VEHICLES TOWED BY LANGLEYS PER THEIR REQUESTS. DRIVER 1 CITED FOR NEG 2.	20-0410

Camas Police Dept

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Date	Incident_Type	Location	Details	Case Number	Zone
10/28/2024	ACCIDENT	5900 NW FRIBERG-STRUNK RD	[redacted] Child Victim/Witness ACCIDENT OCCURRED AT THE OAK TREE STATION ON 10-20-24. YANG JUST FOUND OUT [redacted] IS UNINSURED. TOLD HIM ITS A CIVIL ISSUE AND REFERRED HIM BACK TO HIS INSURANCE COMPANY.		3
01/26/2022	ACCIDENT	FRIBERG-STRUNK / DWYER CREEK DR	MARIE JONES WAS ATTEMPTING TO TURN N/B (LEFT) FROM THE PARKING LOT OF UNION HS. SHE COLLIDED INTO JACOB FLENTKE WHO WAS ATTEMPTING TO TURN E/B ONTO DWYER CREEK DR FROM S/B ON FRIBERG-STRUNK. WSP REPORT.	22-0072	3
01/26/2022	ACCIDENT	FRIBERG-STRUNK / DWYER CREEK DR	MARIE JONES WAS ATTEMPTING TO TURN N/B (LEFT) FROM THE PARKING LOT OF UNION HS. SHE COLLIDED INTO JACOB FLENTKE WHO WAS ATTEMPTING TO TURN E/B ONTO DWYER CREEK DR FROM S/B ON FRIBERG-STRUNK. WSP REPORT.	22-0072	3
12/09/2019	ACCIDENT	6200 BLK NW FRIBERG-STRUNK ST	2: FLEGGE, JACOB T. 03/29/2002 BERGSTROM WAS STOPPED FOR TRAFFIC AND WAS REAR ENDED BY FLEGGE. FLEGGE CITED FOR FOLLOWING TOO CLOSE. COLLISION REPORT.	19-1202	3
09/25/2016	ACCIDENT	NE GOODWIN / FRIBERG-STRUNK	VEHICLE VERSUS PEDESTRIAN TA. THOMAS FAILED TO YIELD TO KAO, WHO WAS IN THE SIDEWALK. DRIVER CITED FOR VIOLATION.	16-1045	3
09/25/2016	ACCIDENT	NE GOODWIN / FRIBERG-STRUNK	VEHICLE VERSUS PEDESTRIAN TA. THOMAS FAILED TO YIELD TO KAO, WHO WAS IN THE SIDEWALK. DRIVER CITED FOR VIOLATION.	16-1045	3
01/09/2015	ACCIDENT	NW FRIBERG-STRUNK / LAKE RD	PUD TRUCK HOPPED CURB AND DROVE ON SIDEWALK APPROXIMATELY 150' AND RAN OVER A TREE THEN TOOK OFF. UNDER INVESTIGATION	15-0144	3
07/15/2013	ACCIDENT	7021 NW FRIBERG-STRUNK	SOREQUE SWERVED TO MISS AN ANIMAL AND HER TIRE CAUGHT ON THE ROAD AND SHE THEN OVERCORRECTED AND DROVE INTO KLUKA'S FIELD. TALKED TO PROPERTY OWNER AND THEY SAID THEY WOULD BE PATIENT WHILE SOREQUE PLANS A TOW.		31

Public Records Exemptions

Enclosed please find a copy of the response documents for your public records request. The following information is provided to explain the process employed to review and produce the response documents.

Reason	Description	Pages
Child Victim/Witness	RCW 7.69A.030 To not have the names, addresses, nor photographs of the living child victim or witness disclosed by any law enforcement agency, prosecutor's office, or state agency without the permission of the child victim, child witness, parents, or legal guardians to anyone except another law enforcement agency, prosecutor, defense counsel, or private or governmental agency that provides services to the child victim or witness.	1

