City Council Regular Meeting Agenda
Monday, June 06, 2022, 7:00 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 – Video & Audio (*able to public comment*)
Use Zoom app and Meeting ID – 959 5896 0527; or click https://zoom.us/j/95958960527

OPTION 2 – Audio-only (*able to public comment*)
By phone: 877-853-5257, Meeting ID – 959 5896 0527

OPTION 3 – Observe video & audio (*no public comment*)
Go to www.cityofcamas.us/meetings and click "Watch Livestream" (left on page)

For Public Comment:
1. On Zoom app – click Raise Hand icon
2. On phone – hit *9 to "raise hand"
3. Or, email publiccomments@cityofcamas.us (400 word limit); routes to Council

CALL TO ORDER

PLEDGE OF ALLEGIANCE

ROLL CALL

PUBLIC COMMENTS

This is the public's opportunity to comment about any item on the agenda, including items up for final Council action.

CONSENT AGENDA

NOTE: Consent Agenda items may be removed for general discussion or action.

1. May 16, 2022 Camas City Council Workshop and Regular Meeting Minutes
2. Automated Clearing House and Claim Checks Approved by Finance Committee
3. $163,666 Doolittle Construction LLC, 2022 Citywide Chip Seal Treatments Bid Award with up to 10% Change Order Authorization (Submitted by James Carothers)
4. NW 12th Avenue Improvements McDonald Excavating Inc. Final Acceptance (Submitted by James Carothers, Engineering Manager)

NON-AGENDA ITEMS

5. Staff

6. Council

MAYOR

7. Mayor Announcements

8. LGBTQ+ and Pride Month Proclamation

9. Alzheimer's & Brain Awareness Month Proclamation

10. Juneteenth Day Proclamation

MEETING ITEMS

11. Public Hearing for Six-Year Transportation Improvement Program
Presenter: James Carothers, Engineering Manager
Time Estimate: 10 minutes

12. Ordinance No. 22-009 Amending CMC 10.08.060A – Parking Infraction Base Fine
Presenter: Mitch Lackey, Chief of Police
Time Estimate: 5 minutes

13. Resolution No. 22-006 Adopting a Revised Salary Scale for the City Administrator
Presenter: Jennifer Gorsuch, Administrative Services Director
Time Estimate: 5 minutes

14. Camas Business Park
Presenter: Lauren Hollenbeck, Senior Planner
Time Estimate: 20 minutes

PUBLIC COMMENTS

CLOSE OF MEETING

City Council Regular Meeting Minutes - Draft
Monday, May 16, 2022, 7:00 PM
616 NE 4th Avenue

NOTE: Please see the published agenda packet for item attachments

CALL TO ORDER

Mayor Steve Hogan called the meeting to order at 7:00 p.m.

PLEDGE OF ALLEGIANCE

ROLL CALL

Present: Council Members Greg Anderson, Bonnie Carter, Don Chaney, Tim Hein, Leslie Lewallen and Shannon Roberts

Excused: Council Member Marilyn Boerke

Staff: Carrie Davis, Cliff Free, Jennifer Gorsuch, Cathy Huber Nickerson, Mitch Lackey, Trang Lam, Robert Maul, Bryan Rachal, Heather Rowley, Madeline Sutherland, Jeff Swanson, Connie Urquhart and Steve Wall

Press: No one from the press was present

PUBLIC COMMENTS

This is the public's opportunity to comment about any item on the agenda, including items up for final Council action.

Jeff Englund, Camas, thanked Mayor and Council for their service and commented about equality.

CONSENT AGENDA

1. April 28, 2022 Camas City Council Town Hall; April 29, 2022 Annual Planning Conference Day 4; May 2, 2022 Workshop and Regular Meeting Minutes

2. $643,649.94 Automated Clearing House and Claim Checks Numbered 150835 to 130952

3. $95,711.31 for April 2022 Emergency Medical Services (EMS) Write-off Billings; $79,941.96 for Monthly Uncollectable Balance of Medicare and Medicaid Accounts and $15,769.35 for Ground Emergency Medical Transport funding. (Submitted by Cathy Huber Nickerson, Finance Director)

4. $504,525.04 Advanced Excavating Specialists, LLC 2022 Suninngdale Gardens Lift Station Improvements Bid Award with up to 10% change order authorization (Submitted by James Carothers, Engineering Manager)

5. $294,800 Geosyntec Consultants, Inc. Lakes Management Plan Field Work Professional Services Agreement (Submitted by Steve Wall, Public Works Director)

6. $164,750 Gray & Osborne, Inc. Prune Hill Pump Station Professional Services Agreement (Submitted by Steve Wall, Public Works Director)

It was moved by Council Member Roberts, and seconded, to approve the Consent Agenda. The motion carried unanimously.

NON-AGENDA ITEMS

7. Staff

Maul announced a Planning Commission public hearing on May 17, 2022.

Lam announced a Crown Park Open House on May 17, 2022.

8. Council

Hein attended two Downtown Camas Association (DCA) ribbon cuttings, a North Shore Subarea Plan Steering Committee meeting, a citizen meeting regarding traffic concerns, a tour of Camas-Washougal Fire Department Station 43, the City Administrator candidate events, and spoke with various citizens regarding homelessness, the Lake Management Plan, and the Georgia Pacific (GP) Mill clean up.

Anderson acknowledged the earlier public comment, attended the City Administrator candididate panel, a C-TRAN board meeting, the DCA Plant Fair, and will attend a upcoming Finance Committee meeting and a Joint Policy Advisory Committee (JPAC) meeting.

Chaney attended the DCA ribbon cuttings and the City Administrator candidate events. Chaney commented about potential resources to support Camas youth impacted by COVID. Discussion ensued.

Roberts attended a North Shore Subarea Plan Steering Committee meeting and the City Administrator candidate events; commented about Camas youth; and will attend a Camas-Washougal Rotary event, a Homelessness Ad-hoc Committee meeting, the Vancouver hydroplane boat exhibition, and the Crown Park Open House.

Lewallen attended the City Administrator candidate events and commented about the Crown Park Open House, and about hiring an arborist or forester. Lewallen requested a discussion about a pool be placed on a future agenda.

By Council consensus, an agenda item for a pool discussion will be placed on a July workshop agenda.

Carter volunteered at the City tent at the DCA Plant Fair and commented about citizen requests for Council ward meetings,

MAYOR

9. Mayor Announcements

Mayor commented about City Administrator candidate interview process and National Police Week.

10. National Public Works Week Proclamation

    Mayor Hogan declared the week of May 15-21, 2022, as National Public Works Week.

11. Asian American, Native Hawaiian and Pacific Islander Heritage Month Proclamation

    Mayor Hogan declared the month of May 2022, as Asian American, Native Hawaiian, and Pacific Islander Heritage Month.

12. Military Appreciation Month Proclamation

    Mayor Hogan declared the month of May 2022, as Military Appreciation Month.

MEETING ITEMS

13. Ordinance No. 22-007 Adopting Modifications to Title 17 & 18
    Presenter: Madeline Sutherland, Planner

It was moved by Council Member Carter, and seconded, that Ordinance No. 22-007 be adopted and published according to law. The motion carried unanimously.

14. Ordinance No. 22-008 Amending Section 18.15.100 Prohibiting Signs
    Presenter: Madeline Sutherland, Planner

It was moved by Council Member Carter, and seconded, that Ordinance No. 22-008 be adopted and published according to law. The motion carried unanimously.

PUBLIC COMMENTS

No one from the public wished to speak.

EXECUTIVE SESSION

15. Executive Session – Topic: Pending Litigation (RCW 42.30.110)
    Time Estimate: 30 minutes

The Council met in an Executive Session regarding pending litigation per RCW 42.30.110. Mayor Hogan stated that the Executive Session was scheduled to last approximately 30 minutes.

The meeting at recessed 7:44 p.m. and the session was held in the Mayor's Chambers. Elected officials present were: Mayor Hogan and Council Members Anderson, Carter, Chaney, Hein, Lewallen and Roberts. Others present were Attorney Bronson Potter and Interim City Administrator Jeff Swanson.

Mayor Hogan reconvened the meeting at 8:13 p.m.

ADJOURNMENT

The meeting adjourned at 8:13 p.m.

City Council Workshop Minutes - Draft
Monday, May 16, 2022, 4:30 PM
616 NE 4th Avenue

NOTE: Please see the published agenda packet for item attachments

CALL TO ORDER

Mayor Steve Hogan called the meeting to order at 4:30 p.m.

ROLL CALL

Present: Council Members Greg Anderson, Bonnie Carter, Don Chaney, Tim Hein, Leslie Lewallen and Shannon Roberts

Excused: Council Member Marilyn Boerke

Staff: Carrie Davis, James Carothers, Cliff Free, Jennifer Gorsuch, Cathy Huber Nickerson, Michelle Jackson, Mitch Lackey, Trang Lam, Robert Maul, Bryan Rachal, Heather Rowley, Ron Schumacher, Jeff Swanson, Connie Urquhart and Steve Wall

Press: No one from the press was present

PUBLIC COMMENTS

No one from the public wished to speak.

WORKSHOP TOPICS

1. Sunningdale Gardens Lift Station Improvements Bids
   Presenter: James Carothers, Engineering Manager

   This item was also placed on the May 16, 2022 Consent Agenda.

2. City of Camas First Quarter 2022 Financial Performance Presentation
   Presenter: Cathy Huber Nickerson, Finance Director

   Huber Nickerson provided an overview of the City's First Quarter 2022 Financial Performance. Discussion ensued. This was for Council's information only.

3. Backyard Habitat Certification Program Renewal
   Presenter: Steve Wall, Public Works Director

   This item will be placed on the June 6, 2022 Consent Agenda.

4. Six-Year Transportation Improvement Program
   Presenter: James Carothers, Engineering Manager

   Carothers provided an overview of the Transportation Plan. Discussion ensued. Staff will schedule a public hearing for the June 6, 2022 Regular Meeting.

5. Presentation: Why Do We Use Consultants?
   Presenter: Steve Wall, Public Works Director

   Wall provided an overview of why the City uses consultants. Discussion ensued. This was for Council's information only.

6. Staff Miscellaneous Updates
   Presenter: Jeff Swanson, Interim City Administrator

   Due to time constraints, staff updates were provided at the May 16, 2022 Regular Meeting.

COUNCIL COMMENTS AND REPORTS

Due to time constraints, Council comments were provided at the May 16, 2022 Regular Meeting.

PUBLIC COMMENTS

No one from the public wished to speak.

ADJOURNMENT

The meeting adjourned at 6:28 p.m.

City of Camas WASHINGTON

I, James E. Carothers, Engineering Manager, hereby certify that these bid tabulations are correct.

James E. Carothers, PE 5-13-22 Date

PROJECT NO. T1040

DESCRIPTION: 2022 Citywide Chip Seal

DATE OF BID OPENING: May 11, 2022, 11:30am Ent. By PAF

ITEM NO	DESCRIPTION	UNIT	QTY	Engineer's Estimate: Range $200,000 to $220,000 (Volatility in oil and aggregate pricing) UNIT PRICE	ENGRG TOTAL	Doolittle Construction LLC PO Box 1819 Snoqualmie, WA 98065 425-455-1150 info@doolittlellc.com UNIT PRICE	CONTRACT TOTAL	Sierra Santa Fe Corporation PO Box 1058 Ridgefield, WA 98642 360-887-2222 info@sierrasantafe.com UNIT PRICE	CONTRACT TOTAL	Granite Construction Company 16821 SE McGillivray Blvd. Ste 210B Vancouver, WA 98683 360-831-5529 bid.vancouver@gcinc.com UNIT PRICE	CONTRACT TOTAL
1	Minor Changes (minimum bid $5,000)	LS	1.00	$5,000.00	$5,000.00	$5,000.00	$5,000.00	$5,000.00	$5,000.00	$5,000.00	$5,000.00
2	Mobilization	LS	1.00	$18,984.00	$18,984.00	$14,976.50	$14,976.50	$17,167.75	$17,167.75	$23,025.75	$23,025.75
3	Project Temporary Traffic Control	LS	1.00	$15,000.00	$15,000.00	$17,367.00	$17,367.00	$14,455.00	$14,455.00	$44,000.00	$44,000.00
4	Chip and Fog Seal	SY	28,600	$5.50	$157,300.00	$3.90	$111,540.00	$4.72	$134,992.00	$6.00	$171,600.00
5	Additional Sweeping	HR	20	$60.00	$1,200.00	$237.00	$4,740.00	$200.00	$4,000.00	$200.00	$4,000.00
6	Paint line (4" white edge line)	LF	795	$2.50	$1,987.50	$1.30	$1,033.50	$0.85	$675.75	$0.25	$198.75
7	Paint line (4" double yellow centerline)	LF	6,930	$1.35	$9,355.50	$1.30	$9,009.00	$0.85	$5,890.50	$0.35	$2,425.50
	Subtotal				**$208,827.00**		**$163,666.00**		**$182,181.00**		**$250,250.00**
	Washington State Sales Tax (8.4%)				**N/A**		**N/A**		**N/A**		**N/A**
	Contract Total				**$208,827.00**		**$163,666.00**		**$182,181.00**		**$250,250.00**
	Basis of Award										

CITY OF CAMAS PROJECT NO. T1030 NW 12th Avenue Improvements			PAY ESTIMATE: FIVE - FINAL PAY PERIOD: 6/10/21 Through 5/20/22 ORIGINAL CONTRACT AMOUNT: $ 345,811.26				McDonald Excavating, Inc. 2719 Main Street Washougal, WA 98671 360-835-8794				
ITEM NO.	DESCRIPTION	UNIT	ORIGINAL QUANTITY	UNIT PRICE	CONTRACT TOTAL	QUANTITY PREVIOUS	TOTAL PREVIOUS	QUANTITY THIS EST.	TOTAL THIS EST.	QUANTITY TO DATE	TOTAL TO DATE
Schedule A - Street											
1	MOBILIZATION	LS	1.00	$27,500.00	$27,500.00	1.00	$27,500.00	0.00	$0.00	1.00	$27,500.00
2	PROJECT TEMPORARY TRAFFIC CONTROL	LS	1.00	$9,000.00	$9,000.00	1.00	$9,000.00	0.00	$0.00	1.00	$9,000.00
3	CLEARING & GRUBBING	LS	1.00	$500.00	$500.00	1.00	$500.00	0.00	$0.00	1.00	$500.00
4	EROSION CONTROL AND WATER POLLUTION CONTROL	LS	1.00	$1,750.00	$1,750.00	1.00	$1,750.00	0.00	$0.00	1.00	$1,750.00
5	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LS	1.00	$9,600.00	$9,600.00	1.00	$9,600.00	0.00	$0.00	1.00	$9,600.00
6	REMOVAL OF ADDITIONAL CEMENT CONCRETE SIDEWALK	SY	10.00	$9.00	$90.00	0.00	$0.00	0.00	$0.00	0.00	$0.00
7	REMOVAL OF ADDITIONAL CEMENT CONCRETE CURB	LF	50.00	$3.00	$150.00	48.00	$144.00	0.00	$0.00	48.00	$144.00
8	ROADWAY EXCAVATION, INCL. HAUL	CY	240.00	$45.00	$10,800.00	240.00	$10,800.00	0.00	$0.00	240.00	$10,800.00
9	IN-PLACE CEMENT TREATED BASE (CTB)	SY	2,630.00	$3.80	$9,994.00	1,980.00	$7,524.00	0.00	$0.00	1980.00	$7,524.00
10	CEMENT FOR CTB (8% @ 10" DEPTH)	TON	85.00	$170.00	$14,450.00	57.08	$9,703.60	0.00	$0.00	57.08	$9,703.60
11	REMOVAL AND REPLACEMENT OF UNSUITABLE MATERIAL	CY	50.00	$50.00	$2,500.00	36.00	$1,800.00	0.00	$0.00	36.00	$1,800.00
12	HMA CLASS 1/2" PG 64-22 (3 INCH DEPTH)	TON	440.00	$90.00	$39,600.00	460.28	$41,425.20	0.00	$0.00	460.28	$41,425.20
13	CEMENT CONCRETE DRIVEWAY	SY	103.00	$125.00	$12,875.00	99.00	$12,375.00	0.00	$0.00	99.00	$12,375.00
14	CEMENT CONCRETE TRAFFIC CURB	LF	911.00	$27.00	$24,597.00	959.00	$25,893.00	0.00	$0.00	959.00	$25,893.00
15	CEMENT CONCRETE PEDESTRIAN CURB	LF	204.00	$19.00	$3,876.00	263.00	$4,997.00	0.00	$0.00	263.00	$4,997.00
16	CEMENT CONCRETE SIDEWALK	SY	464.00	$78.00	$36,192.00	449.00	$35,022.00	0.00	$0.00	449.00	$35,022.00
17	CEMENT CONCRETE CURB RAMP	SY	157.00	$125.00	$19,625.00	131.00	$16,375.00	0.00	$0.00	131.00	$16,375.00
18	DETECTABLE WARNING SURFACE	SF	150.00	$58.00	$8,700.00	137.93	$8,000.00	0.00	$0.00	137.93	$8,000.00
19	ADJUST MANHOLE LID TO GRADE	EA	4.00	$215.00	$860.00	4.00	$860.00	0.00	$0.00	4.00	$860.00
20	VALVE AND CLEANOUT UTILITY BOX	EA	10.00	$80.00	$800.00	10.00	$800.00	0.00	$0.00	10.00	$800.00
21	PAVEMENT MARKINGS	LS	1.00	$3,100.00	$3,100.00	1.00	$3,100.00	0.00	$0.00	1.00	$3,100.00
22	SIGN RELOCATION	EA	1.00	$3,200.00	$3,200.00	1.00	$3,200.00	0.00	$0.00	1.00	$3,200.00
23	CONSTRUCTION DOCUMENTATION	LS	1.00	$15,000.00	$15,000.00	0.03	$504.00	0.97	$14,496.00	1.00	$15,000.00
24A	M.C. - TREE REMOVAL	LS		$1,306.73		1.00	$1,306.73	0.00	$0.00	1.00	$1,306.73
24B	M.C. - IRRIGATION REPAIR	LS		$894.89		1.00	$894.89	0.00	$0.00	1.00	$894.89
24C	M.C. - MODIFY WOOD WALKWAY	LS		$914.76		1.00	$914.76	0.00	$0.00	1.00	$914.76
24D	M.C. - OIL ESCALATION	LS		$2,131.64		1.00	$2,131.64	0.00	$0.00	1.00	$2,131.64
24E	M.C. - ADDITIONAL TRAFFIC FLAGGING	LS		$3,292.80		1.00	$3,292.80	0.00	$0.00	1.00	$3,292.80
CO1	CHANGE ORDER 1	LS		$42,187.36		1.00	$42,187.36	0.00	$0.00	1.00	$42,187.36
	SUBTOTAL:				**$254,759.00**		**$281,600.98**		**$14,496.00**		**$296,096.98**
	Sales Tax (0%):				$0.00		$0.00		$0.00		$0.00
	Total:				$254,759.00		$281,600.98		$14,496.00		$296,096.98

ITEM NO.	DESCRIPTION	UNIT	ORIGINAL QUANTITY	UNIT PRICE	CONTRACT TOTAL	QUANTITY PREVIOUS	TOTAL PREVIOUS	QUANTITY THIS EST.	TOTAL THIS EST.	QUANTITY TO DATE	TOTAL TO DATE
ScheduleB - Water/Sewer											
25	REMOVE AND PLUG EXISTING WATER SERVICE	EA	2.00	$80.00	$160.00	2.00	$160.00	0.00	$0.00	2.00	$160.00
26	SERVICE CONNECTION, 1 INCH DIAM.	EA	2.00	$1,570.00	$3,140.00	2.00	$3,140.00	0.00	$0.00	2.00	$3,140.00
27	TRENCH SAFETY SYSTEM	LF	535.00	$2.00	$1,070.00	535.00	$1,070.00	0.00	$0.00	535.00	$1,070.00
28	REMOVAL AND REPLACEMENT OF UNSUITABLE MATERIAL	CY	50.00	$1.00	$50.00	0.00	$0.00	0.00	$0.00	0.00	$0.00
29	SOLID ROCK EXCAVATION	CY	10.00	$25.00	$250.00	0.00	$0.00	0.00	$0.00	0.00	$0.00
30	DUCTILE IRON PIPE FOR WATER MAIN, 8 INCH DIAM.	LF	535.00	$80.00	$42,800.00	560.00	$44,800.00	0.00	$0.00	560.00	$44,800.00
31	TESTING AND FLUSHING WATER SYSTEM	LS	1.00	$2,500.00	$2,500.00	1.00	$2,500.00	0.00	$0.00	1.00	$2,500.00
32	FIRE HYDRANT ASSEMBLY	EA	1.00	$5,100.00	$5,100.00	1.00	$5,100.00	0.00	$0.00	1.00	$5,100.00
33	GATE VALVE, 6 INCH MJ	EA	2.00	$880.00	$1,760.00	1.00	$880.00	0.00	$0.00	1.00	$880.00

CITY OF CAMAS PROJECT NO. T1030 NW 12th Avenue Improvements	PAY ESTIMATE: FIVE - FINAL PAY PERIOD: 6/10/21 Through 5/20/22 ORIGINAL CONTRACT AMOUNT: $ 345,811.26	McDonald Excavating, Inc. 2719 Main Street Washougal, WA 98671 360-835-8794

ITEM NO.	DESCRIPTION	UNIT	ORIGINAL QUANTITY	UNIT PRICE	CONTRACT TOTAL	QUANTITY PREVIOUS	TOTAL PREVIOUS	QUANTITY THIS EST.	TOTAL THIS EST.	QUANTITY TO DATE	TOTAL TO DATE
34	GATE VALVE, 8 INCH MJ	EA	2.00	$1,300.00	$2,600.00	1.00	$1,300.00	0.00	$0.00	1.00	$1,300.00
35	GATE VALVE, 6 INCH FL x MJ	EA	1.00	$885.00	$885.00	1.00	$885.00	0.00	$0.00	1.00	$885.00
36	GATE VALVE, 8 INCH FL x MJ	EA	4.00	$1,255.00	$5,020.00	4.00	$5,020.00	0.00	$0.00	4.00	$5,020.00
37	DUCTILE IRON FITTING, 6 INCH MJ SLEEVE	EA	6.00	$200.00	$1,200.00	0.00	$0.00	0.00	$0.00	0.00	$0.00
38	DUCTILE IRON FITTING, 6 INCH BLIND FLANGE	EA	4.00	$125.00	$500.00	0.00	$0.00	0.00	$0.00	0.00	$0.00
39	DUCTILE IRON FITTING, 6 INCH SPOOL	EA	7.00	$60.00	$420.00	8.00	$480.00	0.00	$0.00	8.00	$480.00
40	DUCTILE IRON FITTING, 6 INCH MJ CAP	EA	5.00	$93.00	$465.00	4.00	$372.00	0.00	$0.00	4.00	$372.00
41	DUCTILE IRON FITTING, 6 INCH MJ TEE	EA	2.00	$312.00	$624.00	1.00	$312.00	0.00	$0.00	1.00	$312.00
42	DUCTILE IRON FITTING, 6 INCH x 8 INCH MJ REDUCER	EA	4.00	$220.00	$880.00	4.00	$880.00	0.00	$0.00	4.00	$880.00
43	DUCTILE IRON FITTING, 8 INCH FL CROSS	EA	1.00	$890.00	$890.00	1.00	$890.00	0.00	$0.00	1.00	$890.00
44	DUCTILE IRON FITTING, 8 INCH x 6 INCH FL TEE	EA	1.00	$945.00	$945.00	1.00	$945.00	0.00	$0.00	1.00	$945.00
45	ADDITIONAL 6 INCH or 8 INCH DUCTILE IRON FITTING	EA	1.00	$250.00	$250.00	0.00	$0.00	0.00	$0.00	0.00	$0.00
46	ROADSIDE RESTORATION	LS	1.00	$2,875.00	$2,875.00	1.00	$2,875.00	0.00	$0.00	1.00	$2,875.00
47A	M.C. - (4) 6" ALPHA COUPLINGS	LS		$1,424.35		1.00	$1,424.35	0.00	$0.00	1.00	$1,424.35
	SUBTOTAL:				**$74,384.00**		**$73,033.35**		**$0.00**		**$73,033.35**
	Sales Tax (8.4%):				$6,248.26		$6,134.80		$0.00		$6,134.80
	Total:				$80,632.26		$79,168.15		$0.00		$79,168.15

	CONTRACT TOTAL	TOTAL PREVIOUS	**TOTAL THIS EST.**	TOTAL TO DATE
ORIGINAL CONTRACT SUBTOTAL	$329,143.00	$354,634.33	$14,496.00	$369,130.33
ADDITIONS / DELETIONS	$0.00	$0.00	$0.00	$0.00
SUBTOTAL	$329,143.00	$354,634.33	$14,496.00	$369,130.33
SALES TAX (8.4%)	$6,248.26	$6,134.80	$0.00	$6,134.80
TOTAL CONTRACT	$335,391.26	$360,769.13	$14,496.00	$375,265.13
LESS 5% RETAINAGE *		$0.00	$0.00	$0.00
TOTAL		**$360,769.13**	**$14,496.00**	**$375,265.13**

STREET ACCOUNT NUMBER: 300-00-595-340-65 STREET THIS PAY EST: **$14,496.00**
WATER ACCOUNT NUMBER: 424-40-594-344-65 WATER THIS PAY EST: **$0.00**
TOTAL: **$14,496.00**

** Retainage Bond*

F.I.

Project Engineer — Date: 5/19/22

Contractor — Date: 5/19/22

Project Manager — Date: 5/19/2022

City of Camas WASHINGTON

Office of the Mayor

~ PROCLAMATION ~

WHEREAS, City Council and staff have committed to make Camas an inclusive and welcoming community for all, including the LGBTQ+ community; and

WHEREAS, all people regardless of age, gender identity, race, color, religion, marital status, national origin, sexual orientation, or physical challenges have the right to be treated on the basis of their intrinsic value as human beings; and

WHEREAS, the City of Camas accepts and welcomes people of diverse backgrounds and believes a diverse population leads to a more vibrant community; and

WHEREAS, all members of the Camas community, including those who are lesbian, gay, bisexual, transgender, queer or questioning, intersex and asexual have the right to feel safe, not be discriminated against and to live without the threat of harassment; and

WHEREAS, supporting Camas' LGBTQ+ community also aligns with the City's objective to co-create a more inclusive and equitable community that promotes unity and honors diversity; and

WHEREAS, the LGBTQ+ community has made great strides; however, work remains in order to achieve full equality, inclusion, and acceptance;

NOW THEREFORE, I, Steve Hogan, Mayor of the City of Camas, do hereby proclaim June 2021, as:

"LGBTQ+ and Pride Month"

in the City of Camas and encourage citizens to recognize and appreciate the contributions made by those in the LGBTQ+ Community.

In witness whereof, I have set my hand and caused the seal of the City of Camas to be affixed this 6th day of June 2022.

Steve Hogan, Mayor

City of Camas WASHINGTON

Office of the Mayor

~ PROCLAMATION ~

WHEREAS, June is Alzheimer's & Brain Awareness Month, a time dedicated to increasing public awareness of Alzheimer's disease, available resources and how you can get involved to support the cause.

WHEREAS, Alzheimer's disease, the most common form of dementia, is a progressive and degenerative brain disorder that causes memory loss and affects self-care, decision making, and behavior; and

WHEREAS, with early detection and diagnosis, individuals and families can gain access to medications and support services that promote quality of life, fully participate in planning for the future, and enroll in critical research trials; and

WHEREAS, Alzheimer's disease is an epidemic that affects more than just the person diagnosed.

WHEREAS, Family and friends see their loved one struggle with changes related to the brain disease, while dealing with changes to their personal and professional lives;

WHEREAS, By raising concern for the effects of Alzheimer's disease and building awareness for its symptoms and the need to seek early diagnosis, we can improve the quality of life for all; and

WHEREAS, it is important to recognize the stories, strengths, and efforts of the individuals, families, friends, and caregivers impacted by Alzheimer's disease, as well as the tireless work of the researchers who are seeking a cause and cure;

NOW THEREFORE, I, Steve Hogan, Mayor of the City of Camas, do hereby proclaim June 2022, as:

"Alzheimer's and Brain Awareness Month"

in the City of Camas and encourage all citizens to join me in this special observance.

In witness whereof, I have set my hand and caused the seal of the City of Camas to be affixed this 6th day of June 2022.

Steve Hogan, Mayor

City of Camas WASHINGTON

Office of the Mayor

~ PROCLAMATION ~

WHEREAS, President Abraham Lincoln signed the Emancipation Proclamation January 1, 1863, declaring the slaves in Confederate territory free, paving the way for the passing of the 13th Amendment which formally abolished slavery in the United States of America; and

WHEREAS, word about the signing of the Emancipation Proclamation was delayed some two and one half years, to June 19, 1865, in reaching authorities and African-Americans in the South and Southwestern United States; and

WHEREAS, June 19th has a special meaning to African-Americans, and is called "JUNETEENTH" combining the words June and Nineteenth, and has been celebrated by the African-American community for over 150 years; and

WHEREAS, Juneteenth commemorates African American freedom and celebrates the successes gained through education and greater opportunity; and

WHEREAS, on a larger scale, celebration of Juneteenth reminds each of us of the precious promises of freedom, equality, and opportunity which are at the core of the American Dream;

NOW THEREFORE, I, Steve Hogan, Mayor of the City of Camas, do hereby proclaim June 19, 2022, as:

"Juneteenth Day"

in the City of Camas and encourage all citizens to join me in this special observance.

In witness whereof, I have set my hand and caused the seal of the City of Camas to be affixed this 6th day of June 2022.

Steve Hogan, Mayor

Staff Report

June 6, 2021 Council Regular Meeting

Public Hearing for Six-Year Transportation Improvement Program
Presenter: James Carothers, Engineering Manager
Time Estimate: 10 minutes

Phone	Email
360.817.7230	jcarothers@cityofcamas.us

BACKGROUND: The Six Year Transportation Improvement Program, also known as the Six Year Street Plan, is updated each year prior to commencement of the Washington State fiscal year of July 1 per the requirements of the Revised Code of Washington (RCW) 35.77.010. This year's program is for calendar years 2023 through 2028. Projects that have obligated (committed) construction funding are pulled from the list each year.

SUMMARY: In accordance with the RCW, the purpose of the Plan is to assure that each city shall perpetually have available advanced plans looking to the future for not less than six years as a guide in carrying out a coordinated transportation program. Most of the projects on the list do not currently have a funding source. The project list is much larger than available funding sources. Some grant sources require a project to be on the agency's 6 Year Street Plan to be eligible for funding. Typically, the priority number assigned is only for broader community planning purposes and is not necessarily of importance for reasons of timing or eligibility of funding.

Staff presented a draft of the map and list of projects for the program at the May 16 Council Workshop. Based on Council comments, staff made the following revisions to the draft:

- Lake Road & Sierra Signal project moved from priority 8 to 3.
- Lake Road – Lacamas Lane to Everett project moved from priority 7 to 4.
- Crown Road project moved from priority 11 to 6.
- 16th Ave/Hood/18th Ave Path project moved from priority 9 to 7.
- SR 14 West Camas Slough Bridge project moved from priority 12 to 8.
- NE Goodwin/28th Corridor project moved from priority 3 to 9.
- Northshore E/W Arterial project moved from priority 4 to 10.
- Northshore Blvd. (west end) project moved from priority 6 to 11.

The program consists of the list, map and appendices. The drafts are attached to this agenda item.

EQUITY CONSIDERATIONS:

What are the desired results and outcomes for this agenda item?

Conduct a Public Hearing in preparation of Resolution by Council on June 21, 2022.

What's the data? What does the data tell us?

N/A

How have communities been engaged? Are there opportunities to expand engagement?

This plan is being posted on the website and there is opportunity for public testimony at this Public Hearing.

Who will benefit from, or be burdened by this agenda item?

This plan allows projects to be eligible for various grants. These grants benefit all citizens in general by providing completed projects with sources that offset local funding.

What are the strategies to mitigate any *unintended* consequences?

N/A

Does this agenda item have a differential impact on underserved populations, people living with disabilities, and/or communities of color? Please provide available data to illustrate this impact.

No.

Will this agenda item improve ADA accessibilities for people with disabilities?

There are many projects in this plan that include ADA accessibility enhancements.

What potential hurdles exists in implementing this proposal (include both operational and political)?

None.

How will you ensure accountabilities, communicate, and evaluate results?

After a public hearing, this plan is to be adopted by Council Resolution.

How does this item support a comprehensive plan goal, policy or other adopted resolution?

Projects in the comprehensive plan are included in the Six Year Street Plan.

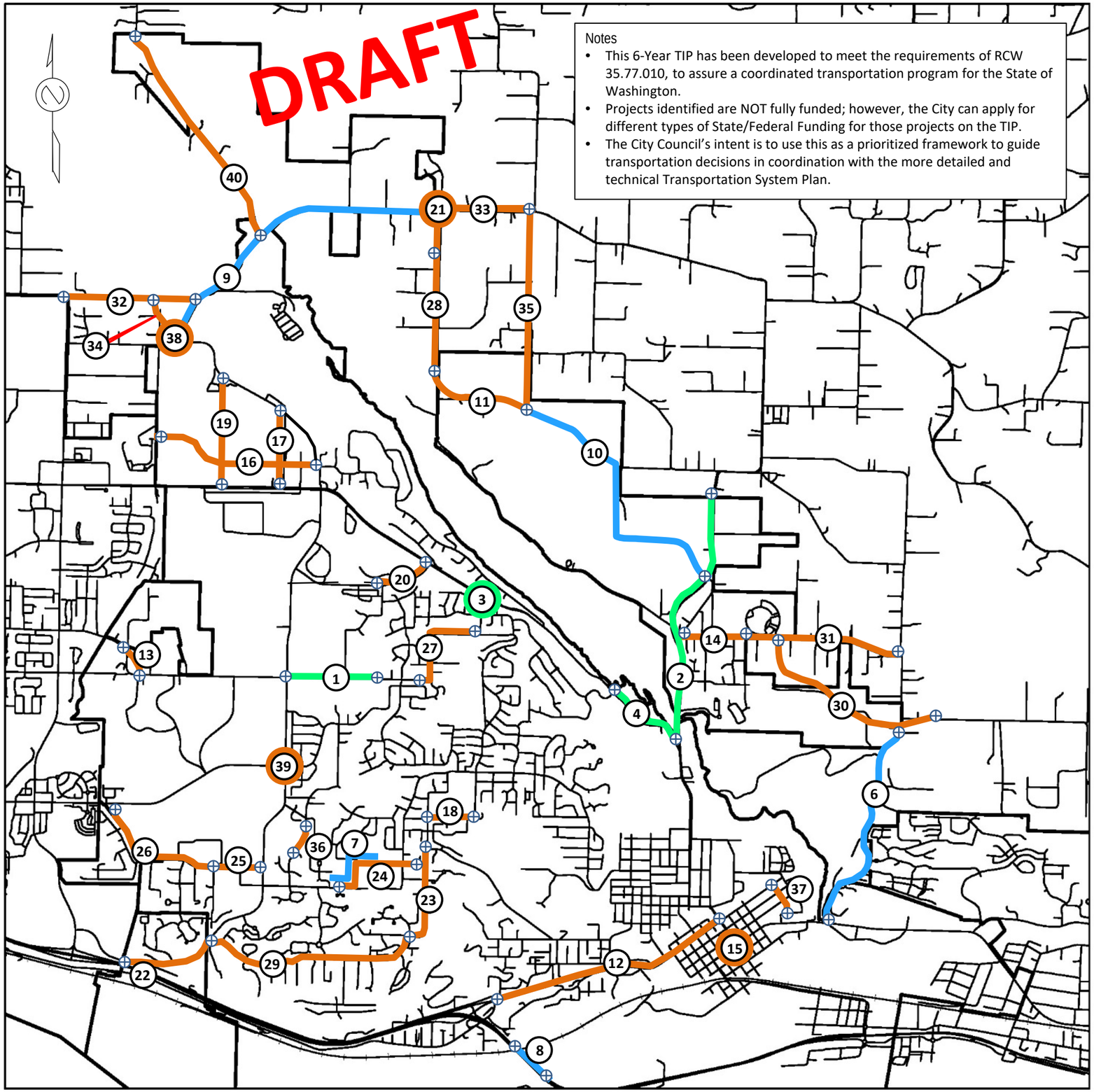
BUDGET IMPACT: This agenda item is budget neutral.

RECOMMENDATION: Staff recommends that Council conduct a public hearing, consider public testimony and direct the City Attorney to prepare a Resolution to adopt the Six Year Transportation Improvement Program for the June 21, 2022 Council Meeting.

City of Camas
2023 – 2028
Six Year Street Priorities

DRAFT

Notes
- This 6-Year TIP has been developed to meet the requirements of RCW 35.77.010, to assure a coordinated transportation program for the State of Washington.
- Projects identified are NOT fully funded; however, the City can apply for different types of State/Federal Funding for those projects on the TIP.
- The City Council's intent is to use this as a prioritized framework to guide transportation decisions in coordination with the more detailed and technical Transportation System Plan.



1 NW 38th Ave (Ph 3)
2 SR 500 (Everett St/Rd)
3 Lake Rd. & NW Sierra St. Signal
4 NW Lake Rd.
5 ADA Access Upgrades Citywide

6 SE Crown Rd
7 16th Ave/ Hood / 18th Ave Path
8 SR 14 - West Camas Slough Bridge
9 NE Goodwin Rd/28th St
10 North Shore East/West Arterial

11 NE North Shore Blvd.
12 NW/NE 6th Ave Corridor Imp
13 Bybee Rd
14 NE 43rd Ave
15 Downtown Infrastructure
16 Street "B" (North Dwyer Creek Area)
17 NW Payne St.
18 NW 23rd Ave
19 Street "A" (North Dwyer Creek Area)
20 NW Leadbetter Dr Path
21 NE 28th St & NE 232nd Ave Intersection Imp.
22 NW Brady Rd Ped & Bike Improvements
23 NW Astor St.
24 NW 16th Ave/Hood/18th Ave
25 NW 18th Ave
26 NW 18th Ave/Payne Rd
27 NW Astor St. /43rd Ave
28 NE 232nd Ave
29 NW McIntosh Rd
30 NE Woodburn Dr.
31 SE 15th St./Norse Rd
32 NE 18th St (192nd to Goodwin)
33 NE 28th St (232nd to 242nd)
34 NW Camas Meadows Dr (West)
35 NE 242nd Ave
36 NW Maryland St
37 NE Nevada St.
38 NE Goodwin / Camas Meadows Signal
39 NW Pacific Rim / Parker St. Signal
40 NE Ingle Rd to N City Limits

Six Year Street Plan Map 2023-2028 D3 (File 2023-2028 STIP)

City of Camas WASHINGTON

Washington State Department of Transportation
Agency: City of Camas
Co. No.: 06 Co. Name: Clark Co.
City No.: 0145 MPO/RTPO: RTC

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Six Year Transportation Improvement Prog

FROM: 2023 **TO:** 2028
Hearing Date: 6/6/2022 Adoption Date: 6/21/2022
Amend Date: Resolution No:

Functional Class	Priority Number	Project Identification A. Pin/Project No. B. STIP ID C. Project Title D. Road Name or Number E. Begin & End Termini F. Project Description G. Structure ID	Improvement Type(s)	Status	Total Length	Utility Codes	Project Costs in Thousands of Dollars Project Phase	Phase Start (yyyy)	Fund Source Information Federal Fund Code	Federal Funds	State Fund Code	State Funds	Local Funds	Total Funds	Expenditure Schedule (Local Agency) 1st	2nd	3rd	4th thru 6th	Federally Funded Projects Only Envir. Type	R/W Required
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
16	1	***NW 38th Avenue*** NW Parker to Grass Valley Park from: to: Widening, bike lanes, pedestrian access	03	S	0.45		CN	4/1/2024		1436			5164	6600			5600	1000	CE	YES
							Totals		0	1436	0	5164		6600	0	0	5600	1000		
16	2	***SR-500 (Everett St./Rd.)*** NW Lake Rd. to SE 4th St. from: to: Widen with bike lanes, sidewalks, illumination, bridge replacement	03	P	1.08		ALL	6/1/2023						45700		1000	2000	42700		
							Totals		0	0	0	0		45700	0	1000	2000	42700		
16	3	***NW Lake Road*** @ NW Sierra St. from: to: Traffic signal	24	P	00		ALL	1/1/2024						395		395				
							Totals		0	0	0	0		395	0	395	0			
16	4	***Lake Road*** NW Lacamas Lane to Lacamas Lake Lodge from: to: Widening, sidewalk	03	P	0.45		ALL	6/1/2025						3475			3475			
							Totals		0	0	0	0		3475	0	0	3475	0		
14	5	***ADA Access Upgrades*** from: Citywide to: (Ongoing)	28	P	0.00		ALL	1/1/2023						300	50	50	50	150		
							Totals		0	0	0	0		300	50	50	50	150		
16	6	***Crown Road*** from: SE 23rd St. to NE 3rd Ave. Multimodal, turn lanes and intersection improvements	04	P	1.3		ALL	1/1/2026						12360				12360		
							Totals		0	0	0	0		12360	0	0	0	12360		

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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20	21
16	7	***NW 18th Ave., et al. Path*** NW Astor to NW 16th, include NW Hood from: to: Pedestrian Path	28	P	0.40		ALL	1/1/2025						260				60	200		
							Totals		0	0		0	0	260		0	0	60			
12	8	***SR-14 West Camas Slough Bridge*** from: to: Widen to 4 lanes NOTE: PE phase began 1/2006	03	P	2.25		ALL	1/1/2026			WSDOT	35000		35000					35000		
							Totals		0	0		35000	0	35000		0	0	0	35000		
17	9	***NE Goodwin Road/28th Street*** NW Camas Meadows Dr. to NE 232nd Ave. from: to: Widen to 5 lanes with bike lanes, sidewalk west of Ingle Widen to 3 lanes with bike lanes, sidewalk east of Ingle	15	P	1.72		ALL	1/1/2025						22515				22515			
							Totals		0	0		0	0	22515		0	0	22515	0		
16	10	**New North Shore E/W Arterial** NE North Shore Blvd. to Everett Rd. from: to: New construction Includes Critical Areas and Alignment Investigation	01	P	2.00		ALL	6/1/2025						16936				2000	14936		
							Totals		0	0		0	0	16936		0	0	2000	14936		
00	11	***NE Northshore Blvd.*** NE 232nd Ave. to NE 242nd Ave. from: to: New construction Includes Critical Areas and Alignment Investigation	15	P	0.50		PE	6/1/2026						227					227		
							Totals		0	0		0	0	227		0	0	0	227		
14	12	***NW/NE 6th Avenue Corridor Improvements*** NW Norwood to NE Garfield from: to: Access and multimodal upgrades	24	P	1.70		ALL	1/1/2024						1000			1000				
							Totals		0	0		0	0	1000		0	1000	0	0		

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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
17	13	***Bybee Road Realignment*** SE 15th St. to SE 20th St. from: to: New construction	01	P	0.05		ALL	1/1/2024						1823		1823				
							Totals		0	0		0	0	1823		1823	0	0		
17	14	***NE 43rd Avenue*** from: SR-500 to: East City Limits Widen to 3 lanes with bike lanes, sidewalk	03	P	0.36		ALL	1/1/2028						2190				2190		
							Totals		0	0		0	0	2190	0	0	0	2190		
00	15	***Downtown Infrastructure*** NE 3rd to NE 7th, NE Adams to NE Garfield from: to: Pavement and sidewalk Rehab, ADA upgrades	06	P	0	SWPO	ALL	1/1/2025						1550			1550			
							Totals		0	0		0	0	1550	0	0	1550	0		
00	16	***North Dwyer Creek Master Plan Street "B"*** NW Friberg St./Strunk to NW Larkspur St. from: to: New construction	15	P	0.90		PE	1/1/2027						5				5		
							Totals		0	0		0	0	5	0	0	0	5		
19	17	***NW Payne Street*** NW Lake Rd. to NW Camas Meadows Dr. from: to: Widening, bike lanes, sidewalk	03	P	0.40		PE	1/1/2028						5				5		
							Totals		0	0		0	0	5	0	0	0	5		