Camas Police Dept

All dailylog - Query Applied

Date	Incident_Type	Location	Details	Case Number	Zone
05/03/2023	ACCIDENT	4600 NW CAMAS MEADOWS DR	KERR'S STEERING WHEEL LOCKED UP CAUSING HER TO JUMP CURB NEAR 4600 BLOCK OF NW CAMAS MEADOWS DR HITTING LIGHT POLE CAUSING REPORTABLE DAMAGE TO POLE AND VEHICLE. NO INJURIES. OWNER FACILITATED TOW FROM SCENE. I TRIED CALLING ALL AFTER HOURS #'S FOR PUB WORKS BUT NO ANSWER. POLE WAS BADLY DAMAGED AND LEANING SO I PUSHED IT OVER AND GOT IT OUT OF ROADWAY/SIDEWALK. CONES PLACED NEAR EXPOSED WIRES. PLEASE ADVISE PUB WORKS POLE NEEDS ATTENTION.	23-0469	3
03/03/2023	ACCIDENT	GOODWIN/CAMAS MEADOWS	SINGLE CAR INTO DITCH UNOCCUPIED WHEN I ARRIVED TAPED IT OFF. 321		1
12/24/2022	ACCIDENT	NW CAMAS MEADOWS DR / NE GOODWIN RD	**NOTIFY PW OF DAMAGED LIGHT POLE** FOUND LIGHTPOLE AT INTERSECTION THAT GOT RAN OVER. APPEARED VEHICLE WAS TRYING TO TURN ONTO CAMAS MEADOWS DR AND SLID INTO IT. ** PW ADVISED, 557***	22-2265	3
10/15/2021	ACCIDENT	4105 NW CAMAS MEADOWS DR	BRODY CALLED TO REPORT BEING REAR ENDED BY A BLK VW IN WHICH THE OTHER DRIVER DID NOT HAVE INSURANCE. BOTH PARTIES LEFT PRIOR TO MY ARRIVAL. CALLED BRODY, HE SAID THE OTHER DRIVER LEFT SO HE WENT HOME TOO. MINOR DAMAGE TO THE REAR OF HIS		4
07/07/2021	ACCIDENT	4105 NW CAMAS MEADOWS DR	SCOTT CORNETT CALLED IN TO REPORT HIS VEHICLE WAS STRUCK IN THE PARKING LOT OF CAMAS MEADOWS GOLF COURSE. HE SAID HE HAD THE SUSPECT INFORMATION AND VIDEO OF THE ACCIDENT. I WAS ABLE TO CONTACT THE OTHER PARTY DEBRA PARKER. SHE TOLD ME THEY DID STOP AFTER HER HUSBAND STRUCK THE VEHICLE. SHE SIAD HE GOT OUT BUT DID NOT SEE ANY DAMAGE. MRS. PARKER SAID THEY WERE GOING TO STAY AROUND BUT SHE WAS HAVING A MEDICAL PROBLEM SO THEY LEFT TO GO TO HOSPITAL. I ASKED HER IF SHE WOULD BE ALRIGHT TO PASS ON HER INFORMATION TO THE OWENR OF THE VEHICLE THAT THEY STRUCK. SHE TOLD ME THAT WAS FINE. I RE-CONTACTED MR. CORNETT AND PROVIDED HIM MRS. PARKER'S INFORMATION. HE SIAD HE WOULD CONTACT HER SO THEY COULD EXCHANGE INFORMATION.		
07/07/2021	ACCIDENT	4105 NW CAMAS MEADOWS DR	#2 DEBRA PARKER SCOTT CORNETT CALLED IN TO REPORT HIS VEHICLE WAS STRUCK IN THE PARKING LOT OF CAMAS MEADOWS GOLF COURSE. HE SAID HE HAD THE SUSPECT INFORMAITON AND VIDEO OF THE ACCIDENT. I WAS ABLE TO CONTACT THE OTHER PARTY DEBRA PARKER. SHE TOLD ME THEY DID STOP AFTER HER HUSBAND STRUCK THE VEHICLE. SHE SIAD HE GOT OUT BUT DID NOT SEE ANY DAMAGE. MRS. PARKER SAID THEY WERE GOING TO STAY AROUND BUT SHE WAS HAVING A MEDICAL PROBLEM SO THEY LEFT TO GO TO HOSPITAL. I ASKED HER IF SHE WOULD BE ALRIGHT TO PASS ON HER INFORMATION TO THE OWENR OF THE VEHICLE THAT THEY STRUCK. SHE TOLD ME THAT WAS FINE. I RE-CONTACTED MR. CORNETT AND PROVIDED HIM MRS. PARKER'S INFORMATION. HE SIAD HE WOULD CONTACT HER SO THEY COULD EXCHANGE INFORMATION.		30
03/25/2021	ACCIDENT	NW MCMASTER / CAMAS MEADOWS DR	SINGLE CAR ROLL-OVER TA. WORK TRUCK HIT CONCRETE GATE PILLARS AND FLIPPED. 329	21-0270	3
10/06/2020	ACCIDENT	CAMAS MEADOWS/MCMASTERS	DIMITRY'S VAN BLEW A TIE ROD CAUSING HIM TO SWERVE AND HIT THE BASE OF A LIGHT POLE. NO DAMAGE. HE WANTED TO DOCUMENT IT INCASE SOMEONE CALLED IT IN AS A HIT AND RUN.		3
07/23/2020	ACCIDENT	CAMAS MEADOWS	HIT AND RUN, CAR SIDE SWIPED IN PARKING LOT.	20-0731	3
08/30/2019	ACCIDENT	4600 BLK NW CAMAS MEADOWS DR	STEPHEN FOX PULLED OUT FROM THE LOGITECH DRIVEWAY AND FAILED TO YIELD TO SHEELA SHETH WHO WAS E/B ON CAMAS MEADOWS DR. FOX WAS CITED.	19-0855	3
08/30/2019	ACCIDENT	4600 BLK NW CAMAS MEADOWS DR	STEPHEN FOX PULLED OUT FROM THE LOGITECH DRIVEWAY AND FAILED TO YIELD TO SHEELA SHETH WHO WAS E/B ON CAMAS MEADOWS DR. FOX WAS CITED.	19-0855	3

REBUTTAL TO APPEAL24-1001 STAFF REPORT

1. "1st paragraph of the Summary states that a gas station, convenience store and drive-through car wash are permitted per Table 1 CMC 18.07.030 are allowed within BP zone." A car wash is NOT listed in Table 1. The ONLY car wash in the City of Camas is in zoning Community Commercial, CC.
2. "Water pollution": The discussion around stormwater control does not address the proximity to the closest of the over 50 drinking water well heads nearby. Per the Washington Department of Health's Sanitary Control Ares document, the distance has to be greater than 100'. There can be no source of pollution within these 100'. Best Management Practices are applicable if prevention is not possible. In this situation the prevention that the regulations call for, is to not allow such a project in this location in the first place.
3. "Noise": The pre-existing road noise is created by vehicles passing by as commuters use the arterial without stopping, unless the signal light turns. This project would add hundreds of more daily trips and stops, each stopping, entering, exiting, turning engines on and off. It would have delivery trucks for each line of food and alcohol categories arrive and depart. The car wash would create swooshing, dinging noises and the vacuums would create loud vacuum noises. Omitting and minimizing this exponential noise pollution is egregious. Just because noise from commuters exists, does not give permission to exacerbate the condition.
4. "Light": The section 18.19.050 refers to Design Principles, However, section CMC 18.21.060 Site development criteria, it states that Site and building lighting shall be designed to minimize glar or objectionable effects to the adjacent properties. Residential neighborhoods are of particular concern. There is light pollution from two sources: One is the building, the gas pump canopy and the sign. The second which not being addressed in the staff report, is the light pollution caused by the new trips/stops by vehicles, which ordinarily would only travel in the east-west direction. By entering and exiting their light with EACH vehicle will shine into the north and west residential properties.
5. "BP – is an auto oriented use" According to Table 1, NOT anything related to autos is permitted in BP zone. If someone would only want to build a car wash, which zoning is approved by the City witout being mentioned in Table 1. Table lists nearly any business imaginable and give guidance for the permitted zoning. The precedent has been set by only having a car wash in the the CC – Community commercial zoning. A car wash uses chemicals that are similar to those used in commercial dry cleaning business to remove grime from tires. A commercial dry cleaning business is not allowed in the BP zone due to the toxicity of the chemicals. The chemicals used would not be permitted to be sold within the convenience store. ……
6. "Dangerous intersection/Access standards" It is clear that the 660' access standard cannot be met. Ironically in the last sentence the report states that the standard is met! To be clear, the standard not being met. The city is jeopardizing the safety of this already dangerous and busy intersection to grant a deviation to the access standard. With the newly proposed median/left turn lane into the proposed gas station, the city is only addressing the access to the gas station. It does not addresshow the residents in the neighborhood to the north and their services (garbage, mail, etc.) can make a safe left turn from eastbound to northbound. How could eastbound and westbound cars share the same median. This median just made it worse. There

is also no bike lane on the north side of NE 13th in the proposal as needs to be included, per Camas City code for arterials.

7. “Traffic study” We hired our own traffic engineers to evaluate the accuracy of the Charbonneau 2023 TIR. They found significant errors and their report has been submitted to the hearings examiner.
8. “Ingress-egress” A right-in right-out only option may reduce rear-end collisions caused by stacking cars approaching west-bound. It will severely negatively impact traffic to the High school, school bus traffic and stacking of cars along residences on NE 13th Street. It will also affect cars waiting to turn southbound from westbound traffic and cause illegal U-turns.

REBUTTAL TO STAFF REPORT & DECISION 13th Street Gas Station
File Number SPRV23-06 (CONSOLIDATED FILES: ARCH23-07, CA23-08, DR23-09, SEPA23-12) *Type II* Decision Date: September 16, 2024:

1. Page 1: Table 1 of CMC 18.07.030, does NOT list a car wash to be allowed in BP zoning. The only other car wash in Camas is in CC (community commercial) because BP is a park-like setting per Camas definition (p1128)
2. The Staff report only addresses the environmental concerns during the construction and demolition through recommendations of other agencies. However the staff did not address the environmental issues that will be present during the business operation, once the business goes live. They did not consult agencies to request input on the feasibility and safety of the proposed project in this location.
3. Page 2: Add that convenience store will sell alcoholic beverages
4. Page 2: All comments submitted were opposing this development. If there was a single comment in favor, then please rephrase your summary statement to accurately reflect that the vast majority is against this project.
5. Page 2: The CAR was conducted on the project site, yet just 20' west from the property boundary is either a wetland (or a spring?) per the Department of Ecology and 75' west of the property boundary is a drinking water well
6. Page 2: The revised SEPA did not take the drinking water safety of the wells of the adjacent parcels into consideration, despite comments by numerous affected residences.
7. Page 4 Zoning: Listing the "Comprehensive Plan" instead of the actual definition is problematic. More accurately it should read: Per CMC **18.37.010 -** The Business Park (BP) district is intended to provide for employment growth in the city by protecting industrial areas for future employment. Design of business park facilities in this district will be "campus-style," with landscaped buffers, and architectural features compatible with, and not offensive to, surrounding uses. Fact: A gas station does not provide a campus-like impact on the surrounding area and it is offensive to the surrounding homes. The intent of BP zoning is not met for placing a gas station near residential homes.
8. Page 4: The "provides employment" statement is also problematic, because a typical gas station/convenience store has 5 or fewer employees on site. This represents a miniscule result for job creation on a one acre parcel.
9. Page 4: A gas station is also not meeting the Land use definition LU-2.5 of being compatible with adjacent neighborhoods.
10. Page 5: Parking: If the car wash were to only requires 1 parking space for 2 employees, it is curious to imagine how the second employee would get to work, because there are only side-walk to the south, unless they would walk along the dangerous NE 13th/Goodwin Rd. arterial.

11. Page 5 Parking: The 50' setback requirement, disallows parking spaces to be built within this area. If this setback requirement is not upheld, it implies a favor to the developer and a disfavor to the surrounding properties. Rephrasing the setback to occur from the ingress is misleading. The setback requirement from the road should be upheld.
12. Page 6: Roads: CDSM should include a bike lane in both directions, the current proposed road improvements fail to include a west bound bike lane. Please revise the road construction to include the west-bound bike lane.
13. Page 10: Fueling trucks cannot be permitted to deliver outside of City of Camas's business hours due to the noise and light impact on surrounding residences. Regular business hours per CMC are from 7:00 a.m. to 10:00 p.m. and the fuel tanker truck delivery has to occur during business hours. The gas station hours need to be adjusted to accommodate the delivery of all their goods, through undoubtedly many trucks, during regular business hours. Allowing operation outside of business hours would be viewed as providing a favor to the project developer while disregarding the surrounding residential area, which would be a break from the BP zoning definition.
14. Page 11: We respectfully disagree that 2023 and 2024 traffic counts are the same. Fact: New traffic in 2024:
    a. The new Oak Tree Food truck station opened summer 2024
    b. the high cube warehouse which became occupied in 2024 and has semi-trucks entering and exiting (large Interstate Battery distribution center),
    c. residential traffic to more newly constructed homes along former Green Mountain golf course
    d. construction traffic for 2 Camas Meadows Golf course communities
15. page 12: Developer should be required to provide updated traffic counts to Clark County and City of Vancouver just prior to development start or upon building permit approval because the current dollar amounts are significant lower than the actual counts will be when the project is ready for construction or business opening. The former owner of the parcel, Mr. Warren Townsend, is still living on the property in the single-family dwelling. He is permitted to stay as long as he likes. The project construction may be a number of years into the future and therefore the fees should be adjusted accordingly. Fixing the fees at this early stage may be viewed as a favor to the applicant.
16. Page 18: The Oak Tree station on the south end of Friberg/Strunk Rd. has managed to maintain the Oak Tree on their site. There is a valuable Natural feature on this parcel: the white oak. It is inaccurate to state "There are no significant natural features on site." Camas has a description of maintaining tree canopy in their Comprehensive Plan, but if Camas allows the removal of

an oak tree and then allows the purchase of "oak tree credits" outside the City, how is that preserving the tree canopy, per the vision?

17. Page 19: Outdoor lighting: Lighting will not only be generated by the building the pump station canopy, but foremost by vehicles entering and exiting, shining their lights in the surrounding neighbors yards to the north and west and southwest, completely denying the right to quite enjoyment per CMC for residential neighborhoods. The current description is inadequate and does not effectively address the prevention of light pollution generated by cars entering and exiting: "**Outdoor lighting shall not be directed off-site.** The applicant's narrative indicates that the lighting plan meets the minimum safety standards and outdoor lighting will be shielded to prevent off-site light intrusion to the greatest extent possible. Landscape, parking lot and/or building lighting shall be directed, hooded, or shielded away from surrounding properties and is conditioned as such." The remedy may be very tall walls. Furthermore, all lights, including signage lights, should be completely shut off when the gas station closes for the night, similar to the gas station on 192nd Ave. across from QFC.
18. The staff report does not address noise – please see our comments on the SEPA response. Noise nuisance is not allowed per a CMC, and code enforcement in Camas is carried out by the police department, which may be overburdened when called to curtail the music/raucous created by customers of the gas station.

Source Water Protection

Sanitary Control Area Protection

331-453 • Revised 11/30/2022

What is a sanitary control area?

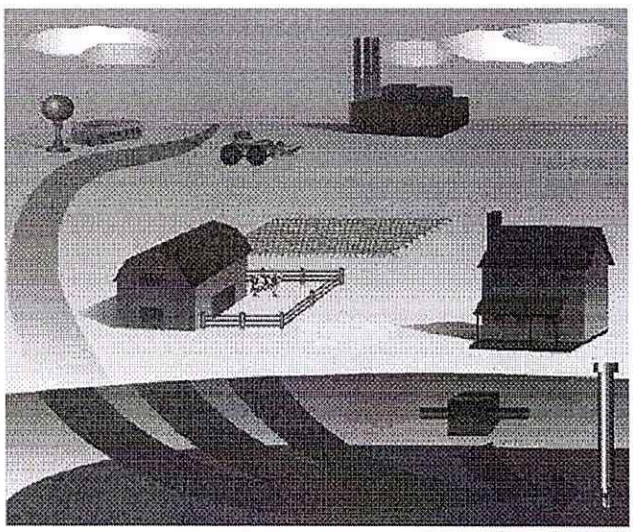
The area immediately surrounding your well or spring that is most susceptible to contamination is called the sanitary control area (SCA). You must maintain an SCA of at least 100 feet around wells and 200 feet around springs.