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							Project Phase	Phase Start (yyyy)	Fund Source Information: Federal Fund Code	Federal Funds	State Fund Code	State Funds	Local Funds	Total Funds	1st	2nd	3rd	4th thru 6th	Envir. Type	R/W Required
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
17	18	***NW 23rd Avenue*** Nw Astor to NW Sierra from: to: Widening, sidewalk	04	P	0.23		ALL	1/1/2026						560				560		
							Totals		0	0		0	0	560	0	0	0	560		
00	19	***North Dwyer Creek Master Plan Street "A"*** NW Lake Rd. to NW Camas Meadows Dr. from: to: New construction	15	P	0.64		PE	1/1/2023						5	5					
							Totals		0	0		0	0	5	5	0	0	0		
17	20	***NW Leadbetter Drive*** NW Lake Rd. to NW Fremont St. from: to: Sidewalk	28	P	0.15		CN	1/1/2026						66				66		
							Totals		0	0		0	0	66	0	0	0	66		
17	21	***NE 28th Street & NE 232nd Avenue*** from: to: Intersection improvements	24	P	0.00		ALL	6/1/2026						177				177		
							Totals		0	0		0	0	176.63	0	0	0	176.63		
16	22	***Brady Road*** McIntosh to West City Limits from: to: Bike & Pedestrian Improvements	04	P	.50		PE	1/1/2026						5				5		
							Totals		0	0		0	0	5	0	0	0	5		
17	23	***NW Astor Street/NW 11th Avenue*** NW 16th Ave. to McIntosh Rd. from: to: Widening, bike lanes, sidewalk	03	P	0.62		PE RW CN	1/1/2026 1/1/2027 6/1/2028						140 140 2203				140 140 2203		
							Totals		0	0		0	0	2483.21	0	0	0	2483.21		

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							Project Phase	Phase Start (yyyy)	Fund Source Information: Federal Fund Code	Federal Funds	State Fund Code	State Funds	Local Funds	Total Funds		1st	2nd	3rd	4th thru 6th	Envir. Type	R/W Required
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20	21
16	24	***NW 18th Avenue, et al*** NW Astor to NW 16th, include NW Hood from: to: Widen curb, sidewalk	03	P	0.51		PE	1/1/2026						5					5		
							Totals		0	0		0	0	5		0	0	0	5		
16	25	***NW 18th Avenue*** NW Whitman St. to NW Brady Rd. from: to: New construction with bike lanes	01	P	0.26		PE	1/1/2026						5					5		
							Totals		0	0		0	0	5		0	0	0	5		
16	26	**NW 18th Avenue** NW Whitman St. to West City Limits from: to: Widening, bike lanes	03	P	0.40		PE	1/1/2026						5					5		
							Totals		0	0		0	0	5		0	0	0	5		
16	27	***NW 43rd/NW Astor - NW Sierra to NW 38th Impr.*** from: to: Widening, bike lanes, sidewalk	03	P	.50		PE	1/1/2028						5					5		
							Totals		0	0		0	0	5		0	0	0	5		
17	28	***NE 232nd Avenue*** NE 28th to NE North Shore Blvd. from: to: Widen to 3 lanes with bike lanes, sidewalk	15	P	0.97		PE	1/1/2028						5					5		
							Totals		0	0		0	0	5		0	0	0	5		
17	29	***NW McIntosh Road*** NW Brady Rd. to NW 11th Ave. from: to: Widening, bike lanes, sidewalk	15	P	1.2		PE	1/1/2028						5					5		
							Totals		0	0		0	0	5		0	0	0	5		

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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
00	30	***NE Woodburn Drive*** SE 283rd Ave. to SE 15th St. from: to: New construction Includes 23rd St. realignment	01	P	.70		ALL	1/1/2028						6587				6587		
							Totals		0	0		0	0	6587.26	0	0	0	6587.26		
07	31	***SE 15th Street/Nourse Road*** from: Camas High School to: NE 283rd Ave. Widen to 3 lanes with bike lanes, sidewalk	15	P	0.59		PE	1/1/2028						5				5		
							Totals		0	0		0	0	5	0	0	0	5		
00	32	***NE 18th Street*** NE 192nd Ave. to NE Goodwin Rd. from: to: New construction (potential alternate alignment)	15	P	0.67		PE	1/1/2028						5				5		
							Totals		0	0		0	0	5	0	0	0	5		
17	33	***NE 28th Street*** NE 232nd Ave. to NE 242nd Ave. from: to: Widen to 3 lanes with bike lanes	15	P	0.50		PE	1/1/2028						5				5		
							Totals		0	0		0	0	5	0	0	0	5		
16	34	***NW Camas Meadows Drive*** NE 13th St. to NE 18th St. from: to: New construction (potential alternate alignment)	15	P	0.20		PE	1/1/2028						5				5		
							Totals		0	0		0	0	5	0	0	0	5		
00	35	***NE 242nd Avenue*** NE 28th St. to NE North Shore Blvd. from: to: Widen to 3 lanes with bike lanes, sidewalk	15	P	0.70		PE	1/1/2028						5				5		
							Totals		0	0		0	0	5	0	0	0	5		

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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
19	36	***NW Maryland Street*** NW 19th to NW 24th from: to: New construction	01	P	0.25		ALL	6/1/2028						291				291		
							Totals		0	0		0	0	290.92	0	0	0	290.92		
19	37	***NE Nevada Street*** NE 3rd to NE 6th from: to: Reconstruct	04	P	0.17		ALL	6/1/2028						291				291		
							Totals		0	0		0	0	290.92	0	0	0			
00	38	***NE Goodwin Road @ NW Camas Meadows Drive*** from: to: Traffic signal	24	P	00		ALL	6/1/2028						364				364		
							Totals		0	0		0	0	363.65	0	0	0	363.65		
16	39	***NW Pacific Rim @ Parker Street*** from: to: Traffic signal	15	P	00		PE	6/1/2028						5				5		
							Totals		0	0		0	0	5	0	0	0	5		
17	40	***NE Ingle Road-NE Goodwin to N City Limits*** Goodwin to N City Limits from: to: widen to 3 lanes with bike lanes, sidewalk	03	P	1.30		PE	6/1/2028						5				5		
							Totals		0	0		0	0	5	0	0	0	5		
00	41	***NE Ingle Road Extension*** Goodwin to 232nd Ave from: to: New construction	15	P	1.00		PE	6/1/2028						5				5		
							Totals		0	0		0	0	5	0	0	0	5		

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Hearing Date: 6/6/2022 Adoption Date: 6/21/2022
Amend Date: Resolution No:

Functional Class	Priority Number	Project Identification A. Pin/Project No. B. STIP ID C. Project Title D. Road Name or Number E. Begin & End Termini F. Project Description G. Structure ID	Improvement Type(s)	Status	Total Length	Utility Codes	Project Costs in Thousands of Dollars								Expenditure Schedule (Local Agency)				Federally Funded Projects Only	
							Project Phase	Phase Start (yyyy)	Fund Source Information: Federal Fund Code	Federal Funds	State Fund Code	State Funds	Local Funds	Total Funds	1st	2nd	3rd	4th thru 6th	Envir. Type	R/W Required
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
16	42	***SR-500 @ Leadbetter Road*** from: to: Access Control	15	P	00		PE	1/1/2028						5				5		
							Totals			0		0	0	5	0	0	0	5		
16	43	***SR-500 @ New E/W Arterial*** from: to: Intersection improvements	15	P	00		PE	1/1/2028						5				5		
							Totals			0		0	0	5	0	0	0	5		
16	44	***NE 28th Street @ 242nd Avenue*** from: to: Intersection improvements	15	P	00		PE	1/1/2028						5				5		
							Totals			0		0	0	5	0	0	0	5		
16	45	***SR-500*** @ NE 14th Ave. from: to: Controlled Access	24	P	00		PE	1/1/2028						5				5		
							Totals			0		0	0	5	0	0	0	5		
00	46	***NE 232nd Avenue @ Ingle Extension*** from: to: Roundabout	15	P	00		PE	1/1/2028						5				5		
							Totals			0		0	0	5	0	0	0	5		
00	47	***Pavement Treatments (maintenance & preservation)*** from: to: Overlays, surface treatments	47	P	00		CN	6/1/2023						5400	900	900	900	2700		
							Totals			0		0	0	5400	900	900	900	2700		

Agency: City of Camas
Co. No.: 06 Co. Name: Clark Co.
City No.: 0145 MPO/RTPO: RTC

DRAFT

FROM: 2023 **TO:** 2028
Hearing Date: 6/6/2022 Adoption Date: 6/21/2022
Amend Date: Resolution No:

Functional Class	Priority Number	Project Identification A. Pin/Project No. B. STIP ID C. Project Title D. Road Name or Number E. Begin & End Termini F. Project Description G. Structure ID	Improvement Type(s)	Status	Total Length	Utility Codes	Project Costs in Thousands of Dollars Project Phase	Phase Start (yyyy)	Fund Source Information Federal Fund Code	Federal Funds	State Fund Code	State Funds	Local Funds	Total Funds	Expenditure Schedule (Local Agency) 1st	2nd	3rd	4th thru 6th	Federally Funded Projects Only Envir. Type	R/W Required
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
00	48	***Reconstructs*** from: Citywide to:	04	P	00		ALL	1/1/2023	CDBG	250				1500	250	250	250	750		
							Totals		0	250		0	0	1500	250	250	250	750		
00	49	***Sidewalk Projects*** from: to: Sidewalk installations Citywide, including curb ramps	28	P	00		ALL	1/1/2023						150	25	25	25	75		
							Totals		0	0		0	0	150	25	25	25	75		
0	50	***Shared Path Improvements*** Citywide from: to:	28	P	00		ALL	1/1/2025						200			50	150		
							Totals		0	0		0	0	200	0	0	50	150		
00	51	***Safety Projects*** from: to: Future safety projects Includes traffic revisions, NW Fargo Curve Safety Analysis	21	P	00		ALL	1/1/2023						300	50	50	50	150		
							Totals		0	0		0	0	300	50	50	50	150		

Appendices

Six Year Form Coding Instructions

Heading

Agency	Enter name of the sponsoring agency.
County No.	Enter the assigned number (see LAG Appendix 21.44).
City No.	Enter the assigned number (see LAG Appendix 21.45).
MPO/RTPO	Enter the name of the associated MPO (if located within urbanized area) or RTPO (if located in a rural area).
Hearing Date	Enter the date of the public hearing.
Adoption Date	Enter the date this program was adopted by council or commission.
Resolution No.	Enter Legislative Authority resolution number (if applicable.)
Amendment Date	Enter the date this program was amended by council or commission.

Column Number

1. **Functional Classification**. Enter the appropriate 2-digit code denoting the Federal Functional Classification. (***Note:*** The Federal Functional Classification must be one approved by FHWA.)

Description

00- No Classification

Rural (< 5000 pop.)	**Urban** (> 5000 pop.)
01 - Interstate	11 - Interstate
02 - Principal Arterials	12 - Freeways & Expressways
06 - Minor Arterials	14 - Other Principal Arterials
07 - Major Collector	16 - Minor Arterial
08 - Minor Collector	17 - Collector
09 - Local Access	19 - Local Access

1. **Priority Numbers.** Enter local agency number identifying agency project priority (optional).

2. **Project Identification.** Enter (a) Federal Aid Number if previously assigned; (b) Bridge Number; (c) Project Title; (d) Street/Road Name or Number/Federal Route Number;
(e) Beginning and Ending Termini (milepost or street names); and (f) Describe the Work to be Completed.

4. **Improvement Type Codes.** Enter the appropriate federal code number.

SEE APPENDIX A

5. **Funding Status.** Enter the funding status for the entire project or phase that describes the current status.

S - Project is 'selected' by the appropriate selection body and funding has been secured by the lead agency.

P - Project is subject to selection by an agency other than the lead and is listed for planning purposes. (Funding has ***not*** been determined.)

6. **Total Length.** Enter project length to the nearest hundredth (or code "**00**" if not applicable).

7. **Utility Code(s).** Enter the appropriate code letter(s) for the utilities that need to be relocated or are impacted by the construction project.

C - Cable TV
O - Other
S - Sewer (other than agency-owned)
W – Water
G - Gas
P - Power
T - Telephone

8. **Project Phase.** Select the appropriate phase code of the project.

PE - Preliminary Engineering, including Design (or Planning)
RW - Right of Way or land acquisition
CN - Construction only **(or transit planning or equipment purchase)**
ALL - All Phases: from Preliminary Engineering through Construction

9. **Phase Start Date.** Enter the ***month/day/year*** in MM/DD/YY format that the selected phase of the project is ***actually*** expected to start.

10. **Federal Fund Code.** Enter the Federal Fund code from the table.

SEE APPENDIX C

11. **Federal Funds.** Enter the total federal cost (**in thousands**) of the phase regardless of when the funds will be spent.

12. **State Fund Code.** Enter the appropriate code for any of the listed state funds to be used on this project.

SEE APPENDIX C

13. **State Funds.** Enter all funds from the State Agencies (**in thousands**) of the phase regardless of when the funds will be spent.

14. **Local Funds.** Enter all the funds from Local Agencies (**in thousands**) of the phase regardless of when the funds will be spent.

15. **Total Funds.** Enter the sum of columns 10, 12, and 14. (Auto-calculation in the "STIP Too" program.)

16-19. **Expenditure Schedule - (1st, 2nd, 3rd, 4th thru 6th years).** Enter the estimated expenditures (**in thousands**) of dollars by year. **(*For Local Agency use*.)**

20. **Environmental Data Type.** Enter the type of environmental assessment that will be required for this project. (This is ***"required"*** for ***Federally funded projects***, but may be filled in for state or locally funded projects.)

EIS - Environmental Impact Statement
EA - Environmental Assessment
CE - Categorical Exclusion

21. **R/W Certification.** Click ***Y*** if Right of Way acquisition is or will be required. If yes, enter R/W
Certification Date, if known. (This is **"required"** for ***Federally funded*** *projects*

APPENDIX A
IMPROVEMENT TYPE CODES

01 New Construction Roadway
03 Reconstruction, Added Capacity
04 Reconstruction, No Added Capacity
05 4R Maintenance Resurfacing
06 4R Maintenance - Restoration & Rehabilitation
07 4R Maintenance - Relocation
08 Bridge, New Construction
10 Bridge Replacement, Added Capacity
11 Bridge Replacement, No Added Capacity
13 Bridge Rehabilitation, Added Capacity
14 Bridge Rehabilitation, No Added Capacity
15 Preliminary Engineering
16 Right of Way
17 Construction Engineering
18 Planning
19 Research
20 Environmental Only
21 Safety
22 Rail/Highway Crossing
23 Transit
24 Traffic Management/Engineering - HOV
25 Vehicle Weight Enforcement Program
26 Ferry Boats
27 Administration
28 Facilities for Pedestrians and Bicycles
29 Acquisition of Scenic Easements and Scenic or Historic Sites
30 Scenic or Historic Highway Programs
31 Landscaping and Other Scenic Beautification
32 Historic Preservation
33 Rehab & Operation of Historic Transp. Buildings, Structures, Facilities
34 Preservation of Abandoned Railway Corridors
35 Control and Removal of Outdoor Advertising
36 Archaeological Planning & Research
37 Mitigation of Water Pollution due to Highway Runoff
38 Safety and Education for Pedestrians/Bicyclists
39 Establishment of Transportation Museums
40 Special Bridge
41 Youth Conservation Service
42 Training
43 Utilities
44 Other
45 Debt Service
47 Systematic Preventive Maintenance

APPENDIX B
Void

APPENDIX C
FEDERAL FUND CODES

5307	FTA Urbanized Area Formula Program
5309(Bus)	FTA Bus and Bus Facilities
5309(FG)	FTA Fixed Guideway Modernization
5309(NS)	FTA New Starts
5310	FTA Elderly Persons and Persons with Disabilities
5311	FTA Rural Area Formula Grants
5316	FTA Job Access & Reverse Commute Program (JARC)
5317	FTA New Freedom Program
FTA Discretionary	Discretionary Programs such as Alternatives Analysis (5339) and TIGER Program
BIA	Bureau of Indian Affairs
BR	Bridge Replacement/Rehabilitation Program
CBI	Coordinated Border Infrastructure
CDBG	Community Development Block Grant (Dept. of Commerce)
CMAQ	Congestion Mitigation and Air Quality
DEMO	Demonstration Projects (High Priority, Sect. 112, 115, 117, 125 and 129)
Discretionary- FBD	Ferry Boat Discretionary
Discretionary- IMD	Interstate Maintenance Discretionary
Discretionary- ITS	Intelligent Transportation Systems
Discretionary- PLH	Public Lands Highways (Federal Lands)
Discretionary- SB	Scenic Byways
Discretionary- STP	Surface Transportation Priorities
Discretionary- TCSP	Transportation, Community & System Preservation Program
DOD	Department of Defense
FMSIB	Freight Mobility Strategic Investment Board
IM	Interstate Maintenance
IRR	Indian Reservation Roads
NHS	National Highway System
SRTS	Safe Routes to Schools
STBG	Surface Transportation Block Grant
STP	Surface Transportation Program (WSDOT Use Only)
STP(E)	Surface Trans. Program - Enhancements
STP(L)	Surface Trans. Program - Legislative Earmarks
STP(S)	Surface Trans. Program- Safety (Includes Highway) Safety Improvement Program, Hazard Elimination, Railway/Highway Crossing Program and 2010-15 County Road Safety Program)
STP(R)	Surface Trans. Program - Rural Regionally Selected
STP(U)	Surface Trans. Program - Urban Regionally Selected

STATE FUND CODES

CRAB	County Road Administration Board
CW	Connecting Washington
FMSIB	Freight Mobility Strategic Investment Board
PWTF	Public Works Trust Fund
SRTS	Safe Routes to Schools
TIB	Transportation Improvement Board
TPP	Transportation Partnerships Program
WSDOT	WSDOT funds
OTHER	Any other state funds not listed

Staff Report – Ordinance

June 6th, 2022 - Council Workshop / Regular Meeting

Ordinance No. 22 - 009 Amending CMC 10.08.060A – Parking Infraction Base Fine
Presenter: Mitch Lackey, Chief of Police
Time Estimate: 5 minutes

Phone	Email
360.817.1502	mlackey@cityofcamas.us

INTRODUCTION/PURPOSE/SUMMARY: The City of Camas Parking Commission made a recommendation to the Camas City Council that the infraction fee for a parking ticket be increased from $15.00 to $30.00. The Parking Commission reported that the existing fine might not be providing the deterrent that it was designed to be due to the fact that it has been set at this level for decades. The Parking Commission believed that a higher fine might increase compliance with the downtime parking time restrictions. The City Council heard this request in an open meeting on May 2nd, 2022. The Council agreed with this recommendation and directed staff to prepare an ordinance that would institute this change. At the direction of the Council, this change will take effect on July 1st, 2022.

EQUITY CONSIDERATIONS:

What are the desired results and outcomes for this agenda item? A new ordinance is adopted that will increase the base fine for a parking infraction to $30.00

What's the data? What does the data tell us? N/A

How have communities been engaged? Are there opportunities to expand engagement? The DCA, as well as the Chamber of Commerce, were aware of this proposal and were represented in discussions.

Who will benefit from, or be burdened by this agenda item? It is believed that the downtown merchants will benefit from this action if it achieves the desired goal – more parking spaces opened for use by customers/shoppers.

What are the strategies to mitigate any unintended consequences? Once adopted, media announcements will be used to advise of the upcoming change.

Does this agenda item have a differential impact on underserved populations, people living with disabilities, and/or communities of color? Please provide available data to illustrate this impact. N/A

Will this agenda item improve ADA accessibilities for people with disabilities? No. Disabled parking is enforced differently and those who have valid disabled documents from D.O.L. are not subject to overtime parking infractions.

What potential hurdles exists in implementing this proposal (include both operational and political)? None.

How will you ensure accountabilities, communicate, and evaluate results? On-going monitoring with assistance and observations from merchants, staff and groups such as the DCA and Chamber of Commerce.

How does this item support a comprehensive plan goal, policy or other adopted resolution? This item supports economic development in the downtown commercial core.

RECOMMENDATION: It is recommended that the City Council adopt the attached ordinance that increases the base infraction for a parking violation to $30.00 effective July 1st, 2022.

ORDINANCE NO. 22-009

AN ORDINANCE amending Section 10.08.060A of the Camas Municipal Code by increasing the base infraction penalty for City parking violations, clarifying the adopted penalty schedule for all other parking violations, and establishing an effective date.

The Council of the City of Camas do ordain as follows:

Section I

Section 10.08.060A of the Camas Municipal Code is amended to provide as follows:

A. Any person violating any provision of this chapter is guilty of committing a traffic infraction, and upon being found to have committed a traffic infraction shall be assessed a monetary penalty as follows: For violation of Section 10.08.035 - fifty dollars and for all other parking infractions specifically imposed by this chapter - thirty dollars. Violations of all other parking provisions as may be imposed by the Washington Model Traffic Ordinance, as adopted per Chapter 10.04, or by the adopted provisions of state law pursuant to Section 10.08.055 of this Chapter, shall be subject to the respective penalties as otherwise set forth therein or as set forth in IRLJ Section 6.2.

Section II

This Ordinance shall take force and be in effect five (5) days from and after its publication according to law but in no event earlier than July 1, 2022.

PASSED BY the Council and APPROVED by the Mayor this 6th day of June, 2022.

SIGNED:_____
Mayor

ATTEST:_____
Clerk

APPROVED as to form:

_____
City Attorney

Staff Report

June 6, 2022 Council Regular Meeting

Resolution 22-006 Revised Salary Scale for the City Administrator
Presenter: Jennifer Gorsuch, Administrative Services Director
Time Estimate: 5 minutes

Phone	Email
360.817.7013	jgorsuch@cityofcamas.us

BACKGROUND: The City Administrator position will be reposted this week. Prior to posting the position again, the salary was reviewed and will be increased.

SUMMARY:
City staff reviewed the salary range with the Mayor and consultant and determined that while it is in the range for the level of City Administrator we are seeking for Camas, having a slightly higher increase will increase our odds of attracting high caliber candidates.

Currently, the City Administrator salary is about $165-198k/annually. Staff is proposing an approximate 4% increase – bringing the range to $173-205k/annually.

This would put the top step of the pay scale just over $17,000/monthly.

EQUITY CONSIDERATIONS:

What are the desired results and outcomes for this agenda item*?* The desired result is to be competitive in the labor market to recruit an experienced City Administrator.

What's the data? What does the data tell us? The data from comparable entities shows that the salary scale is within range, but an increase is merited to attract additional candidates.

How have communities been engaged? Are there opportunities to expand engagement*? N/A*

Who will benefit from, or be burdened by this agenda item? *N/A*

What are the strategies to mitigate any unintended consequences? *N/A*

Does this agenda item have a differential impact on underserved populations, people living with disabilities, and/or communities of color? Please provide available data to illustrate this impact*. N/A*

Will this agenda item improve ADA accessibilities for people with disabilities? *N/A*

What potential hurdles exists in implementing this proposal (include both operational and political)? *N/A*

How will you ensure accountabilities, communicate, and evaluate results? *N/A*

How does this item support a comprehensive plan goal, policy or other adopted resolution? *N/A*

BUDGET IMPACT: This change will result in an increase of approximately $7k/annually to the Executive budget including a salary and benefits increase.

RECOMMENDATION: Staff recommends Resolution 22-006 be adopted by Council.

RESOLUTION NO. 22-006

A RESOLUTION adopting a revised salary scale for the City Administrator.

BE IT RESOLVED BY THE COUNCIL OF THE CITY OF CAMAS AS FOLLOWS:

I

There is hereby adopted a revised salary scale for the position of City Administrator. The salary scale is attached hereto as Exhibit "A" and shall be effective as of June 6, 2022.

II

PASSED BY the Council and approved by the Mayor this 6th day of June, 2022.

SIGNED: _____
Mayor

ATTEST: _____
Clerk

APPROVED as to form:

_____
City Attorney

Position							
	1	2	3	4	5	6	7
City Administrator	14306	14735	15177	15633	16102	16585	17082

Staff Report

June 6, 2022 Council Regular Meeting

Camas Business Park
Presenter: Lauren Hollenbeck, Senior Planner
Time Estimate: 20 min.

Phone	Email
360.817.7253	lhollenbeck@cityofcamas.us

BACKGROUND: The Panattoni Development Company, Inc. is seeking land development approval for the construction of three (3) warehouse/office industrial buildings totaling approximately 942,939 square feet on 74.06-acres located at 4707 and 4723 NW Lake Road within the Light Industrial/Business Park (LI/BP) zone.

SUMMARY: Development within the Light Industrial/Business Park zone is a Type III application review approval process, which requires a public hearing before Planning Commission and final decision approval by City Council per CMC 18.55.030- Table 1, Note 4. *Type III applications are quasi-judicial and City Council as the decision maker shall disclose any ex parte contact, conflicts of interest or bias before the beginning of each hearing item and provide an opportunity for challenge per CMC 18.55.180.D.5.* A detailed staff report (LI/BP21-01) addressing the applicable development code sections of the Camas Municipal Code was prepared by City staff and included as Exhibit 44.

The project proposal was first reviewed by the Design Review Committee at a public meeting on April 14, 2022 as required by code and found the proposal to be in general compliance with the Design Review Manual subject to recommended conditions of approval as discussed in the LI/BP21-01 staff report (Exhibit 44).

Planning Commission held a public hearing on May 17, 2022. At the open record hearing, city staff gave the Planning Commission a brief presentation of the development proposal including the public comments that were received by the city, which are included as Exhibit 41, and discussed in the LI/BP21-01 staff report at pages 30 and 31 (Exhibit 44). City staff also discussed an email concerning the applicant's questions/comments pertaining to the LI/BP21-01 staff report including city staff's responses, which is included as Exhibit 42. As a result of that email, city staff prepared and presented a memo to Planning Commission with proposed revisions to the conditions of approval, which is included as Exhibit 43 and are addressed in the LI/BP21-01 staff report (Exhibit 44). The applicant concurred with the proposed revisions in the memo.

The Planning Commission unanimously recommended approval as conditioned in staff's report (LI/BP21-01).

EQUITY CONSIDERATIONS:

What are the desired results and outcomes for this agenda item? The construction of 3 warehouse/office industrial buildings.

What's the data? What does the data tell us? n/a

How have communities been engaged? Are there opportunities to expand engagement? Public notices were published in the Post Record local paper, mailed to property owners within 300-feet, posted on social media, the City website, City Hall and library.

Who will benefit from, or be burdened by this agenda item? n/a

What are the strategies to mitigate any unintended consequences? The recommended conditions of approval in the staff report.

Does this agenda item have a differential impact on underserved populations, people living with disabilities, and/or communities of color? Please provide available data to illustrate this impact. n/a

Will this agenda item improve ADA accessibilities for people with disabilities? n/a

What potential hurdles exists in implementing this proposal (include both operational and political)? n/a

How will you ensure accountabilities, communicate, and evaluate results? Through the implementation of the conditions of approval.

How does this item support a comprehensive plan goal, policy or other adopted resolution? Yes, the proposed development supports a number of comprehensive plan goals and policies as outlined in the project staff report.

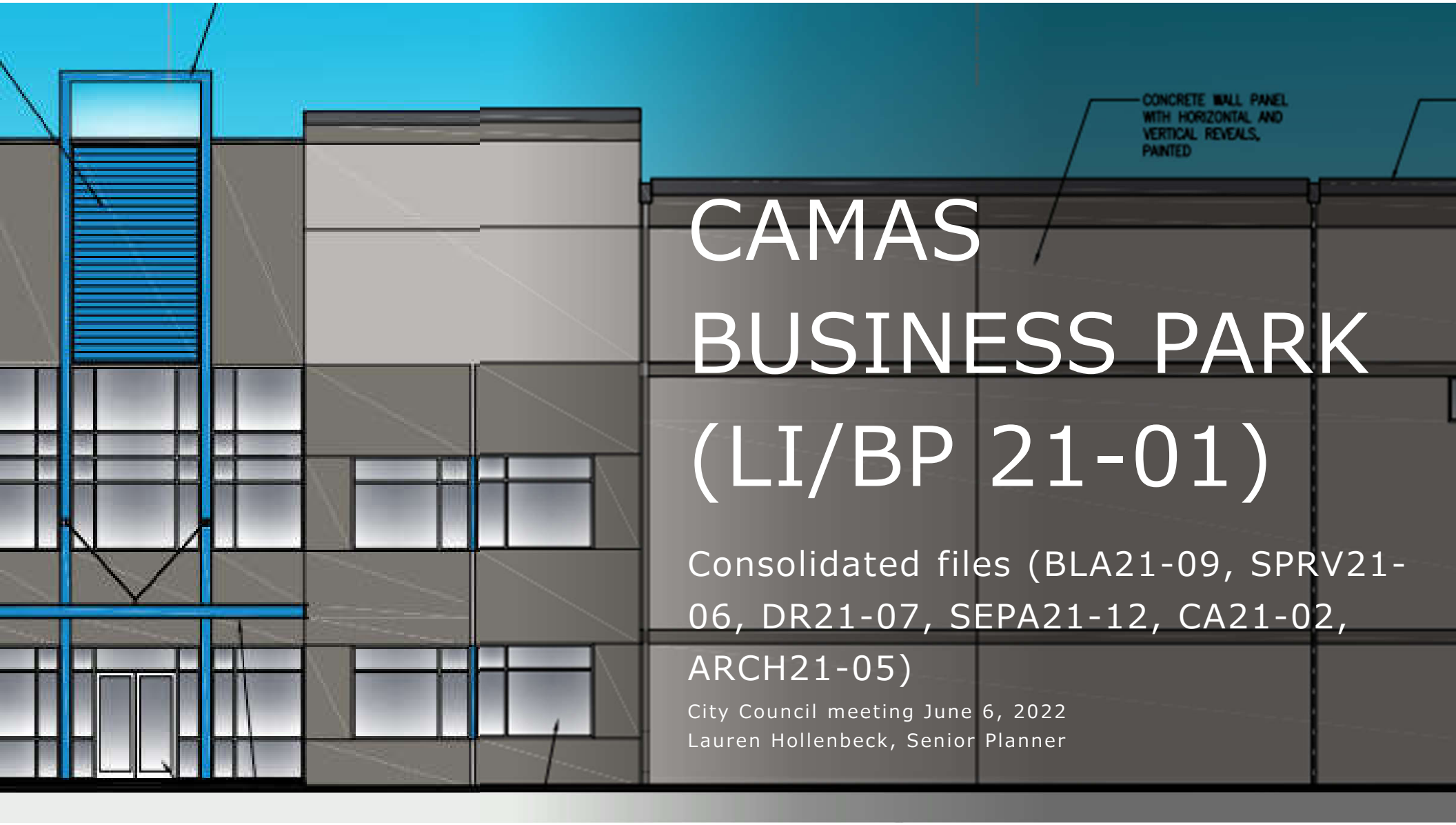
BUDGET IMPACT: n/a

RECOMMENDATION: Following an open record hearing, the Planning Commission recommended APPROVAL of the consolidated application for the Camas Business Park (LI/BP 21-01) subject to the conditions of approval. The City Council in a closed record meeting shall review the public record, deliberate and provide a final decision that could include the following:

1. Approve with conditions contained herein
2. Approved with modified and/or additional conditions
3. Deny
4. Remand back to the Planning Commission

Recommended Motion:

"To approve the Camas Business Park and the conditions of approval based on the recommendation of the Planning Commission and instruct the City Attorney to prepare findings and conclusions to accompany the Notice of Decision".



CAMAS BUSINESS PARK (LI/BP 21-01)

Consolidated files (BLA21-09, SPRV21-06, DR21-07, SEPA21-12, CA21-02, ARCH21-05)