The SCA is your first line of defense in keeping contaminants out of your drinking water system. You must control and monitor this area regularly to ensure that things going on closest to your source do not threaten your water quality. In the long run, prevention costs much less than installing treatment or a new source. This is not just a matter of regulation but can also expose you legally if, due to improper care or monitoring, contamination occurs and harms people.

Your SCA is part of a larger protective boundary called the source water or wellhead protection area. This area collects and transports not just water, but also potential contaminants, to your drinking water source.

Sanitary control area protection

You must control your SCA both legally and physically. This means you should either own the land around your water source or, if someone else owns it, have an enduring legal agreement in place that limits land uses and activities in that area. The resources list below includes a separate publication about this.



The SCA immediately surrounding a well or surface water intake is part of a larger protective boundary called the source water or wellhead protection area.

It also means that you cannot allow potential contaminant sources within the SCA. If you can't avoid or remove potential contaminant threats, we may require that you:

- Take steps to lessen the severity of the threat,
- Increase water quality monitoring,
- Install treatment, and/or
- Find a new drinking water source.

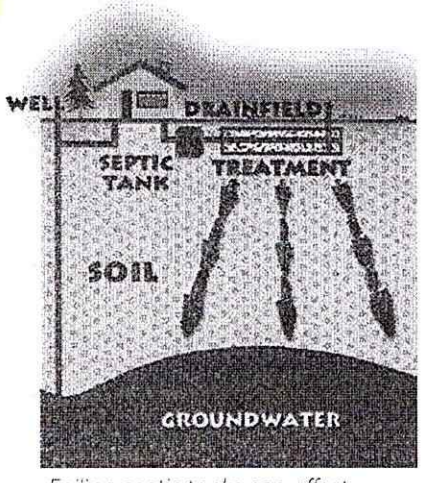
We consider the following factors when evaluating whether a potential contaminant source can remain in your SCA:

1. The nature of the potential contamination and the risk of release.
2. Source construction details including well depth, source construction, subsurface geology and other factors that could protect the source from contamination.
3. Distance from the potential contaminant source to the drinking water source.
4. Other relevant information.

Water systems must also develop a source water or wellhead protection plan to protect drinking water sources from contamination and loss of supply. The plan defines the protection area, identifies potential contaminant sources and includes management strategies to prevent contamination and loss of supply.

Common sanitary control area threats

Some common activities and land uses can threaten your source with contamination. Your well is more susceptible to contamination if it is shallow, poorly constructed, located in highly permeable soils, or served by surface water or groundwater under the influence of surface water. Below are some common threats to your SCA and some ways to protect your drinking water source. The best solution is to remove the threat. If that isn't possible, ask your regional office to help you find another workable solution.



Failing septic tanks can affect groundwater quality.

Sewer and septic systems

Sewer lines, drain fields, and septic tanks could leak and contaminate your drinking water source, resulting in severe illness or even death. Therefore, preventing this type of contamination is one of our highest priorities.

Ways to prevent or minimize the risk of contamination include:

- Remove the threat from your SCA, if possible.
- Sleeve the sewer line within another watertight line, or encase the sewer line in concrete.
- Increase coliform monitoring so you can detect problems early.
- Install disinfection treatment (with a CT of 6 according to agency requirements).

Do not store hazardous materials in the SCA.

Hazardous materials

Businesses, homeowners and water system personnel may use, store and dispose of hazardous wastes and materials. These include gasoline or diesel fuel, used motor oil, heating oil, cleaning products, pesticides, herbicides, and fertilizers. If they accidentally enter your drinking water supply, these hazardous wastes and materials are dangerous to public health.

To prevent or minimize contamination:

- Do not store chemicals there.
- Do not dispose of or apply hazardous waste or materials there.
- Install double-walled storage tanks, or provide other secondary containment.
- Install permanent on-site leak detection equipment.

Landfills and dumps

Everyday garbage can contain pathogens (bacteria, viruses, etc.); nutrients; and hazardous materials such as solvents, pesticides, fertilizers, pharmaceuticals, and paints. Leaks from landfills, dumps, and dumpsters could threaten nearby drinking water sources. Even properly constructed municipal landfills could leach hazardous materials, causing a plume, or large area of underground contamination, that could eventually reach your drinking water source.

To prevent or minimize contamination:

- Site wells and intakes at least 1,000 feet away from landfills.
- Remove dumpsters from your SCA.

Sewer waste by-products

Wastewater spray (sludge) irrigation or surface application of dry sludge is a way to recycle treated sewer waste. Even though the waste is treated, it can tend to increase nitrogen which then soaks into the soil and can contaminate groundwater. Do not apply sewer waste by-products in the SCA.

Cemeteries

Common burial practices use formaldehyde and other chemicals that pose a cancer threat for embalming. Studies show that these chemicals may leach from cemeteries into groundwater. If your SCA is near a cemetery, contact your regional office for guidance.

Animal waste, pens, feed lots and dead animals

If you see evidence of animals in your SCA, be concerned. Animal waste and dead animals could contaminate your source with bacteria and nutrients and make your customers ill.

To prevent or minimize contamination:

- Keep animals out of your SCA using fences or other means, which may include non-chemical controls to keep wild animals from invading your source.
- Install linings and walls around waste holding ponds.
- Increase coliform monitoring so you can detect problems early.
- Install disinfection treatment (with a CT of 6 according to agency requirements).

Unused and abandoned wells

All wells are a direct conduit to your groundwater and distribution system. Unused or abandoned wells that have not been properly decommissioned are often not monitored or maintained properly, increasing the likelihood of source contamination. Proper decommissioning means removing the well from active service and sealing it off from your distribution system and groundwater source. See resources listed below for more information.

Roads, parking areas, and landscaping strips

Petroleum products, chemicals, and metals can leak or be spilled and accumulate on paved surfaces like roads and parking lots, and chemicals can be used for landscaping maintenance.

To prevent or minimize contamination:

- Do not store vehicles or motorized equipment like lawn mowers in your SCA.
- Slope and pave surfaces away from the source.
- Install closed drainage systems. Do not install or allow stormwater infiltration ponds within your SCA.
- Install protective barriers (such as cones or poles) around the source to protect from vehicle damage.
- Post "no-spray" signs.

Noxious weeds

State law gives our state and local noxious weed control boards broad authority. Occasionally, a board might insist that a water system spray to kill noxious weeds in its SCA. Unfortunately, there's nothing in the law that requires them to consider or act in the best interests of source water protection. To avoid such conflicts, it's best for you to become familiar with both the state noxious weed lists (see WAC 16-750-005 through -015) and your local list, which varies by county. Continuously inspect your SCA(s) to remove any noxious weed starts before they establish.

Important: Giant Hogweed is highly phototoxic and requires special handling. Do not touch it without first looking up instructions for removal techniques to protect your employees or landscapers. Certain other weeds may be toxic as well. Do not compost noxious weeds; instead, place them in the trash.

For more information

Department of Health Office of Drinking Water
Eastern Regional Office 509-329-2100
Northwest Regional Office 253-395-6750
Southwest Regional Office 360-236-3030

Department of Ecology
Well Construction and Licensing (regional contacts on webpage)
Well Decommissioning

Free Technical Assistance
Evergreen Rural Water of Washington 360-462-9287

Relevant Rules and Publications
Washington Administrative Code citations.

- Chapter 173-160 WAC Minimum standards for construction and maintenance of wells.
- Chapter 246-203 WAC General sanitation.

- WAC 246-290-135 Source water protection (Group A).
- WAC 246-291-125 Groundwater source approval (Group B).

Our publications are online at doh.wa.gov/drinkingwater.

- *Legal Protections for your Sanitary Control Area* 331-048 (PDF).
- *Wellhead Protection Program Guidance Document* 331-018 (PDF).
- *Abandoned Wells: Problems and Solutions* 96-br-097 (PDF) Department of Ecology.

To request this document in another format, call 1-800-525-0127. Deaf or hard of hearing customers, please call 711 (Washington Relay) or email civil.rights@doh.wa.gov.

How to **REMEDIATE** Your Well

If your well is contaminated or damaged, consult with your public health department, certified well inspector, and/or licensed well contractor to determine options for repair and remediation. Potential solutions include:

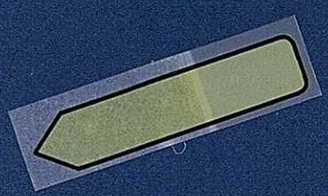
- Disinfectants to remove germs and microbes.
- Filters or other on-site treatment processes.
- Identifying a new water source.
- Digging a new, deeper well.

PAY ATTENTION to Your Well Surroundings and **ASK QUESTIONS**

Find out about facilities that may pollute your drinking water.

Attend planning or zoning meetings and ask questions about how your water sources will be protected.

Ask to see a project's environmental impact statement. Check if water sources have been addressed.



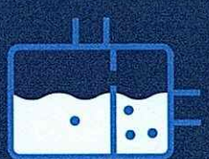
HOW WELLS CAN BECOME CONTAMINATED

Wells can become contaminated by sources around your well and your community. A few examples include:

AROUND YOUR WELL

Fuel tanks

Lawns—fertilizers, pesticides, and herbicides

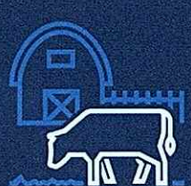


Septic tanks and sewer lines

Swimming pool chemicals

AROUND YOUR COMMUNITY

Factories and industrial manufacturing



Farms and animal feedlots

New construction and mining operations

Cemeteries

For more information, visit: **epa.gov/privatewells**

Protect Your **PRIVATE WELL**

EPA

Many Americans receive their drinking water from a private well. These wells are not regulated by EPA or required to follow EPA's standards. If you use a private well, there are steps you can take to protect your water and ensure the safety of your drinking water.

How to **PROTECT** Your Well

TEST YOUR WELL WATER ANNUALLY

Have your water tested annually for contaminants.

Always use a state certified laboratory for testing.

If contaminant levels exceed a drinking water standard, retest the water supply immediately and contact your public health department for assistance.

How to **PREVENT** Well Water Pollution

Keep hazardous chemicals out of septic systems and away from your well

Pump and inspect septic systems as recommended by your local health department

Install a sanitary seal and slope the area around the well to drain surface runoff

Hire a certified well driller for any new well construction or modification

PLS

13th Street Site Plan

Located in the NW ¼ of Section 29, T2N, R3E, W.M.
City of Camas, Washington

PARCEL STATISTICS		
ZONE: Business Park BP		
Gross Site Area	42,708 SQ FT	0.97 AC
Critical Areas	0 SQ FT	0 AC
	REQUIRED	PROPOSED
Density	N/A	N/A
Maximum Lot Coverage	50%	20%
Setbacks		
North	15'	15'
South	15'	15'
East	15'	15'
West	50'	50'
Maximum Building Height	None	28'
Total Parking Spaces *	20	20
Standard Parking Spaces	70% Min of Total	20
Compact Spaces (C)	30% Max of Total	0
Gas Fill-up Stalls *	1 Per Nozzle (8)	8
ADA Spaces (ADA)	1 Per 25 of Total (1)	1
Spaces with Electric Vehicle Charging Infrastructure (E)	10% Now (2) + 10% Future (2)	2 Now + 2 Future

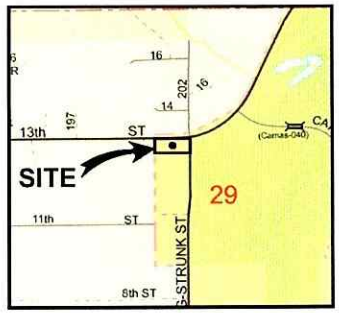
*Note: The Gas stalls are not actually parking stalls and do not count towards the required ADA and EV calculations

REQUIRED PARKING CALCULATIONS:

4100 sf c-store @ 1/250 sf	= 17
8 nozzle gas station @ 1/nozzle	= 8
1 stall carwash w/ 2 employees @ 2/stall+1/2 employees/	= 3
Total	= 28
Excluding Gas Fill-up Stalls	= 20