City Council meeting June 6, 2022

Lauren Hollenbeck, Senior Planner

Process

Apr. 14, 2022

Design Review meeting

Apr. 28, 2022

SEPA DNS issued

May 17, 2022

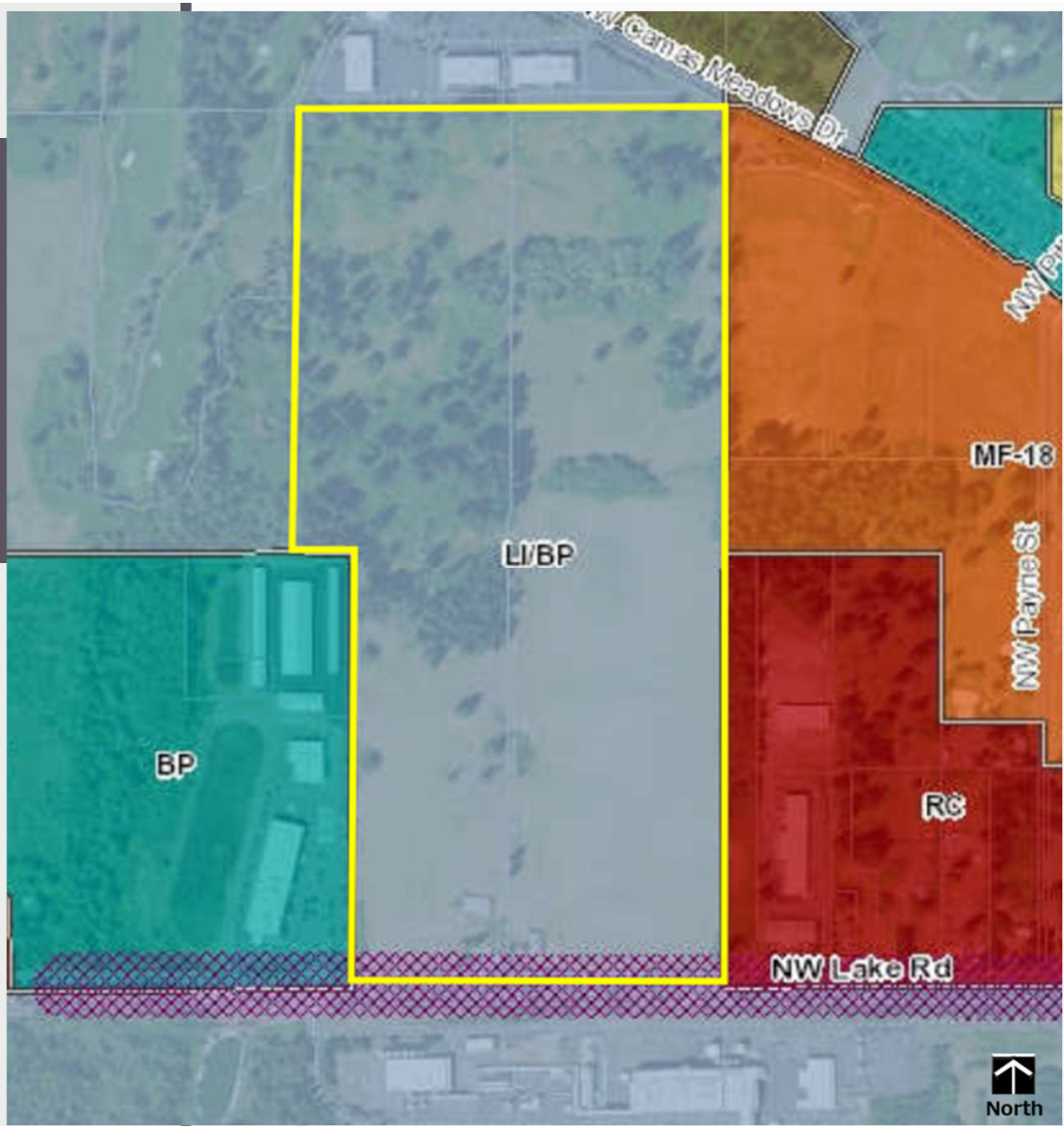
Planning Commission Public Hearing

June 6, 2022

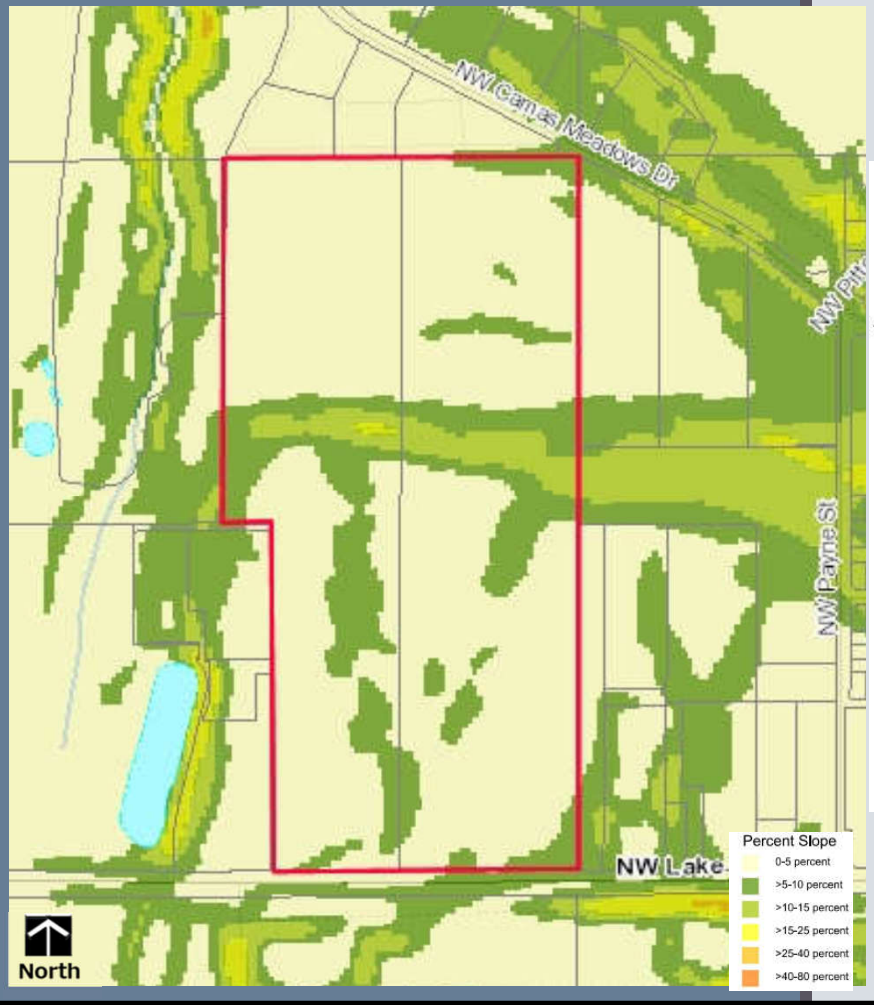
City Council closed record meeting

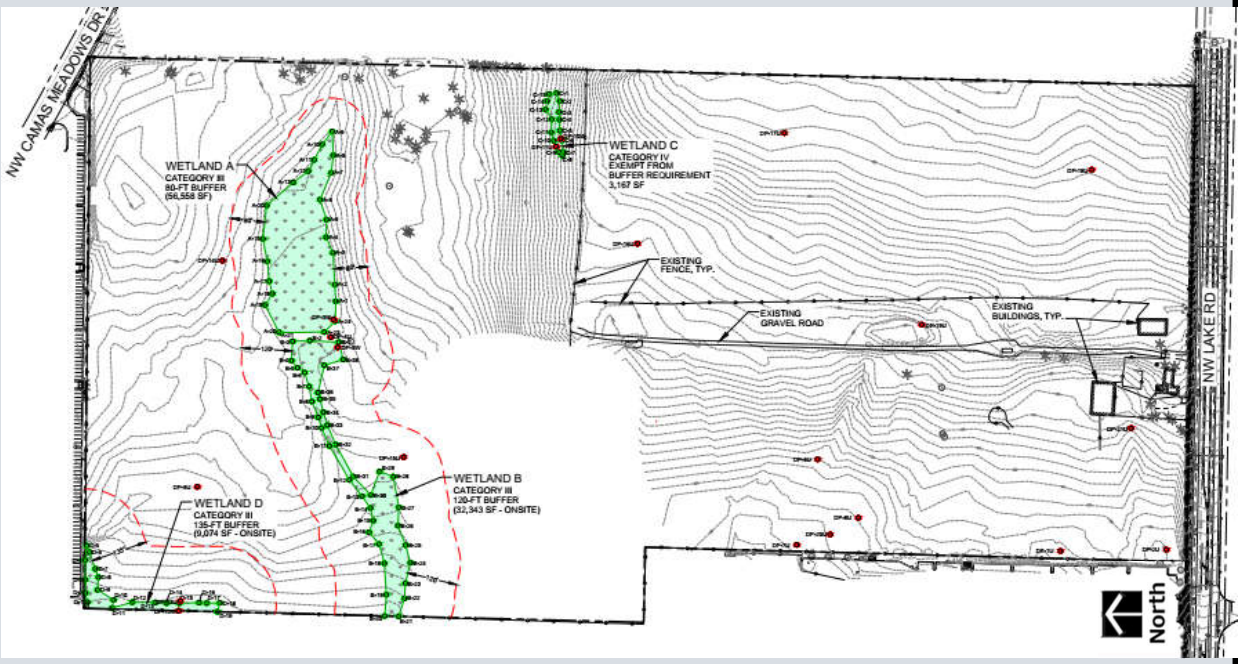
VICINITY MAP

ZONING MAP


NW Camas Meadows Dr
MF-18
LI/BP
NW Payne St
BP
RC
NW Lake Rd
North

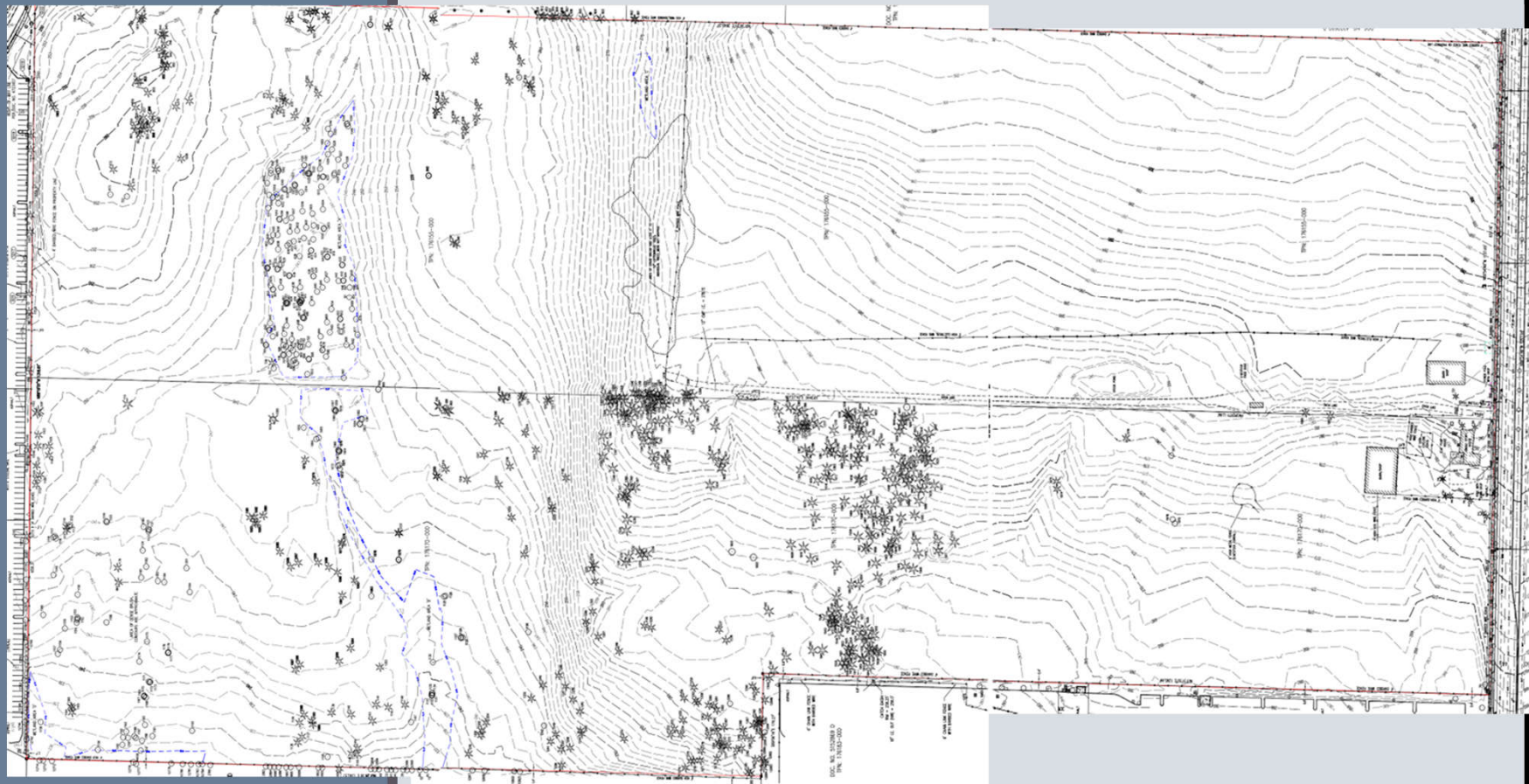
CRITICAL AREAS



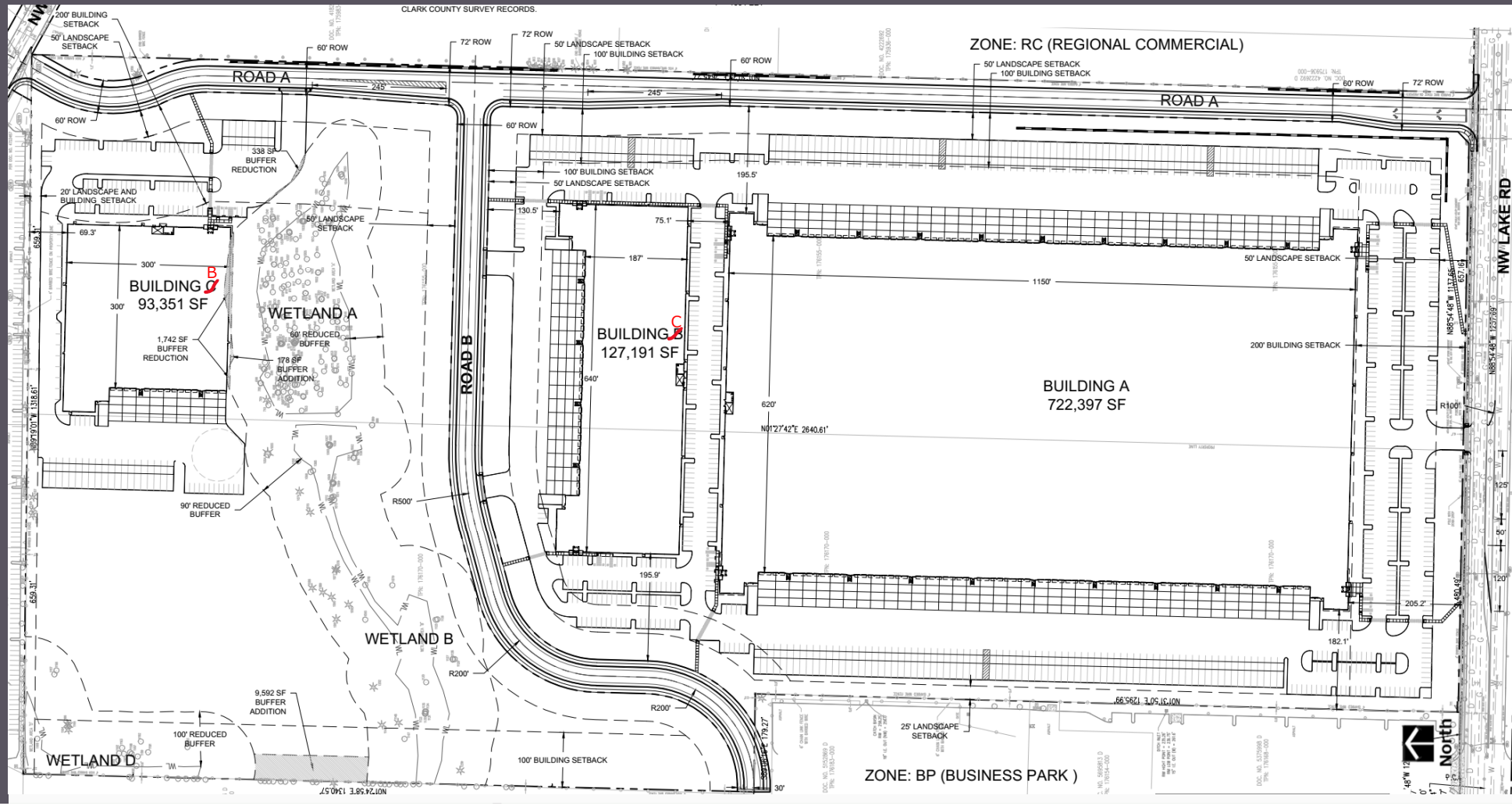


TREE PRESERVATION AND REMOVAL

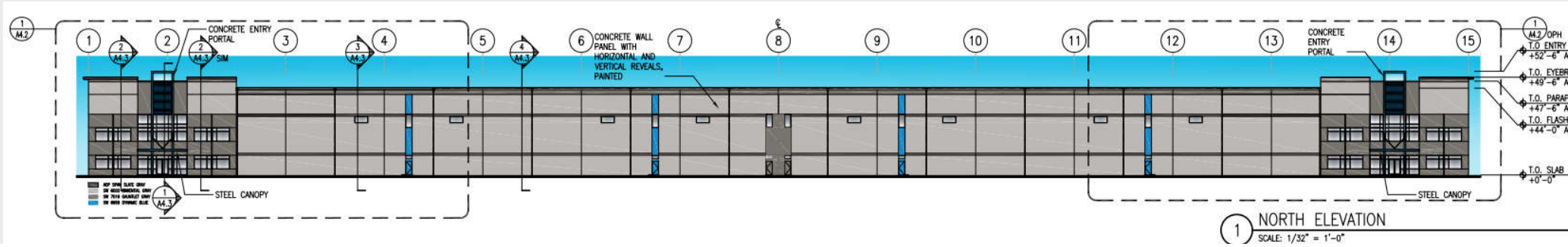
- 20 tree units per net acre required = 1,434 Tree Units
- 1,313 Tree Units provided
  - ❖ 476 TUs preserved
  - ❖ 837 TUs proposed
- Additional 121 Tree Units required



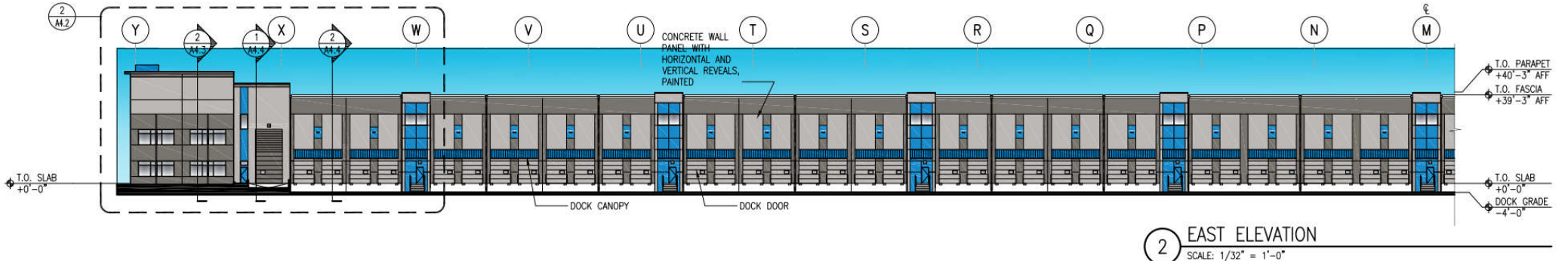
SITE PLAN


CLARK COUNTY SURVEY RECORDS.
ZONE: RC (REGIONAL COMMERCIAL)
ROAD A
ROAD A
ROAD B
NW LAKE RD
200' BUILDING SETBACK
50' LANDSCAPE SETBACK
60' ROW
72' ROW
100' BUILDING SETBACK
245'
338 SF BUFFER REDUCTION
20' LANDSCAPE AND BUILDING SETBACK
69.3'
300'
BUILDING C
93,351 SF
1,742 SF BUFFER REDUCTION
WETLAND A
50' REDUCED BUFFER
178 SF BUFFER ADDITION
90' REDUCED BUFFER
WETLAND B
9,592 SF BUFFER ADDITION
100' REDUCED BUFFER
WETLAND D
R500'
R200'
130.5'
195.5'
75.1'
187'
BUILDING B
127,191 SF
640'
620'
N01°27'42"E 2640.61'
1150'
BUILDING A
722,397 SF
195.9'
205.2'
182.1'
R100'
480.49'
25' LANDSCAPE SETBACK
ZONE: BP (BUSINESS PARK)
North

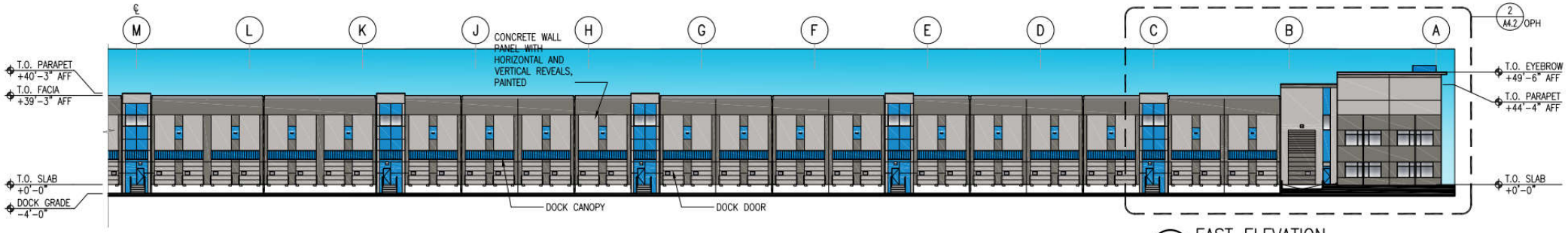
BUILDING A ELEVATIONS



1 NORTH ELEVATION
SCALE: 1/32" = 1'-0"

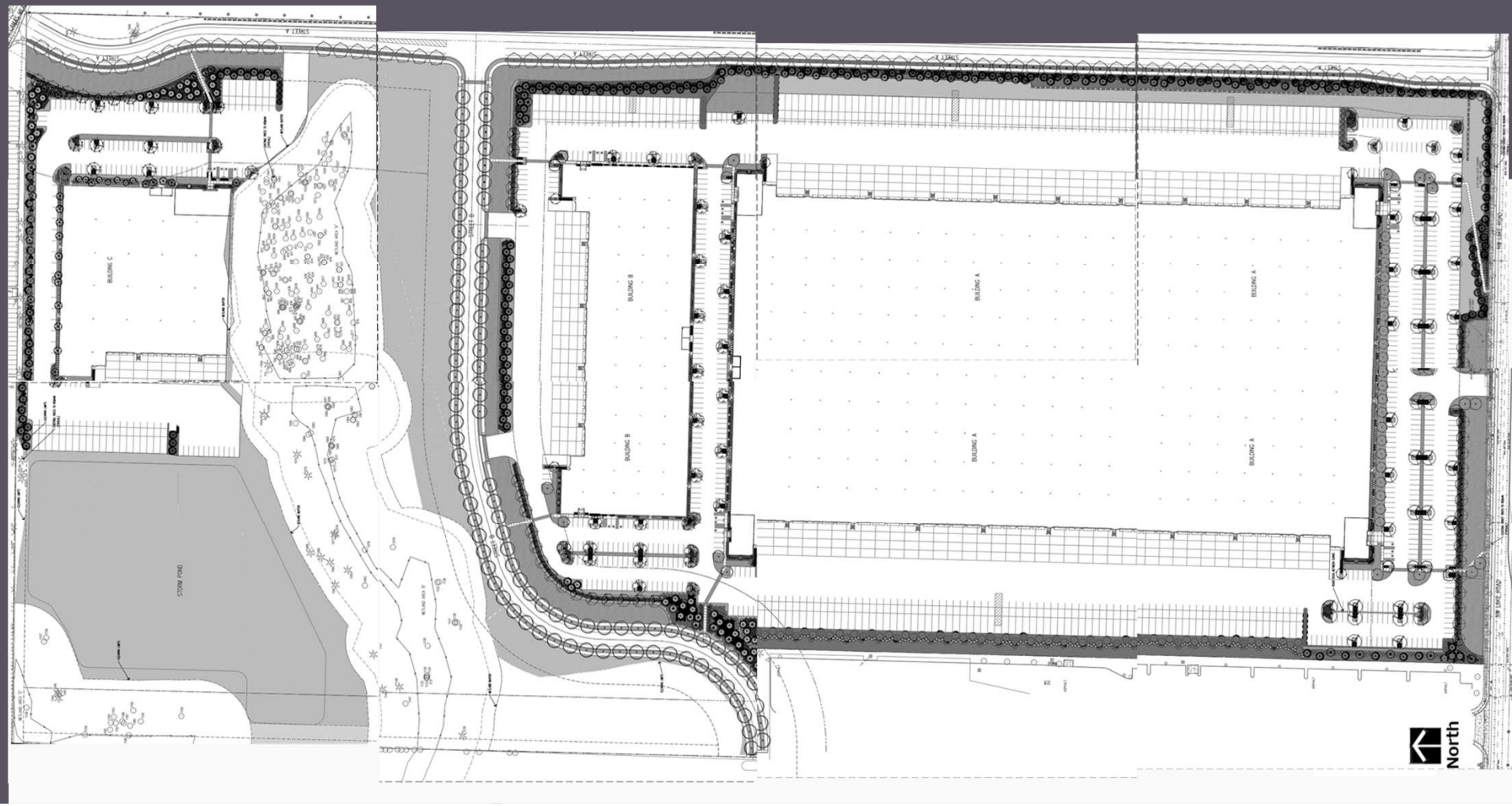


2 EAST ELEVATION
SCALE: 1/32" = 1'-0"



3 EAST ELEVATION
SCALE: 1/32" = 1'-0"

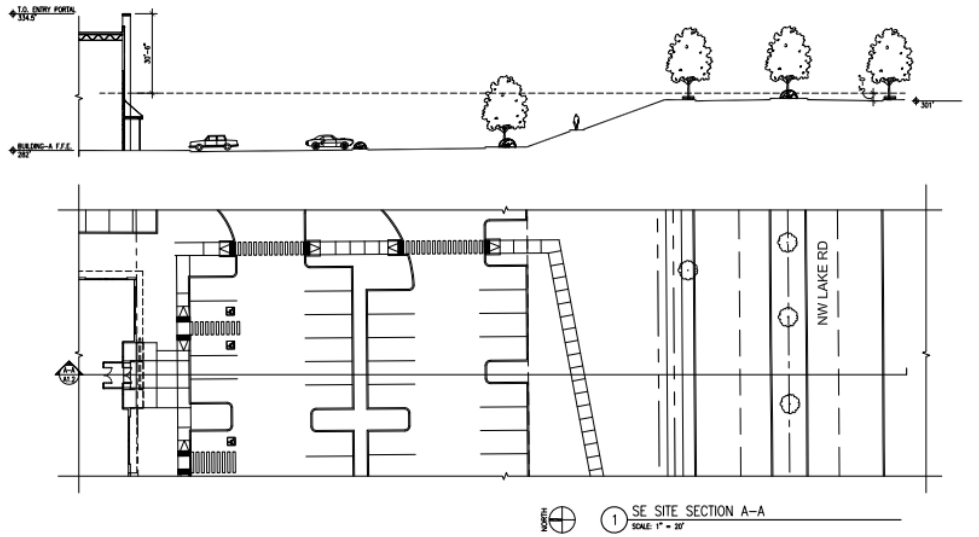
LANDSCAPE PLAN

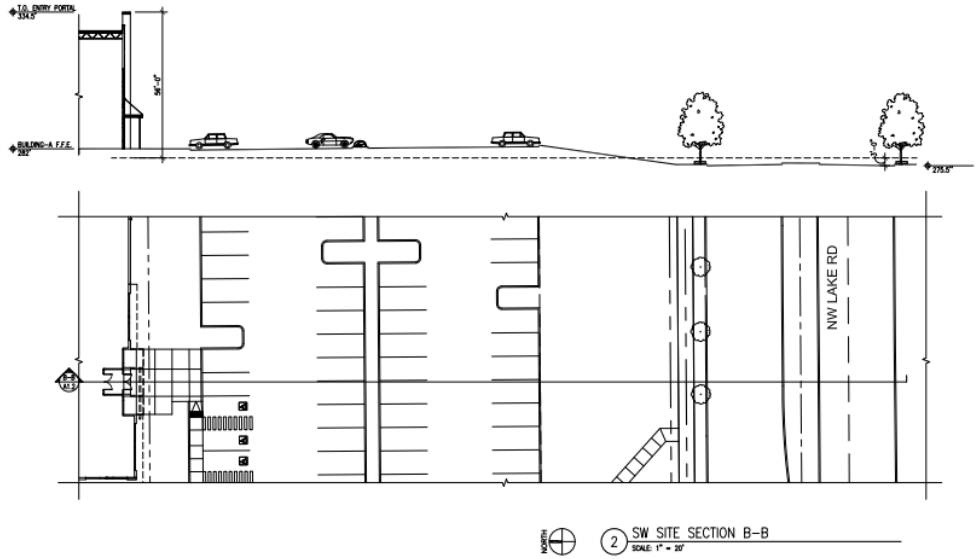


LAKE ROAD CROSS-SECTIONS

Massing & Setbacks

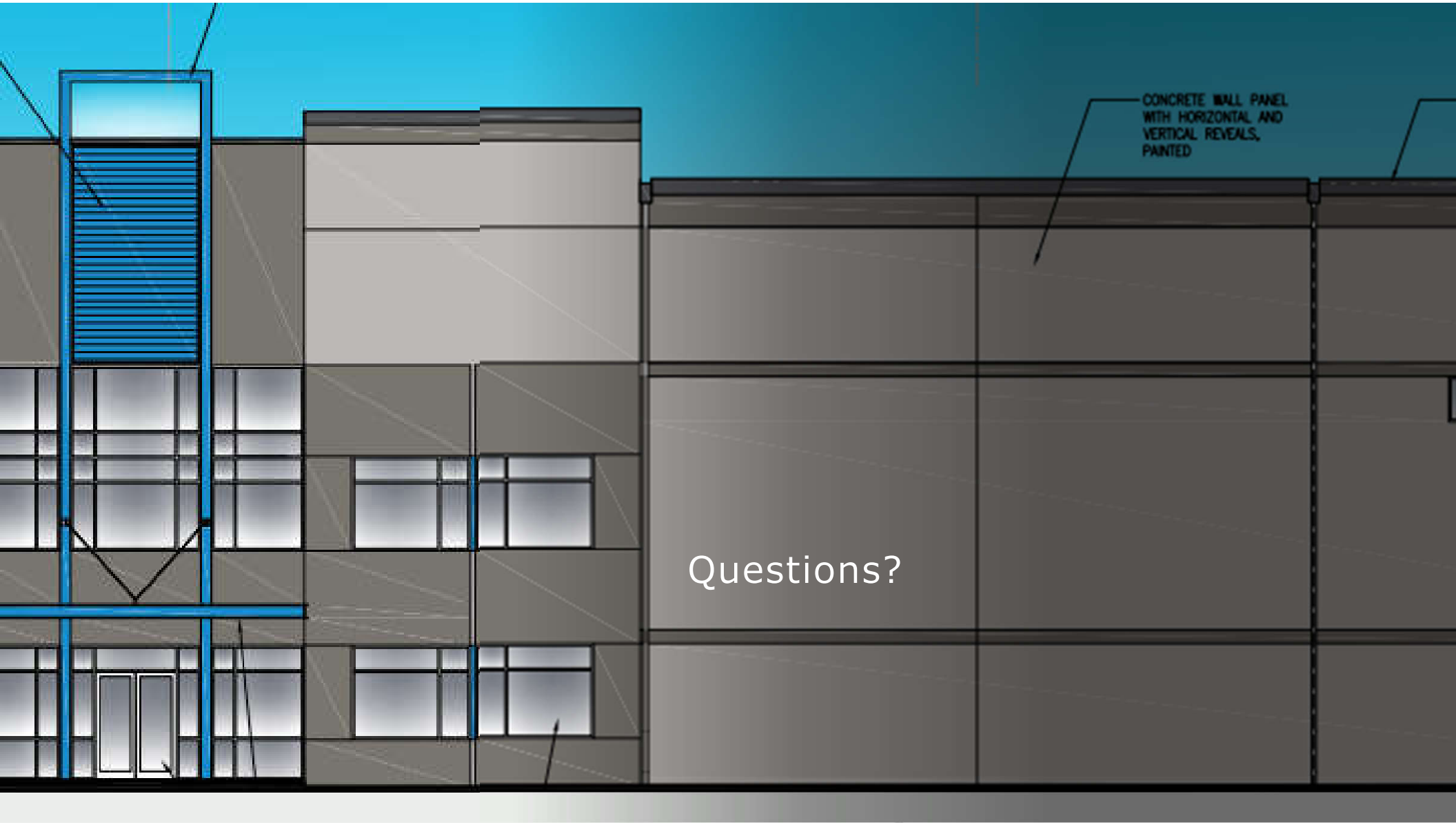
- Massing and setbacks are major elements of a site plan. These elements have the greatest impact as to how the proposed development relates to the surrounding area and how individuals living and visiting the area interact with the development. Major components that define the character and quality of the proposed development include the size, scale, and placement of buildings, lot coverage, and traffic/pedestrian circulation.





Looking West on NW Lake Road

Looking East on NW Lake Road


CONCRETE WALL PANEL
WITH HORIZONTAL AND
VERTICAL REVEALS,
PAINTED
Questions?

Community Development Department | P
616 NE Fourth Avenue | Camas, WA 98607
(360) 817-1568
communitydevelopment@cityofcamas.us

General Application Form **Case Number:**

Applicant Information

Applicant/Contact:: Bart Brynestad PE/Sheri Greene *Phone:* (253) 383-2422

Address: 2215 N. 30th Street #300 bbrynestad@ahbl.com sgreene@ahbl.com
Street Address *E-mail Address*

Tacoma WA 98403
City *State* *ZIP Code*

Property Information

Property Address: 4707 NW Lake Road 176155000 and 176170000
Street Address *County Assessor # / Parcel #*

Camas
City *State* *ZIP Code*

Zoning District LI/BP Site Size 74.06

Description of Project

Brief description: Project proposes construction of three industrial buildings totaling 969,073 square feet of warehouse/office facilities with associated parking and drive aisles. The project also includes construction of new onsite public roads with utility improvements.

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: Grimm Joseph and Carolyn *Phone:* ( )
Last *First*

6315 NE 63rd Street
Street Address *Apartment/Unit #*

E mail Address: Vancouver WA 98661
City *State* *Zip*

Signature

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

Signature: see attached authorization letter **Date:**

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: Pre-Application Date:	
Staff: Related Cases # ☐ **Electronic Copy Submitted**	**Validation of Fees**

Community Development Department | Planning
616 NE Fourth Avenue | Camas, WA 98607
(360) 817-1568
communitydevelopment@cityofcamas.us

Boundary Line Adjustment

General Application Form **Case Number:**

Applicant Information

Applicant/Contact:: Bart Brynestad PE/Sheri Greene *Phone:* (253) 383-2422

Address: 2215 N. 30th Street #300 bbrynestad@ahbl.com sgreene@ahbl.com
Street Address *E-mail Address*

Tacoma WA 98403
City *State* *ZIP Code*

Property Information

Property Address: 4707 NW Lake Road 176155000 and 176170000
Street Address *County Assessor # / Parcel #*

Camas
City *State* *ZIP Code*

Zoning District LI/BP Site Size 74.06

Description of Project

Brief description: Project proposes construction of three industrial buildings totaling 969,073 square feet of warehouse/office facilities with associated parking and drive aisles. The project also includes construction of new onsite public roads with utility improvements.

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

Permits Requested: Boundary Line Adjustment ☐ Type I ☐ Type II ☐ Type III ☐ Type IV, BOA, Other

Property Owner or Contract Purchaser

Owner's Name: Grimm Joseph and Carolyn *Phone:* ( )
Last *First*

6315 NE 63rd Street
Street Address *Apartment/Unit #*

E mail Address: Vancouver WA 98661
City *State* *Zip*

Signature

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Signature: see attached authorization letter **Date:**

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: Pre-Application Date:	
Staff: Related Cases # ☐ **Electronic Copy Submitted**	**Validation of Fees**

DocuSign Envelope ID: 7B2771CE-4821-4708-98BE-57997EC404E3

October 14, 2021

Panattoni Development Company
1821 Dock St, Suite 100
Tacoma, WA 98402

RE: Authorization Letter for 74 Acres of Land
4707 NW Lake Rod, Camas, WA

To whom it may concern:

As the owners of Clark County Parcels 176155-000 and 176170-000 we hereby authorize Panattoni and their consultants to make applications to the City of Camas. These applications may include but are not limited to: land use, SEPA, Design Review, construction and development permits, etc.

Sincerely,

GRIMM LIVING TRUST
Lisa Sorenson
Trustee

DocuSigned by:
Lisa Sorenson Trustee
604D62FC140C4F6...

Application Checklist and Fees [updated on January 1, 2021]

◊ Annexation	$863 - 10% petition; $3,669 - 60% petition	001-00-345-890-00		$
◊ Appeal Fee		001-00-345-810-00	$399.00	$
◊ Archaeological Review		001-00-345-810-00	$137.00	$ 137.00
◊ Binding Site Plan	$1,879 + $24 per unit	001-00-345-810-00		$
◊ Boundary Line Adjustment		001-00-345-810-00	$103.00	$
◊ Comprehensive Plan Amendment		001-00-345-810-00	$5,826.00	$
◊ Conditional Use Permit				
Residential	$3,417 + $105 per unit	001-00-345-810-00		$
Non-Residential		001-00-345-810-00	$4,328.00	$
◊ Continuance of Public Hearing		001-00-345-810-00	$524.00	$
◊ Critical or Sensitive Areas (fee per type) x3		001-00-345-810-00	$775.00	$ 2,325.00
(wetland, steep slopes or potentially unstable soils, streams and watercourses, vegetation removal, wildlife habitat)				
◊ Design Review				
Minor		001-00-345-810-00	$433.00	$
Committee		001-00-345-810-00	$2,375.00	$ 2,375.00
◊ Development Agreement	$877 first hearing; $530 ea. add'l hearing/continuance	001-00-345-810-00		$
◊ 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)*		$420.00	
Single Family Residence (SFR) - Stormwater Plan Review	*(Fee shown for information only)*		$208.00	
Gates/Barrier on Private Street Plan Review	*(Fee shown for information only)*		$1,041.00	
◊ Fire Department Review				
Short Plat or other Development Construction Plan Review & Insp.		115-09-345-830-10	$284.00	$
Subdivision or PRD Construction Plan Review & Inspection		115-09-345-830-10	$354.00	$
Commercial Construction Plan Review & Inspection		115-09-345-830-10	$424.00	$ 424.00
◊ Home Occupation				
Minor - Notification (No fee)			$0.00	
Major		001-00-321-900-00	$69.00	$
◊ LI/BP Development	$4,328 + $41.00 per 1000 sf of GFA (969,073)sqft	001-00-345-810-00		$ 44,059.99
◊ Minor Modifications to approved development		001-00-345-810-00	$346.00	$
◊ Planned Residential Development	$35 per unit + subdivision fees	001-00-345-810-00		$
◊ Plat, Preliminary				
Short Plat	4 lots or less: $1,936 per lot	001-00-345-810-00		$
Short Plat	5 lots or more: $7,1755 + $250 per lot	001-00-345-810-00		$
Subdivision	$7,175 + $250 per lot	001-00-345-810-00		$
◊ Plat, Final:				
Short Plat		001-00-345-810-00	$200.00	$
Subdivision		001-00-345-810-00	$2,375.00	$
◊ Plat Modification/Alteration		001-00-345-810-00	$1,196.00	$
◊ Pre-Application (Type III or IV Permits)				
No fee for Type I or II				
General		001-00-345-810-00	$354.00	$
Subdivision (Type III or IV)		001-00-345-810-00	$911.00	$
◊ SEPA		001-00-345-890-00	$810.00	$ 810.00
◊ Shoreline Permit		001-00-345-890-00	$1,196.00	$
◊ Sign Permit				
General Sign Permit	(Exempt if building permit is required)	001.00.322.400.00	$41.00	$
Master Sign Permit		001.00.322.400.00	$126.00	$
◊ Site Plan Review				
Residential	$1,151 + $34 per unit	001-00-345-810-00		$
Non-Residential	$2,876 + $68 per 1000 sf of GFA	001-00-345-810-00		$
Mixed Residential/Non Residential	(see below)	001-00-345-810-00		$
	$4,055 + $34 per res unit + $68 per 1000 sf of GFA			
◊ Temporary Use Permit		001-00-321-990-00	$80.00	$
◊ Variance (Minor)		001-00-345-810-00	$695.00	$
◊ Variance (Major)		001-00-345-810-00	$1,295.00	$
◊ Zone Change (single tract)		001-00-345-810-00	$3,345.00	$

Adopted by RES 1023 AUG 2005; Revised by RES 1113 SEPT 2007; Revised by RES 1163 OCT 2009; Revised by RES 1204 NOV 2010; Revised by RES 15-001 JAN 2015; Revised by RES 15-007 MAY 2015; Revised by RES 15-018 DEC 2015; Revised by RES 16-019 NOV 2016; Revised by RES 17-015 NOV 2017; Revised by RES 18-003 APRIL 2018; Revised by RES 18-013 NOV 2018; Revised by RES 19-018 DEC 2019 Revised by RES20-014 DEC 2020

Fees reviewed & approved by Planner: [signature] 10/22/21
Initial *Date*

For office use only

Total Fees Due: $ 50,130.99

PRE-APPLICATION MEETING NOTES
Randy Brown Industrial buildings
PA20-50

Thursday, December 3, 2020 – Revised January 7, 2021
City Hall (no in-person meeting)
616 NE 4th Ave. Camas, WA. 98607

Applicant:	Randy Brown 12503 Bel-Red Road, Suite 101 Bellevue, WA 98005 360-574-6088 Email: randy.brown@synthesispllc.com
City of Camas:	Lauren Hollenbeck, Senior Planner Robert Maul, Planning Manager Anita Ashton, Project Manager Engineering Bob Cunningham, Building Official Randy Miller, Fire Marshall
Location:	4707 NW Lake Road Camas, WA 98607 Parcel Numbers: 176155000 & 176170000
Zoning:	Light Industrial/Business Park (LI/BP)
Description:	The applicant is proposing the construction of 4 industrial buildings for warehouse distribution totaling 1,185,075 square feet.

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".

PLANNING DIVISION LAUREN HOLLENBECK lhollenbeck@cityofcamas.us (360) 817-7253

Applicable codes for the proposed development include Title 16 Environment, Title 17 Land Development, and Title 18 Zoning of the Camas Municipal Code ("CMC"), which can be found on the city website. Please note it remains the **applicant's responsibility** to review the CMC and address all applicable provisions. The following pre-application notes are based on the application materials and site plan submitted to the City on November 15, 2020:

Application Requirements
Your proposal will need to comply with the general application requirements per **CMC Section 18.55.110** as follows**:**

1. A completed city application form and required fee(s);

Fees will be based on the adopted fees at the time of application submittal. The current fees include the following:

1.	Short Plat (*if proposed*)	$1,904.00 per lot
2.	Binding Site Plan (*if proposed*)	$1,894.00 + $24.00 per unit
3.	Site Plan Review	$2,828.00 + $67.00 per 1000 sf of GFA
4.	Major Design Review	$2,335.00
5.	Critical Areas Review (per type)	$762.00
6.	SEPA	$796.00
7.	Archaeological Review	$135.00
8.	Fire Department Review	$416.00
9.	Building Permit and Plan Review	*based on the valuation of the project
10.	Engineering Review	3% of estimated construction costs

2. A complete list of the permit approvals sought by the applicant;
3. A current (within thirty days prior to application) mailing list and mailing labels of owners of real property within three hundred feet of the subject parcel, certified as based on the records of Clark County assessor;
4. A complete and detailed narrative description that describes the proposed development, existing site conditions, existing buildings, public facilities and services, and other natural features. The **narrative shall also explain how the criteria are or can be met**, and address any other information indicated by staff at the pre-application conference as being required;
5. Necessary drawings- three sets and an electronic copy (send as a PDF by email or on a disc);
6. Copy of the pre-application meeting notes;
7. A development sign must be posted on site per CMC Section 18.55.110.H (1-5).

Short Plat
A short plat is required if the proposal includes subdividing the land into nine or fewer lots per CMC 17.09.010. In addition to the general application requirements listed above, a complete short plat application for preliminary short plat approval shall comply with CMC 17.09.030.B. A narrative demonstrating compliance with the approval criteria for a short plat per CMC 17.09.030.D shall be submitted with the application.

Binding Site Plan (BSP)
A binding site plan may be submitted in lieu of a short plat application if the property is on land zoned commercial or industrial. In addition to the general application requirements listed above, a complete BSP application shall comply with CMC 17.15.030.B. A narrative demonstrating compliance with the approval criteria for a BSP per CMC 17.15.030.D shall be submitted with the application.

Site Plan Review
The application for Site Plan Review shall contain information outlined in CMC 18.18.040 (A-J). The application shall address in a **narrative** the criteria of approval CMC 18.18.060 (A-F). **The proposal is subject to the LI/BP development standards in CMC Chapter 18.21.** The site development approval process in a LI/BP district is processed as a Type III decision per CMC 18.21.020, which is a quasi-judicial process and requires a public hearing before Planning Commission with a final decision by City Council. Building height, setback and lot coverage can be found in CMC 18.09.030 Table 1.

Major Design Review
The site is located within a city gateway area, which is subject to Design Review per CMC 18.19.020 and reviewed by the Design Review Committee. The standards applicable to this property for Design Review are found in the Design Review Manual to include the Standard Principles & Guidelines in addition to the Specific Principles & Guidelines for Gateways & Corridors and Commercial & Mixed Uses.

A submittal for design review should include a narrative, site plan drawing, detailed landscape plan, exterior elevations, building materials and colors, lighting specs and plan, and sign plan (optional). A final design review decision is typically consolidated and issued with the Site Plan permit.

Landscaping/Tree Retention
Landscaping standards apply to industrial uses per CMC 18.13.020.B.1. A Landscape, Tree and Vegetation plan must be submitted pursuant to CMC 18.13.050 along with 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. A minimum 20-unit tree density per net acre (exclusive of critical area tracts) is required for new development per CMC 18.13.051 and needs to be incorporate into the overall landscape plan. Landscape screening buffers shall be provided per CMC 18.13.055 Table 1. **The LI/BP landscape standards in CMC 18.21.070 are also applicable.**

Parking Regulations
The proposed use will need 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. Warehousing uses require 1 per 1,000 square feet. Per CMC 18.11.020(D), small car parking spaces are allowed at a maximum of 30% of the parking lot and can be small as 8’ by 15’ deep.

Critical Areas Review
Clark County GIS mapping identifies the following critical areas within or adjacent to (within 200-feet) of the subject property: 1) geologically hazardous areas (i.e. steep slopes >10-15%), 2) wetlands, 3) fish and wildlife conservation areas (i.e. streams). Oregon White Oaks, if present on site, are considered a habitat of local importance and hereby considered a critical area per CMC 16.61.010.A.3.a.

A critical areas report is required for each type of critical area if a proposed development is within or adjacent to a critical area per CMC Section 16.51.130. The general requirements for a critical areas report are found in CMC Section 16.51.140. The City’s code contains additional report requirements for each type of critical area as follows: 1) Geologically Hazardous Areas are found in CMC 16.59.060 and 16.59.070, 2) Wetlands are found in CMC 16.53.030 and 3) Fish and Wildlife Habitat Conservation Areas are found in CMC 16.61.020.

SEPA
Your proposal is not categorically exempt from the requirements of the State Environmental Policy Act (SEPA) per CMC Section 16.07.020.C as the proposed property for development contains environmentally sensitive areas. Therefore, a SEPA environmental checklist is required.

Archeological Review
The site is located in an area of low-moderate probability for the presence of archaeological objects. If an archaeological site is within a ¼ mile of the site, an archeological predetermination will be required per CMC Section 16.31.070.A.

ENGINEERING DIVISION **ANITA ASHTON aashton@cityofcamas.us (360) 817-7231**

General Requirements:

1. Civil site construction plans, which includes all improvements outside of the building envelope, shall be prepared by a licensed Washington State Engineer in accordance with the *Camas Design Standards Manual (CDSM)* and CMC 17.19.040.
2. The Engineering Dept. is responsible for plan review (PR) and construction inspection (CI). A 3% PR&CI fee is collected for all improvements outside of the building envelope.
   a. The 3% fee is based on an engineer's estimate or Contractor's construction bid.
   b. The preliminary engineer's estimate is to be submitted with the application.
   c. The engineer's estimate is to include all improvements outside of any proposed building envelope.
3. *Engineering site plan submittal will not be accepted until after Land Use decision is issued.*
4. *Building applications will not be accepted until after Final Acceptance is issued by Engineering Dept.*
5. If applicable, existing wells and septic tanks and septic drain fields shall be decommissioned in accordance with State and County guidelines per CMC 17.19.020 (A3).
6. Regulations for installation of public improvements, improvement agreements, bonding, final platting, and final acceptance can be found at CMC 17.21.
7. The applicant will be responsible for ensuring that private utilities; underground power, telephone, gas, CATV, and associated appurtenances are installed.

Traffic/Transportation:

8. A traffic analysis (TIA) report will be required and shall be prepared by a licensed Traffic Engineer, in accordance with the City's adopted *Traffic Impact Study Guidelines.*
9. The following items will be included in the analysis:
   a. Site distance at the applicant's access points onto NW Lake Road and Camas Meadows Drive.
   b. Vision clearance area is to be addressed, per CMC 18.17.030.
   c. Onsite traffic circulation plan showing ingress and egress in relation to future Street "A" and Street "B", per CMC 17.19.040 (B.10.a).
   d. Length of left-turn pocket on NW Lake Road at future Street 'A'.
   e. Address movement conflicts with nearby intersections and private driveways.
   f. Provide AM and PM Peak trip distribution to and from the site.

Streets:

10. NW Lake Road is an existing fully improved 5-lane roadway, designated as an arterial, with bike lanes, sidewalks, street landscaping, illumination, and center raised medians.
11. Future Street "A" and Street "B", as shown in the 6-year Transportation Comprehensive Plan, are over and across the proposed development. See attached 6-year street plan and exhibits.
12. Per CMC 17.19.040.B.1, half-width and/or full-width street improvements are required.
13. Street right-of-way shall meet the criteria for CMC 17.19.040.B., Table 17.19.040-2
14. Future Street 'B':
    a. Designated as a future 2 or 3-lane collector, see CDSM, Street Detail ST4.
    b. The applicant will be required to dedicate 60-feet right-of-way for Street 'B'.
    c. The applicant will be required to construct the full-width street improvements for the segment of Street "B" traversing east-to-west through the property. This includes curbs & gutters, planter strips, sidewalks, bike lanes, and a 36-foot paved surface.
    d. Access driveways shall meet the requirements of Table 3 - Access Spacing Standards for a Collector (min. 330-ft. / max. 600-ft.), as indicated in CDSM.
    e. The curve radii at all driveway accesses shall be a minimum 25-feet at all intersections with the public road and other private driveways to allow for fire access.
15. Future Street 'A':

a. Designated as a future 2 or 3-lane collector, see CDSM, Street Detail ST4.
b. The applicant will be required to dedicate sufficient right-of-way to accommodate the half-width street improvements for the length of Street 'A' from NW Lake Road north to NW Camas Meadows Drive.
c. The applicant will be required to construct the full half-width street improvements for Street "A" along the easterly property line from NW Lake Road to NW Camas Meadows Drive.
d. Street 'A' shall be constructed in accordance with Street Detail ST4, consisting of curb & gutter, planter strip, sidewalk, bike lane, and a minimum 24-foot paved surface to allow for 2-way traffic.
e. Access driveways shall meet the requirements of Table 3 - Access Spacing Standards for a Collector (min. 330-ft. / max. 600-ft.), as indicated in CDSM.
f. The curve radii at all driveway accesses shall be a minimum 25-feet at all intersections with the public road and other private driveways to allow for fire access.

16. The applicant has proposed 3 driveway access onto their property on to NW Lake Road. Per CDSM Table 3, Access Spacing Standards, the minimum access spacing on an arterial is a minimum of 660-feet with a maximum of 1000-feet.
    a. The applicant is to construct all driveway approaches per CDSM, Detail ST17.
    b. The curve radii at all driveway accesses shall be a minimum 25-feet at all intersections with the public road and other private driveways to allow for fire access.
    c. The driveway proposed at the easterly property line shall be the intersection of future Street 'A' at NW Lake Road. This location will require removal of the existing median to install a left-turn pocket from NW Lake Road onto Street 'A'. The removed median will be replaced with full rock and pavement section per CDSM Detail ST6.
    d. The second proposed driveway location, as shown onto NW Lake Road, is to be designated as "Right-in/Right-out Only".
    e. Third proposed driveway access, as shown onto NW Lake Road at the west property line, shall also be designated as "Right-in/Right-out Only" access to the property.
17. On-site drive aisles shall be a minimum 15-feet wide for one-way travel and 24-feet wide for two-way travel.
18. All existing driveways are to be removed and replaced with sidewalk and planter strip to match the surrounding area.
19. Applicant shall provide ADA compliant pedestrian access throughout the site and out onto NW Lake Road, Street 'B', Street 'A', and NW Camas Meadows Drive,
20. ADA compliant pedestrian ramps are required at all pedestrian crossings, therefore careful evaluation of street profile grades and site grading will be required.
21. LED street lighting is to be installed along all street frontages within and adjacent to the proposed development, in accordance with CDSM.

Stormwater:

22. Proposed development is located in the Lacamas Lake Basin.
23. Combined parcel size is 3,225,836 sf (74.06 acres).
24. A preliminary stormwater report (TIR) is to be submitted with the application for the proposed development.
25. Per *CMC 14.02 Stormwater Control*, onsite stormwater treatment and detention shall be designed in accordance with the latest edition of Ecology's *Stormwater Management Manual for Western Washington* (currently 2019 SWMMWW).
26. Refer to Ecology's *Figure I-3.1 Flow Chart for Determining Requirements for New Development (Vol. I, Chapter 3)* and the CSDS.

- All development projects shall comply with Minimum Requirement (MR) #2 – Submittal of a *Stormwater Pollution Prevent Plan (SWPPP)*.
- If the project results in 5,000 sf, or greater, of new plus replaced hard surface area; than Minimum Requirements (MR) #1- #9 will apply.

27. Maintenance of stormwater facilities will be the responsibility of the owner per *CMC 17.19.040.C.3.*
28. A right-of-entry, for purposes of inspection, is to be granted to the City and is to be included as a plat note.
29. Private storm easements, if applicable, are to be shown on the construction drawings and the plat.
30. The applicant is to provide a designated concrete washout area (BMP C154, Vol. II, Chap. 3, pgs. 320-326), which is to be shown on the engineering plans. These areas are to be used during home construction and commercial construction activities. The washout area is to be removed prior to issuance of final occupancy.
31. Stormwater facilities shall be located and landscaped per CMC 17.19.030 (F6) and CMC 17.19.040 (C3a).
32. A monthly stormwater utility fee will be assessed in accordance with CMC 13.89 for new impervious surfaces added to the site.

Erosion Control:

33. The proposed development area totals over one acre in size (74.06 Acres), which will require an NPDES Construction Stormwater General Permit and an SWPPP document. Copies of both are to be submitted to the City prior to construction.
34. An erosion control bond, in the amount 200% of the engineer's estimate for erosion control measures, is to be submitted prior to construction per CMC 17.21.030.

Water:

35. There is an existing 18-inch DIP waterline in NW Lake Road ,with an existing 12-inch stub to the north at the eastern edge of the property.
36. There is an existing 12-inch waterline in NW Camas Meadows Drive, with an existing 12-inch stub to the south.
37. The applicant will be required to extend the 12-inch waterline through future Street "A", from NW Lake Road, and tie into the existing 12-inch water main in NW Camas Meadows Drive.
38. The applicant will be required to install minimum 8-inch public water main from west-to-east in Street 'B' and tie into Street 'A' for the benefit of the proposed development.
39. The waterlines constructed with Street 'A' and Street 'B' shall be public.
40. The onsite waterlines and hydrants shall be private.
41. Onsite commercial water systems shall be private, properly sized, installed and maintained by the business/building owner.
42. Private fire hydrants shall be ordered from the manufacturer as red hydrants.
43. Based on proposed usage, the applicant will be required to evaluate required fire flows. Contact Fire Marshal's office regarding fire flow questions.
44. The water systems serving commercial uses shall be privately owned and maintained beyond the water meter. If an onsite fire line is required ,then a Double Detector Check Valve (DDCV) will be required at the ROW line. Irrigation systems will also require a separate meter and individual Back Flow Device (BFD).
45. A monthly fire utility fee will be assessed in accordance with CMC 13.36 if a fire line is installed.
46. A 10-foot separation shall be maintained between water and sanitary sewer lines when located within the right-of-way.

Sanitary Sewer:

47. There is an existing 12-inch sanitary sewer force main in NW Lake Road with an existing 6-inch stub located at the east edge of the property.

48. There is an existing 10-inch STEP main located in NW Camas Meadows Drive.
49. The applicant will be required to extend a minimum 6-inch sanitary sewer main through Street "A" from NW Lake Road north to the existing 10-inch STEP main in NW Camas Meadows Drive.
50. The applicant will be required to install the public sanitary sewer main from west-to-east in Street 'B' and tie into Street 'A'.
51. The sanitary STEP sewer mains constructed with Street 'A' and Street 'B' shall be public.
52. Onsite sanitary sewer systems shall be privately owned and maintained.
53. The Applicant will be required to provide an appropriately sized sanitary sewer line to serve the proposed development.
54. The applicant will be responsible for the design, installation and maintenance of the private STEP sewer system that will serve the proposed development per CMC 17.19.040 (C, 2, d.).
55. A 10-foot separation shall be maintained between water and sanitary sewer lines when located within the right-of-way.

Parks/Trails:

56. There are no trail requirements, however, all onsite sidewalks shall meet ADA requirements.

City Approved Tapping Contractors:

57. A&A Drilling Services, Inc (water & pressure sewer):
    16734 SE Kens Ct. #B, Milwaukie, OR 97267, 800-548-3827,
    http://www.aadrilling.com
58. Ferguson Waterworks (water only):
    14103 NW 3rd Court, Vancouver, WA 98685, 360-896-8708, https://www.ferguson.com/branch/nw-3rd-ct-vancouver-wa-waterworks

Impact Fees & System Development Charges (SDCs):

- Impact Fees and SDCs are collected at time of building permit issuance
- Rates are adjusted on January 1st of each year.
- 2021 Rates are noted below.
- *This development is in the South District*.

Impact Fees- Commercial:

- Traffic Impact Fee (TIF) - $3,555.00 per PM Peak Hour Trip
- School Impact Fee – Not applicable
- Park/Open Space Impact Fee – Not applicable
- Fire Impact Fee - $0.40 SF

System Development Charges (SDCs) for 2021:

59. Water –
    - 1" meter - $12,329.00 + $445.00 connection fee
    - 1.5" meter - $24,657.00 + $851.00 connection fee
      (Developer purchases – City installs)
    - 2" meter - $39,415.00 + $2,075.00 connection fee
      (City approves meter - Developer purchases & installs)
60. Sewer – Based on water meter size
    - 1" meter - $6,234.00 + $177.00 inspection fee
    - 1.5" meter - $12,467.00 + $177.00 inspection fee
    - 2" meter - $19,948.00 + $177.00 inspection fee

BUILDING DIVISION BOB CUNNINGHAM bcunningham@cityofcamas.us (360) 817-1568

1. The structures will be reviewed under the most current building codes as adopted by The State of Washington.

2. A code analysis and plans shall be prepared by an architect licensed by the State of Washington. The code analysis shall address types of occupancy, type of construction, building height, allowable area, fire separation distance, Fire Life Safety elements and the ADA requirements
3. The structural drawings and calculations shall be prepared and stamped by a Professional Engineer licensed by the State of Washington.
4. The new structure shall comply with the Washington Energy Code for building insulation, mechanical equipment, lighting, etc… All commercial energy forms shall be prepared by a licensed professional in accordance with section C103 of The Washington Energy Code.
5. Plumbing and mechanical construction documents shall be prepared by a design professional licensed by the State of Washington
6. A set of detailed plans for commercial kitchen equipment, ventilation equipment, the type 1 hood and suppression systems shall be prepared by a design professional licensed by the State of Washington
7. If applicable a properly sized grease interceptor is required.
8. Review and approval from the Clark County Health Department
9. Any fire suppression and or fire alarm systems shall be in accordance with IBC and other applicable code standards, all fire suppression and or fire alarm systems shall be reviewed & permitted through the Camas Fire Marshal's office.
10. For Businesses located back off the street a monument sign for addresses will be required.
11. Impact fees may, with the consent of the city, be prepaid. Prepaid impact fees, including the amounts of any developer credits under subsection 3.88.140(A) shall be deducted from impact fees at the time such fees are collected pursuant to subsection 3.88.040(C).

Section 427—Electric vehicle charging infrastructure.

427.1 Scope. The provisions of this section shall apply to the construction of new buildings serving Group B, Group R-1 hotel and motel only, and Group R-2 occupancies.
427.2 Required electric vehicle charging infrastructure. Where parking is provided, five percent of parking spaces shall be provided with electric vehicle charging infrastructure in compliance with Sections 427.3, 427.4 and 427.5. When the calculation of percent served results in a fractional parking space, the applicant shall round up to the next whole number.
EXCEPTION: Group R and Group B occupancies served by less than 20 on-site parking spaces.

FIRE DEPARTMENT RANDY MILLER rmiller@cityofcamas.us (360) 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

All review notes are based on the current codes and standards at the time of submittal, specifically the IFC, NFC & CMC. Plat notes and other review notes may also be based on the developers/applicants willingness to provide our community/citizens items exceeding the "Minimums" required for Life Safety and may not specifically be a requirement of the minimum codes.

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

FMO PRE-APP NOTES: PA20-50
***** A meeting between the Fire Marshal's Office, General Contractor etc. is required prior to the start of any underground work/construction. Please contact our office to arrange a time.*****

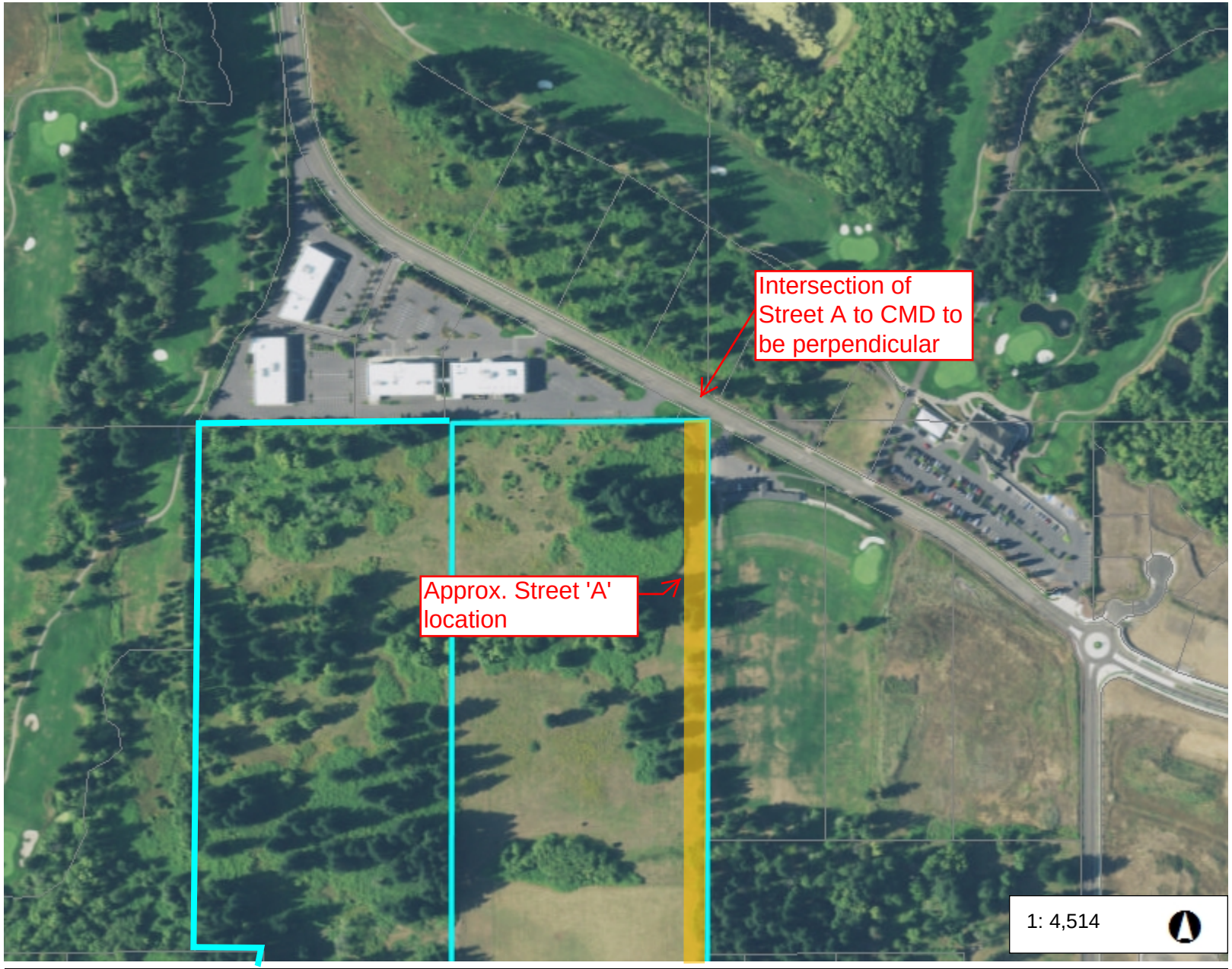
The following list includes potential permits that may occur throughout the project and is dependent on the actual use/submittals.

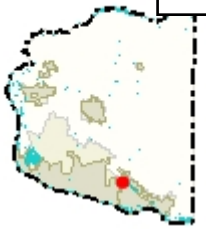
1) Site plan permit required. Distributed to the FMO by planning once submitted.
2) Fire Marshals Office New Construction permit required for each structure. Submit two sets of plans and any explanatory materials needed to facilitate a successful review. Each permit requires a completed FMO application form.
3) Separate Permit with the Fire Marshal's office required for each NFPA 24 Underground Fire Sprinkler Main. (Washington State Licensed Level "U" required for onsite installation contractor bidding the work) This "work" shall be performed by a "level "U" licensed company. A third party sign off or third party overseer shall not occur as confirmed by the State Fire Marshal's office. This is strictly enforced, please contact our office if you have any questions. **Provide documentation of the minimum level “U” contractor that will be working on each NFPA 24 fire main underground system. ** There will be NO exceptions to the minimum level “U” license requirement**

   It is preferable to have the double checks in the building riser room or riser doghouse instead of in a vault if that is what works for the project. Private fire hydrants to be ordered from the factory in Red. Knox padlocks, Building Lock Boxes and locking FDC caps to be ordered from the Knox company, specific items/product numbers to be approved prior to ordering. Provide door access to the riser room from the outside of each building.
4) Separate Permit with the fire Marshals office required for the fire alarm system or for any future TI’s, changes, alterations, additions, deletions etc. to any existing Fire Alarm System. Minimum requirements shall be NICET III for design and NICET II for acceptance testing. Documentation required. All fire sprinkler system control valves and all tampers are to be monitored by the Fire Alarm System.
5) Separate Permit with the Fire Marshal's office required for the NFPA 13 Above Ground Fire Sprinkler System. WA State Licensed Fire Sprinkler Contractor with appropriate NICET Levels required. Provide outside door access to riser room. Building-Shell fire sprinkler systems designed to a greater commodity hazard, provides increased flexibility for occupancy types. High piled storage requires a third party review for fire approved fire sprinkler coverage.
6) A separate permit required with the Fire Marshal's office required for any underground oil tank removal discovered at this projects site. This submittal if needed needs to occur ASAP.
7) Separate permit with the Fire Marshal's office Required for any Generator. Installed per NFPA 110.
8) Separate Permit with the Fire Marshals office required for any needed enhancement for Emergency Responder Radio Coverage 2009 IFC CH 5, Section 510. This code section applies to new construction and retroactively to existing structures. This permit may or may not apply depending on the effectiveness of emergency services radio transmissions from within a building. For example, radio analysis by an approved company/technician has been performed in other buildings in our jurisdiction at 75 % build out. It has been discovered that costs to meet this requirement when emergency radios do not work inside of a structure dramatically increase when not completed in the construction process and mitigation occurs by retrofitting the building. It seems unlikely that in these buildings a DAS system would be needed however it is being brought to your attention as a possibility.
9) Separate permit required for any onsite fuel tanks and or fuel refilling operation during construction.

10) NFPA Carbon Dioxide monitoring permit required with the FMO for any Dewar tank installation.
11) Other Fire Code Permits may be required as discovered and are not waived because of inadvertent omission in this review.
12) Access to construction site through fence gates shall be required with the use of "Knox" padlocks. This can be ordered online at the Knox Co. website.
13) Please don't hesitate to contact the FMO if you have any questions. 360-834-6191 or FMO@cityofcamas.us
14) When contacting the Fire Marshal regarding future permits, it is required that you have available or provide the APPLICATION number as noted on the permit.
15) To request future inspections contact the Fire Marshal's Office via *Camas Connect* (see attached for details). Otherwise please call our inspection line at 360-834-6191 x1.

Grimm Parcels - North End





Legend

- Taxlots
- Cities Boundaries
- Urban Growth Boundaries

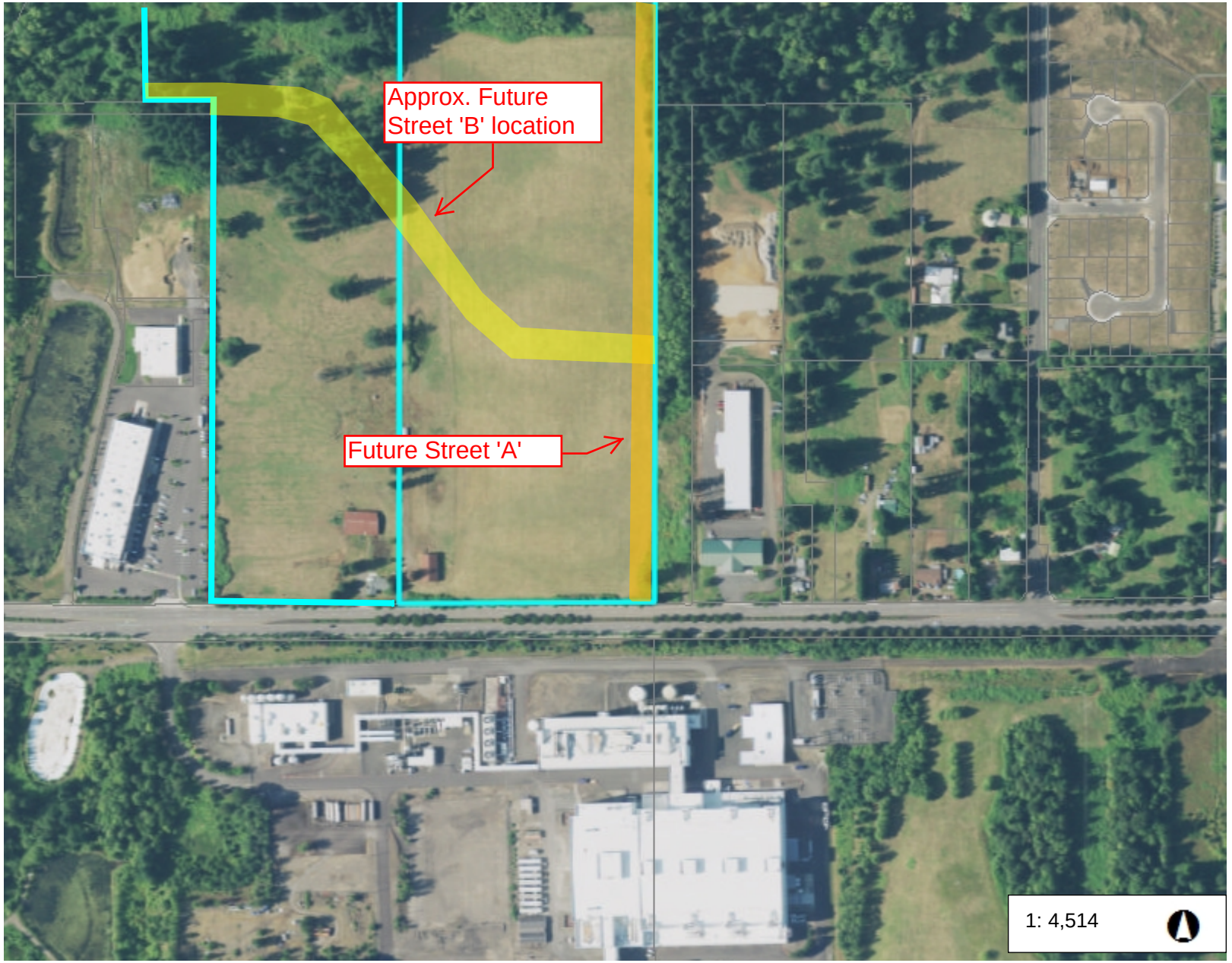
Notes:

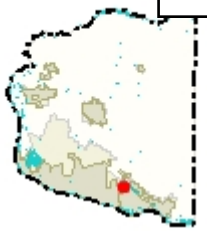
752.3 0 376.17 752.3 Feet

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.

Grimm Parcels - South End





Legend

- Taxlots
- Cities Boundaries
- Urban Growth Boundaries

Notes:

752.3 0 376.17 752.3 Feet

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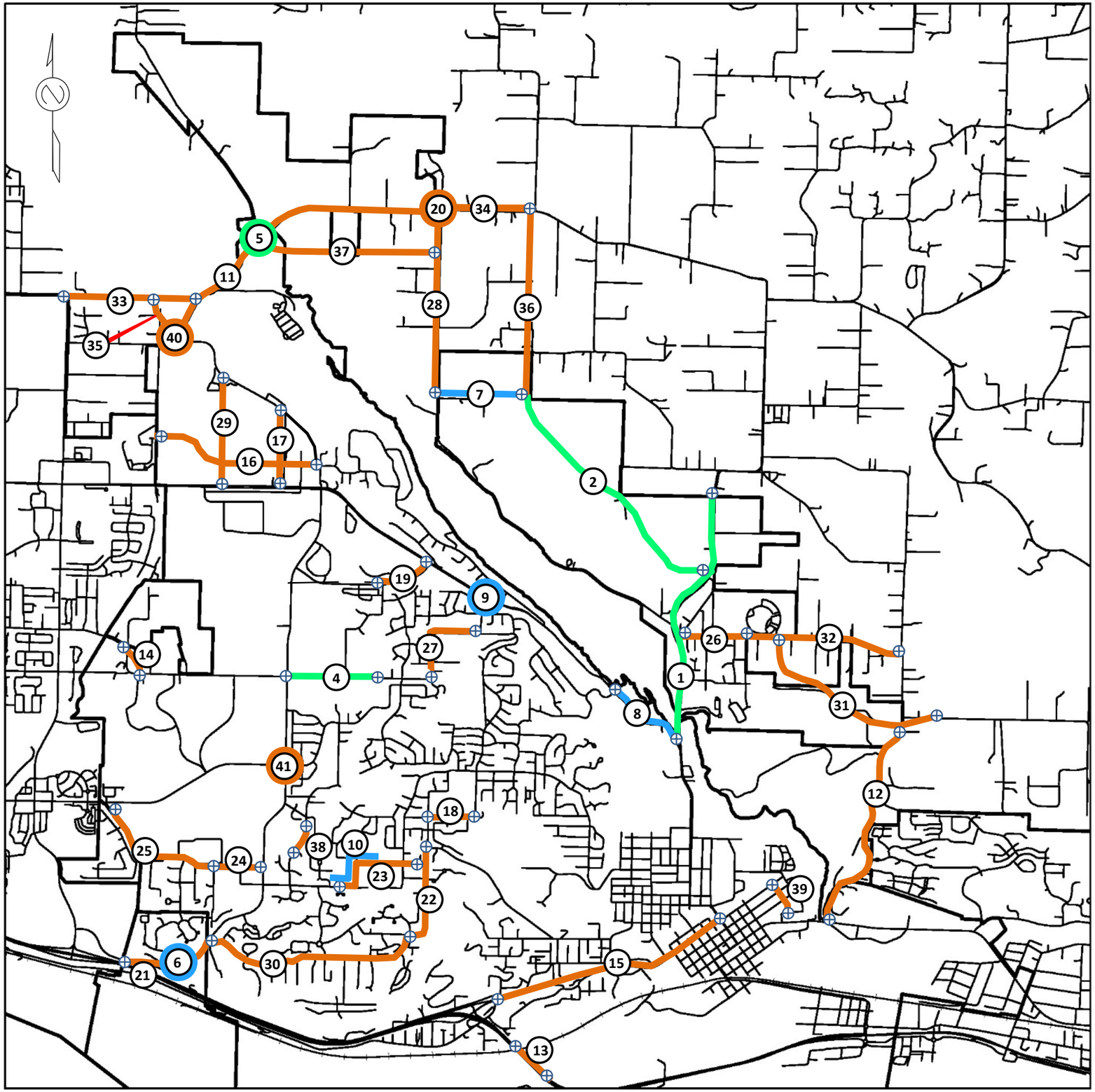
City of Camas
2021 – 2026
Six Year Street Priorities



1 SR 500 (Everett St/Rd)
2 North Shore East/West Arterial
3 ADA Access Upgrades Citywide
4 NW 38th Ave (Ph 3)
5 NE Goodwin Road / Ingle Rd Signal

6 NW Brady Rd at NW Grand Ridge Dr. Intersection Imp.
7 NE 9th St
8 NW Lake Rd.
9 Lake Rd. & NW Sierra St. Signal
10 16th Ave/ Hood / 18th Ave Path

11 NE Goodwin Rd/28th St
12 SE Crown Rd
13 SR 14 - West Camas Slough Bridge
14 Bybee Rd
15 NW/NE 6th Ave Corridor Imp
16 Street "B" (North Dwyer Creek Area)
17 NW Payne St.
18 NW 23rd Ave
19 NW Leadbetter Dr Path
20 NE 28th St & NE 232nd Ave Intersection Imp.
21 NW Brady Rd Ped & Bike Improvements
22 NW Astor St.
23 NW 16th Ave/Hood/18th Ave
24 NW 18th Ave
25 NW 18th Ave/Payne Rd
26 NE 43rd Ave
27 NW Astor St. /43rd Ave
28 NE 232nd Ave
29 Street "A" (North Dwyer Creek Area)
30 NW McIntosh Rd
31 NW Woodburn Dr.
32 SE 15th St./Norse Rd
33 NE 18th St (192nd to Goodwin)
34 NE 28th St
35 NW Camas Meadows Dr (West)
36 NE 242nd Ave
37 NE Ingle Rd Extension
38 NW Maryland St
39 NE Nevada St.
40 NE Goodwin / Camas Meadows Signal
41 NW Pacific Rim / Parker St. Signal

2020JE Six Year Street Plan Map 2021-2026 D5-A

PROJECT MEMO

TO:	Lauren Hollenbeck, Senior Planner City of Camas	**DATE:**	April 13, 2022
FROM:	Bart Brynestad, PE Tacoma - (253) 383-2422	**PROJECT NO.:**	2200867.10
		PROJECT NAME:	Camas Business Center
SUBJECT:	Revised Project Narrative		

This Project Narrative is provided to support our applications for SEPA, Boundary Line Adjustment, Site Plan Review, Design Review, Critical Area Review, and Archeological Review for the Camas Business Center project. Below is a narrative of the proposed project and how the project meets all relevant requirements of the Camas Municipal Code (CMC).

Items noted below with *"**Request:**"* are areas where the project is requesting relief from the standards and is proposing an alternate method to meet the intent of the standard.

Project Description

The development site includes two tax parcels and is approximately 74 acres. The majority of the parcel is currently used as farmland and the remainder is undeveloped. One home exists on the property. The property is zoned Light Industrial/Business Park.

Panattoni Development plans to demolish the existing buildings and redevelop the site with three buildings, associated loading/truck yards, parking, and landscaping for a speculative industrial-type use. While the tenant(s) are not identified at this time, industry norms assume that 95 percent of the buildings will be warehouse and 5 percent will be associated office space.

The buildings are proposed to be one-story, Type III-B construction that are approximately 722,397 square feet (Building A), 93,351 square feet (Building B), and 127,191 square feet (Building C). The project will be constructed in up to three phases. Phase 1 will include development of Building A, along with all roads and utilities. Phase 2 will be Building B and Phase 3 will be Building C.

Site Plan Review (CMC18.18)

The criteria for approval from CMC 18.18.060 are listed below.

A. Compatibility with the city's comprehensive plan.

The site's comprehensive plan designation is Industrial, which is consistent with the LI/BP zoning and the proposed use.

B. Compliance with all applicable design and development standards contained in this title and other applicable regulations.

The project will comply with City of Camas design and development standards, including, but not limited to, the Camas Zoning Code, LI/BP Park Standards, and the Camas Design Standards Manual. As allowed by code, the project is requesting relief from the noted standards in the sections below.

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.

The project provides connections to public roadways, including cross connection from NW Lake Road to NW Camas Meadows Drive and a new east-west road for future connectivity. Additionally, sanitary sewer, storm sewer, and water utilities are provided to support the proposed development.

D. Adequate provisions are made for other public and private services and utilities, parks, and trails (e.g., provide copies of private covenant documents).

The project will provide a new public road connection for use by the public. The project will also accommodate private utilities such as telephone and communications.

E. Adequate provisions are made for maintenance of public utilities.

All proposed public improvements will be located within public right-of-way or public easements and will be accessible for maintenance.

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 Administration and Procedures.

The project meets all relevant statutory codes, regulations, and ordinances.

Roadway and Frontage Improvements

The project proposes two new roads onsite to meet project needs and satisfy city transportation requirements. The new Road A will be oriented north-south and will connect NW Lake Road to NW Camas Meadows Drive. The new Road B will be oriented east-west and will connect from the project's western boundary to the new Road A.

These proposed roads and alignments are in accordance with the City's Six-Year Transportation Comprehensive Plan. Please refer to Sheets SPR2 and SPR3 for the proposed roadway plan and sections.

Traffic Impact Analysis

A full Traffic Impact Analysis has been provided along with an Access Evaluation for the Lake Rd driveway.

Off-Street Parking

Parking is provided for each building at a ratio of 1 space per 250 SF of office use and 1 space per 1,000 SF of warehouse use. Parking calculations were made under the assumption that each building will be 5 percent office and 95 percent warehouse.

Building A provides 460 spaces (831 are required), Building B provides 123 spaces (107 are required), and Building C provides 192 spaces (146 are required).

Request:

While Building A does not meet the required parking count, we anticipate that the intended user will not require more parking than proposed. If a future tenant requires more vehicle parking, some of the trailer parking stalls can be converted to vehicle parking stalls.

Land Division/ Boundary Line Adjustment

The final configuration of the project will include two lots. Building A and C will be located on Lot 1 and Building B will be located on Lot 2. The lots will be created from the two existing lots from a Boundary Line Adjustment (BLA). A preliminary BLA exhibit has been provided to show the intended lot configuration. Once the City has approved the site plan and lot layout, we will prepare a formal BLA map for the application. Please refer to the separate BLA Narrative.

Density and Dimension Standards (CMC 18.09)

Front Yard

For Building A, the front yard will be toward NE Lake Road. The Building will be 50 feet tall and a 200-foot setback is provided. For Buildings B and C, the front yard will be toward the new Road A. The buildings will be up to 50 feet tall and a 200-foot setback is provided.

Request:

The project requests relief from the standards for front yard setback based on building height. The project proposes 200' front yard setbacks for all buildings for a building height of up to 50 feet. The floor elevation of Building A will be significantly lower than the adjacent frontages for NW Lake Road and the new Road A. This elevation difference of up to 30' will make the buildings appear relatively shorter and will lessen the apparent mass of the buildings as viewed by the travelling public. Please refer to the "Building Design" section below for a discussion of the façade design and how the building height will be mitigated.

Side and Rear Yards, Building

For Buildings A and C, side and rear yards of 100 feet are provided.

Request:

For Building B, a side yard setback of 64 feet is proposed, which is less than the standard 100 feet. The project requests relief on this standard due to the limited space available for this building. The wetlands and buffers on the south side of Building B are being protected, but the remaining width is not sufficient for a typical industrial building. The 20-foot setback would be screened with landscape from the neighboring industrial/office development.

Side and Rear Yards, Parking

Side and rear yards of 25 feet for the parking area are provided for all buildings.

Lot Coverage

Request:

The proposed shell warehouse buildings are single-story but have enough height to add additional stories/mezzanines inside. The typical standard for Lot Coverage is 30 percent for one story, 40 percent for two stories, and 45 percent for three stories. The project proposes to account for the Lot Coverage across the entire site together, including the large wetland area to be retained. The proposed Lot Coverage is 30 percent.

Impervious Surface Coverage

The total impervious surface coverage is 2,107,500 square feet (48.38 acres) including roofs, pavements, sidewalks, and hardscapes.

Building Height

The buildings will be up to 50 feet tall. See notes in the “Front Yard” section above for the building height request.

Landscaping and Tree Retention (CMC 18.13)

A Landscape, Tree, and Vegetation Plan and a Tree Survey are provided with the submittal. A minimum 20-unit tree density per net acre is provided. Landscaping is proposed to meet the requirements of CMC 18.13.

Light Industrial/Business Park Standards (CMC 18.21)

Landscape Design

The project will provide a 50-foot wide landscape screening buffer along all road-facing sides of the project. Other sides will provide a 25-foot wide landscape screening buffer.

> ***Request:***
>
> ***The project requests relief from the standards for building façade landscaping. The project will provide an effective screen within the 50-foot landscape screening buffers, and therefore additional screening at the building face would be less effective. Additionally, the large grade changes on the site allow the building to be generally located much lower than the adjacent roadways, thus making the screen along the roadside more effective and the building appear shorter. Required landscape buffers are placed on upper portions of the slope, where applicable or adjacent to parking, for the best screening in landscape areas sloping toward the street. Density of tree and shrub planting has been doubled and columnar trees have been added along building façades.***

Building Design

The three buildings shall use a common creative aesthetic to create a consistent corporate park setting. While the buildings are up to 50 feet tall, the fact that they are set at a ground plane elevation several feet below the adjacent streets helps to alleviate the overall mass of the buildings from the traveling vehicular viewpoint. A deliberate rhythm of color and texture has been provided to reduce the scale and monotony of long, blank walls typical of other warehouses. Parapet elevations vary to coincide with the color variations to further enhance the aesthetic, and therefore provide visual interest where the buildings break the sky. These parapet variations correspond to clerestory glazing that provided natural daylight into the warehouse plus views of the sky from the warehouse interior, while also providing additional interest to the building elevations. The balance of transparency to solidity and of the lightness to the mass and the proportionality of elevations has been thoughtfully crafted to develop a strong sense of place in this corporate park. A concentrated expression of glass transparency at the proposed tenant entries adds strong visitor wayfinding at the main pedestrian entries. The required fire ingress doors along the truck loading dock face have been pulled upward at parapet and forward in elevation 5 feet from the plane of the dock doors as a means of providing visual interest to an otherwise overwhelmingly monotonous array of loading dock doors. We use these elements to break up the loading dock face and provide accentuated

color into the aesthetic. An orderly rhythm of truck and pedestrian doors, canopies, and parapets diminishes the overall scale, thereby establishing a hierarchical architectonic composition.

Wetlands

Four wetlands (Wetlands A, B, C, and D), as identified by Soundview Consultants (2021), are located onsite. Wetlands A and D are classified as Category III depressional wetlands. Wetland B is a Category III slope wetland and Wetland C is a small, locally exempt Category IV slope wetland. One Type F (fish habitat) stream is also located offsite to the west. Refer to the included *Wetland and Fish and Wildlife Habitat Assessment Report* by Soundview Consultants dated October 2021.

The development project will require work within 200 feet of the onsite wetlands, including administrative buffer averaging and restoration of temporary buffer impact areas. The complete fill of the small (3,167 square feet), locally exempt, Category IV Wetland C is also proposed. Refer to the included *Mitigation Bank Use and Conceptual Mitigation Plan* by Soundview Consultants dated October 2021.

Archeological Review

AINW conducted an archaeological survey of the project area (AINW Report No. 4672). The archaeological survey revealed that Archaeological Site 45CL405 previously identified to the north and northwest of the project area extends into the project area. Following the City's archaeological ordinance, areas where ground disturbance cannot be avoided during the construction will be evaluated to determine the significance of the site. Another resource, 45CL1476, was found (three artifacts found during shovel testing). AINW recommended Site 45CL1476 was not significant and avoidance would not be needed.

Utilities

The project proposes to connect to city systems for sewer and water. Water and sewer force mains will be constructed within new Roads A and B. Onsite STEP sewer systems will be provided, as well as onsite domestic and fire water services. Refer to the conceptual utility plan on Sheet SPR4.

A storm drainage system will be provided in accordance with the 2019 Department of Ecology *Stormwater Management Manual for Western Washington (SWMMWW)*. Please refer to the conceptual grading and drainage plan on Sheet SPR2 and the preliminary drainage report.

BEB/lsk

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PROJECT MEMO

TO:	Lauren Hollenbeck, Senior Planner City of Camas	**DATE:**	December 1, 2021
FROM:	Bart Brynestad, PE Tacoma - (253) 383-2422	**PROJECT NO.:**	2200867.10
		PROJECT NAME:	Camas Business Center
SUBJECT:	List of Land Use Permits		

Below is the list of the land use permits sought for the Camas Business Center Project. This list complies with CMC 18.55.110.B.

- SEPA
- Boundary Line Adjustment
- Site Plan Review
- Design Review
- Critical Area Review
- Archeological Review

BEB/lsk

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CAMAS BUSINESS CENTER

LOCATED IN THE SE 1/4 OF SECTION 29, TOWNSHIP 2 NORTH, RANGE 3 EAST, W.M., CITY OF CAMAS, CLARK COUNTY, WASHINGTON

Exhibit 5
LI/BP21-01

LEGEND

BUFFER REDUCTION AREA
TOTAL = 2,080 SF

BUFFER ADDITION AREA
TOTAL = 9,770 SF

REFER TO WETLAND MITIGATION STUDY

VERTICAL DATUM

ELEVATIONS AND CONTOURS ARE BASED ON CLARK COUNTY BENCHMARK ID NUMBER 265. THE BENCHMARK IS THE SOUTHEAST CORNER OF SECTION 29, BEING A BRASS DISK IN CONCRETE WITHIN A MONUMENT CASE. THE BENCHMARK IS LOCATED IN THE CENTERLINE OF NW LAKE ROAD NEAR THE SOUTHEAST CORNER OF THE SURVEYED PROPERTY. IT HAS AN ELEVATION OF 316.85 FEET BASED ON THE NGVD 1929(47) VERTICAL DATUM.

BASIS OF BEARING

THE BASIS OF BEARINGS FOR THIS SURVEY IS BOOK 58, PAGE 46, CLARK COUNTY SURVEY RECORDS.

N

GRAPHIC SCALE
0 50 100 200
1" = 100 FEET

PROJECT INFORMATION

ZONE	LI/BP (LIGHT INDUSTRIAL/BUSINESS PARK)
PARCEL NUMBERS	176170-000, 176155-000
GROSS SITE AREA	3,245,501.45 SF (74.506 ACRES)
ANTICIPATED ROW AREA	266,826.21 SF (6.125 ACRES)
NET DEVELOPABLE AREA	2,978,675.24 SF (68.381 ACRES)
BUILDING A AREA	722,397 SF
BUILDING B AREA	127,191 SF
BUILDING C AREA	93,351 SF
TOTAL BUILDING AREA	942,939 SF (21.647 ACRES)
BUILDING COVERAGE	29.05%

NW CAMAS MEADOWS DR

ZONE: MF-18 (MULTIFAMILY)

ZONE: RC (REGIONAL COMMERCIAL)

ZONE: LI/BP (LIGHT INDUSTRIAL/BUSINESS PARK)

ZONE: BP (BUSINESS PARK)

ROAD A

ROAD B

NW LAKE RD

BUILDING C
93,351 SF

BUILDING B
127,191 SF

BUILDING A
722,397 SF

WETLAND A

WETLAND B

WETLAND D

200' BUILDING SETBACK
50' LANDSCAPE SETBACK
100' BUILDING SETBACK
60' ROW
72' ROW
245'
338 SF BUFFER REDUCTION
20' LANDSCAPE AND BUILDING SETBACK
69.3'
659.31'
300'
1,742 SF BUFFER REDUCTION
60' REDUCED BUFFER
178 SF BUFFER ADDITION
90' REDUCED BUFFER
100' REDUCED BUFFER
9,592 SF BUFFER ADDITION
R500'
R200'
130.5'
75.1'
195.5'
187'
640'
620'
195.9'
179.27'
1150'
200' BUILDING SETBACK
R100'
125'
50'
120'
480.40'
205.2'
182.1'
657.16'
25' LANDSCAPE SETBACK
100' BUILDING SETBACK
30'
P.C.
LENGTH=898.8'
RADIUS=8320.00'
DELTA=00°24'44"
=S88°42'26"E 59.87'

N69°19'01"W 1318.61'
N01°27'42"E 2640.61'
N88°54'48"W 1137.68'
N88°54'48"W 1237.69'
N01°31'30"E 1295.99'
N01°24'58"E 1340.57'

DOC. NO. 4182260 D
TPN: 176555-000
DOC. NO. 4222592
TPN: 175936-000
DOC. NO. 4634966 D
TPN: 176187-000
DOC. NO. 5152809 D
TPN: 176154-000
DOC. NO. 5195913 D
TPN: 176154-000
DOC. NO. 5375995 D
TPN: 176155-000

TPN: 176170-000
TPN: 176155-000

Know what's below.
Call before you dig.

SHEET INDEX

Sheet Number	Sheet Title
SPR1	PRELIMINARY SITE PLAN
SPR2	PRELIMINARY GRADING AND DRAINAGE PLAN
SPR3	PRELIMINARY ROAD SECTIONS
SPR4	PRELIMINARY WATER AND SEWER PLAN

AHBL
TACOMA • SEATTLE • SPOKANE • TRI-CITIES
2215 North 30th Street, Suite 300 Tacoma, WA 98403
253.383.2422 TEL 253.383.2572 FAX www.ahbl.com WEB

Project Title:
CAMAS BUSINESS CENTER

Client:
PANATTONI DEVELOPMENT COMPANY, LLC
1821 DOCK STREET, SUITE 100
TACOMA, WA 98402

Project No.
2200867.10

Issue Set & Date:
SEPA AND SITE PLAN REVIEW
4/8/2022

J. MATTHEW WEEBER
STATE OF WASHINGTON
24532
REGISTERED
PROFESSIONAL ENGINEER

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Revisions:
1
2
3
4

Sheet Title:
PRELIMINARY SITE PLAN

Designed by: TDW/MW/GG
Drawn by: TDS
Checked by: BEB

Sheet No.
SPR1
1 of 4 Sheets

DATE: April 18, 2022 FILENAME: Q:\2020\2200867\10_CIV\CAD_SEPA\2200867-SH-COVR.dwg

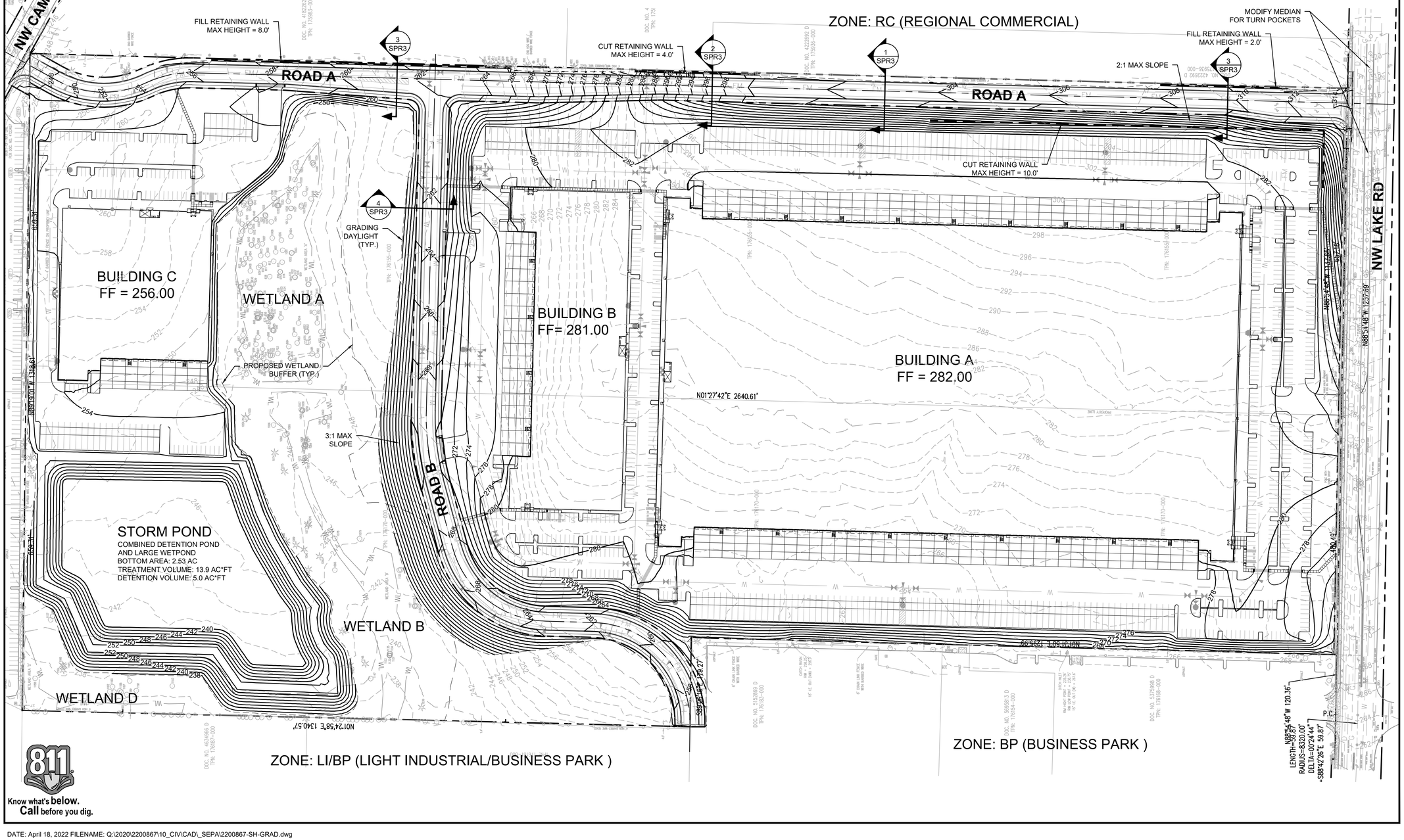
CAMAS BUSINESS CENTER

LOCATED IN THE SE 1/4 OF SECTION 29, TOWNSHIP 2 NORTH, RANGE 3 EAST, W.M., CITY OF CAMAS, CLARK COUNTY, WASHINGTON

EARTHWORK QUANTITIES

CUT: 383,000 CY (EXPORT)
FILL: 503,000 CY (IMPORT)
NET: 120,000 CY (IMPORT)

THE ABOVE QUANTITIES ARE ESTIMATES ONLY INTENDED FOR THE PERMITTING PROCESS. DO NOT USE FOR BID PURPOSES. THE QUANITIES DO NOT HAVE STRIPPING, COMPACTION, OR CUT OR FILL ADJUSTMENT FACTORS APPLIED TO THEM, NOR DO THEY ACCOUNT FOR PAVEMENT, SIDEWALK, OR BUILDING SECTIONS.