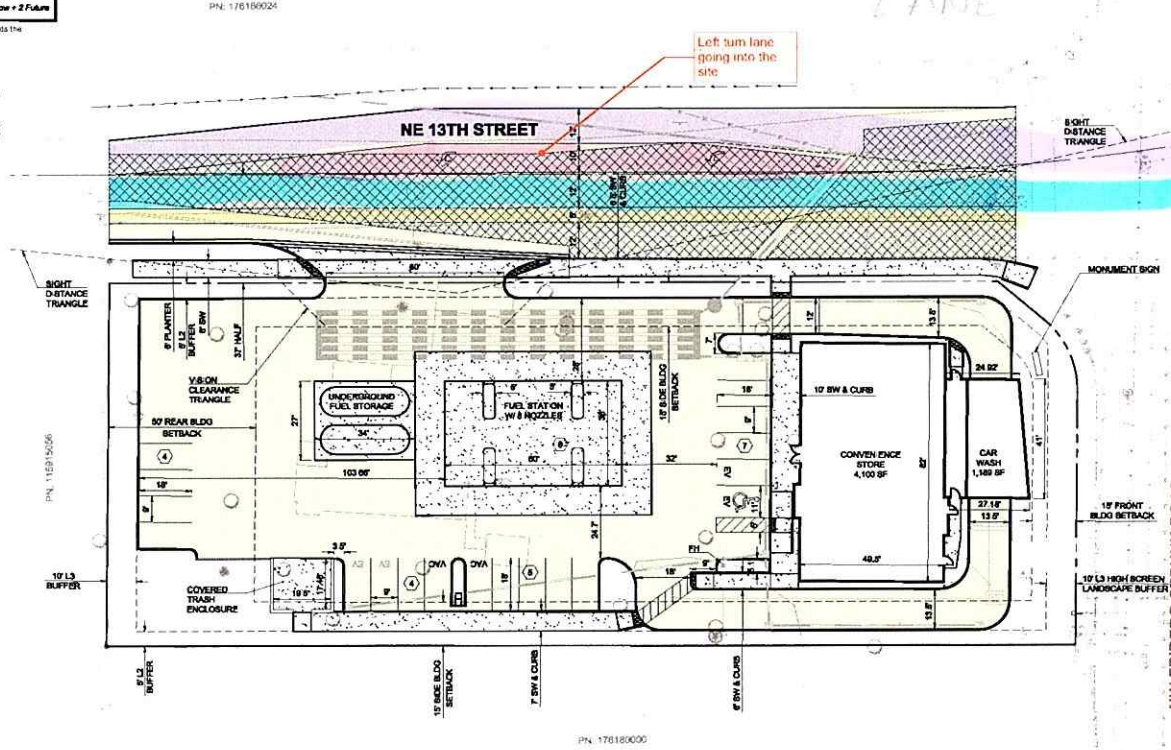
Legend
- Proposed Asphalt Concrete
- Proposed Cement Concrete
- Proposed Grind and Overlay

Scale 1" = 20'



VICINITY MAP
NOT TO SCALE

NO WESTBOUND RIGHT LANE



GENERAL NOTES

APPLICANT:
Taz Kahn
3993 NW Currawong Court
Camas, WA 98607
TKahnusa@gmail.com

OWNER:
Pak USA Camas LLC
20107 NE 13th Street
Camas, WA 98607

CIVIL ENGINEER:
PLS Engineering
Contact: Travis Johnson, PE
604 W Evergreen Blvd
Vancouver, WA 98660
PH: (360) 944-6519
pm@plsengineering.com

SITE ADDRESS:
Parcel # 176148-000
20101 NE 13TH ST
Camas, WA 98607

SITE STATISTICS:
Existing Site Area: 42,257 SF (0.97 Acre)
ROW Dedication: 1,832 SF (0.04 Acre)
Developed Site: 42,257 SF (0.93 Acre)

PLS ENGINEERING
Engineering · Surveying · Planning | 604 W. Evergreen Blvd, Vancouver, WA 98660 | PH: (360) 944-6519 | Fax (360) 944-6539

Preliminary Site Plan For:
13th Street Site Plan
A Subdivision Located In The City Of Camas, Washington

Revisions

Project No. 3632
SCALE: H: 1" = 20' V: N/A
DESIGNED BY: SWG
DRAFTED BY: JSV
REVIEWED BY: TGJ

2
8

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2024

Sole Source Aquifers

Find address or place

Troutdale Aquifer System Area SSA

Troutdale Aquifer System Source Area SSA

Woodland
Columbia City
St Helens
La Center
Amboy
Yacolt
Ridgefield
Warren
Battle Ground
Scappoose
Sauvie Island
Salmon Creek
Orchards
Vancouver
Mill Plain
Camas
Washougal
Banks
North Plains
Vancouver Lake

1739

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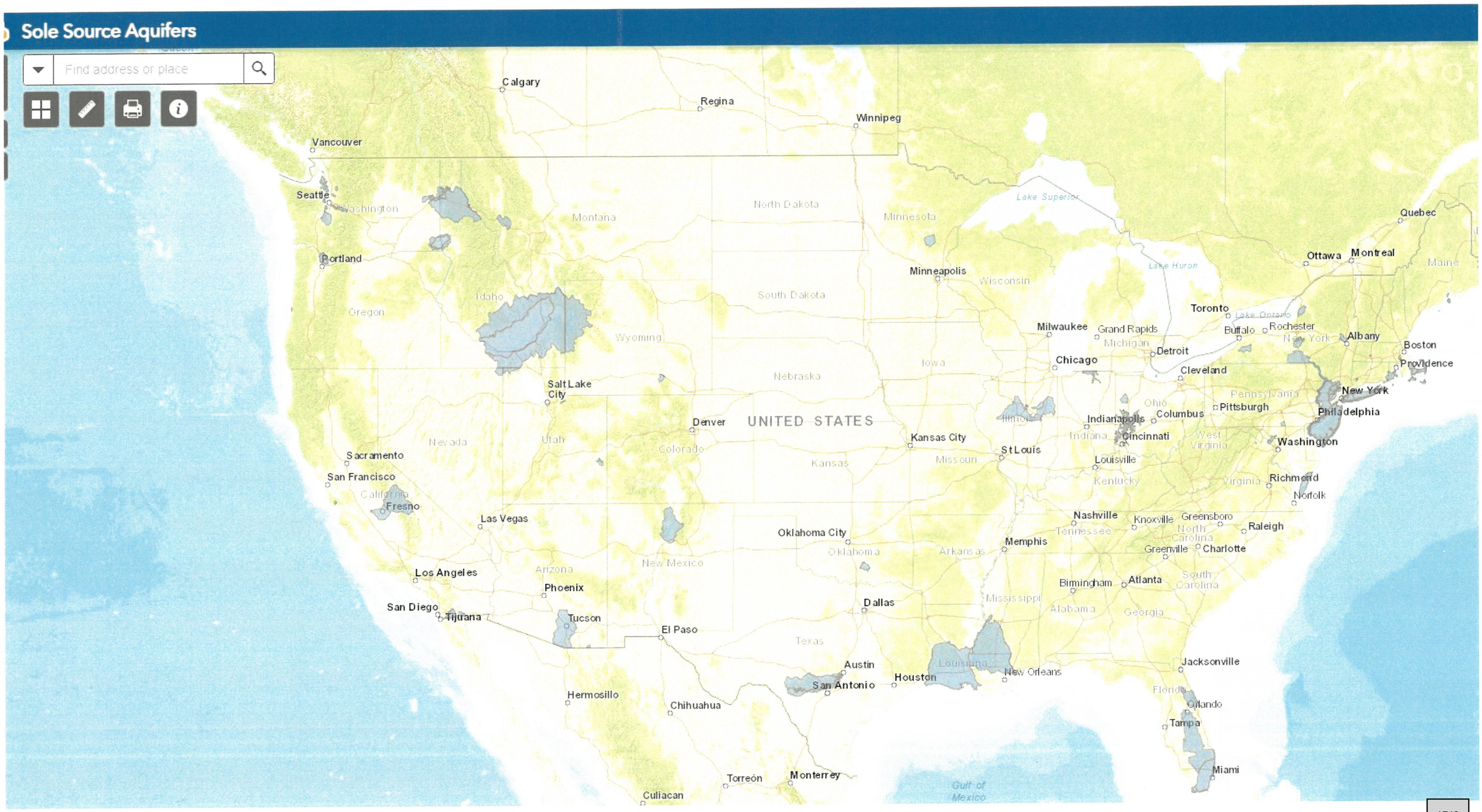
Sole Source Aquifers