811 Know what's below. Call before you dig.

DATE: April 18, 2022 FILENAME: Q:\2020\2200867\10_CIV\CAD_SEPA\2200867-SH-GRAD.dwg

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4/8/2022

J. MATTHEW WEBER — STATE OF WASHINGTON — 21485 — REGISTERED PROFESSIONAL ENGINEER

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Revisions:
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2
3
4

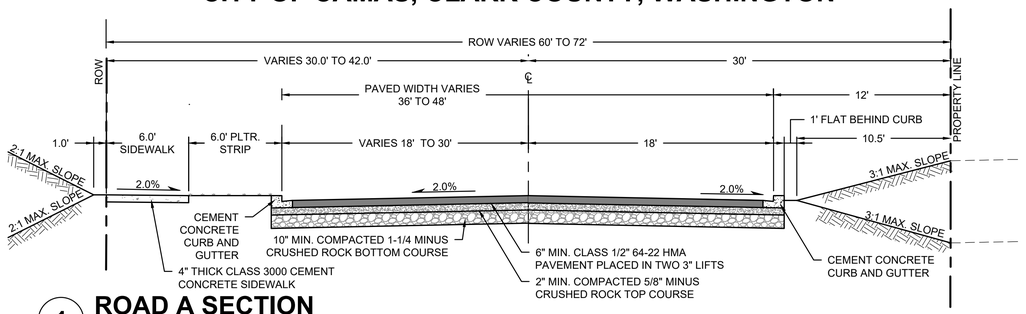
Sheet Title:
PRELIMINARY GRADING AND DRAINAGE PLAN

Designed by:	Drawn by:	Checked by:
TDW/MW/GG	TDS	BEB

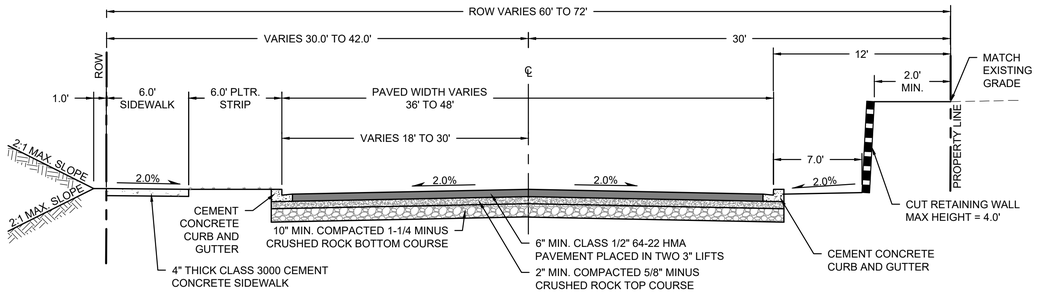
Sheet No.
SPR2
2 of 4 Sheets

CAMAS BUSINESS CENTER

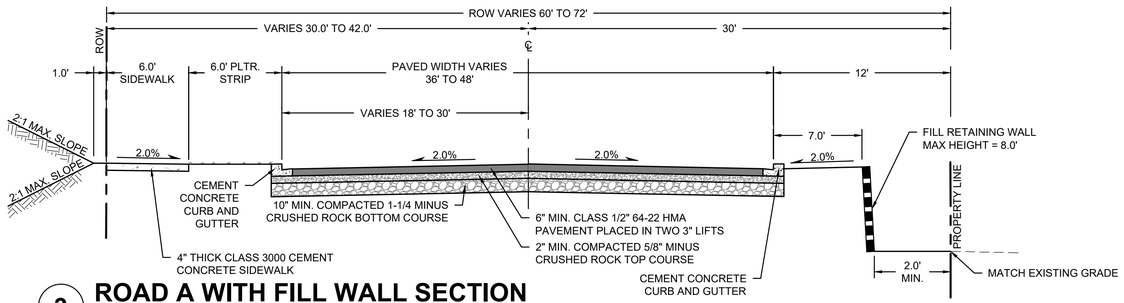
LOCATED IN THE SE 1/4 OF SECTION 29, TOWNSHIP 2 NORTH, RANGE 3 EAST, W.M., CITY OF CAMAS, CLARK COUNTY, WASHINGTON



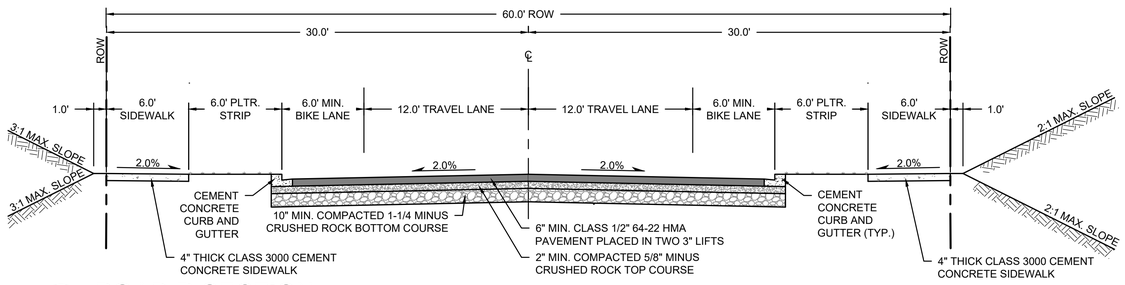
1 ROAD A SECTION
NOT TO SCALE



2 ROAD A WITH CUT WALL SECTION
NOT TO SCALE



3 ROAD A WITH FILL WALL SECTION
NOT TO SCALE



4 ROAD B SECTION
NOT TO SCALE

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253.383.2422 TEL 253.383.2572 FAX www.ahbl.com WEB

Project Title:
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1821 DOCK STREET, SUITE 100
TACOMA, WA 98402

Project No.
2200867.10

Issue Set & Date:
SEPA AND SITE PLAN REVIEW
4/8/2022

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Revisions:
4
3
2
1

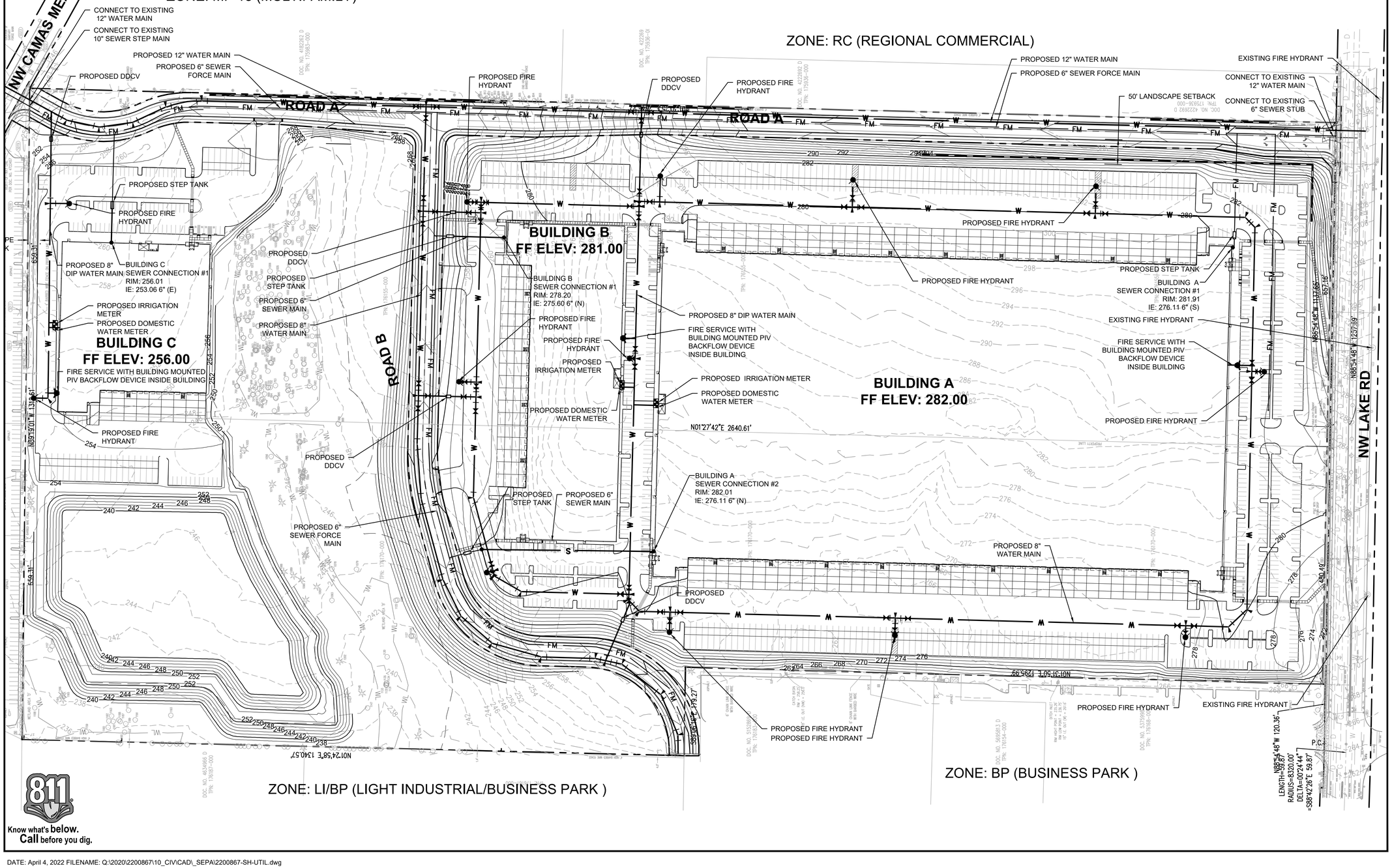
Sheet Title:
PRELIMINARY ROAD SECTIONS

Designed by:	Drawn by:	Checked by:
TDW/MW/GG	TDS	BEB

Sheet No.
SPR3
3 of 4 Sheets

CAMAS BUSINESS CENTER

LOCATED IN THE SE 1/4 OF SECTION 29, TOWNSHIP 2 NORTH, RANGE 3 EAST, W.M., CITY OF CAMAS, CLARK COUNTY, WASHINGTON



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Revisions:
4
3
2
1

Sheet Title:
PRELIMINARY WATER AND SEWER PLAN

Designed by:	Drawn by:	Checked by:
TDW/MW/GG	TDS	BEB

Sheet No.
SPR4
4 of 4 Sheets

DATE: April 4, 2022 FILENAME: Q:\2020\2200867\10_CIV\CAD_SEPA\2200867-SH-UTIL.dwg

MATCHLINE - SEE SHEET L-3 FOR CONTINUATION

MATCHLINE - SEE SHEET L-2 FOR CONTINUATION

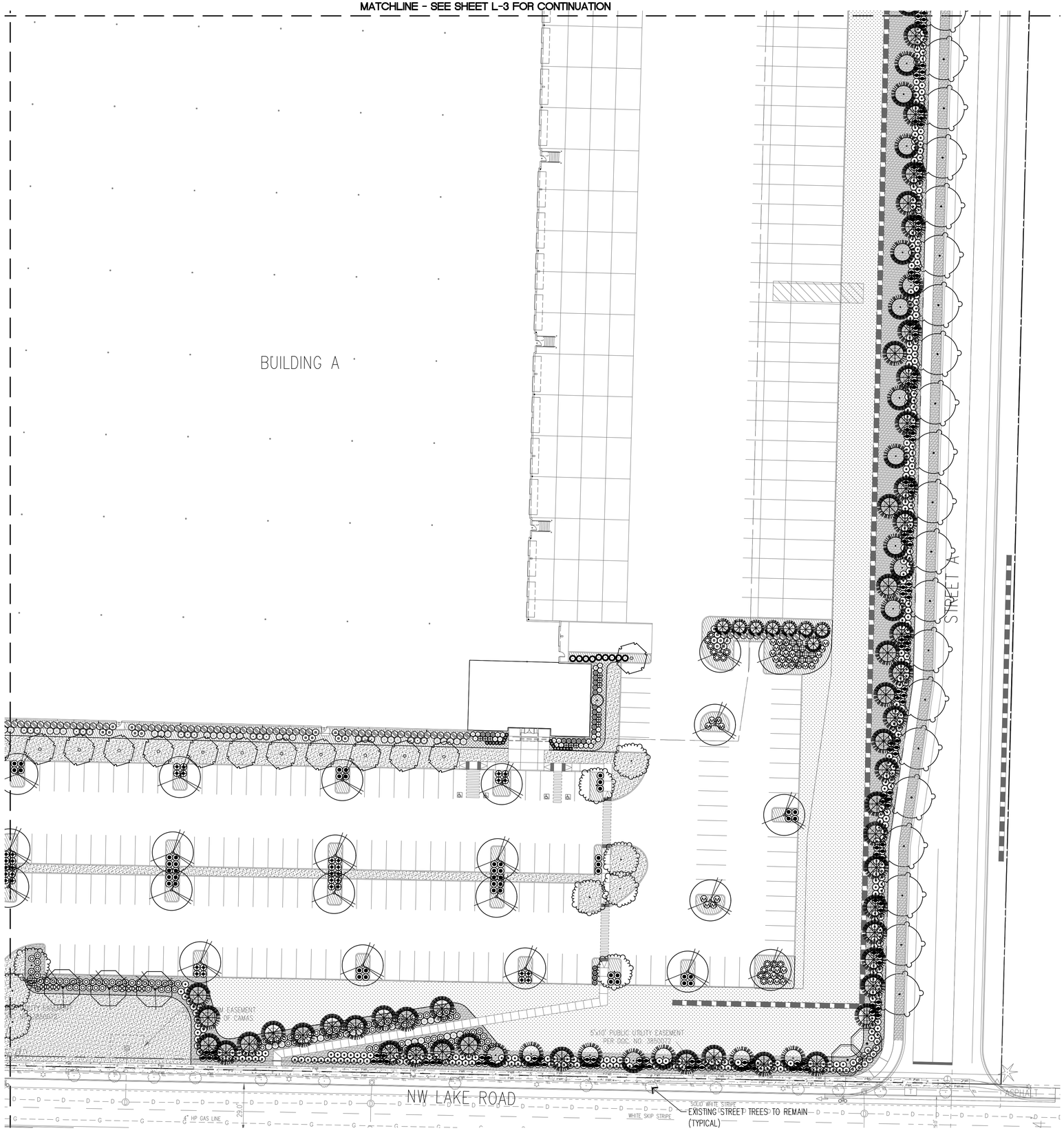

Exhibit 6
LI/BP21-01

PLANT LEGEND

SYMBOL	BOTANICAL NAME / COMMON NAME
	LARGE DECIDUOUS TREES
	ACER NIGRUM 'GREENCOLUMN' / GREENCOLUMN MAPLE
	ACER T. X ACRE P. 'WARRENS RED' / PACIFIC SUNSET MAPLE
	ACER X FREEMANII 'JEFFERERED'/ AUTUMN BLAZE MAPLE
	CARPINUS BETULUS 'FRANS FONTAINE' / HORNBEAM
	FRAXINUS PENNSYLVANICA 'PATMORE' / PATMORE ASH
	PYRUS CALLERYANA 'CHANTICLEAR' / CHANTICLEAR PEAR
	QUERCUS ROBUR / ENGLISH OAK
	ZELCOVA SERRATA 'VILLAGE GREEN' / VILLAGE GREEN ZELCOVA
	SMALL DECIDUOUS TREES
	ACER CIRCINATUM / VINE MAPLE
	AMELANCHIER X G. 'AUTUMN BRILLANCE' / SERVICEBERRY
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	EVERGREEN TREES
	CALOCEDRUS DECURRENS / INCENSE CEDAR
	CHAMAECYPARIS NOOTKATENSIS 'PENDULA' / ALASKA CEDAR
	CHAMAECYPARIS OBTUSA 'GRACILIS' / HINOKI FALSE CYPRESS
	PINUS NIGRA / AUSTRIAN PINE
	PSEUDOTSUGA MENZIEII / DOUGLAS FIR
	THUJA PLICATA 'EXCELSA' / WESTERN RED CEDAR
	EVERGREEN SHRUBS
	ARBUTUS UNEDO 'COMPACTA' / STRAWBERRY TREE
	AUCUBA JAPONICA 'ROZANNIE' / JAPANESE AUCUBA
	BUXUS M. JAPONICA 'GREEN BEAUTY' / BOXWOOD
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	LONIERCA N. 'RED TIPS' / RED TIPS HONEYSUCKLE
	MAHONIA AQUIFOLIUM 'COMPACTA' / OREGON GRAPE
	MYRICA CALIFORNICA / PACIFIC WAX MYRTLE
	NANDINA D. 'GULF STREAM' / HEAVENLY BAMBOO
	OSMANTHUS H. 'GOSHIKI'/ VARIEGATED OSMANTHUS
	PINUS MUGO MUGO / MUGO PINE
	PRUNUS L. 'SCHIPKAENSIS' / SCHIPKA LAUREL
	PRUNUS L. 'OTTO LUYKEN' / OTTO LUYKEN LAUREL
	PRUNUS LUSITANICA / PORTUGAL LAUREL
	SARCOCOCCA RUSCIFOLIA / SWEET BOX
	TAXUS X MEDIA 'DENSIFORMIS' / SPREADING YEW
	TAXUS MEDIA X 'HICKSII' / HICKS YEW
	VIBURNUM DAVIDII / DAVID'S VIBURNUM
	VIBURNUM T. 'SPRING BOUQUET' / SPRING BOUQUET
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	SPIRAEA X BUMALDA 'ANTHONY WATERER' / SPIREA
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	GROUNDCOVER
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	COTONEASTER D. 'CORAL BEAUTY' / COTONEASTER
	GERANIUM MACRORRHIZUM / BIGROOT CRANESBILL
	EROSION CONTROL SEED MIX
	DROUGHT TOLERANT TURF/ TALL FESCUE SEED MIX

NOTE:
REFER TO PLANT SCHEDULE ON SHEET L–9 FOR SIZES AND QUANTITIES.

TREE DENSITY CALCULATIONS

SITE AREA:	3,245,501 S.F.		
ANTICIPATED R.O.W. DEDICATION:	(266,826 S.F.)		
NET SITE AREA:	2,978,675 S.F.		
NET SITE AREA	68.38	ACRES	(2,978,675 S.F.)
REQUIRED TREE UNITS:	1,368	UNITS	(20 TREE UNITS / ACRE)
PROVIDED EXISTING TREE UNITS:	1,068	UNITS	(REFER TO ARBORIST REPORT)
PROVIDED NEW TREE UNITS:	644	UNITS	(EXCLUDES NEW STREET TREES)
TOTAL PROVIDED TREE UNITS:	1,712	UNITS	

NOTE:
REFER TO ARBORIST REPORT PREPARED BY TERAGAN & ASSOCIATES, INC.
DATED OCTOBER 6TH, 2021.

LANDSCAPE PLAN

0 15' 30' 60' 120'

SCALE: 1" = 30' - 0"

SHEET SIZE: 24" x 36" AT 100%

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WBLA
Landscape Architecture
Site Planning Irrigation
16630 30th Dr. S.E.
Bothell, WA 98012
phone (425) 417-4609

PROJECT:
CAMAS BUSINESS CENTER

LOCATION:
4707 NW Lake Road
CAMAS, WA

CLIENT:
PANATTONI DEVELOPMENT, INC
1821 DOCK ST,#100
TACOMA, WA 98402

NO.	DATE	REVISION
	10.18.2021	SEPA
	01.31.2022	REVISED SEPA
	04.08.2022	DESIGN REVIEW

DESIGNED CB
DRAWN CB
CHECKED CB

PROFESSIONAL SEAL

STATE OF WASHINGTON
REGISTERED
LANDSCAPE ARCHITECT
WILLIAM A. BROWN
CERTIFICATE NO. 501

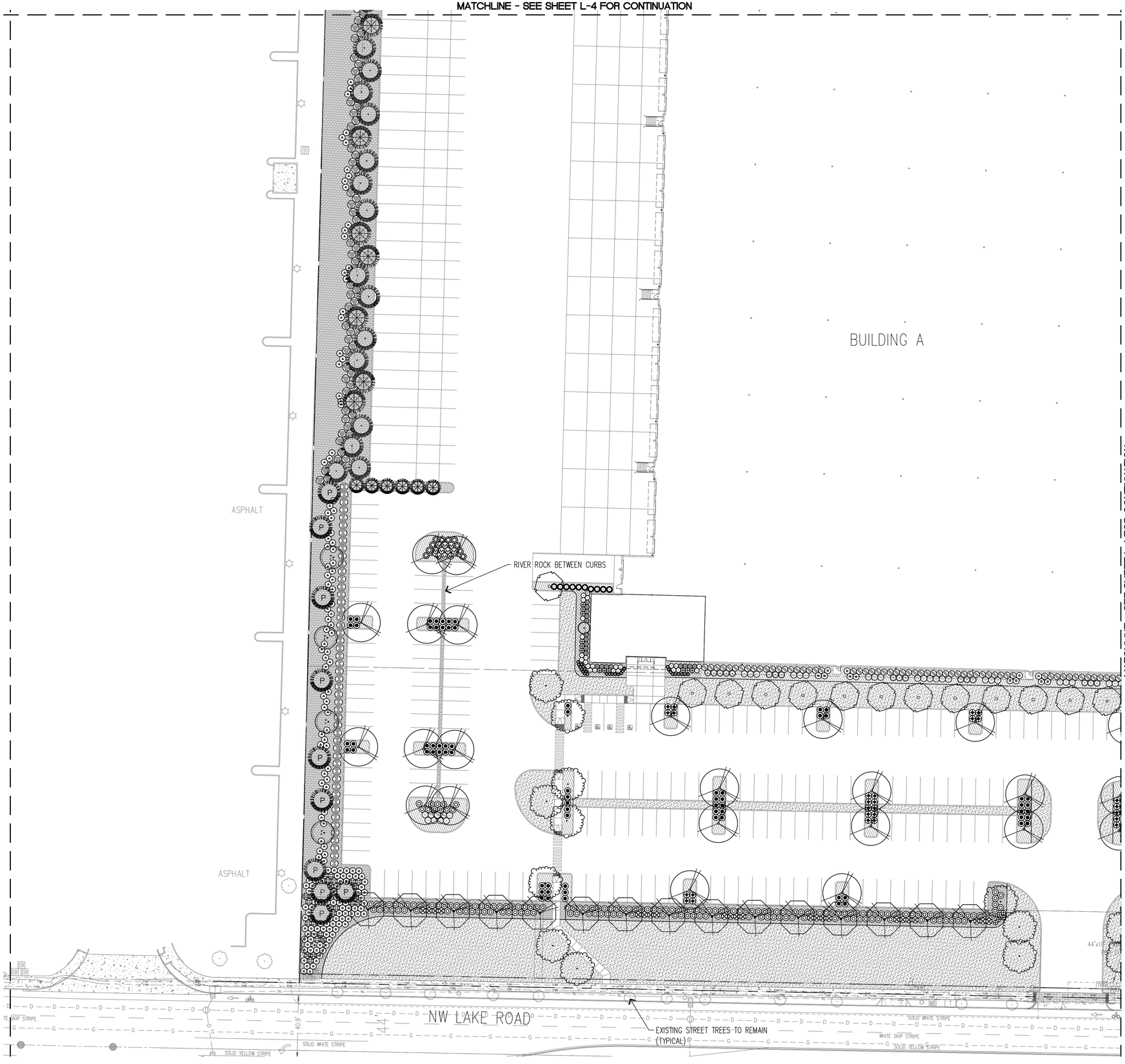
DATE 10.01.2021

PROJECT NO. 202120

TITLE
BUILDING A LANDSCAPE PLAN

SHEET NUMBER
L-1
1 OF 9

MATCHLINE - SEE SHEET L-4 FOR CONTINUATION



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STATE OF WASHINGTON
REGISTERED
LANDSCAPE ARCHITECT
WILLIAM A. BROWN
CERTIFICATE NO. 501

DATE 10.01.2021

PROJECT NO. 202120

TITLE
BUILDING A LANDSCAPE PLAN

SHEET NUMBER
L-2
2 OF 9

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MATCHLINE - SEE SHEET L-5 FOR CONTINUATION

MATCHLINE - SEE SHEET L-4 FOR CONTINUATION

BUILDING A

STREET A

MATCHLINE - SEE SHEET L-1 FOR CONTINUATION

PLANT LEGEND

SYMBOL	BOTANICAL NAME / COMMON NAME
	LARGE DECIDUOUS TREES
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	EROSION CONTROL SEED MIX
	DROUGHT TOLERANT TURF/ TALL FESCUE SEED MIX

NOTE:
REFER TO PLANT SCHEDULE ON SHEET L-9 FOR SIZES AND QUANTITIES.

LANDSCAPE PLAN

0 15' 30' 60' 120'

SCALE: 1" = 30' - 0"

SHEET SIZE: 24" x 36" AT 100%

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WBLA Landscape Architecture Site Planning Irrigation
16630 30th Dr. S.E.
Bothell, WA 98012
phone (425) 417-4609

PROJECT:
CAMAS BUSINESS CENTER

LOCATION:
4707 NW Lake Road
CAMAS, WA

CLIENT:
PANATTONI DEVELOPMENT, INC
1821 DOCK ST,#100
TACOMA, WA 98402

NO.	DATE	REVISION
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	01.31.2022	REVISED SEPA
	04.08.2022	DESIGN REVIEW

DESIGNED CB
DRAWN CB
CHECKED CB

PROFESSIONAL SEAL

STATE OF WASHINGTON
REGISTERED
LANDSCAPE ARCHITECT
WILLIAM A. BROWN
CERTIFICATE NO. 501

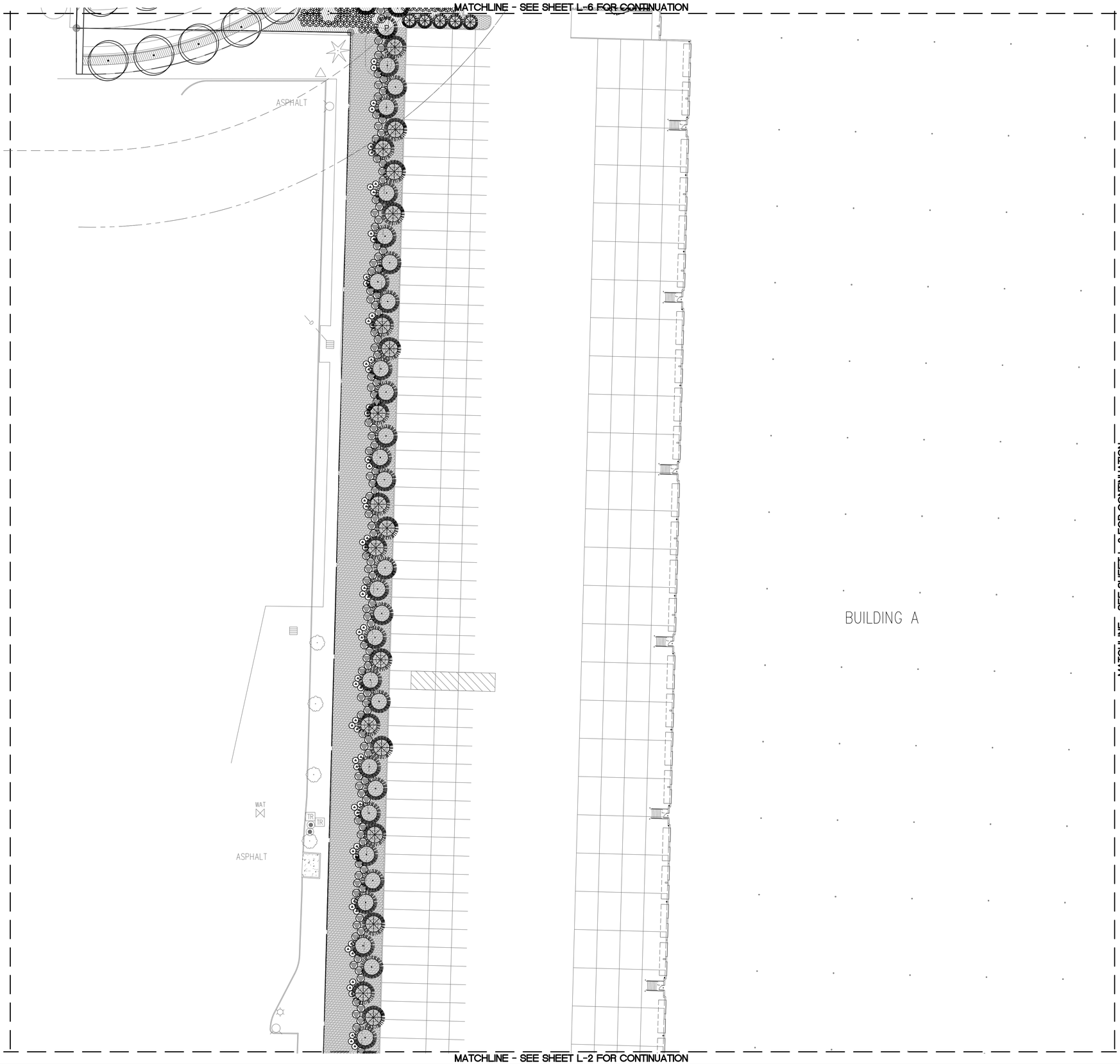
DATE 10.01.2021

PROJECT NO. 202120

TITLE
BUILDING A LANDSCAPE PLAN

SHEET NUMBER
L-3
3 OF 9

MATCHLINE - SEE SHEET L-6 FOR CONTINUATION



MATCHLINE - SEE SHEET L-3 FOR CONTINUATION

MATCHLINE - SEE SHEET L-2 FOR CONTINUATION

PLANT LEGEND

SYMBOL	BOTANICAL NAME / COMMON NAME
	LARGE DECIDUOUS TREES
	ACER NIGRUM 'GREENCOLUMN' / GREENCOLUMN MAPLE
	ACER T. X ACRE P. 'WARRENS RED' / PACIFIC SUNSET MAPLE
	ACER X FREEMANII 'JEFFERERED'/ AUTUMN BLAZE MAPLE
	CARPINUS BETULUS 'FRANS FONTAINE' / HORNBEAM
	FRAXINUS PENNSYLVANICA 'PATMORE' / PATMORE ASH
	PYRUS CALLERYANA 'CHANTICLEAR' / CHANTICLEAR PEAR
	QUERCUS ROBUR / ENGLISH OAK
	ZELCOVA SERRATA 'VILLAGE GREEN' / VILLAGE GREEN ZELCOVA
	SMALL DECIDUOUS TREES
	ACER CIRCINATUM / VINE MAPLE
	AMELANCHIER X G. 'AUTUMN BRILLANCE' / SERVICEBERRY
	CERCIS CANADENSIS 'MERLOT' / EASTERN REDBUD
	EVERGREEN TREES
	CALOCEDRUS DECURRENS / INCENSE CEDAR
	CHAMAECYPARIS NOOTKATENSIS 'PENDULA' / ALASKA CEDAR
	CHAMAECYPARIS OBTUSA 'GRACILIS' / HINOKI FALSE CYPRESS
	PINUS NIGRA / AUSTRIAN PINE
	PSEUDOTSUGA MENZIEII / DOUGLAS FIR
	THUJA PLICATA 'EXCELSA' / WESTERN RED CEDAR
	EVERGREEN SHRUBS
	ARBUTUS UNEDO 'COMPACTA' / STRAWBERRY TREE
	AUCUBA JAPONICA 'ROZANNIE' / JAPANESE AUCUBA
	BUXUS M. JAPONICA 'GREEN BEAUTY' / BOXWOOD
	CISTUS X HYBRIDUS / WHITE ROCKROSE
	ILEX CRENATA 'GREEN ISLAND' / JAPANESE HOLLY
	LONIERCA N. 'RED TIPS' / RED TIPS HONEYSUCKLE
	MAHONIA AQUIFOLIUM 'COMPACTA' / OREGON GRAPE
	MYRICA CALIFORNICA / PACIFIC WAX MYRTLE
	NANDINA D. 'GULF STREAM' / HEAVENLY BAMBOO
	OSMANTHUS H. 'GOSHIKI'/ VARIEGATED OSMANTHUS
	PINUS MUGO MUGO / MUGO PINE
	PRUNUS L. 'SCHIPKAENSIS' / SCHIPKA LAUREL
	PRUNUS L. 'OTTO LUYKEN' / OTTO LUYKEN LAUREL
	PRUNUS LUSITANICA / PORTUGAL LAUREL
	SARCOCOCCA RUSCIFOLIA / SWEET BOX
	TAXUS X MEDIA 'DENSIFORMIS' / SPREADING YEW
	TAXUS MEDIA X 'HICKSII' / HICKS YEW
	VIBURNUM DAVIDII / DAVID'S VIBURNUM
	VIBURNUM T. 'SPRING BOUQUET' / SPRING BOUQUET
	DECIDUOUS SHRUBS
	BERBERIS T. ATROPURPUREA 'PYGMY RUBY' / BARBERRY
	CORNUS SERICEA / REDTWIG DOGWOOD
	EUONYMUS ALATUS / WINGED EUONYMUS
	PHYSOCARPUS O. 'SUMMER WINE' / COMMON NINEBARK
	POTENTILLA FRUTICOSA 'GOLDFINGER' / SHRUBBY CINQUEFOIL
	SPIRAEA X BUMALDA 'ANTHONY WATERER' / SPIREA
	SPIRAEA JAPONICA 'WALBUMA' / MAGIC CARPET SPIREA
	ORNAMENTAL GRASSES
	CALAMAGROSTIS X A. 'KARL FOERSTER' / REED GRASS
	CAREX BUCHANANII 'RED FOX' / RED FOX CURLY SEDGE
	GROUNDCOVER
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TITLE
BUILDING A LANDSCAPE PLAN

SHEET NUMBER
L-4
4 OF 9

MATCHLINE - SEE SHEET L-7 FOR CONTINUATION

MATCHLINE - SEE SHEET L-6 FOR CONTINUATION

MATCHLINE - SEE SHEET L-3 FOR CONTINUATION

STREET B

STREET A

BUILDING B

814 813 812 811 810 809 808 807 806 805 804 803 802 801

PLANT LEGEND

SYMBOL	BOTANICAL NAME / COMMON NAME
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	ACER T. X ACRE P. 'WARRENS RED' / PACIFIC SUNSET MAPLE
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	FRAXINUS PENNSYLVANICA 'PATMORE' / PATMORE ASH
	PYRUS CALLERYANA 'CHANTICLEAR' / CHANTICLEAR PEAR
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	SMALL DECIDUOUS TREES
	ACER CIRCINATUM / VINE MAPLE
	AMELANCHIER X G. 'AUTUMN BRILLANCE' / SERVICEBERRY
	CERCIS CANADENSIS 'MERLOT' / EASTERN REDBUD
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	CALOCEDRUS DECURRENS / INCENSE CEDAR
	CHAMAECYPARIS NOOTKATENSIS 'PENDULA' / ALASKA CEDAR
	CHAMAECYPARIS OBTUSA 'GRACILIS' / HINOKI FALSE CYPRESS
	PINUS NIGRA / AUSTRIAN PINE
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	THUJA PLICATA 'EXCELSA' / WESTERN RED CEDAR
	EVERGREEN SHRUBS
	ARBUTUS UNEDO 'COMPACTA' / STRAWBERRY TREE
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	BUXUS M. JAPONICA 'GREEN BEAUTY' / BOXWOOD
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	POTENTILLA FRUTICOSA 'GOLDFINGER' / SHRUBBY CINQUEFOIL
	SPIRAEA X BUMALDA 'ANTHONY WATERER' / SPIREA
	SPIRAEA JAPONICA 'WALBUMA' / MAGIC CARPET SPIREA
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NOTE:
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LANDSCAPE PLAN

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WILLIAM A. BROWN
CERTIFICATE NO. 501

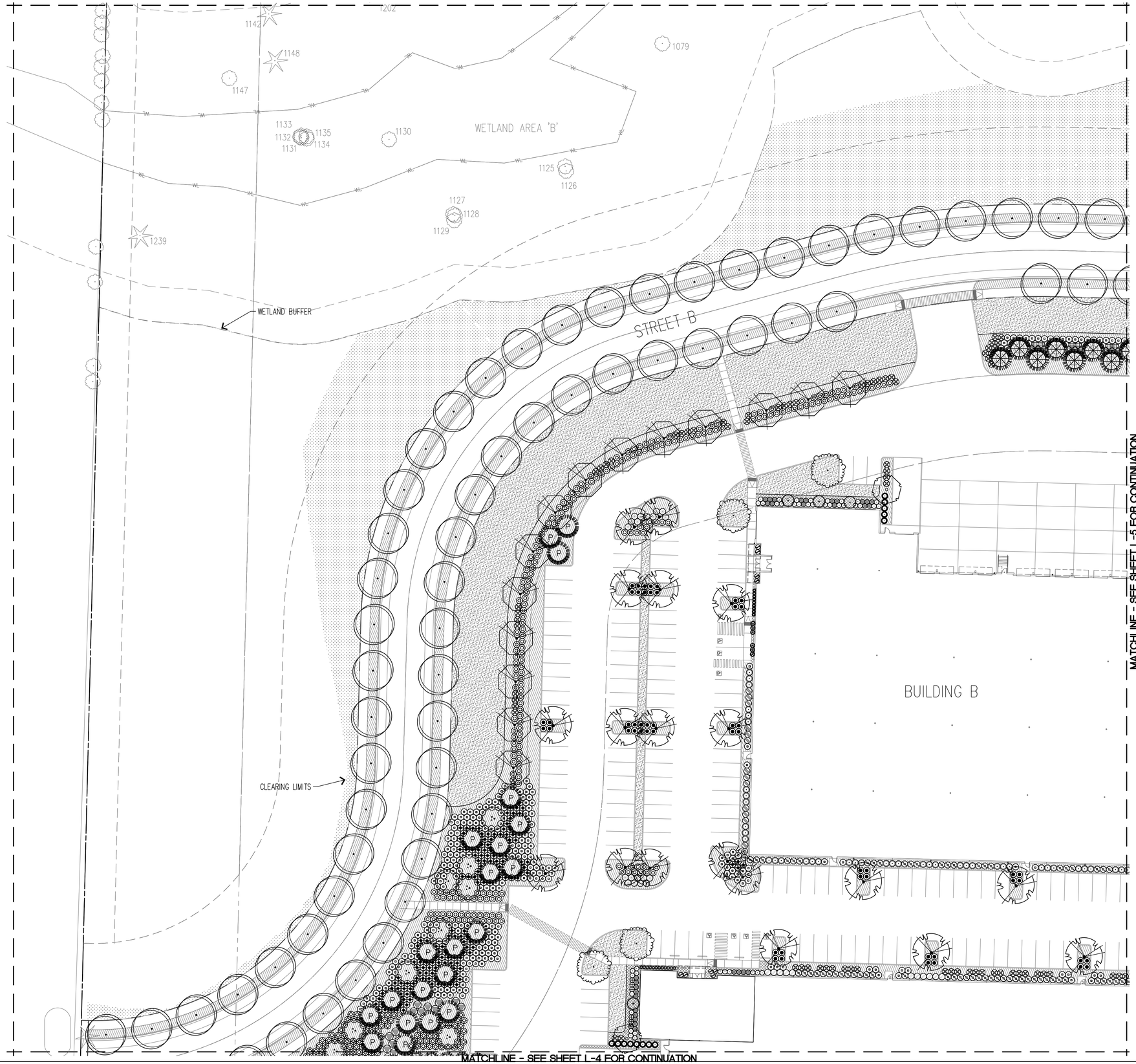
DATE 10.01.2021

PROJECT NO. 202120

TITLE
BUILDING B LANDSCAPE PLAN

SHEET NUMBER
L-5
5 OF 9

MATCHLINE - SEE SHEET L-8 FOR CONTINUATION



MATCHLINE - SEE SHEET L-5 FOR CONTINUATION

MATCHLINE - SEE SHEET L-4 FOR CONTINUATION

PLANT LEGEND

SYMBOL	BOTANICAL NAME / COMMON NAME
	LARGE DECIDUOUS TREES
	ACER NIGRUM 'GREENCOLUMN' / GREENCOLUMN MAPLE
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	VIBURNUM DAVIDII / DAVID'S VIBURNUM
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	CORNUS SERICEA / REDTWIG DOGWOOD
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	PHYSOCARPUS O. 'SUMMER WINE' / COMMON NINEBARK
	POTENTILLA FRUTICOSA 'GOLDFINGER' / SHRUBBY CINQUEFOIL
	SPIRAEA X BUMALDA 'ANTHONY WATERER' / SPIREA
	SPIRAEA JAPONICA 'WALBUMA' / MAGIC CARPET SPIREA
	ORNAMENTAL GRASSES
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NOTE:
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LANDSCAPE PLAN

0 15' 30' 60' 120'

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BUILDING B LANDSCAPE PLAN

SHEET NUMBER
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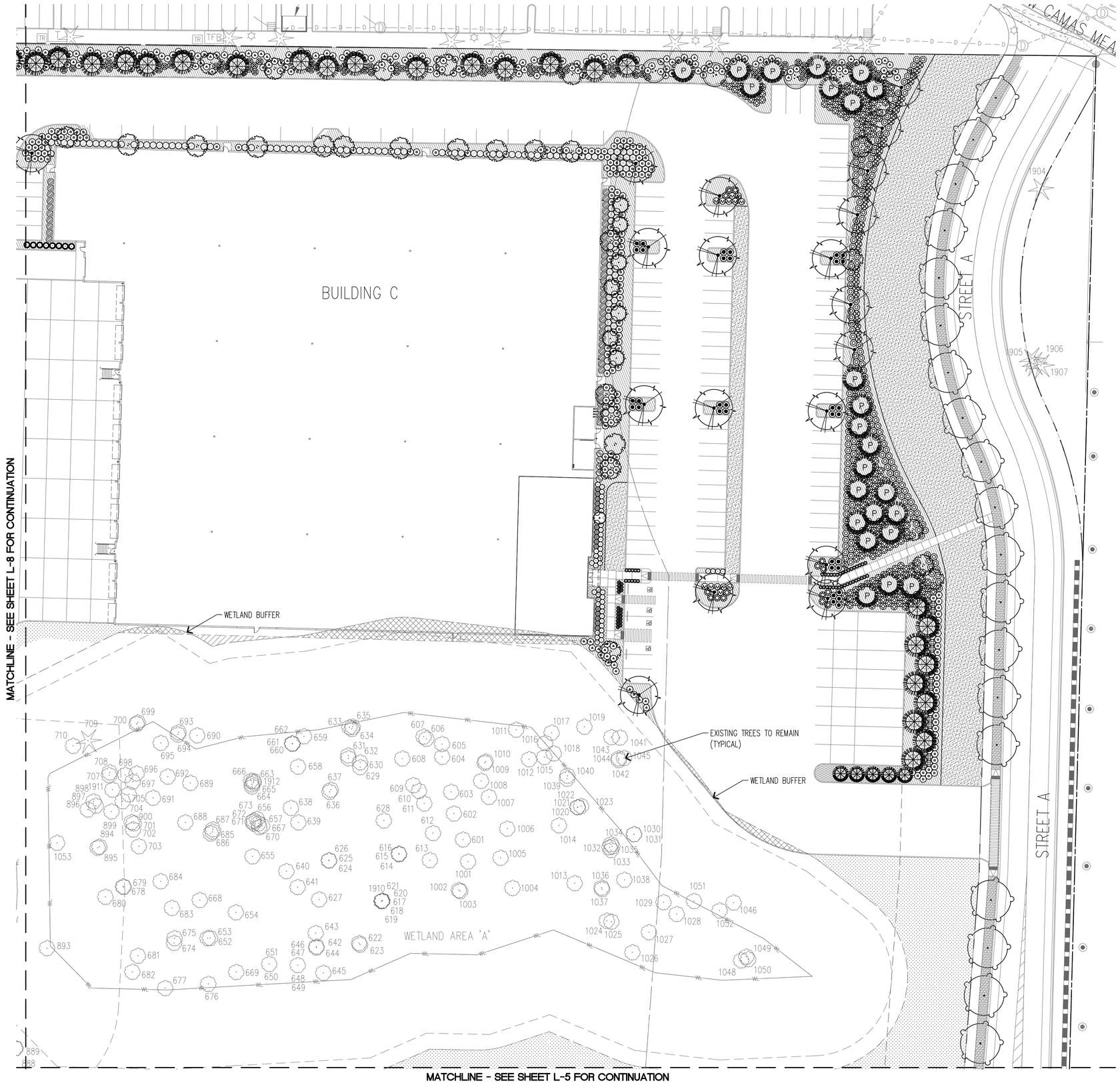

PLANT LEGEND

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SHEET NUMBER
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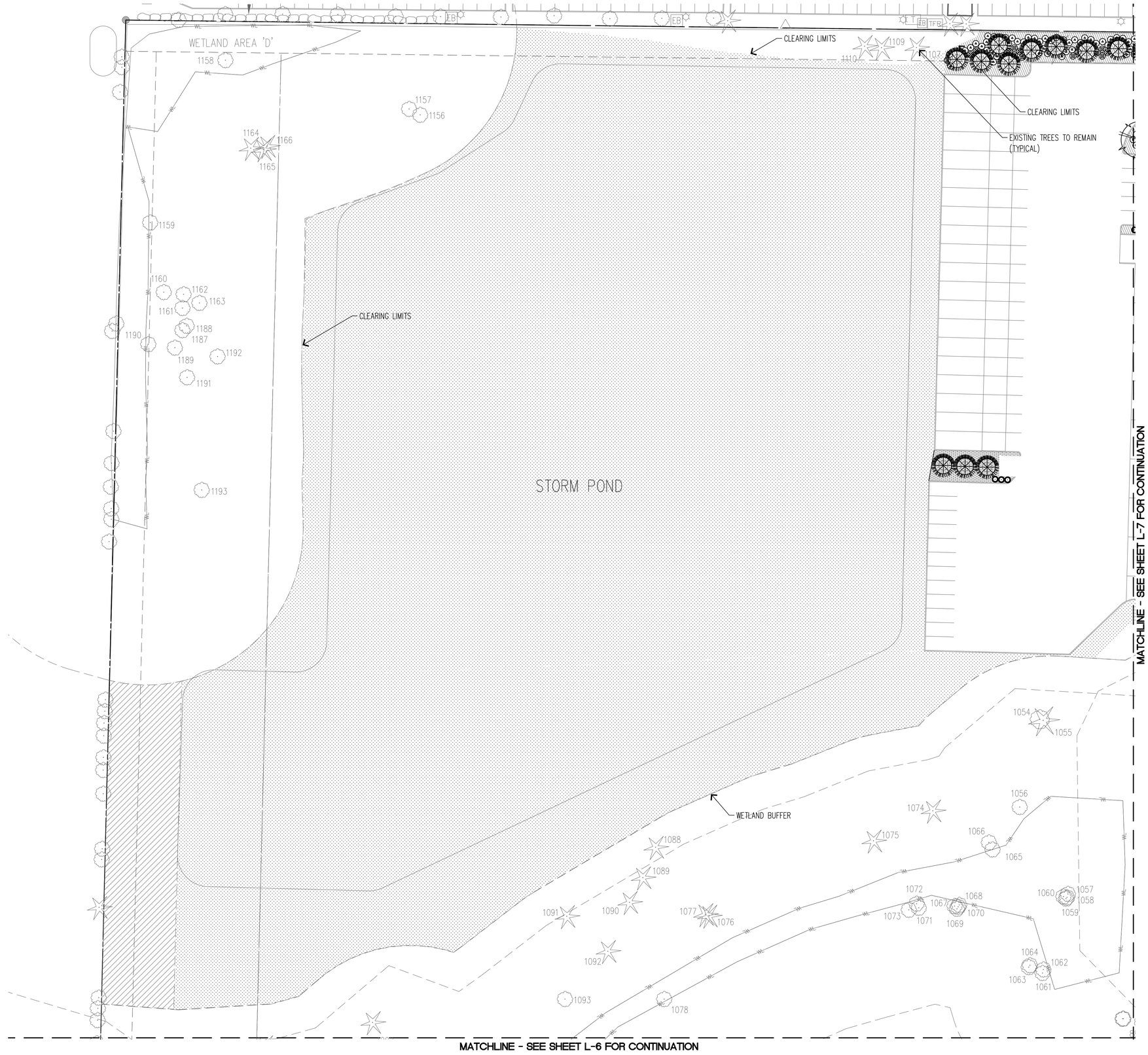

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	PINUS MUGO MUGO / MUGO PINE
	PRUNUS L. 'SCHIPKAENSIS' / SCHIPKA LAUREL
	PRUNUS L. 'OTTO LUYKEN' / OTTO LUYKEN LAUREL
	PRUNUS LUSITANICA / PORTUGAL LAUREL
	SARCOCOCCA RUSCIFOLIA / SWEET BOX
	TAXUS X MEDIA 'DENSIFORMIS' / SPREADING YEW
	TAXUS MEDIA X 'HICKSII' / HICKS YEW
	VIBURNUM DAVIDII / DAVID'S VIBURNUM
	VIBURNUM T. 'SPRING BOUQUET' / SPRING BOUQUET
	DECIDUOUS SHRUBS
	BERBERIS T. ATROPURPUREA 'PYGMY RUBY' / BARBERRY
	CORNUS SERICEA / REDTWIG DOGWOOD
	EUONYMUS ALATUS / WINGED EUONYMUS
	PHYSOCARPUS O. 'SUMMER WINE' / COMMON NINEBARK
	POTENTILLA FRUTICOSA 'GOLDFINGER' / SHRUBBY CINQUEFOIL
	SPIRAEA X BUMALDA 'ANTHONY WATERER' / SPIREA
	SPIRAEA JAPONICA 'WALBUMA' / MAGIC CARPET SPIREA
	ORNAMENTAL GRASSES
	CALAMAGROSTIS X A. 'KARL FOERSTER' / REED GRASS
	CAREX BUCHANANII 'RED FOX' / RED FOX CURLY SEDGE
	GROUNDCOVER
	ARCHTOSTAPHYLOS UVA-URSI / KINNIKINNICK
	CORNUS SERICA 'KELSYI' / DWARF REDTWIG DOGWOOD
	COTONEASTER D. 'CORAL BEAUTY' / COTONEASTER
	GERANIUM MACRORRHIZUM / BIGROOT CRANESBILL
	EROSION CONTROL SEED MIX
	DROUGHT TOLERANT TURF/ TALL FESCUE SEED MIX

NOTE:
REFER TO PLANT SCHEDULE ON SHEET L-9 FOR SIZES AND QUANTITIES.

LANDSCAPE PLAN

0 15' 30' 60' 120'

SCALE: 1" = 30' - 0"

SHEET SIZE: 24" x 36" AT 100%

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WB LA
Landscape Architecture
Site Planning Irrigation
16630 30th Dr. S.E.
Bothell, WA 98012
phone (425) 417-4609

PROJECT:
CAMAS BUSINESS CENTER

LOCATION:
4707 NW Lake Road
CAMAS, WA

CLIENT:
PANATTONI DEVELOPMENT, INC
1821 DOCK ST,#100
TACOMA, WA 98402

NO.	DATE	REVISION
	10.18.2021	SEPA
	01.31.2022	REVISED SEPA
	04.08.2022	DESIGN REVIEW

DESIGNED CB
DRAWN CB
CHECKED CB

PROFESSIONAL SEAL

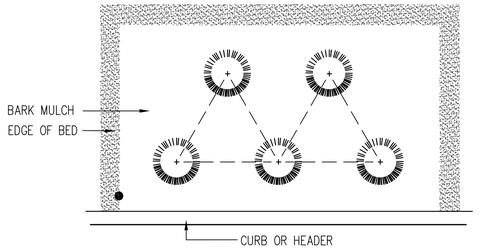
STATE OF WASHINGTON
REGISTERED
LANDSCAPE ARCHITECT
WILLIAM A. BROWN
CERTIFICATE NO. 501

DATE 10.01.2021

PROJECT NO. 202120

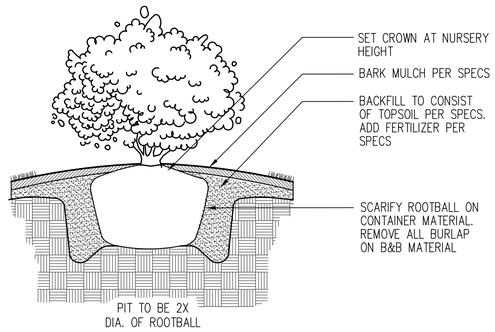
TITLE
BUILDING C LANDSCAPE PLAN

SHEET NUMBER
L-8
8 OF 9



NOTE: SPACING TO BE TRIANG. PER DISTANCE SHOWN ON PLANT SCHEDULE

1 GROUND COVER SPACING
NTS



2 SHRUB PLANTING
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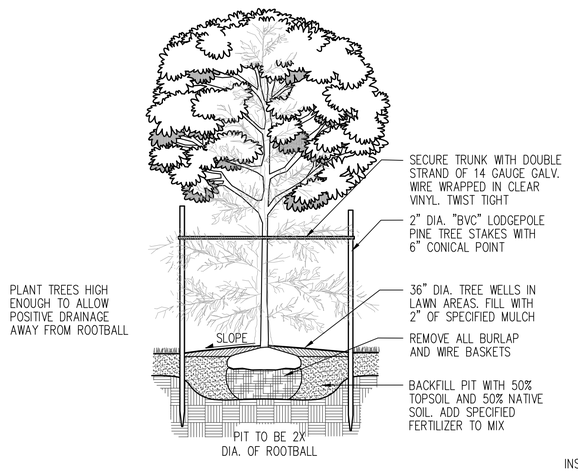
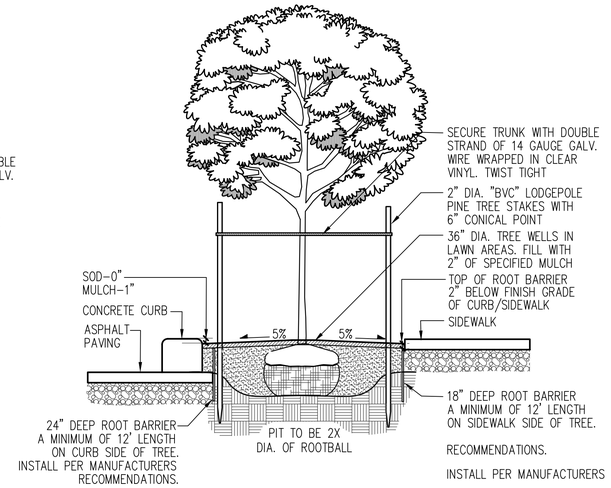


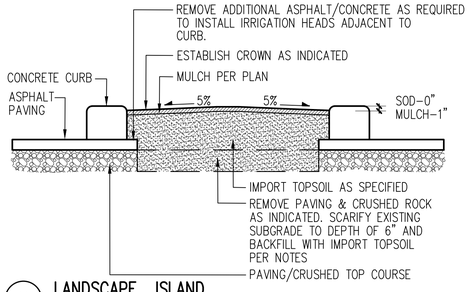
3 TREE STAKING
NTS



4 STREET TREES PLANTING
NTS

PLANT SCHEDULE

SYMBOL	BOTANICAL NAME / COMMON NAME	QTY	SIZE	REMARKS
	LARGE DECIDUOUS TREES			
	ACER NIGRUM 'GREENCOLUMN' / GREENCOLUMN MAPLE	37	MIN. 2-1/2" CAL.	B&B
	ACER T. X ACRE P. 'WARRENS RED' / PACIFIC SUNSET MAPLE	43	MIN. 2-1/2" CAL.	B&B
	ACER X FREEMANII 'JEFFERERED'/ AUTUMN BLAZE MAPLE	31	MIN. 2-1/2" CAL.	B&B
	CARPINUS BETULUS 'FRANS FONTAINE' / HORNBEAM	29	MIN. 2-1/2" CAL.	B&B
	FRAXINUS PENNSYLVANICA ' PATMORE' / PATMORE ASH	96	MIN. 2-1/2" CAL.	B&B
	PYRUS CALLERYANA 'CHANTICLEAR' / CHANTICLEAR PEAR	28	MIN. 2-1/2" CAL.	B&B
	QUERCUS ROBUR / ENGLISH OAK	81	MIN. 2-1/2" CAL.	B&B
	ZELCOVA SERRATA 'VILLAGE GREEN' / VILLAGE GREEN ZELCOVA	19	MIN. 2-1/2" CAL.	B&B
	SMALL DECIDUOUS TREES			
	ACER CIRCINATUM / VINE MAPLE	28	MIN. 2" CAL.	B&B
	AMELANCHIER X G. 'AUTUMN BRILLANCE' / SERVICEBERRY	20	MIN. 2" CAL.	B&B
	CERCIS CANADENSIS 'MERLOT' / EASTERN REDBUD	2	MIN. 2" CAL.	B&B
	EVERGREEN TREES			
	CALOCEDRUS DECURRENS / INCENSE CEDAR	50	MIN. 5' HT.	B&B
	CHAMAECYPARIS NOOTKATENSIS 'PENDULA' / ALASKA CEDAR	7	MIN. 5' HT.	B&B
	CHAMAECYPARIS OBTUSA 'GRACILIS' / HINOKI FALSE CYPRESS	8	MIN. 5' HT.	B&B
P	PINUS NIGRA / AUSTRIAN PINE	56	MIN. 5' HT.	B&B
	PSEUDOTSUGA MENZIEII / DOUGLAS FIR	90	MIN. 5' HT.	B&B
	THUJA PLICATA 'EXCELSA' / WESTERN RED CEDAR	196	MIN. 5' HT.	B&B
	EVERGREEN SHRUBS			
	ARBUTUS UNEDO 'COMPACTA' / STRAWBERRY TREE	136	MIN. 18" HT, 5 GAL.	
	BUXUS M. JAPONICA 'GREEN BEAUTY' / BOXWOOD	42	MIN. 18" HT, 5 GAL.	
	AUCUBA JAPONICA 'ROZANNIE' / JAPANESE AUCUBA	106	MIN. 18" HT, 5 GAL.	
	CISTUS X HYBRIDUS / WHITE ROCKROSE	576	MIN. 18" SPR, 5 GAL.	
	ILEX CRENATA 'GREEN ISLAND' / JAPANESE HOLLY	165	MIN. 18" HT, 5 GAL.	
	LONIERCA N. 'RED TIPS' / RED TIPS HONEYSUCKLE	265	MIN. 18" HT, 5 GAL.	
	MAHONIA AQUIFOLIUM 'COMPACTA' / OREGON GRAPE	396	MIN. 18" HT, 5 GAL.	
	MYRICA CALIFORNICA / PACIFIC WAX MYRTLE	176	MIN. 18" HT, 5 GAL.	
	NANDINA D. 'GULF STREAM' / HEAVENLY BAMBOO	109	MIN. 18" HT, 5 GAL.	
	OSMANTHUS H. 'GOSHIKI'/ VARIEGATED OSMANTHUS	110	MIN. 18" HT, 5 GAL.	
	PINUS MUGO MUGO / MUGO PINE	61	MIN. 18" SPR, 5 GAL.	
	PRUNUS L. 'SCHIPKAENSIS' / SCHIPKA LAUREL	45	MIN. 18" HT, 5 GAL.	
	PRUNUS L. 'OTTO LUYKEN' / OTTO LUYKEN LAUREL	755	MIN. 18" SPR, 5 GAL.	
	PRUNUS LUSITANICA / PORTUGAL LAUREL	50	MIN. 18" HT, 5 GAL.	
	SARCOCOCCA RUSCIFOLIA / SWEET BOX	13	MIN. 18" HT, 5 GAL.	
	TAXUS X MEDIA 'DENSIFORMIS' / SPREADING YEW	257	MIN. 18" SPR, 5 GAL.	
	TAXUS MEDIA X 'HICKSII' / HICKS YEW	65	MIN. 48" HT, B&B	
	VIBURNUM DAVIDII / DAVID'S VIBURNUM	913	MIN. 18" SPR, 5 GAL.	
	VIBURNUM T. 'SPRING BOUQUET' / SPRING BOUQUET	164	MIN. 18" HT, 5 GAL.	



5 LANDSCAPE ISLAND
NTS

PLANT SCHEDULE

SYMBOL	BOTANICAL NAME / COMMON NAME	QTY	SIZE	REMARKS
	DECIDUOUS SHRUBS			
	BERBERIS T. ATROPURPUREA 'PYGMY RUBY' / BARBERRY	40	MIN. 18" HT, 5 GAL.	
	CORNUS SERICEA / REDTWIG DOGWOOD	308	MIN. 18" HT, 5 GAL.	
	EUONYMUS ALATUS / WINGED EUONYMUS	207	MIN. 18" HT, 5 GAL.	
	PHYSOCARPUS O. 'SUMMER WINE' / COMMON NINEBARK	207	MIN. 18" HT, 5 GAL.	
	POTENTILLA FRUTICOSA 'GOLDFINGER' / SHRUBBY CINQUEFOIL	39	MIN. 18" SPR, 5 GAL.	
	SPIRAEA X BUMALDA 'ANTHONY WATERER' / SPIREA	135	MIN. 18" SPR, 5 GAL.	
	SPIRAEA JAPONICA 'WALBUMA' / MAGIC CARPET SPIREA	201	MIN. 18" SPR, 5 GAL.	
	ORNAMENTAL GRASSES			
	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER' / FEATHER REED GRASS	TBD	1 GAL.	24" O.C.
	CAREX BUCHANANII 'RED FOX' / RED FOX CURLY SEDGE	TBD	1 GAL.	24" O.C.
	GROUNDCOVER			
	ARCHTOSTAPHYLOS UVA-URSI / KINNIKINNICK	TBD	1 GAL.	24" O.C.
	CORNUS SERICA 'KELSYI' / DWARF REDTWIG DOGWOOD	TBD	1 GAL.	24" O.C.
	COTONEASTER D. 'CORAL BEAUTY' / COTONEASTER	TBD	1 GAL.	24" O.C.
	GERANIUM MACRORRHIZUM / BIGROOT CRANESBILL	TBD	1 GAL.	24" O.C.
	EROSION CONTROL SEED MIX: 45% FESTUCA ARUNDINACEA VAR. / DWARF TALL FESCUE 30% LOLIUM PERENNE VAR. BARCLAY / DWARF PERENNIAL RYE (BARCLAY) 20% FESTUCA RUBRA / RED FESCUE 5% AGROSTIS TENUIS 'HIGHLAND STRAIN / COLONIAL BENTGRASS		HYDROSEED	SEED-80 LBS / ACRE MULCH-1,500 LBS / ACRE
	DROUGHT TOLERANT TURF/ TALL FESCUE SEED MIX: 33.33% FIRECRAKER LS TALL FESCUE 33.33% SPYDER LS TALL FESCUE 33.33% RAPTOR II TALL FECUE		SOD	

LANDSCAPE NOTES

1. ALL NEW PLANTING BEDS TO RECEIVE A MINIMUM 12" OF TOPSOIL. INSTALLED IN TWO LIFTS OF 6" DEPTH, WITH THE FIRST LIFT ROTOTILLED INTO THE SUBGRADE TO A MINIMUM DEPTH OF 8". TOPSOIL TO CONSIST OF 40% BY VOLUME NATIVE LOAM SOIL, 40% BY VOLUME SAND, AND 20% BY VOLUME COMPOST. TOPSOIL TO BE UNIFORMLY AMENDED FOR FERTILITY AND PH AS RECOMMENDED BY A CURRENT SOILS TEST PROVIDED BY A APPROVED SOIL TEST LABORATORY FOR NEW LANDSCAPE PLANTING.
2. ALL NEW PLANTER BEDS TO HAVE MEDIUM/FINE (3" MINUS) BARK MULCH INSTALLED TO A MINIMUM DEPTH OF 2". MAINTAIN A 6" MULCH FREE RING AROUND TRUNKS OF ALL TREES AND SHRUBS.
3. GROUNDCOVER TO EXTEND UNDER ALL DECIDUOUS TREE CANOPIES AT THE SPECIFIED SPACING TO PROVIDE COMPLETE COVERAGE IN ALL PLANTING BEDS SHOWN TO RECEIVE GROUNDCOVER. GROUNDCOVER BENEATH EVERGREEN TREES TO MAINTAIN A 3' CLEARANCE FROM BASE OF TREE.
4. TREES TO MAINTAIN A MINIMUM 8' CLEARANCE FROM FIRE HYDRANTS, BACKFLOW DEVICES, AND METERS. SHRUBS TO MAINTAIN A MINIMUM 3' CLEARANCE FIRE HYDRANTS, BACKFLOW DEVICES, AND METERS.
5. ALL PLANT MATERIAL HAS BEEN SELECT TO BE DROUGHT TOLERANT. SUBSTITUTIONS IF REQUIRED TO ALSO BE DROUGHT TOLERANT, BE OF THE SAME GENERAL CHARACTER OF PLANT SUBSTITUTED, AND TO BE APPROVED BY LANDSCAPE ARCHITECT.
6. ALL NEW PLANTING TO BE FERTILIZED WITH STARTER FERTILIZER 2-4-2, OR APPROVED EQUAL, APPLIED AT MANUFACTURERS RECOMMENDED RATE. TREES AND SHRUBS TO BE FERTILIZED WITH AGSAFE 20-10-5, 21 GRAM PLANT TABS, APPLIED AT MANUFACTURERS RECOMMENDED RATE.
7. LANDSCAPE DRAWINGS ARE BASED ON THE SITE PLANS PREPARED BY SYNTHESIS PLLC. IMMEDIATELY NOTIFY LANDSCAPE ARCHITECT OF ANY FIELD CHANGES TO THE SITE PLAN THAT MAY REQUIRE ADJUSTMENT OF DESIGN.
8. REFER TO CIVIL ENGINEERING DRAWINGS FOR GRADING AND DRAINAGE INFORMATION. IMMEDIATELY NOTIFY LANDSCAPE ARCHITECT ON ANY ADVERSE DRAINAGE CONDITIONS WHICH MAY AFFECT HEALTH OF PLANT MATERIAL.
9. WARRANTY ALL PLANTING FOR 1 YEAR FROM FINAL ACCEPTANCE. REPLACE PLANTING THAT HAS DIED OR DYING.
10. ALL NEW LANDSCAPE TO BE IRRIGATED WITH A HIGH EFFICIENCY IRRIGATION SYSTEM. EROSION CONTROL HYDROSEED TO HAVE TEMPORARY ABOVE GRADE IRRIGATION. TREES AND SHRUBS WITHIN EROSION CONTROL AREAS TO HAVE PERMANENT UNDERGROUND IRRIGATION. IRRIGATION TO BE PROVIDED WITH A ET ADJUSTED IRRIGATION CONTROLLER WITH A ON SITE ET SENSOR.

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WBLA Landscape Architecture Site Planning Irrigation
16630 30th Dr. S.E.
Bothell, WA 98012
phone (425) 417-4609

PROJECT:
CAMAS BUSINESS CENTER

LOCATION:
4707 NW Lake Road
CAMAS, WA

CLIENT:
PANATTONI DEVELOPMENT, INC
1821 DOCK ST,#100
TACOMA, WA 98402

NO.	DATE	REVISION
	10.18.2021	SEPA
	01.31.2022	REVISED SEPA
	04.08.2022	DESIGN REVIEW

DESIGNED CB
DRAWN CB
CHECKED CB

PROFESSIONAL SEAL

STATE OF WASHINGTON
REGISTERED
LANDSCAPE ARCHITECT
WILLIAM A. BROWN
CERTIFICATE NO. 501

DATE 10.01.2021

PROJECT NO. 202120

TITLE
LANDSCAPE PLANT SCHEDULE & DETAILS

SHEET NUMBER
L-9
9 OF 9

SHEET SIZE: 24" x 36" AT 100%

CAMAS BUSINESS CENTER

LOCATED IN THE SE 1/4 OF SECTION 29, TOWNSHIP 2 NORTH, RANGE 3 EAST, W.M., CITY OF CAMAS, CLARK COUNTY, WASHINGTON

Exhibit 7
LI/BP21-01

LEGEND

BUFFER IMPACT AREA
TOTAL = 4,007.4 SF

BUFFER ADDITION AREA
TOTAL = 13,345.8 SF

REFER TO WETLAND MITIGATION STUDY

VERTICAL DATUM

ELEVATIONS AND CONTOURS ARE BASED ON CLARK COUNTY BENCHMARK ID NUMBER 265. THE BENCHMARK IS THE SOUTHEAST CORNER OF SECTION 29, BEING A BRASS DISK IN CONCRETE WITHIN A MONUMENT CASE. THE BENCHMARK IS LOCATED IN THE CENTERLINE OF NW LAKE ROAD NEAR THE SOUTHEAST CORNER OF THE SURVEYED PROPERTY. IT HAS AN ELEVATION OF 316.85 FEET BASED ON THE NGVD 1929(47) VERTICAL DATUM.

BASIS OF BEARING

THE BASIS OF BEARINGS FOR THIS SURVEY IS BOOK 58, PAGE 46, CLARK COUNTY SURVEY RECORDS.

N

GRAPHIC SCALE
0 50 100 200
1" = 100 FEET

PROJECT INFORMATION

ZONE	LI/BP (LIGHT INDUSTRIAL/BUSINESS PARK)
PARCEL NUMBERS	176170-000, 176155-000
GROSS SITE AREA	3,245,501.45 SF (74.51 ACRES)
ANTICIPATED ROW AREA	212,863.21 SF (4.89 ACRES)
NET DEVELOPABLE AREA	3,032,638.24 SF (69.62 ACRES)
BUILDING A AREA	649,448 SF
BUILDING B AREA	227,393 SF
BUILDING C AREA	92,232 SF
TOTAL BUILDING AREA	969,073 SF (22.25 ACRES)
BUILDING COVERAGE	29.86%

PARKING REQUIREMENTS

BUILDING A:	32,472 SF OFFICE @ 1:250 616,976 SF WAREHOUSE @ 1:1000 747 PARKING STALLS REQUIRED 544 PASSENGER CAR PARKING STALLS PROVIDED 89 TRAILER PARKING STALLS PROVIDED
BUILDING B:	11,370 SF OFFICE @ 1:250 216,023 SF WAREHOUSE @ 1:1000 262 PARKING STALLS REQUIRED 321 PASSENGER CAR PARKING STALLS PROVIDED 107 TRAILER PARKING STALLS PROVIDED
BUILDING C:	4,612 SF OFFICE @ 1:250 87,620 SF WAREHOUSE @ 1:1000 107 PARKING STALLS REQUIRED 129 PASSENGER CAR PARKING STALLS PROVIDED 28 TRAILER PARKING STALLS PROVIDED

SHEET INDEX	
Sheet Number	Sheet Title
SPR1	PRELIMINARY SITE PLAN
SPR2	PRELIMINARY GRADING AND DRAINAGE PLAN
SPR3	PRELIMINARY ROAD SECTIONS
SPR4	PRELIMINARY WATER AND SEWER PLAN

811 Know what's **below.** **Call** before you dig.

DATE: October 19, 2021 FILENAME: Q:\2020\2200867\10_CIV\CAD_SEPA\2200867-SH-COVR.dwg

AHBL
TACOMA • SEATTLE • SPOKANE • TRI-CITIES
2215 North 30th Street, Suite 300 Tacoma, WA 98403
253.383.2422 TEL 253.383.2572 FAX www.ahbl.com WEB

Project Title:
CAMAS BUSINESS CENTER

Client:
PANATTONI DEVELOPMENT COMPANY, LLC
1821 DOCK STREET, SUITE 100
TACOMA, WA 98402

Project No.
2200867.10

Issue Set & Date:
SEPA AND SITE PLAN REVIEW
10/19/2021

J. MATTHEW WEBER — STATE OF WASHINGTON — 24850 — REGISTERED PROFESSIONAL ENGINEER
10/19/2021

NOTICE
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GENERAL ONSITE CIRCULATION PLAN
INCOMING —>—
OUTGOING —>—

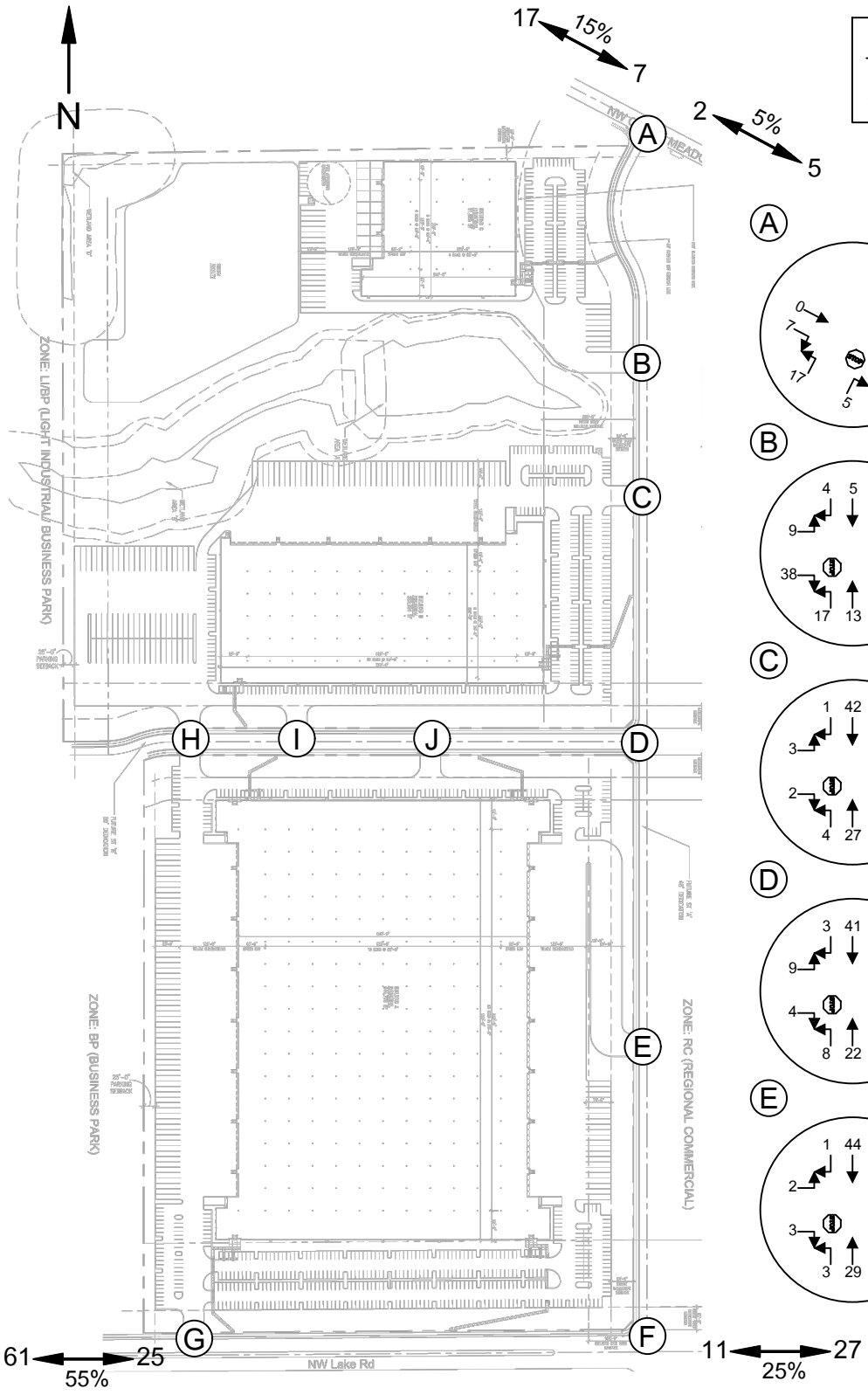
Revisions:
1
2
3
4

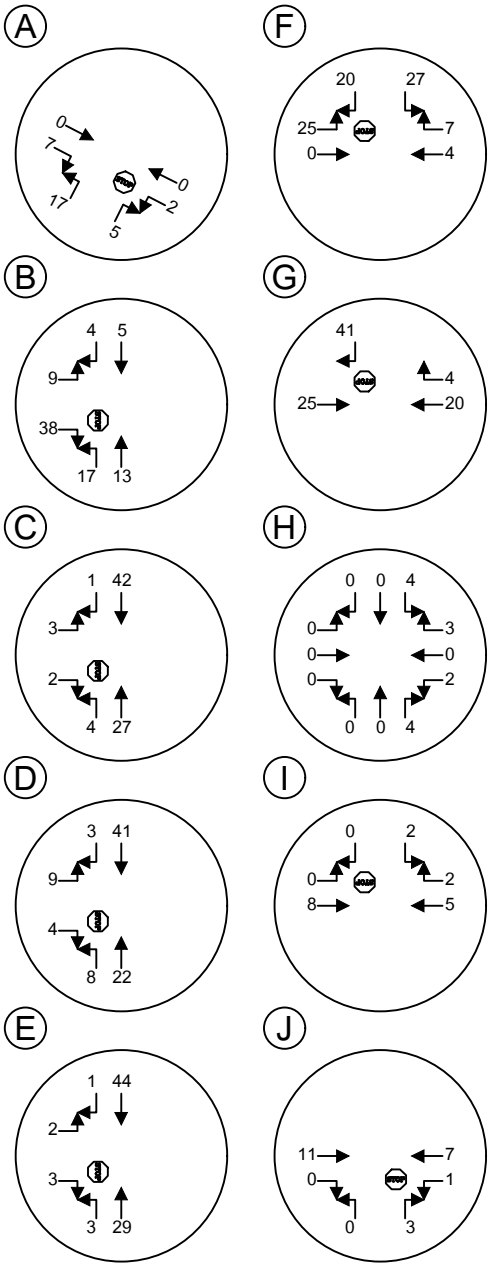
Sheet Title:
PRELIMINARY SITE PLAN

Designed by:	Drawn by:	Checked by:
TDW/MW/GG	TDS	BEB

Sheet No.
SPR1
1 of 4 Sheets

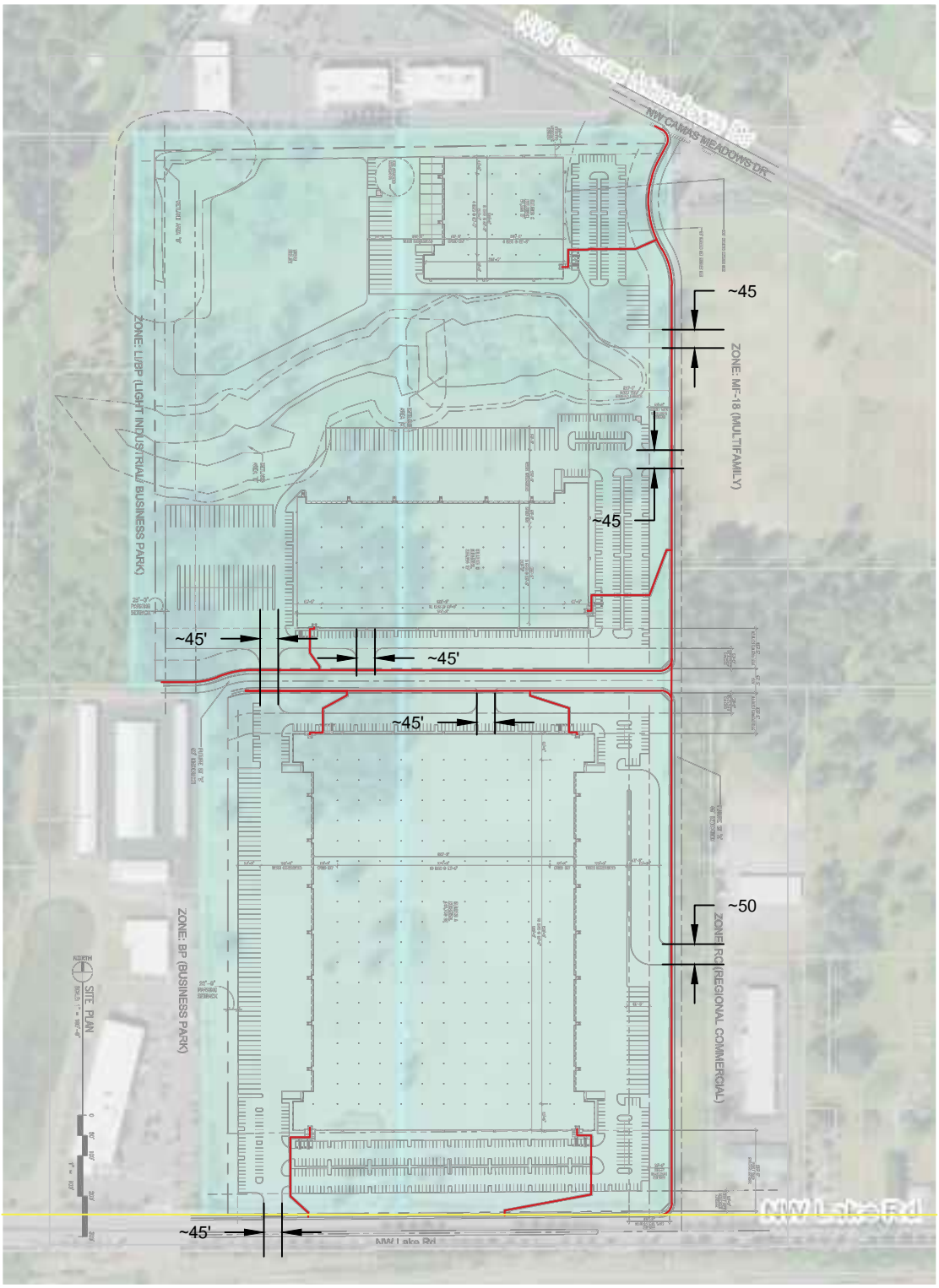
NEW PM PEAK HOUR TRIPS
INBOUND: 45 VPH
OUTBOUND: 110 VPH





HEATH & ASSOCIATES
TRAFFIC AND CIVIL ENGINEERING

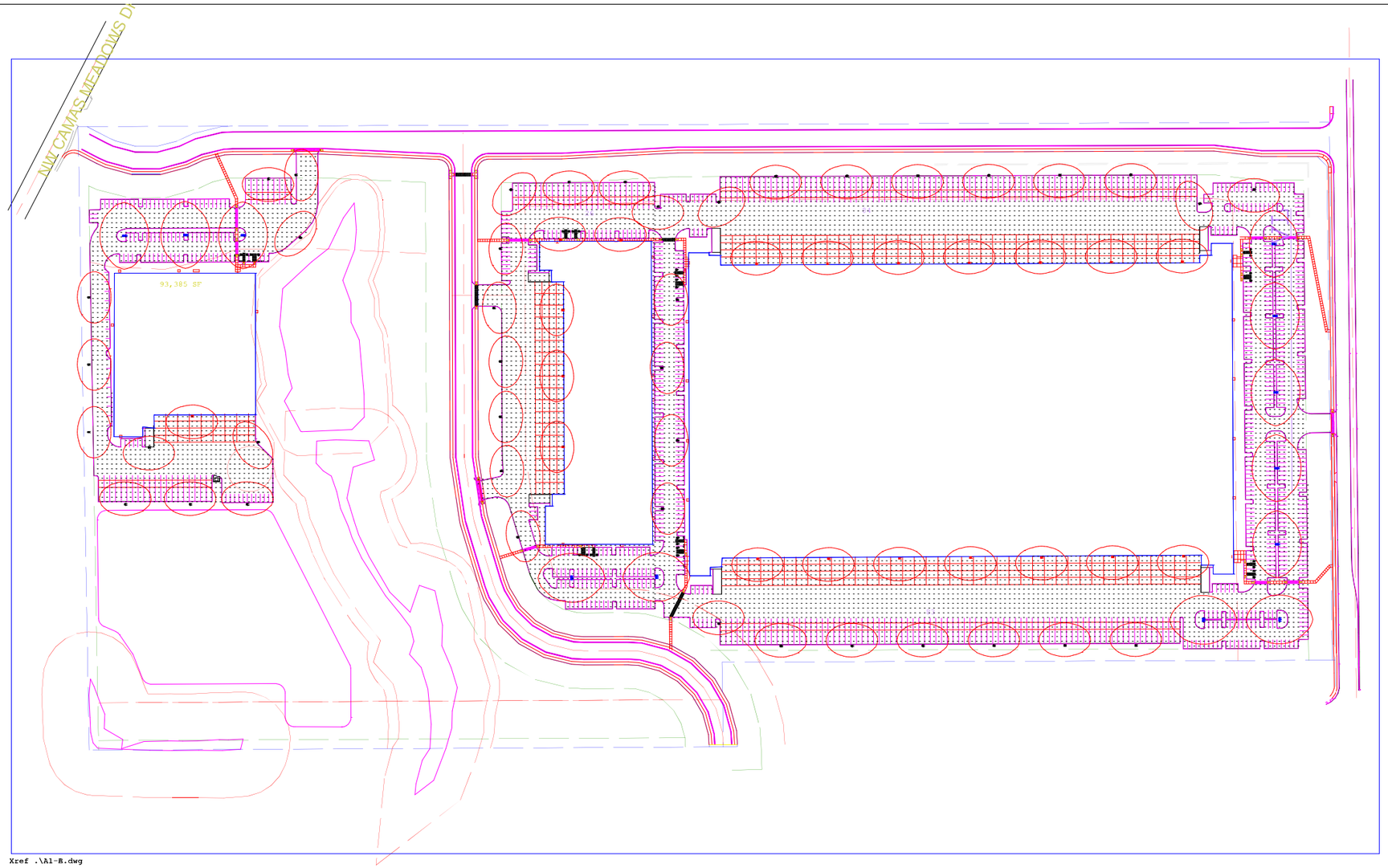
CAMAS BUSINESS CENTER
PM PEAK HOUR VEHICULAR CIRCULATION PLAN
FIGURE 1



= EXISTING PEDESTRIAN CIRCULATION
= PROPOSED PEDESTRIAN CIRCULATION

HEATH & ASSOCIATES
TRAFFIC AND CIVIL ENGINEERING

CAMAS BUSINESS CENTER
PEDESTRIAN CIRCULATION PLAN
FIGURE 2



Xref .\A1-B.dwg

Luminaire Schedule						
Symbol	Qty	Label	LLF	Description	Wattage	Lumens per Fixture
	41	IAHP1C1xxxFD850xxT3	0.935	ISON LED Area Light High Performance Gen 1, 143W, 23000 Lumens, 80CRI, 5000K, Ty	138.9	22360
	20	IAHP1C1xxxFD850xxT3-WM	0.935	ISON LED Area Light High Performance Gen 1, 143W, 23000 Lumens, 80CRI, 5000K, Ty	138.9	22360
	12	IAHP1C1xxxFD850xxT3-B2B	0.935	ISON LED Area Light High Performance Gen 1, 143W, 23000 Lumens, 80CRI, 5000K, Ty	138.9	22360

Calculation Summary									
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	FC Req	AFF
Building A Lot	Illuminance	Fc	1.43	10.8	0.1	14.30	108.00	1 FC	0"
Building B Lot	Illuminance	Fc	1.70	10.8	0.0	N.A.	N.A.	1 FC	0"
Building C Lot	Illuminance	Fc	1.89	10.7	0.1	18.90	107.00	1 FC	0"

IMPORTANT
1.) Presentation plans only. Not for construction use.
2.) Calculations performed on representative aisles only and are inclusive of all contributing light.