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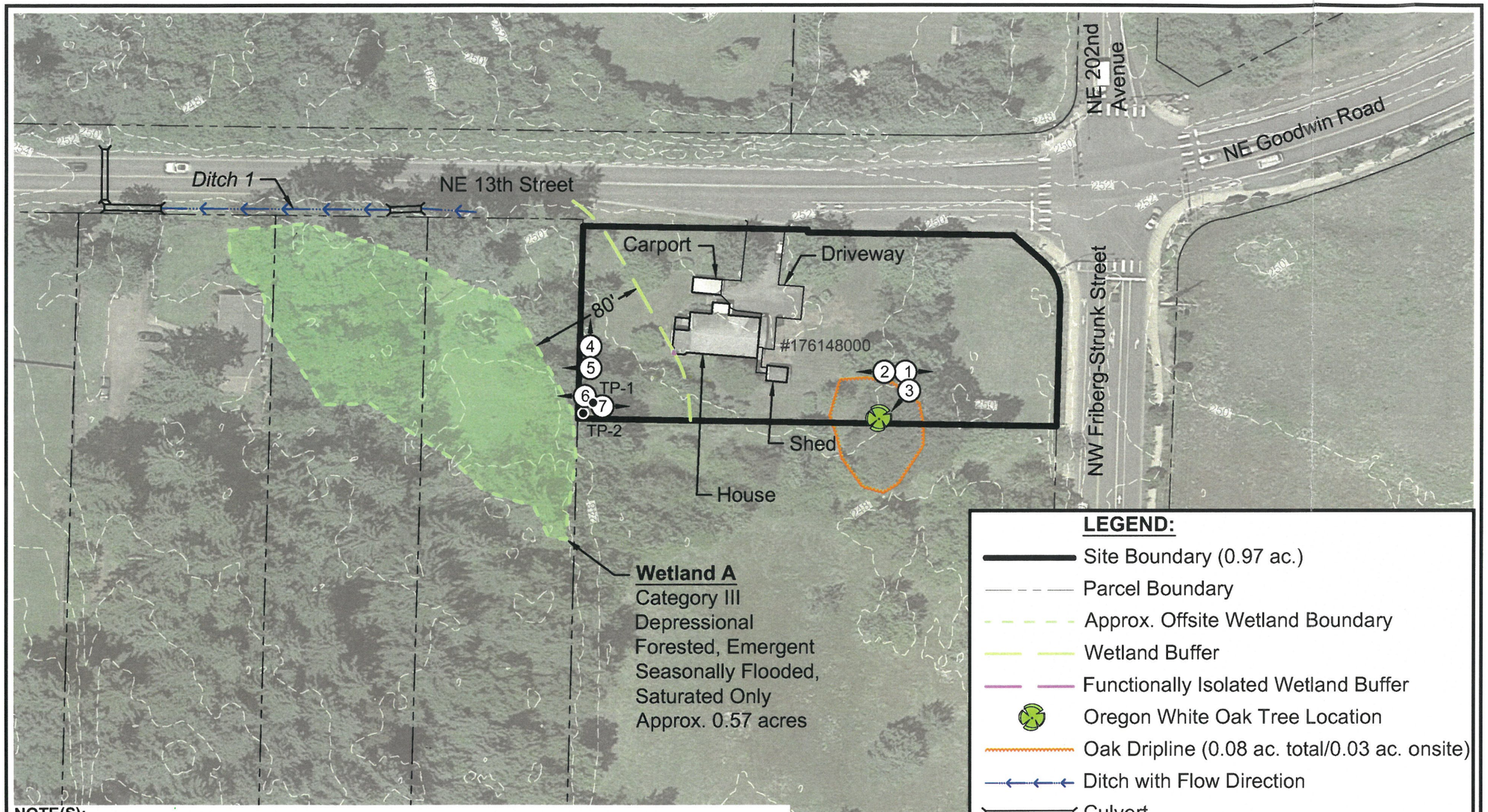

NOTE(S):

1. Aerial from Google Earth™ (6/17/2021).
2. Photostations located using handheld GPS capable of submeter accuracy.
3. Site boundary, oak tree location, and oak dripline surveyed by PLS Engineering, Inc.
4. Parcel, ditch, and culvert data from Clark County GIS Department.
5. Topography from 2013 Clark County Lidar provided by WDNR at https://lidarportal.dnr.wa.gov.

N W E S

0 100 200
SCALE IN FEET

Ecological Land Services
1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com

DATE: 5/2/24
DWN: JKJ
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3934.01

Figure 2
EXISTING CONDITIONS
13th Street Gas Station
PAK USA Camas, LLC
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

RECORDED WELLS SHADED GRAY

13th Street Gas Station (APPEAL24-1001)
Index of Exhibits

Exhibit No.	Title/Description	Date Submitted
1	Preliminary Application	11/9/23
2	List of Permit Approvals	11/9/23
3	PA22-32 PreApp Notes	11/9/23
4	PA22-32 City of Vancouver Transportation PreApp Notes	11/9/23
5	Narrative	11/9/23
6	Public Health Review Letter	11/9/23
7	SEPA Checklist	11/9/23
8	Geotechnical Report	11/9/23
9	Preliminary TIR	11/9/23
10	Traffic Report	11/9/23
11	Deviations Max Extent Feasible Memo	11/9/23
12	Critical Area Report	11/9/23
13	Oak Mitigation	11/9/23
14	Owner Certified List	11/9/23
15	Title Report	11/9/23
16	Existing Conditions Plan	11/9/23
17	Preliminary Site Plan	11/9/23
18	Preliminary Utility Plan	11/9/23
19	Preliminary Grading Plan	11/9/23
20	Existing Tree Survey	11/9/23
21	Preliminary Landscape Plans	11/9/23
22	Final Landscape Plan	11/9/23
23	Preliminary Irrigation Details	11/9/23
24	Preliminary Irrigation Details B	11/9/23
25	Building Elevations Cover Sheet	11/9/23
26	Building Elevations 1	11/9/23
27	Building Elevations 2	11/9/23
28	Building Floor Plan	11/9/23
29	SPRV23-06 – Welcome Letter	11/30/23
30	Preliminary Circulation Plan_2nd Submittal	12/4/23
31	Preliminary Stormwater Plan_2nd Submittal	12/4/23
32	Prelim Plans_2nd Submittal	12/4/23
33	Preliminary TIR_2nd Submittal	12/4/23
34	SPRV23-06 Completeness Review Letter	12/19/23
35	SEPA23-12 Distribution Packet	2/22/24
36	Agency Comment - Ecology	3/6/24
37	Agency Comment - SWCAA	3/4/24
38	Agency Comment - WDFW	2/28/24
39	Agency Comment – Clark County Response to Karin Nosrati	2/20/24
40	Public Comment - Abbruzzese	3/8/24
41	Public Comment - Bozarth	3/6/24

13th Street Gas Station (APPEAL24-1001)
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43	Public Comment - Clark	3/5/24
44	Public Comment - Connell	3/7/24
45	Public Comment - Daltoso	2/20/24
46	Public Comment - Davis	3/6/24
47	Public Comment - Goertzen, Jeff	3/7/24
48	Public Comment - Goertzen, Keli	3/4/24
49	Public Comment - Goldfain	2/29/24
50	Public Comment - Harrison	3/7/24
51	Public Comment - Harvey	3/4/24
52	Public Comment - Haslam	3/2/24
53	Public Comment - Hubbard	3/3/24
54	Public Comment - Jones	3/1/24
55	Public Comment - Long	3/6/24
56	Public Comment - Lucier	2/28/24
57	Public Comment - Marion	2/28/24
58	Public Comment - Moffat	3/6/24
59	Public Comment - Murphy	3/7/24
60	Public Comment - Niles	3/3/24
61	Public Comment - Nosrati, Arianna	3/7/24
62	Public Comment - Nosrati, Marlise	3/7/24
63	Public Comment - Nosrati, Randy	3/5/24
64	Public Comment - Ogden, Lisa	3/6/24
65	Public Comment - Ogden, Mike	3/7/24
66	Public Comment - Osmun	2/29/24
67	Public Comment - Parker	3/7/24
68	Public Comment - Price	3/7/24
69	Public Comment - Rickard, Elisabeth	3/7/24
70	Public Comment - Rickard, Joan & Richard	3/7/24
71	Public Comment - Rigley	3/7/24
72	Public Comment - Scott	3/6/24
73	Public Comment - Small, Ruth	3/5/24
74	Public Comment - Small, William	3/7/24
75	Public Comment - Waltos	3/4/24
76	Public Comment - Wegner	3/6/24
77	Public Comment - Wilson	3/7/24
78	Public Comment - Woodring	3/7/24
79	Public Comment - Zimmerman	2/29/24
80	Revised Narrative	7/15/24
81	Revised SEPA Checklist	7/11/24
82	Revised Critical Area Report	7/11/24
83	Revised Oak Mitigation Plan	7/11/24
84	Wetland Buffer Mitigation Plan	7/11/24
85	3rd Party Traffic Analysis Review	5/1/24
86	Traffic Memo - Response to City Comments	7/11/24

13th Street Gas Station (APPEAL24-1001)
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88	Ecology Comment Response	7/11/24
89	WDFW Comment Response	7/11/24
90	Preliminary Circulation Plan_3rd Submittal	7/15/24
91	SEPA23-12 Distribution Packet_2nd Review	8/15/24
92	Agency Comment - WDFW	8/30/94
93	Public Comment - Connell 2	8/27/24
94	Public Comment - Cooper	9/16/24
95	Public Comment - Hackl	8/24/24
96	Public Comment - Nosrati, Karin	8/28/24
97	Public Comment - Nosrati, Karin 2	8/28/24
98	Public Comment - Ogden 2	8/29/24
99	Public Comment - Price 2	8/29/24
100	Public Comment - Rickard, Joan & Richard 2	8/29/24
101	Public Comment - Wegner 2	8/29/24
102	Public Comment - Nosrati, Randy 2	8/29/24
103	SPRV23-06 Staff Report and Decision	9/16/24
104	SPRV23-06 Notice of Decision	9/16/24
105	Narrative-Appeal final 09-30-2024_v1	9/30/24
106	Notice of Public Hearing Post Record	10/30/24
107	Public Comment – Wegner 3	11/10/24
108	Public Comment – Nosrati, Karin 3	11/11/24
109	Public Comment – Price 3	11/11/24
110	Public Comment – Rickard & Small	11/12/24
111	Public Comment - Kohut	11/13/24
112	Public Comment – Brickert 2	11/13/24
113	Public Comment – Ketterman	11/13/24
114	Public Comment - Torres	11/14/24
115	Public Comment - Witaaka	11/14/24
116	Public Comment – Nosrati, Karin 4	11/14/24
117	Public Comment – Mangels	11/14/24
118	Public Comment - McBride	11/14/24
119	Department of Health Letter	11/14/24
120	Email from Hearings Examiner	11/15/24
121	Public Comment – Nosrati, Karin 5	11/15/24
122	Public Comment – Goertzen 2	11/20/24
123	Public Comment – Nosrati, Karin 6	11/20/24
124	Public Comment – Nosrati, Karin 7	11/20/24
125	Public Comment – Nosrati, Karin 8	11/20/24
126	Public Comment – Nosrati, Karin 9	11/21/24
127	Applicants Prehearing Brief on Proper Scope of Appeal	11/21/24
128	City of Camas Arguments on SEPA Appeal Process and Appellant Status	11/21/24
129	Public Comment – Orchard	11/24/24

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131	Appellants Rebuttal	11/27/24
132	Public Comment – Wegner 4	11/30/24
133	Procedural Order	12/2/24
134	Charbonneau Traffic Response to Public Comments	11/14/24
135	Notice of Continuance of Public Hearing	12/5/24
136	Email Chain between Environmental Public Health & Karin Nosrati	12/5/24
137	Public Comment – Price 4	12/6/24
138	Public Comment – Kluka	12/6/24
139	V-Naught Traffic Solutions Comments to Charbonneau Traffic Comments	12/6/24
140	Public Comment – Nosrati, Karin 10	12/6/24
141	Public Comment – Nosrati, Karin 11	12/6/24
142	Sanitary Control Area Protection	12/12/24
143	How to Remediate Your Well	12/12/24
144	13th Street Site Plan	12/12/24
145	Sole Source Aquifers	12/12/24
146	Existing Conditions	12/12/24
147	Recorded Wells	12/12/24