AREA LAYOUT

(1) GENERAL NOTES
CONFIDENTIAL INFORMATION Please Note: This data is based upon certain specific assumed reflectances and characteristics of the proposed environment. Any deviation from these reflectances or assumed characteristics may affect the actual performance of the luminaries. Based on the factors, Orion Energy Systems, Inc. can not guarantee these results.

2) NO OBJECTS CONSIDERED IN CALCULATIONS UNLESS OTHERWISE NOTED ON THE PRINT.

3) STANDARD REFLECTION VALUES
CEILING: .8
WALLS: .5
FLOOR: .2
RACKING: .5

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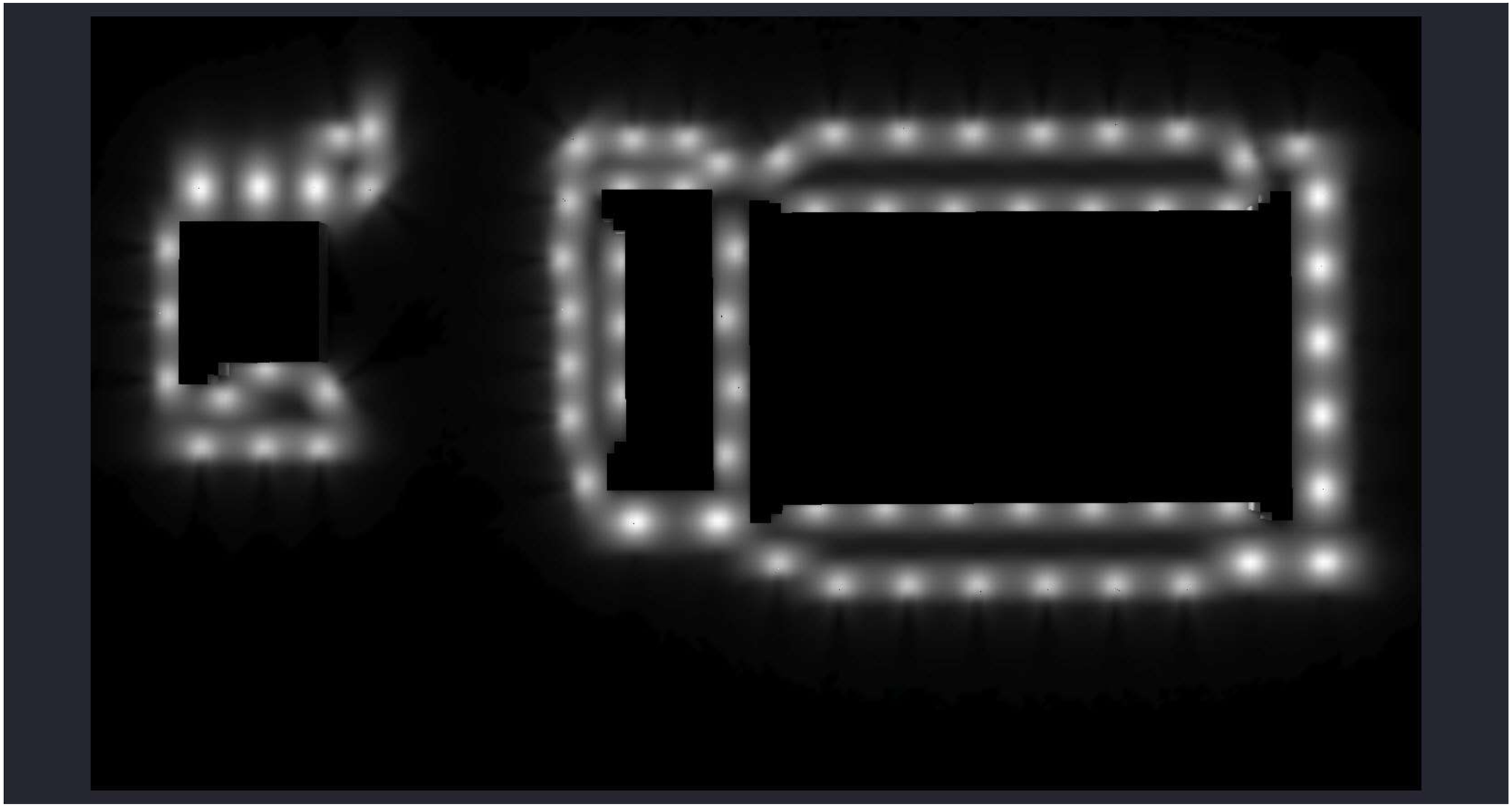
Lifepoint Twin County Regional Healthcare
P1291284
Galax, VA

DRAWING	DATE	DRAWN BY	REVIEWED BY
Rev 0	04/11/22	LL	



IMPORTANT

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RENDERING

(1) GENERAL NOTES
CONFIDENTIAL INFORMATION Please Note: This data is based upon certain specific assumed reflectances and characteristics of the proposed environment. Any deviation from these reflectances or assumed characteristics may affect the actual performance of the luminaries. Based on the factors, Orion Energy Systems, Inc. can not guarantee these results.

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3) STANDARD REFLECTION VALUES
CEILING: .8
WALLS: .5
FLOOR: .2
RACKING: .5

orion

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Lifepoint Twin County Regional Healthcare
P1291284
Galax, VA

DRAWING	DATE	DRAWN BY	REVIEWED BY
Rev 0	04/11/22	LL	

1. DESCRIPTION OF PHOTOMETRIC DRAWING:
THE PURPOSE OF THE FOLLOWING DRAWING(S) IS TO CREATE A CLOSE REPRESENTATION OF FOOT-CANDLE READINGS THE CLIENT CAN EXPECT TO ACHIEVE AFTER THE FIXTURES HAVE BEEN INSTALLED. INCLUDED IN THIS SET OF DRAWING(S) WILL BE A FIXTURE LAYOUT, A LUMINAIRE SCHEDULE SHOWING THE TOTAL NUMBER OF FIXTURES REQUIRED (PER FIXTURE TYPE) AND LIGHT LOSS FACTOR USED FOR EACH FIXTURE AND A CALCULATION SCHEDULE SHOWING THE AVERAGE, MAXIMUM AND MINIMUM FOOT-CANDLE READINGS PER AREA.

2. FIELD VERIFICATION:
CALCULATIONS ARE PROVIDED USING INDUSTRY RECOGNIZED SOFTWARE AND ARE PROVIDED FORESTIMATION PURPOSES ONLY. HOWEVER, ACTUAL LIGHTING LEVELS WILL VARY DEPENDING ON FIELD CONDITIONS INCLUDING BUT NOT LIMITED TO ROOM CHARACTERISTICS AND TEMPERATURE. THE CALCULATIONS CORRESPOND TO THE INFORMATION PROVIDED TO ORION. ASSUMPTIONS MAY BE MADE FOR INFORMATION THAT IS NOT PROVIDED.IT IS THE RESPONSIBILITY OF THOSE USING THIS SERVICE TO VERIFY THAT OUR INPUT DATA IS CONSISTENT WITH ACTUAL FIELD CONDITIONS. CALCULATIONS ARE SUBJECT TO LIMITATIONS OF THE SOFTWARE. DUE TO THE ABOVE CONSIDERATIONS, ORION WILL NOT GUARANTEE THAT ACTUAL LIGHT LEVELS MEASURED IN THE FIELD WILL MATCH THE INITIAL CALCULATIONS. ALTHOUGH ALL EFFORTS HAVE BEEN MADE TO PLACE LIGHT FIXTURES FREE OF OBSTACLES WHEN PROVIDED WITH SUCH INFORMATION, IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY FIXTURE LOCATIONS ARE FREE OF ANY STEEL, HVAC, SPRINKLER SYSTEMS, ETC. IT IS ALSO THE CONTRACTORS RESPONSIBILITY TO MAKE SURE LIGHT FIXTURES ARE INSTALLED IN ACCORDANCE WITH LOCAL CODES, FM GLOBAL AND ESFR.

3. PERMITTING
IT IS THE RESPONSIBILITY OF THE LICENCED CONTRACTOR TO CONTACT THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) TO VERIFY ALL LOCAL CODES AND TO ENSURE COMPLIANCE OF THESE CODES.

4. IES FILES
IESNA STANDS FOR THE "ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA" AND BUILDING ACOUSTICS & LIGHTING LABS TESTS TO THEIR STANDARDS AS WELL AS MANY OTHERS. AN IES DATA FILE IS AN ELECTRONIC PHOTOMETRIC DATA FILE THAT CAN BE PUT INTO AN APPLICATION PROGRAM TO DETERMINE YOUR LUMINAIRES PERFORMANCE INSTANTLY. THESE STANDARDS ARE ESTABLISHED TO ENSURE THAT ALL THE INDEPENDENT LABORATORIES WILL GIVE COMPARABLE RESULTS. THUS ALLOWING MANUFACTURER A TO TEST WITH ONE LAB AND MANUFACTURER B TO TEST WITH ANOTHER LAB AND YOU CAN DIRECTLY COMPARE THE TWO RESULTING REPORTS IN AREAS OF EFFICIENCY, LIGHT DISTRIBUTION AND SO ON.

5. LIGHT METER VARIABLES
DUE TO THE FACT THAT LIGHT METERS ARE NOT ALL MADE BY THE SAME MANUFACTURER, YOU MAY SEE DIFFERENT READINGS DEPENDING ON THE LIGHT METER BEING USED. OTHER VARIABLES WHICH MAY CREATE DIFFERENT LIGHT READINGS THAN WHAT IS SHOWN ON THE PHOTOMETRIC LAYOUT MAY INCLUDE BUT ARE NOT LIMITED TO: SHADOWS PRODUCED BY FRAMING, HVAC, EVAPORATORS, ETC.

6. DEFINITION OF TERMS

EFFICACY
A MEASUREMENT OF HOW EFFECTIVE THE LIGHT SOURCE IS IN CONVERTING ELECTRICAL ENERGY TO LUMENS OF VISIBLE LIGHT. EXPRESSED IN LUMENS-PER-WATT (LPW) THIS MEASURE GIVES MORE WEIGHT TO THE YELLOW REGION OF THE SPECTRUM AND LESS WEIGHT TO THE BLUE AND RED REGION WHERE THE EYE IS NOT AS SENSITIVE.

LUMINAIRE EFFICIENCY
THE EFFICIENCY OF A LUMINAIRE OR FIXTURE IS THE PERCENTAGE OF THE TOTAL LUMENS PRODUCED THAT ARE DELIVERED BY THE FIXTURE.

FOOT CANDLES
A UNIT OF ILLUMINANCE OR INCIDENT LIGHT REFLECTING FROM A SURFACE. IT IS DEFINED AS THE AMOUNT OF LIGHT ON A ONE SQUARE FOOT SURFACE ONE FOOT FROM A STANDARD CANDLE. ONE FOOTCANDLE IS EQUAL TO ONE LUMEN PER SQUARE FOOT.

ILLUMINANCE
ILLUMINANCE IS THE TOTAL LUMINOUS FLUX INCIDENT ON A SURFACE, PER UNIT AREA.
IT IS A MEASURE OF HOW MUCH THE INCIDENT LIGHT ILLUMINATES THE SURFACE. ILLUMINANCE IS MEASURED IN FOOTCANDLES OR LUX.

LIGHT EMITTING DIODE (LED)
A SOLID THAT DIRECTLY CONVERTS ELECTRICAL IMPULSES INTO LIGHT.
LED'S ARE TEMPERATURE DEPENDANT, NOT ONLY FOR LONG LIFE, BUT SO THAT THE MAXIMUM LIGHT OUTPUT, QUALITY AND RELIABILITY OF THE DEVICE IS PRESERVED.

LIGHT LOSS FACTOR (LLF)
THE PRODUCT OF ALL FACTORS THAT CONTRIBUTE TO LOWERING THE ILLUMINATION LEVEL INCLUDING REFLECTOR DEGRADATION, DIRT, LAMP DEPRECIATION OVER TIME, VOLTAGE FLUCTUATIONS, ETC.

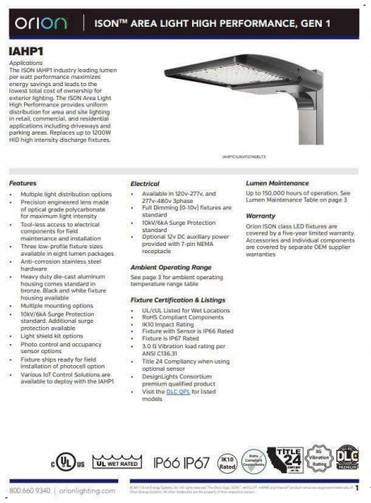
LUMENS
A MEASURE OF THE LUMINOUS FLUX OF LIGHT EMITTED BY A SOURCE. FOR EXAMPLE, A DINNER CANDLE PROVIDES ABOUT 12 LUMENS. A 60-WATT SOFT WHITE INCANDESCENT LAMP PROVIDES ABOUT 840 LUMENS.

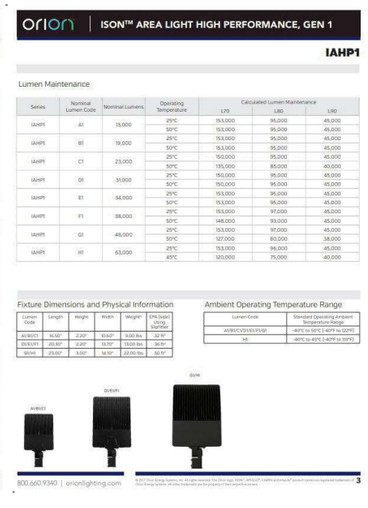
LUMINAIRE
A COMPLETE LIGHTING UNIT CONSISTING OF A LAMP (OR LAMPS), BALLAST (OR BALLASTS) AS REQUIRED TOGETHER WITH THE PARTS DESIGNED TO DISTRIBUTE THE LIGHT, POSITION AND PROTECT THE LAMPS AND CONNECT THEM TO THE POWER SUPPLY. A LUMINAIRE IS OFTEN REFERRED TO AS A FIXTURE.

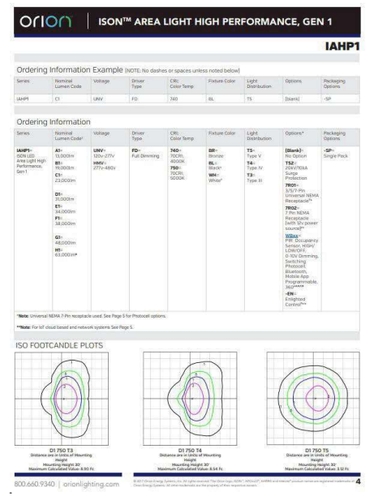
LUMINANCE
A MEASURE OF "SURFACE BRIGHTNESS" WHEN AN OBSERVER IS LOOKING IN THE DIRECTION OF THE SURFACE. IT IS MEASURED IN CANDELAS PER SQUARE METER (OR PER SQUARE FOOT) AND WAS FORMERLY REFERRED TO AS "PHOTOMETRIC BRIGHTNESS."

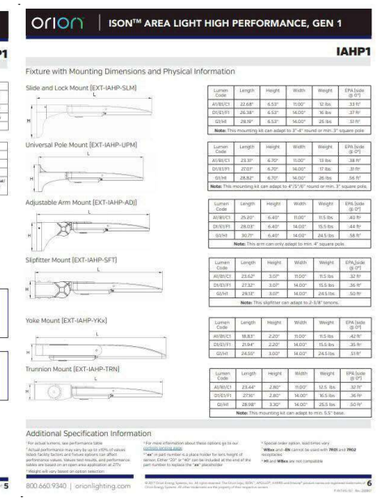
REFLECTANCE
THE RATIO OF LIGHT REFLECTED FROM A SURFACE TO THAT INCIDENT UPON IT.

WATTS
A UNIT OF ELECTRICAL POWER. LAMPS ARE RATED IN WATTS TO INDICATE THE RATE AT WHICH THEY CONSUME ENERGY.









DISCLAIMER

(1) GENERAL NOTES
CONFIDENTIAL INFORMATION Please Note: This data is based upon certain specific assumed reflectances and characteristics of the proposed environment. Any deviation from these reflectances or assumed characteristics may affect the actual performance of the luminaries. Based on the factors, Orion Energy Systems, Inc. can not guarantee these results.

2) NO OBJECTS CONSIDERED IN CALCULATIONS UNLESS OTHERWISE NOTED ON THE PRINT.

3) STANDARD REFLECTION VALUES
CEILING: .8
WALLS: .5
FLOOR: .2
RACKING: .5

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Lifepoint Twin County Regional Healthcare
P1291284
Galax, VA

DRAWING	DATE	DRAWN BY	REVIEWED BY
Rev 0	04/11/22	LL	

LI/BP21-01

LEGEND

DECIDUOUS TREE		STORM SEWER CLEAN OUT		TELEPHONE/TELEVISION VAULT	T	RIGHT-OF-WAY LINE	POWER LINE — PWR
CONIFEROUS TREE		STORM SEWER CATCH BASIN		TELEPHONE/TELEVISION JUNCTION BOX		BOUNDARY LINE	OVERHEAD WIRE — OHW
FIRE HYDRANT		STORM SEWER COMBINATION INLET		TELEPHONE/TELEVISION RISER	TR	PROPERTY LINE	TELEPHONE LINE — TEL
WATER METER	WM	STORM SEWER MANHOLE		TELEPHONE/TELEVISION MANHOLE		CENTERLINE	GAS LINE — GAS
WATER VALVE	WAT	POWER JUNCTION BOX	EB	SIGN		CURB	STORM SEWER LINE — STM
WATER VAULT	WV	POWER TRANSFORMER	TFR	MAILBOX	MB	EDGE OF PAVEMENT	SANITARY SEWER LINE — SAN
SANITARY SEWER CLEAN OUT		GUY WIRE ANCHOR				EASEMENT	WATER LINE — WAT
SANITARY SEWER MANHOLE		UTILITY POLE		1"-1.5" DIAMETER WOOD POLES FOR NETTING		FENCE LINE	WETLAND BOUNDARY — WTB
GAS METER	GM	POWER VAULT	P	FOUND SURVEY MONUMENT		GRAVEL EDGE	
GAS VALVE		STREET LIGHT		RECORD INFORMATION	( )		

STORM SEWER INFORMATION

SD16 CATCH BASIN
RIM = 250.83'
10" IN (NW)
10" OUT (E)
FLOWLINE I.E. = 243.9'

SD17 MANHOLE
RIM = 250.90'
10" I.E. IN (W) = 243.7'
10" I.E. IN (NW) = 243.4'
12" I.E. OUT (E) = 243.3'

SD18 CATCH BASIN
RIM = 249.37'
12" IN (W)
12" OUT (E)
FLOWLINE I.E. = 242.3'

SD19 CATCH BASIN
RIM = 248.29'
12" I.E. OUT (NE) = 241.8'

SD20 MANHOLE
RIM = 247.83'
12" I.E. IN (W) = 241.4'
12" I.E. OUT (NE) = 241.2'

SD21 MANHOLE
RIM = 244.98'
12" IN (NW & SW)
12" OUT (SE)
FLOWLINE I.E. = 240.9'

SD22 MANHOLE
RIM = 243.53'
10" I.E. IN (NE) = 239.7'
12" IN (NW)
12" OUT (SE)
FLOWLINE I.E. = 239.2'

SD23 CURB INLET
RIM = 243.46'
GUTTER/GRADE = 242.73'
10" I.E. OUT (SW) = 240.2'

DOC. NO. 4284809 D
TPN: 172976-000

DOC. NO. 4396777 D
TPN: 172971-000

DOC. NO. 4396777 D
TPN: 986028-109

NW CAMAS MEADOWS DRIVE

RIGHT-OF-WAY LINE PER DOC. NO. 4723457

APPROXIMATE LOCATION OF SANITARY FORCE MAIN

ROCK RETAINING WALL

PARKING STRIPE (TYPICAL)

TRASH ENCLOSURE WITH 6' CYCLONE GATE

4' BARBED WIRE FENCE

4' BARBED WIRE FENCE ON PROPERTY LINE

4' HIGH BARBED WIRE FENCE

END BARBED WIRE FENCE

4' GAS LINE

DOUBLE YELLOW SOLID/SKIP STRIPE

WETLAND AREA 'D'

WETLAND AREA 'A'

WETLAND AREA 'B'

AREA OF DENSE BRUSH, CONTOURS ARE APPROXIMATE

659.31'

N89°19'01"W 1318.61'

N01°24'59"E 1340.57'

DOC. NO. 4634966 D
TPN: 176187-000

TPN: 176170-000

TPN: 176155-000

DOC. NO. 4182262 D
TPN: 175983-000

SEE SHEET 2

SCALE 1" = 50 FEET

NORTHWEST SURVEYING, INC.
1815 NW 169th PLACE, SUITE 2090
BEAVERTON, OR. 97006
PH:(503) 848-2127 FAX:(503) 848-2179
EMAIL: nwsurveying@nwsrvy.com

LOCATED IN THE SE 1/4 OF SECTION 29, TOWNSHIP 2 NORTH, RANGE 3 EAST, W.M., CITY OF CAMAS, CLARK COUNTY, WASHINGTON

TOPOGRAPHIC MAP
4707/4723 NW LAKE ROAD
CAMAS, WASHINGTON

DRAWING NO.:	2295 TOPO
SCALE:	AS NOTED
DRAWING GENERATED BY	LD2004
DRAWN BY:	CDW
CHECKED BY:	CHS

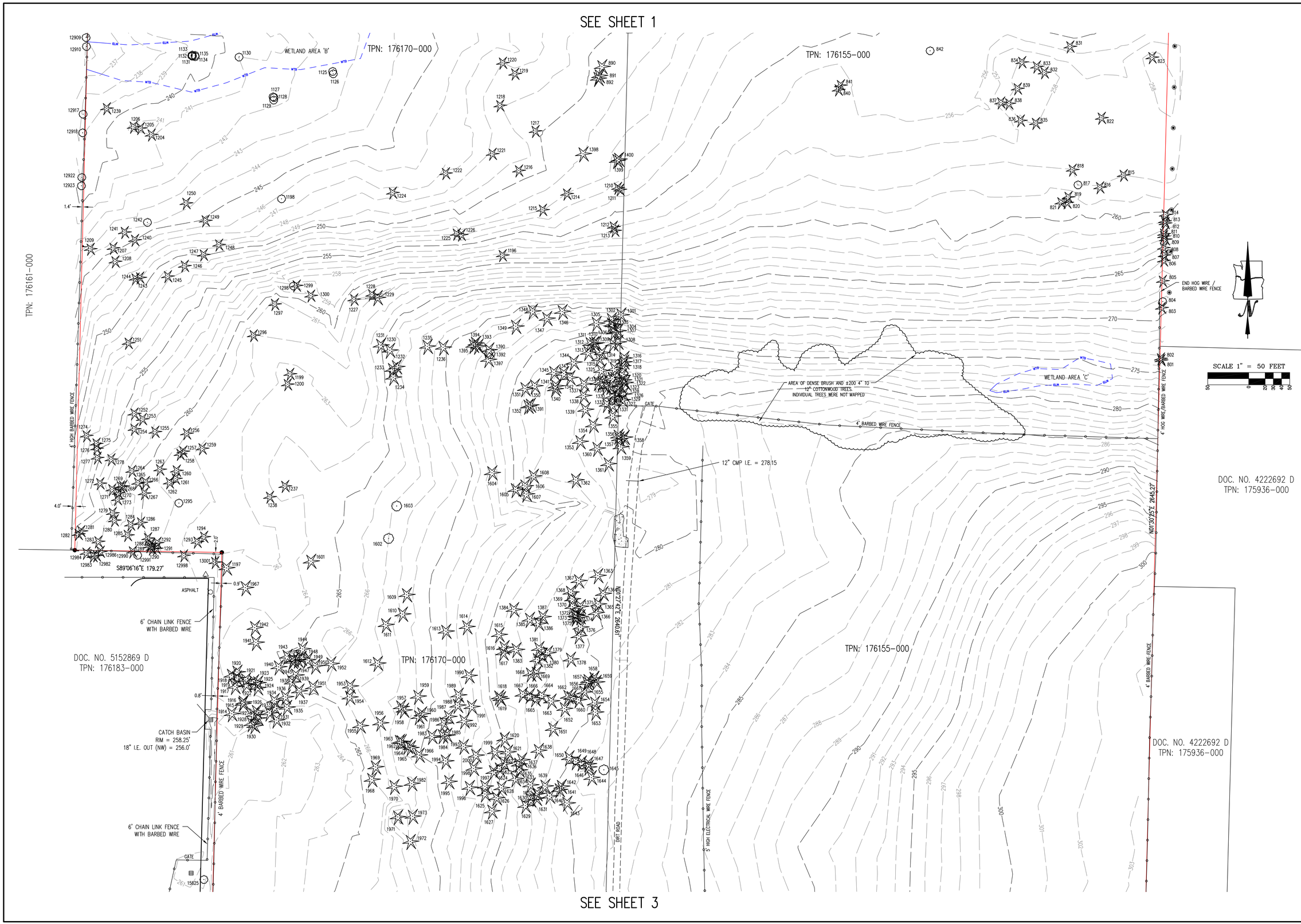
PREPARED FOR:
PANATTONI DEVELOPMENT COMPANY, INC.
1821 DOCK STREET, SUITE 100
TACOMA, WA 98402

REVISIONS:
INITIAL RELEASE: SEPT. 28, 2021

9/29/2021
CLINTON H. STUBBS JR.
41081
REGISTERED
PROFESSIONAL LAND SURVEYOR
STATE OF WASHINGTON

JOB NUMBER
2295

SHEET
1 OF 5



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SHEET
2 OF 5

SEE SHEET 2

DOC. NO. 5695813 D
TPN: 176154-000

DOC. NO. 5375998 D
TPN: 176168-000

TPN: 176170-000

TPN: 176155-000

DOC. NO. 4222692 D
TPN: 175936-000

ASPHALT

N01°31'50"E 1295.99'

0.4'

0.8'

4' BARBED WIRE FENCE

6' HIGH METAL FENCE (LIVESTOCK CORRAL)

STOCK POND

PROPERTY LINE

LIVESTOCK FEED SHED

DIRT ROAD

4' HIGH HOG WIRE FENCE

BARN/SHOP

5' HIGH ELECTRICAL WIRE FENCE

4' BARBED WIRE FENCE ON PROPERTY LINE

6' HIGH BARBED WIRE FENCE

5' HIGH CYCLONE FENCE

5'x6' PUMP HOUSE

GATE

BARN / SHOP

SINGLE STORY HOUSE

GRAVEL

POLE WITH DOWN DROP

5' CHAIN LINK FENCE

POWER POLE WITH DROP

4" GAS LINE

LENGTH=59.87'
RADIUS=8320.00'
DELTA=00°24'44"
CHORD=S88°42'26"E 59.87'

N88°54'48"W 120.36'

480.49'

N88°54'48"W 1257.69'

N88°54'48"W 1737.65'

657.16'

SCALE 1" = 50 FEET

SEE SHEET 4 FOR DETAIL STREET INFORMATION

SEE SHEET 4 FOR DETAIL STREET INFORMATION

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LOCATED IN THE SE 1/4 OF SECTION 29,
TOWNSHIP 2 NORTH, RANGE 3 EAST, W.M.,
CITY OF CAMAS,
CLARK COUNTY, WASHINGTON

TOPOGRAPHIC MAP
4707/4723 NW LAKE ROAD
CAMAS, WASHINGTON

DRAWING NO.:	2295 TOPO
SCALE:	AS NOTED
DRAWING GENERATED BY LD2004	
DRAWN BY:	CDW
CHECKED BY:	CHS

PREPARED FOR:
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1821 DOCK STREET, SUITE 100
TACOMA, WA 98402

REVISIONS:
INITIAL RELEASE: SEPT. 28, 2021

9/28/2021
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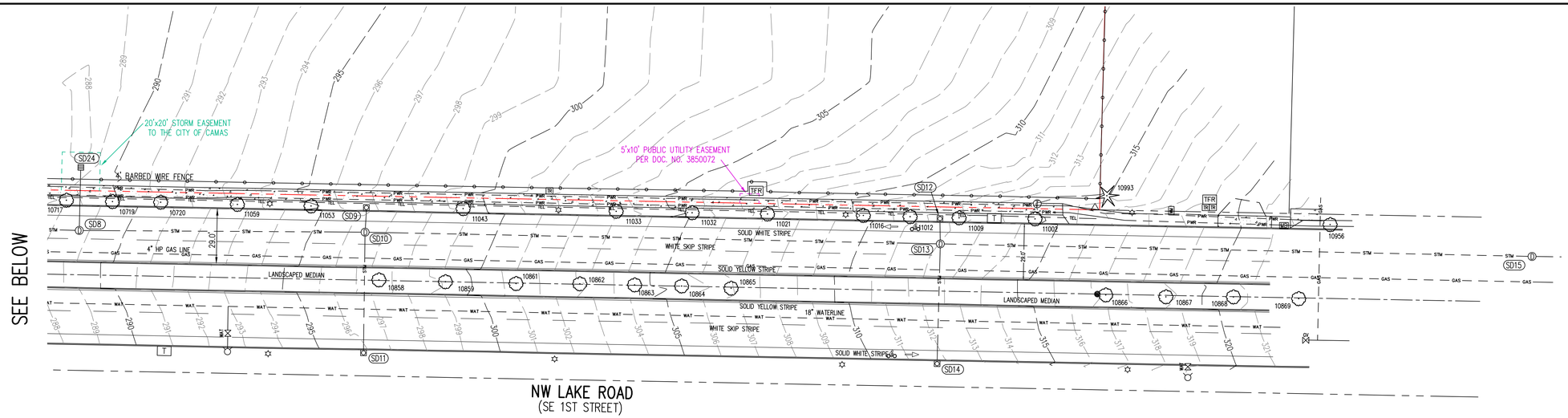
JOB NUMBER
2295

SHEET
3 OF 5



STORM SEWER INFORMATION

(SD1) CATCH BASIN
RIM = 266.23'
10" I.E. OUT (SW) = 263.3'

(SD2) MANHOLE
RIM = 266.42'
10" I.E. IN (NE) = 262.0'
10" I.E. IN (S) = 261.7'
24" I.E. IN (E) = 258.7'
24" I.E. OUT (W) = 258.5'

(SD3) CATCH BASIN
RIM = 266.76'
10" IN (S)
10" OUT (N)
FLOWLINE I.E. = 262.6'

(SD4) CATCH BASIN
RIM = 266.30'
12" I.E. OUT (N) = 263.4'

(SD5) CURB INLET / CATCH BASIN
RIM = 276.81'
GUTTER/GRATE = 276.09'
10" I.E. OUT (S) = 272.4'

(SD6) MANHOLE
RIM = 276.54'
10" I.E. IN (N) = 271.0'
10" I.E. IN (S) = 271.0'
24" I.E. IN (E) = 269.8'
24" I.E. OUT (W) = 269.6'

(SD7) CURB INLET / CATCH BASIN
RIM = 276.71'
GUTTER/GRATE = 275.99'
10" I.E. OUT (N) = 271.2'

(SD8) MANHOLE
RIM = 288.62'
10" I.E. IN (N) = 282.7'
24" IN (E)
24" OUT (W)
FLOWLINE I.E. = 279.6'

(SD9) CURB INLET / CATCH BASIN
RIM = 296.68'
GUTTER/GRATE = 295.93'
10" I.E. OUT (S) = 292.1'

(SD10) MANHOLE
RIM = 296.39'
10" I.E. IN (N) = 290.0'
10" I.E. IN (S) = 290.4'
24" IN (E)
24" OUT (W)
FLOWLINE I.E. = 286.8'

(SD11) CURB INLET / CATCH BASIN
RIM = 296.73'
GUTTER/GRATE = 295.99'
10" I.E. OUT (N) = 292.1'

(SD12) CURB INLET / CATCH BASIN
RIM = 312.29'
GUTTER/GRATE = 311.57'
10" I.E. OUT (S) = 309.0'

(SD13) MANHOLE
RIM = 312.16'
10" I.E. IN (N) = 306.5'
10" I.E. IN (S) = 303.9'
24" IN (E)
24" OUT (W)
FLOWLINE I.E. = 301.9'

(SD14) CURB INLET / CATCH BASIN
RIM = 312.29'
GUTTER/GRATE = 311.58'
10" I.E. OUT (N) = 308.84'

(SD15) MANHOLE
RIM = 328.12'
24" IN (E)
24" OUT (W)
FLOWLINE I.E. = 317.32'

(SD24) DITCH INLET
RIM = ±286.2'
10" I.E. OUT (S) = ±283.5'

SCALE 1" = 30 FEET

NOTES

1) THE FIELD SURVEY FOR THIS MAP WAS COMPLETED ON SEPTEMBER 15, 2021.

2) ELEVATIONS AND CONTOURS ARE BASED ON CLARK COUNTY BENCHMARK ID NUMBER 265. THE BENCHMARK IS THE SOUTHEAST CORNER OF SECTION 29, BEING A BRASS DISK IN CONCRETE WITHIN A MONUMENT CASE. THE BENCHMARK IS LOCATED IN THE CENTERLINE OF NW LAKE ROAD NEAR THE SOUTHEAST CORNER OF THE SURVEYED PROPERTY. IT HAS AN ELEVATION OF 316.85 FEET BASED ON THE NGVD 1929(47) VERTICAL DATUM.

3) THE WETLAND DELINEATION MARKERS WERE PROVIDED BY SOUNDVIEW CONSULTANTS LLC. FIELD TIES OF THE MARKERS WERE OUTLINED TO REPRESENT THE WETLAND BOUNDARIES ON THE SURVEYED PROPERTY.

4) THE BASIS OF BEARINGS FOR THIS SURVEY IS BOOK 58, PAGE 46, CLARK COUNTY SURVEY RECORDS.

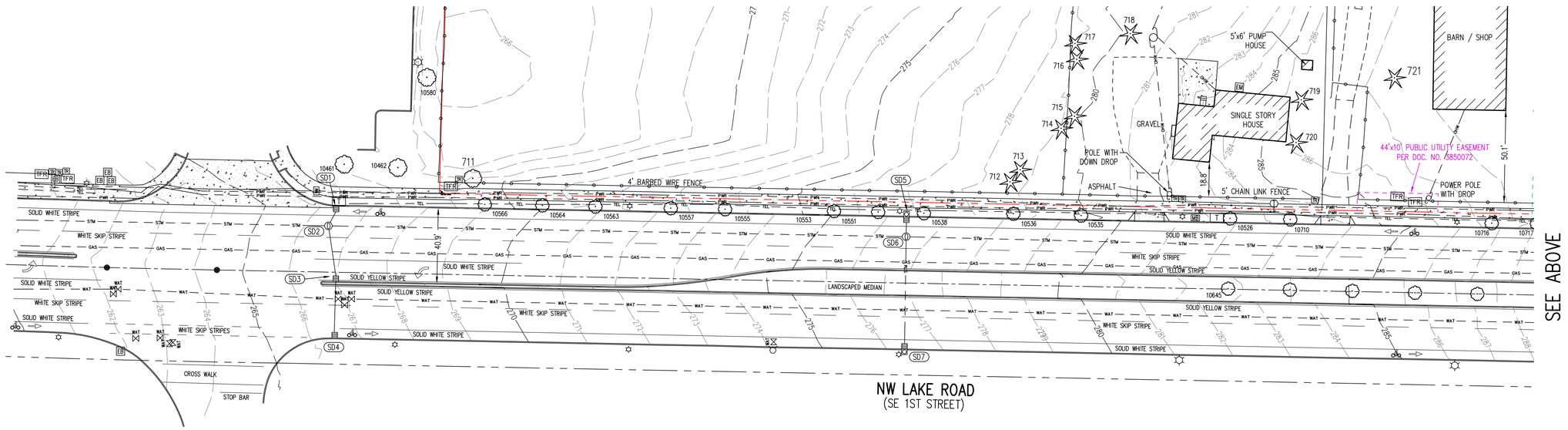
5) THE RIGHT-OF-WAY WIDTHS WERE ESTABLISH USING INFORMATION FROM RECORD SURVEYS AND THE TAX ASSESSOR'S MAP.

6) THE EASEMENTS SHOWN ON THIS MAP ARE BASED ON THE TITLE REPORT, PREPARED BY FIRST AMERICAN TITLE INSURANCE COMPANY WITH FILE NUMBER NCS-1040430-WAI AND WITH AN EFFECTIVE DATE OF NOVEMBER 18, 2020 AT 7:30 AM.

7) THE UNDERGROUND UTILITIES ARE BASED ON THE MARKINGS PER LOCATE TICKET NUMBERS 212004127 AND 21204165.

UTILITY STATEMENT

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.



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LOCATED IN THE SE 1/4 OF SECTION 29, TOWNSHIP 2 NORTH, RANGE 3 EAST, W.M., CITY OF CAMAS, CLARK COUNTY, WASHINGTON

TOPOGRAPHIC MAP
4707/4723 NW LAKE ROAD
CAMAS, WASHINGTON

DRAWING NO.: 2295 ALTA
SCALE: AS NOTED
DRAWING GENERATED BY LD2004
DRAWN BY: CDW
CHECKED BY: CHS

PREPARED FOR:
PANATTONI DEVELOPMENT COMPANY, INC.
1821 DOCK STREET, SUITE 100
TACOMA, WA 98402

REVISIONS:
INITIAL RELEASE: SEPT. 28, 2021

9/29/2021
CLINTON H. STUBBS JR.
STATE OF WASHINGTON
41081
REGISTERED PROFESSIONAL LAND SURVEYOR

JOB NUMBER
2295

SHEET
4 OF 5

TREE INFORMATION

TAG NO	DESCRIPTION
601	14" ASH
602	7" ASH
603	9" ASH
604	10" ASH
605	9" ASH
606	6" ASH
607	9" ASH
608	18" ASH
609	13" ASH
610	12" ASH
611	13" ASH
612	17" ASH
613	19" ASH
614	12" ASH
615	9" ASH
616	9" ASH
617	11" ASH
618	14" ASH
619	14" ASH
620	15" ASH
621	16" ASH
622	14" ASH
623	16" ASH
624	11" ASH
625	8" ASH
626	12" ASH
627	12" ASH
628	18" ASH
629	10" ASH
630	12" ASH
631	8" ASH
632	9" ASH
633	18" ASH
634	18" ASH
635	17" ASH
636	13" ASH
637	12" ASH
638	12" ASH
639	19" ASH
640	9" ASH
641	15" ASH
642	10" ASH
643	18" ASH
644	13" ASH
645	23" ASH
646	7" ASH
647	7" ASH
648	22" ASH
649	6" ASH
650	6" ASH
651	7" ASH
652	6" ASH
653	15" ASH
654	14" ASH
655	22" ASH
656	9" ASH
657	SPLIT 8", 9" ASH
658	13" ASH
659	17" ASH
660	6" ASH
661	10" ASH
662	11" ASH
663	11" ASH
664	12" ASH
665	9" ASH
666	11" ASH
667	10" ASH
668	18" ASH
669	SPLIT 12", 16" ASH
670	9" ASH
671	9" ASH
672	7" ASH
673	14" ASH
674	14" ASH
675	11" ASH
676	20" ASH
677	24" ASH
678	12" ASH
679	10" ASH
680	14" ASH
681	14" ASH
682	19" ASH
683	14" ASH
684	13" ASH
685	11" ASH
686	9" ASH
687	17" ASH
688	18" ASH
689	26" ASH
690	20" ASH
691	14" ASH
692	14" ASH
693	11" ASH
694	13" ASH
695	13" ASH
696	10" ASH
697	8" ASH
698	8" ASH
699	15" ASH
700	12" ASH
701	10" ASH
702	9" ASH
703	20" ASH
704	10" ASH
705	10" ASH
707	9" ASH
708	17" ASH
709	18" FIR
710	50" OAK
711	SPLIT 8", (3) 12" DECIDUOUS
712	SPLIT 12", 19" FIR
713	SPLIT (2) 15", 16" FIR
714	17" FIR
715	22" FIR
716	SPLIT 13", 15" FIR
717	16" FIR
718	32" FIR
719	35" CEDAR
720	14" FIR
721	43" CEDAR
722	SPLIT (2) 6", 7" HOLLY
801	24" FIR
802	20" FIR
803	28" FIR
804	12" ALDER
805	27" FIR
806	18" FIR
807	18" FIR
808	21" FIR
809	15" FIR
810	13" FIR
811	7" FIR
812	12" FIR
813	13" FIR
814	23" FIR
815	32" FIR
816	14" FIR
817	15" OAK
818	29" FIR
819	32" FIR
820	24" FIR
821	23" FIR
822	41" FIR
823	SPLIT 35", 36" FIR
824	40" FIR
825	26" WALNUT
826	27" FIR
827	33" FIR
828	SPLIT 18", 33" FIR
829	40" FIR
830	42" FIR
831	48" FIR
832	40" FIR
833	30" FIR
834	37" FIR
835	28" FIR
836	28" FIR
837	23" FIR
838	31" FIR
839	31" FIR
840	25" FIR
841	27" FIR
842	SPLIT 18", 44" MAPLE
843	30" FIR
844	19" FIR
845	28" FIR
846	28" FIR
847	36" FIR
848	33" FIR
849	25" FIR
850	31" FIR
851	36" FIR
852	31" FIR
853	29" FIR
854	34" FIR
855	36" FIR
856	37" FIR
857	37" FIR
858	25" FIR
859	27" FIR
860	42" FIR
862	42" FIR
863	25" FIR
864	9" FIR
865	23" FIR
866	34" FIR
867	33" FIR
868	29" FIR
869	29" FIR
870	36" FIR
871	45" FIR
872	42" FIR
873	8" HOLLY
874	48" FIR
875	42" FIR
876	28" FIR
877	27" FIR
878	33" FIR
879	34" FIR
880	29" FIR
881	34" FIR
882	41" FIR
883	40" FIR
888	12" ASH
889	17" ASH
890	39" FIR
891	36" FIR
892	27" FIR
893	27" ASH
894	11" ASH
895	12" ASH
896	6" HAWTHORN
897	6" ASH
898	8" ASH
899	10" ASH
900	7" ASH
1001	15" ASH
1002	15" ASH
1003	13" ASH
1004	24" ASH
1005	15" ASH
1006	13" ASH
1007	6" ASH
1008	13" ASH
1009	17" ASH
1010	11" ASH
1011	SPLIT 6", 22", ASH
1012	12" ASH
1013	13" ASH
1014	18" ASH
1015	10" ASH
1016	6" ASH
1017	17" ASH
1018	8" ASH
1019	15" ASH
1020	9" ASH
1021	6" ASH
1022	8" ASH
1023	10" ASH
1024	30" ASH
1025	11" ASH
1026	21" ASH
1027	22" ASH
1028	13" ASH
1029	20" ASH
1030	9" HAWTHORN
1031	6" HAWTHORN
1032	11" ASH
1033	9" ASH
1034	13" ASH
1035	17" ASH
1036	18" ASH
1037	12" ASH
1038	11" ASH
1039	7" ASH
1040	12" ASH
1041	17" ASH
1042	24" ASH
1043	17" ASH
1044	8" ASH
1045	21" ASH
1046	15" ASH
1048	27" ASH
1049	8" ASH
1050	9" ASH
1051	16" ASH
1052	29" ASH
1053	20" ASH
1054	17" ALDER
1055	26" FIR
1056	24" ASH
1057	23" ASH
1058	16" ASH
1059	6" ASH
1060	13" ASH
1061	13" ASH
1062	16" ASH
1063	19" ASH
1064	17" ASH
1065	23" ASH
1066	17" ASH
1067	14" ASH
1068	19" ASH
1069	18" ASH
1070	23" ASH
1071	24" ASH
1072	6" ASH
1073	23" ASH
1074	42" FIR
1075	39" FIR
1076	40" FIR
1077	23" FIR
1078	26" ASH
1079	36" ASH
1080	32" FIR
1081	24" FIR
1082	14" FIR
1083	26" FIR
1084	28" FIR
1085	47" FIR
1086	31" FIR
1087	41" FIR
1088	29" FIR
1089	34" FIR
1090	28" FIR
1091	36" FIR
1092	28" FIR
1093	27" ASH
1094	29" FIR
1095	38" FIR
1096	39" FIR
1097	28" FIR
1098	23" FIR
1099	25" FIR
1100	24" FIR
1101	38" FIR
1102	42" FIR
1103	26" FIR
1104	44" FIR
1105	35" FIR
1106	33" FIR
1107	43" FIR
1108	28" FIR
1109	42" FIR
1110	55" FIR
1111	28" FIR
1112	11" ALDER
1113	20" MAPLE
1114	25" FIR
1115	27" FIR
1116	27" MAPLE
1117	33" MAPLE
1118	13" MAPLE
1119	SPLIT (2) 7" ALDER
1120	12" ALDER
1121	8" ALDER
1122	11" ALDER
1123	SPLIT 9", 12" ALDER
1124	SPLIT 6", 9", (2) 10" ALDER
1125	33" ASH
1126	21" ASH
1127	15" ASH
1128	15" ASH
1129	50" ASH
1130	30" ASH
1131	9" ASH
1132	25" ASH
1133	13" ASH
1134	15" ASH
1135	17" ASH
1136	23" FIR
1137	24" FIR
1138	23" FIR
1139	30" FIR
1140	37" FIR
1141	34" FIR
1142	33" FIR
1143	31" FIR
1144	35" FIR
1145	25" FIR
1146	25" FIR
1147	11" CHERRY
1148	22" HEMLOCK
1149	15" MAPLE
1150	30" ASH
1151	12" ASH
1152	15" ASH
1153	14" ASH
1154	6" ASH
1155	24" ALDER
1156	SPLIT (2) 6", 14" ASH
1157	24" ASH
1158	31" ASH
1159	13" ASH
1160	7" ASH
1161	7" ASH
1162	6" ASH
1163	6" ASH
1164	22" FIR
1165	25" FIR
1166	19" FIR
1167	14" ASH
1168	14" ASH
1169	12" ASH
1170	6" ASH
1171	12" ASH
1172	10" ASH
1173	11" ASH
1174	31" ASH
1175	SPLIT 11", 25" ASH
1176	9" ALDER
1177	9" ALDER
1178	9" ALDER
1179	28" FIR
1180	SPLIT (3) 8" ALDER
1181	SPLIT 11", 14" ALDER
1182	SPLIT 10", 20" ALDER
1183	21" ALDER
1184	9" ASH
1185	SPLIT 6", 7" ALDER
1186	7" ALDER
1187	7" ASH
1188	6" ASH
1189	6" ASH
1190	6" ASH
1191	8" ASH
1192	8" ASH
1193	12" ALDER
1194	SPLIT 18", 24" ASH
1195	13" CHERRY
1196	52" FIR
1197	SPLIT (2) 32" FIR
1198	19" ALDER
1199	35" FIR
1200	38" FIR
1201	28" ASH
1202	29" FIR
1203	23" FIR
1204	28" FIR
1205	27" FIR
1206	28" FIR
1207	29" FIR
1208	35" FIR
1209	38" FIR
1210	34" FIR
1211	21" FIR
1212	38" FIR
1213	30" FIR
1214	38" FIR
1215	40" FIR
1216	42" FIR
1217	43" FIR
1218	38" FIR
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1221	26" FIR
1222	31" FIR
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1233	43" FIR
1234	26" FIR
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1236	39" FIR
1237	37" FIR
1238	37" FIR
1239	36" FIR
1240	31" FIR
1240	31" FIR
1241	39" FIR
1242	27" ALDER
1243	28" FIR
1244	44" FIR
1245	36" FIR
1246	39" FIR
1247	28" FIR
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1249	34" FIR
1250	31" FIR
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1252	39" FIR
1253	35" FIR
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1255	36" FIR
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1257	43" FIR
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1259	38" FIR
1260	31" FIR
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1264	28" FIR
1265	17" FIR
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1278	30" FIR
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1280	14" FIR
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1285	18" FIR
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1295	9" ALDER
1296	39" FIR
1297	31" FIR
1298	8" ALDER
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1300	38" FIR
1301	33" FIR
1302	16" FIR
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1306	34" FIR
1307	15" FIR
1308	14" FIR
1309	21" FIR
1310	20" FIR
1311	10" FIR
1312	32" FIR
1313	7" FIR
1314	SPLIT 9", 29" FIR
1315	18" FIR
1316	16" FIR
1317	22" FIR
1318	25" FIR
1319	8" FIR
1320	13" FIR
1321	10" FIR
1322	20" FIR
1323	9" FIR
1324	8" FIR
1325	19" FIR
1326	SPLIT 7", 31" FIR
1327	18" FIR
1328	12" FIR
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1335	18" FIR
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1340	21" FIR
1341	22" FIR
1342	26" FIR
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1344	32" FIR
1345	25" FIR
1346	37" FIR
1347	32" FIR
1348	40" FIR
1349	34" FIR
1350	17" FIR
1351	47" FIR
1352	35" FIR
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1354	35" FIR
1355	25" FIR
1356	18" FIR
1357	13" FIR
1358	26" FIR
1359	31" FIR
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1362	38" FIR
1363	16" FIR
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1367	16" FIR
1368	17" FIR
1369	11" FIR
1370	22" FIR
1371	14" FIR
1372	12" FIR
1373	14" FIR
1374	14" FIR
1375	12" FIR
1376	25" FIR
1377	19" FIR
1378	22" FIR
1379	19" FIR
1380	17" FIR
1381	5" FIR
1382	19" FIR
1383	24" FIR
1384	23" FIR
1385	21" FIR
1386	16" FIR
1387	SPLIT 17", 19" FIR
1390	21" FIR
1391	26" FIR
1392	SPLIT 11", 12" ALDER
1393	26" FIR
1394	28" FIR
1395	SPLIT 13", 28" FIR
1397	25" FIR
1398	17" FIR
1399	9" FIR
1400	23" FIR
1601	27" FIR
1602	SPLIT 19", 22" ALDER
1603	SPLIT 8", 10" 13" ALDER
1604	34" FIR
1605	31" FIR
1606	19" FIR
1607	34" FIR
1608	36" FIR
1609	38" FIR
1610	30" FIR
1611	27" FIR
1612	29" FIR
1613	23" FIR
1614	28" FIR
1615	20" FIR
1616	21" FIR
1617	22" FIR
1618	20" FIR
1619	31" FIR
1620	20" FIR
1621	27" FIR
1622	13" FIR
1623	23" FIR
1624	29" FIR
1625	31" FIR
1626	SPLIT 6" 19" FIR
1627	39" FIR
1628	SPLIT 14", 31" FIR
1629	25" FIR
1630	12" FIR
1631	20" FIR
1632	18" FIR
1633	SPLIT 17", 21" FIR
1634	20" FIR
1635	8" FIR
1636	17" FIR
1637	21" FIR
1638	28" FIR
1639	26" FIR
1640	23" FIR
1641	25" FIR
1642	24" FIR
1643	28" FIR
1644	SPLIT 18", 19" FIR
1645	9" CHERRY
1646	16" FIR
1647	12" FIR
1648	15" FIR
1649	SPLIT 14", 20" FIR
1650	17" FIR
1651	32" FIR
1652	17" FIR
1653	24" FIR
1654	21" FIR
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1656	29" FIR
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1659	10" FIR
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1661	17" FIR
1662	15" FIR
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1664	22" FIR
1665	14" FIR
1666	26" FIR
1667	21" FIR
1668	25" FIR
1669	15" FIR
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1903	37" FIR
1904	45" FIR
1905	40" FIR
1906	9" FIR
1907	40" FIR
1908	41" FIR
1909	34" FIR
1910	15" ASH
1911	8" ASH
1912	11" ASH
1914	SPLIT 19", 21", 26" FIR
1915	22" FIR
1916	20" FIR
1917	13" FIR
1918	27" FIR
1919	11" FIR
1920	SPLIT 10", 26" FIR
1921	9" FIR
1922	18" FIR
1923	24" FIR
1924	19" FIR
1925	19" FIR
1926	20" FIR
1927	10" FIR
1928	16" FIR
1929	19" FIR
1930	13" FIR
1931	21" FIR
1932	19" FIR
1933	12" FIR
1934	16" FIR
1935	25" FIR
1936	20" FIR
1937	20" FIR
1938	20" FIR
1939	13" FIR
1940	32" FIR
1941	22" FIR
1942	19" FIR
1943	17" FIR
1944	20" FIR
1945	25" FIR
1946	11" FIR
1947	12" FIR
1948	13" FIR
1949	SPLIT 19", 22" FIR
1950	21" FIR
1951	SPLIT 29", 32" FIR
1952	27" FIR
1953	19" FIR
1954	28" FIR
1955	32" FIR
1956	21" FIR
1957	SPLIT 5", 25" FIR
1958	24" FIR
1959	27" FIR
1960	19" FIR
1961	35" FIR
1962	12" FIR
1963	20" FIR
1964	25" FIR
1965	28" FIR
1966	27" FIR
1967	31" FIR
1968	21" FIR
1969	19" FIR
1970	40" FIR
1971	23" FIR
1972	35" FIR
1973	32" FIR
1974	21" FIR
1974	34" FIR
1975	38" FIR
1976	51" FIR
1977	SPLIT 32", 43" FIR
1978	37" FIR
1979	34" FIR
1980	40" PINE
1981	41" PINE
1982	35" FIR
1983	23" FIR
1984	28" FIR
1985	22" FIR
1986	15" FIR
1987	20" FIR
1988	17" FIR
1989	17" FIR
1990	34" FIR
1991	27" FIR
1992	10" FIR
1993	26" FIR
1994	20" FIR
1995	36" FIR
1996	17" FIR
1997	8" FIR
1998	18" FIR
1999	30" FIR
2000	34" FIR

POINT NO.	DESCRIPTION
10461	6" MAPLE
10462	6" MAPLE
10526	11" MAPLE
10535	4" MAPLE
10536	5" MAPLE
10538	11" MAPLE
10551	11" MAPLE
10553	10" MAPLE
10555	8" MAPLE
10557	10" MAPLE
10563	8" MAPLE
10564	10" MAPLE
10566	8" MAPLE
10580	5" OAK
10645	10" MAPLE
10710	11" MAPLE
10716	11" MAPLE
10717	10" MAPLE
10719	10" MAPLE
10720	10" MAPLE
10858	10" DECIDUOUS
10859	11" DECIDUOUS
10861	10" DECIDUOUS
10862	10" DECIDUOUS
10863	10" DECIDUOUS
10864	9" DECIDUOUS
10865	8" DECIDUOUS
10866	8" DECIDUOUS
10867	8" DECIDUOUS
10868	8" DECIDUOUS
10869	8" DECIDUOUS
10956	8" MAPLE
10993	27" CEDAR
11002	9" MAPLE
11009	8" MAPLE
11012	7" MAPLE
11016	7" MAPLE
11021	8" MAPLE
11032	8" MAPLE
11033	8" MAPLE
11043	9" MAPLE
11053	9" MAPLE
11059	9" MAPLE
11511	6" CEDAR
11512	3" CEDAR
11513	3" CEDAR
11514	3" CEDAR
11526	3" CEDAR
11527	3" CEDAR
11528	3" CEDAR
11529	5" CEDAR
11530	5" CEDAR
11545	4" CEDAR
11546	35" CEDAR
12712	SPLIT (2) 8" POPLAR
12713	SPLIT 6", 12" POPLAR
12714	12" POPLAR
12742	4" ALDER
12746	SPLIT 6", 8", 10" DECIDUOUS
12749	8" DECIDUOUS
12752	8" DECIDUOUS
12755	6" DECIDUOUS
12760	9" DECIDUOUS
12761	8" DECIDUOUS
12763	8" DECIDUOUS
12766	9" DECIDUOUS
12770	8" DECIDUOUS
12771	4" DECIDUOUS
12773	9" CEDAR
12776	SPLIT (2) 8" POPLAR
12777	SPLIT 6", 13" POPLAR
12778	SPLIT 6", 13" POPLAR
12780	SPLIT (2) 8" POPLAR
12781	SPLIT 12", 14" POPLAR
12783	17" POPLAR
12784	7" POPLAR
12785	14" POPLAR
12883	SPLIT 8", 15" POPLAR
12884	14" POPLAR
12885	SPLIT 10", 13" POPLAR
12886	16" POPLAR
12887	15" POPLAR
12888	SPLIT 9", 16" POPLAR
12889	21" POPLAR
12892	18" POPLAR
12893	SPLIT 10", 15", 16" POPLAR
12896	22" PINE
12898	13" POPLAR
12899	14" POPLAR
12901	SPLIT 11", 12" POPLAR
12902	14" POPLAR
12903	11" POPLAR
12904	SPLIT 8", 11" POPLAR
12905	SPLIT 7", 13" POPLAR
12906	15" POPLAR
12908	13" POPLAR
12909	13" POPLAR
12910	16" ASH
12917	15" POPLAR
12918	13" POPLAR
12922	SPLIT (3) 8" POPLAR
12923	SPLIT (2) 9" POPLAR
12982	27" FIR
12983	34" FIR
12986	29" FIR
12990	22" FIR
12991	6" CHERRY
12998	37" FIR
13001	38" FIR
15823	2" DECIDUOUS
15824	2" DECIDUOUS
15825	2" DECIDUOUS
15838	2" DECIDUOUS

NORTHWEST SURVEYING, INC.
1815 NW 169th PLACE, SUITE 2090
BEAVERTON, OR. 97006
PH:(503) 848-2127 FAX:(503) 848-2179
EMAIL: nwsurveying@nwsrvy.com

LOCATED IN THE SE 1/4 OF SECTION 29, TOWNSHIP 2 NORTH, RANGE 3 EAST, W.M., CITY OF CAMAS, CLARK COUNTY, WASHINGTON

TOPOGRAPHIC MAP
4707/4723 NW LAKE ROAD
CAMAS, WASHINGTON

DRAWING NO.: 2295 TOPO
SCALE: AS NOTED
DRAWING GENERATED BY LD2004
DRAWN BY: CDW
CHECKED BY: CHS

PREPARED FOR:
PANATTONI DEVELOPMENT COMPANY, INC.
1821 DOCK STREET, SUITE 100
TACOMA, WA 98402

REVISIONS:
INITIAL RELEASE: SEPT. 28, 2021

9/28/2021
CLINTON H. STUBBS JR.
STATE OF WASHINGTON
41081
REGISTERED
PROFESSIONAL LAND SURVEYOR

JOB NUMBER
2295

SHEET
5 OF 5

Camas Business Center
Vicinity Map

LI/BP21-01

Item 14.

Legend

- Taxlots
- All Roads
  - Interstate
  - State Route
  - Arterial
  - Forest Arterial
  - Minor Collector
  - Forest Collector
  - Private or Other
- Cities Boundaries
- Urban Growth Boundaries

Notes:

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.

AHBL
www.ahbl.co

PROJECT MEMO

TO:	Lauren Hollenbeck, Senior Planner City of Camas	**DATE:**	December 1, 2021
FROM:	Bart Brynestad, PE Tacoma - (253) 383-2422	**PROJECT NO.:**	2200867.10
		PROJECT NAME:	Camas Business Center
SUBJECT:	Boundary Line Adjustment Narrative		

This Project Narrative is provided to support our applications for a Boundary Line Adjustment (BLA) for the Camas Business Center project. Below is a narrative of the proposed project and how the project meets all relevant BLA requirements of the Camas Municipal Code (CMC).

Boundary Line Adjustment

The final configuration of the project will include two lots. Building A will be located on its own lot and Buildings B and C will be on a single lot. The lots will be created from the two existing lots from a BLA. A preliminary BLA exhibit has been provided to show the intended lot configuration. Once City of Camas has approved the site plan and lot layout, we will prepare a formal BLA map for the application.

Approval Criteria

A. No additional lots, sites, parcels, tracts, or divisions are created.

There are two existing parcels including 176155000 and 176170000. No additional lots, sites, parcels, tracts, or divisions will be created by the BLA. A separate process will be required to dedicate the proposed right-of-way for the project.

B. The adjustment will not create nonconforming lots, with respect to zoning dimension and area standards, zoning setbacks, and lot area coverage standards identified in CMC Chapter 18.09 or to fire, building, or other applicable codes.

All proposed lots meet the requirements of CMC 18.09 for density and dimension standards. The minimum lot size from CMC 18.09 for the LI/BP zone is 10 acres. There are no requirements for lots within the LI/BP zone.

C. The degree of nonconformance on existing nonconforming lots with respect to zoning dimension and area standards, zoning setbacks, and floor area ratio are not increased, except that a one time exception may be allowed to create a lot that exceeds the maximum lot size permitted in the underlying zone. Any future partitioning/reduction of the oversized lot must comply with the lot size requirements of the underlying zone.

There are no nonconforming lots in the existing or proposed condition.

D. All lots have legal access to a public road. Existing required private road improvements and easements are not diminished below city street standards for lots that are served by a private road, and shall not create unreasonably restrictive or hazardous access to a property;

Both lots currently have access directly from public roads. The proposed lots will have access from the existing public road and the new proposed public roads that cross the site. A separate process will be required to dedicate the proposed right-of-way for the project.

E. The boundary line adjustment will not result in a lot that contains area in two zone designations.

Both parcels are currently zoned LI/BP and the new lot configuration will all be zoned the same.

F. Boundary line adjustments that are used to circumvent subdivision or short subdivision procedures set forth in this title are not allowed. Factors which indicate that the boundary line adjustment process is being used in a manner inconsistent with statutory intent include: numerous and frequent adjustments to existing contiguous lot boundaries, and/or a large number of contiguous lots being proposed for boundary line adjustments at the same time.

The BLA is not being used to circumvent any other land division procedures.

G. Approval of a boundary line adjustment shall not result in the need for a reasonable use exception as defined in CMC 16.51.

A reasonable use exception will not be required.

H. Existing easements for utilities conform to adopted standards for their intended function, or they are extended, moved or otherwise altered to an approved location. The applicant shall be responsible for the relocation of any installed utilities.

Any existing utility easements will be maintained or modified, as required. The development of the parcel concurrent with the BLA will result in a new utility easement on the developed lots.

BEB/lsk

Q:\2020\2200867\WORDPROC\Reports\20211201 BLA Narrative 2200867.10.docx

SCALE 1" = 100 FEET

100 0 40 60 80 100

POTENTIAL ENCROACHMENTS

1. 4' HIGH BARBED AND HOG WIRE FENCES MEANDER ACROSS THE BOUNDARY OF THE SURVEYED PROPERTY, AS SHOWN. OWNERSHIP OF THE FENCES ARE UNKNOWN.

2. THE SIDEWALK AND VARIOUS UTILITIES EXTEND ONTO THE SURVEYED PROPERTY ALONG THE NORTHERLY RIGHT-OF-WAY OF NW LAKE ROAD, AS SHOWN ON SHEETS 2 AND 3.

PROPERTY DESCRIPTION

PARCEL I:

THAT PORTION OF THE SOUTHEAST QUARTER OF SECTION 29, TOWNSHIP 2 NORTH, RANGE 3 EAST OF THE WILLAMETTE MERIDIAN, IN CLARK COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTH LINE OF SE 1ST STREET THAT 658.95 FEET WEST OF THE EAST LINE OF SAID SECTION 29, SAID POINT BEING THE SOUTHWEST CORNER OF THAT CERTAIN TRACT OF LAND CONVEYED TO JOSEPH D. GRIMM, ET UX, BY DEED RECORDED NOVEMBER 5, 1965 AS RECORDING NO. G 432981; THENCE NORTH 0°25'30" EAST, ALONG THE WEST LINE OF SAID GRIMM TRACT, A DISTANCE OF 2,653.94 FEET TO THE NORTH LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 29; THENCE SOUTH 89°32' WEST, ALONG SAID NORTH LINE, A DISTANCE OF 658.62 FEET TO THE NORTHEAST CORNER OF THE S. LORENZO STRUNK TRACT, AS DESCRIBED IN INSTRUMENT RECORDED DECEMBER 13, 1966 AS RECORDING NO. G 471795; THENCE SOUTH 0°26' WEST, ALONG THE EAST LINE OF SAID STRUNK TRACT, A DISTANCE OF 1,339.30 FEET TO A STONE MONUMENT MARKING THE NORTHEAST CORNER OF THAT CERTAIN TRACT CONVEYED TO FRED SCHICK ET UX BY DEED RECORDED FEBRUARY 17, 1953 AS RECORDING NO. G 120226; THENCE NORTH 89°46' EAST, ALONG THE EASTERLY PROLONGATION OF THE NORTH LINE OF SAID SCHICK TRACT, A DISTANCE OF 180 FEET; THENCE SOUTH 0°26' WEST, PARALLEL WITH THE EAST LINE OF SAID SCHICK TRACT, A DISTANCE OF 1,309.30 FEET TO THE NORTH LINE OF SOUTHEAST 1ST STREET; THENCE EAST, ALONG SAID NORTH, LINE A DISTANCE OF 478.95 FEET TO THE POINT OF BEGINNING.

EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE CITY OF CAMAS BY WARRANTY DEED RECORDED SEPTEMBER 26, 2005 AS RECORDING NO. 4055960.

PARCEL II:

THE EAST HALF OF THE EAST HALF OF THE SOUTHEAST QUARTER OF SECTION 29, TOWNSHIP 2 NORTH, RANGE 3 EAST OF THE WILLAMETTE MERIDIAN, IN CLARK COUNTY, WASHINGTON.

EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE CITY OF CAMAS BY WARRANTY DEED RECORDED SEPTEMBER 26, 2005 AS RECORDING NO. 4055960.

ALSO EXCEPTING THEREFROM ANY PORTION LYING WITHIN THE BOUNDARIES OF NE 1ST STREET.

BOUNDARY RESOLUTION

THE BASIS OF BEARINGS FOR THIS SURVEY IS ALONG THE EASTERLY PROPERTY LINE HOLDING THE RECORD BEARING PER BOOK 58, PAGE 46, CLARK COUNTY SURVEY RECORDS.

THE CENTERLINE OF NW LAKE ROAD WAS ESTABLISHED BY HOLDING MONUMENTS (100), (101) AND (103). THE NORTHERLY RIGHT-OF-WAY LINE OF NW LAKE ROAD, ALSO BEING THE SOUTHERLY BOUNDARY OF THE SURVEYED PROPERTY WAS THEN ESTABLISHED WITH THE NORTHERLY RECORD DISTANCE OFFSET OF 44.00 FEET, PER DEDICATION DEED 4055960. SEVERAL SURVEYS AND THE CITY OF CAMAS PLANS FOR LAKE ROAD INDICATE A WIDTH OF 50.00 FEET, HOWEVER, THE TITLE COMPANY WAS UNABLE TO LOCATE ANY ADDITIONAL RIGHT-OF-WAY TAKINGS OR DEDICATIONS.

FOUND MONUMENTS WERE HELD TO ESTABLISH THE REMAINING BOUNDARY WITH THE EXCEPTION OF THE SOUTHERLY PORTION OF THE WEST BOUNDARY. THE SOUTHWEST CORNER WAS ESTABLISHED BY HOLDING THE RECORD DISTANCE OF 120.36 FEET FROM THE POINT OF CURVATURE IN THE NORTHERLY RIGHT-OF-WAY LINE OF NW LAKE ROAD PER RECORD OF SURVEY BOOK 58, PAGE 46. THE SOUTHWEST CORNER WAS HELD WITH MONUMENT (105) TO ESTABLISH THE SOUTHERLY PORTION OF THE WEST BOUNDARY.

SURVEYOR'S CERTIFICATION

TO PANATTONI DEVELOPMENT COMPANY, INC. AND FIRST AMERICAN TITLE INSURANCE COMPANY:

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2-5, 7(a), AND 11(b) OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON JULY 2, 2021.

PRELIMINARY

CLINTON H. STUBBS JR.
WASHINGTON P.L.S. NO. 41081

DATE OF PLAT OR MAP:

EXCEPTIONS

(#) EXCEPTION NUMBER PER ALTA COMMITMENT FOR TITLE INSURANCE

THE PROPERTY DESCRIPTION AND EXCEPTIONS ARE PER THE COMMITMENT FOR TITLE INSURANCE WITH A COMMITMENT DATE OF NOVEMBER 18, 2020 AT 7:30 AM, PREPARED BY FIRST AMERICAN TITLE INSURANCE COMPANY WITH FILE NUMBER NCS-1040430-WA1.

SCHEDULE B, PART II EXCEPTIONS 1-8 AND SCHEDULE B-SECTION 2 SPECIAL EXCEPTIONS 9-11 AND 13-20 ARE NOT PLOTTABLE.

(12) EASEMENT, INCLUDING TERMS AND PROVISIONS CONTAINED THEREIN:

RECORDING DATE:	JULY 1, 2004
RECORDING INFORMATION:	3850072
IN FAVOR OF:	PUBLIC UTILITY DISTRICT NO. 1 OF CLARK COUNTY, A MUNICIPAL CORORATON
FOR:	ELECTIC SYSTEM, FACILITIES AND APPURTENANCES
AFFECTS:	PARCEL II

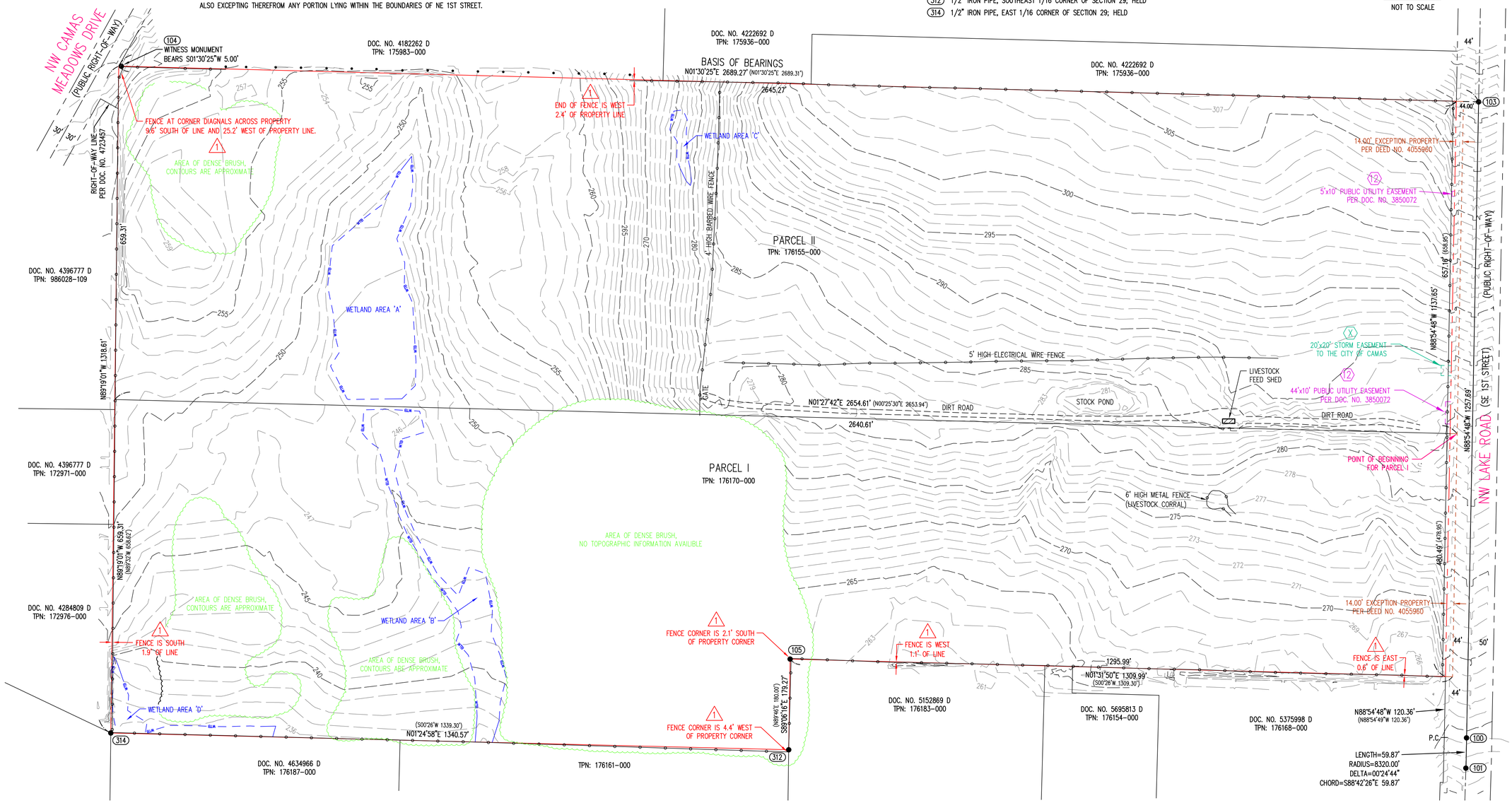
(X) 20'x20' STORM EASEMENT TO THE CITY OF CAMAS, AS SHOWN ON THE CITY OF CAMAS PUBLIC WORKS PLAN, PROJECT NO. S-356 DATED MARCH 2004.

SURVEYOR'S NOTE: THIS EASEMENT WAS NOT INCLUDED WITHIN THE TITLE REPORT.

FOUND MONUMENT DESCRIPTIONS

(100) 1/2" IRON ROD WITH YELLOW PLASTIC CAP STAMPED "RENTON 37535"; HELD
(101) 1/2" IRON ROD WITH YELLOW PLASTIC CAP STAMPED "RENTON 37535"; HELD
(103) 2-1/2" BRASS DISK IN MONUMENT CASE, SOUTHEAST CORNER OF SECTION 29; HELD
(104) 3" BRASS DISK, WITNESS TO EAST 1/4 CORNER OF SECTION 29; BEARS S01°30'25"W 5.00'
(105) 5/8" IRON ROD WITH ORANGE PLASTIC CAP STAMPED "AKS ENGR. 32582"; HELD
(312) 1/2" IRON PIPE, SOUTHEAST 1/16 CORNER OF SECTION 29; HELD
(314) 1/2" IRON PIPE, EAST 1/16 CORNER OF SECTION 29; HELD

VICINITY MAP
NOT TO SCALE



SEE SHEETS 2-4 FOR DETAILS OF THE NORTH AND SOUTH PROPERTY AREAS

NORTHWEST SURVEYING, INC.
1815 NW 169th PLACE, SUITE 2090
BEAVERTON, OR 97006
PH: (503) 848-2127 FAX: (503) 848-2179
EMAIL: nwsurveying@nwsrvy.com

LOCATED IN THE SE 1/4 OF SECTION 29, TOWNSHIP 2 NORTH, RANGE 3 EAST, W.M., CITY OF CAMAS, CLARK COUNTY, WASHINGTON

ALTA/NSPS LAND TITLE SURVEY
CAMAS, WASHINGTON

DRAWING NO.:	2295 ALTA
SCALE:	AS NOTED
DRAWING GENERATED BY LD2004	
DRAWN BY:	CDW
CHECKED BY:	CHS

PREPARED FOR:
PANATTONI DEVELOPMENT COMPANY, INC.
1821 DOCK STREET, SUITE 100
TACOMA, WA 98402

REVISIONS:
PRELIM. RELEASE: JULY 14, 2021

CLINTON H. STUBBS JR. STATE OF WASHINGTON 41081 REGISTERED PROFESSIONAL LAND SURVEYOR

JOB NUMBER
2295

SHEET
1 OF 4

CAMAS BUSINESS CENTER

LOCATED IN THE SE 1/4 OF SECTION 29, TOWNSHIP 2 NORTH, RANGE 3 EAST, W.M., CITY OF CAMAS, CLARK COUNTY, WASHINGTON

LEGEND

BUFFER REDUCTION AREA
TOTAL = 2,080 SF

BUFFER ADDITION AREA
TOTAL = 9,770 SF

REFER TO WETLAND MITIGATION STUDY

VERTICAL DATUM

ELEVATIONS AND CONTOURS ARE BASED ON CLARK COUNTY BENCHMARK ID NUMBER 265. THE BENCHMARK IS THE SOUTHEAST CORNER OF SECTION 29, BEING A BRASS DISK IN CONCRETE WITHIN A MONUMENT CASE. THE BENCHMARK IS LOCATED IN THE CENTERLINE OF NW LAKE ROAD NEAR THE SOUTHEAST CORNER OF THE SURVEYED PROPERTY. IT HAS AN ELEVATION OF 316.85 FEET BASED ON THE NGVD 1929(47) VERTICAL DATUM.

BASIS OF BEARING

THE BASIS OF BEARINGS FOR THIS SURVEY IS BOOK 58, PAGE 46, CLARK COUNTY SURVEY RECORDS.

N

GRAPHIC SCALE
0 50 100 200
1" = 100 FEET

PROJECT INFORMATION

ZONE	LI/BP (LIGHT INDUSTRIAL/BUSINESS PARK)
PARCEL NUMBERS	176170-000, 176155-000
GROSS SITE AREA	3,245,501.45 SF (74.506 ACRES)
ANTICIPATED ROW AREA	266,826.21 SF (6.125 ACRES)
NET DEVELOPABLE AREA	2,978,675.24 SF (68.381 ACRES)
BUILDING A AREA	722,397 SF
BUILDING B AREA	127,191 SF
BUILDING C AREA	93,351 SF
TOTAL BUILDING AREA	942,939 SF (21.647 ACRES)
BUILDING COVERAGE	29.05%

RIGHT-OF-WAY DEDICATION
273,676 SF
6.28 ACRES

ZONE: MF-18 (MULTIFAMILY)

ZONE: RC (REGIONAL COMMERCIAL)

ZONE: LI/BP (LIGHT INDUSTRIAL/BUSINESS PARK)

ZONE: BP (BUSINESS PARK)

NW CAMAS MEADOWS DR

NW LAKE RD

ROAD A

ROAD B

BUILDING C
93,351 SF

BUILDING B
127,191 SF

BUILDING A
722,397 SF

LOT 1
1,892389 SF
43.44 ACRES

LOT 2
1,079,436 SF
27.78 ACRES

WETLAND A

WETLAND B

WETLAND D

200' BUILDING SETBACK
50' LANDSCAPE SETBACK
100' BUILDING SETBACK
60' ROW
72' ROW
245'
338 SF BUFFER REDUCTION
1,742 SF BUFFER REDUCTION
178 SF BUFFER ADDITION
60' REDUCED BUFFER
90' REDUCED BUFFER
100' REDUCED BUFFER
9,592 SF BUFFER ADDITION
20' LANDSCAPE AND BUILDING SETBACK
25' LANDSCAPE SETBACK
R500'
R200'
R100'
195.5'
130.5'
75.1'
187'
1150'
640'
620'
195.9'
659.31'
300'
69.3'
N69°19'01"W 1318.61'
N01°27'42"E 2640.61'
N88°54'48"W 1337.69'
657.16'
480.40'
205.2'
182.1'
125'
50'
120'
179.27'
30'
N01°24'58"E 1340.57'
S89°35'02"W 1295.99'
LENGTH=99.8'
RADIUS=8320.00'
DELTA=00°24'44"
=S88°42'26"E 59.87'
N68°48'W 120.36'
P.O.C.

SHEET INDEX

Sheet Number	Sheet Title
SPR1	PRELIMINARY SITE PLAN
SPR2	PRELIMINARY GRADING AND DRAINAGE PLAN
SPR3	PRELIMINARY ROAD SECTIONS
SPR4	PRELIMINARY WATER AND SEWER PLAN

811 Know what's below. Call before you dig.

DATE: April 18, 2022 FILENAME: Q:\2020\2200867\10_CIV\CAD_SEPA\2200867-SH-COVR.dwg

AHBL
TACOMA • SEATTLE • SPOKANE • TRI-CITIES
2215 North 30th Street, Suite 300 Tacoma, WA 98403
253.383.2422 TEL 253.383.2572 FAX www.ahbl.com WEB

Project Title:
CAMAS BUSINESS CENTER

Client:
PANATTONI DEVELOPMENT COMPANY, LLC
1821 DOCK STREET, SUITE 100
TACOMA, WA 98402

Project No.
2200867.10

Issue Set & Date:
SEPA AND SITE PLAN REVIEW
4/8/2022

J. MATTHEW WEBER
STATE OF WASHINGTON
14858
REGISTERED
PROFESSIONAL ENGINEER

NOTICE
ALTERATION OF THIS DOCUMENT SHALL INVALIDATE THE PROFESSIONAL SEAL AND SIGNATURE. PUBLICATION OF THIS DOCUMENT DOES NOT DEROGATE FROM RESERVED OWNERSHIP RIGHTS IN IT. THIS DOCUMENT IS FOR USE ONLY FOR THE PROJECT IDENTIFIED IN THE TITLE BLOCK AND IS NOT TO BE USED FOR REPAIR, REMODEL OR ADDITION TO THAT PROJECT OR FOR ANY OTHER PROJECT.

Revisions:
A
B
C
D

Sheet Title:
PRELIMINARY BOUNDARY LINE ADJUSTMENT EXHIBIT

Designed by:	Drawn by:	Checked by:
TDW/MW/GG	TDS	BEB

Sheet No.
SPR1
1 of 4 Sheets

TERAGAN & ASSOCIATES, INC.
ARBORICULTURAL CONSULTANTS

MEMORANDUM

DATE: October 6, 2021

TO: Bjorn Brynestad (Panattoni Development Company)

FROM: Todd Prager, RCA #597, ISA Board Certified Master Arborist

RE: Tree Assessment, Removal, and Protection Recommendations for Camas Business Center

Summary

This memorandum provides tree assessment, removal, and protection recommendations for the construction of the Camas Business Center project.

Background

Panattoni Development Company is proposing to construct the Camas Business Center at 4707 NW Lake Road in Camas, Washington. The existing conditions map with existing trees is provided in Attachment 1. The proposed site plan with existing trees to be retained is provided in Attachment 2.

The assignment requested of our firm for this project was as follows:

1. Provide an assessment of the existing trees;
2. Provide recommendations for tree removal and retention based on the proposed site improvements; and
3. Provide protection recommendations for the trees to be retained.

Tree Assessment

In September and October 2021, our firm completed an assessment of the existing trees at the site. The complete inventory data is provided in the tree inventory spreadsheet in Attachment 3. The data provided for each tree includes the tree number, species (common and scientific names), trunk diameter (DBH), tree health condition, tree structural condition, pertinent comments, whether the tree was on the property to be developed, treatment (remove or retain), and tree units per Section 18.13.051 Table 2 of the Camas Code for retained trees. The tree numbers in the tree inventory in Attachment 2 correspond to the tree numbers on the plan sheets in

Teragan & Associates, Inc.
3145 Westview Circle • Lake Oswego, OR 97034
Phone: 971.295.4835 • Fax: 503.697.1976
Email: todd@teragan.com • Website: teragan.com

Attachments 1 and 2. The assessment data in the tree inventory includes the required tree survey information in Section 18.13.045 of the Camas Code.

Proposed Tree Removal

A typical minimum root protection zone allows encroachments no closer than a radius from a tree of .5 feet per inch of DBH if no more than 25 percent of the root protection zone area (estimated at one foot radius per inch of DBH) is impacted. Figure 1 illustrates this concept. This standard may need to be adjusted on a case-by-case basis due to tree health, species, root distribution, whether the tree will be impacted on multiple sides, the specific development proposed, and other factors.

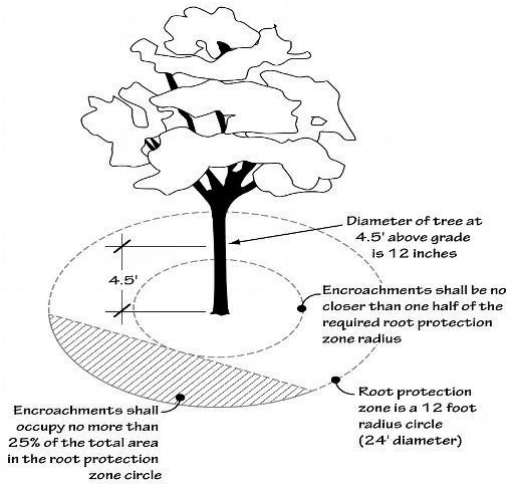


Figure 1: Typical minimum protection zone

Attachment 1 shows the proposed impacts for site improvements in relation to the trees. Five hundred fifty-four (559) of the 794 trees at the site are proposed for removal for the mass grading and construction of improvements as shown in Attachment 2.

Two hundred thirty-five (235) trees within the wetland areas and their associated buffers, groups of Douglas-firs at the northern edge of the site, and existing street trees along NW Lake Road will be retained. Trees on adjacent properties directly adjacent to the property lines will be further evaluated in coordination with the neighboring property owners to make a final determination as to whether they will be retained or removed.

Protection recommendations for the remaining 235 trees to be retained at the site are provided in the next section of this report.

Tree Protection Recommendations

The following recommendations apply to the trees to be retained:

- **Protection Fencing**: Establish tree protection fencing in the locations shown in Attachment 2. The intent of the tree protection fencing is to protect the minimum root protection zones of the trees to be retained as shown in Figure 1.
- **Neighboring Trees**: Trees on adjacent properties directly adjacent to the property lines should be further evaluated in coordination with the neighboring property owners to make a final determination as to whether they will be retained or removed. Property owner approval is required prior to removing trees on neighboring properties.
- **Directional Felling**: Fell the trees to be removed away from the trees to be retained so they do not contact or otherwise damage the trunks or branches of the trees to be retained. No vehicles or heavy equipment should be permitted within the tree protection zones during tree removal operations.

- **Stumps in Tree Protection Zones**: The stumps of removed trees within the tree protection zones shall be flush cut and retained to minimize root disturbances of retained trees.
- **Protect Crowns of Trees**: The crowns of the trees may extend beyond the tree protection fencing. Care will need to be taken to not contact or otherwise damage the crowns of the trees during construction activities. If pruning is required, it shall be the minimum amount needed to achieve the required clearance in accordance with ANSI A300 pruning standards as directed by the project arborist.
- **Sediment Fencing**: Sediment fencing shall be installed outside the protection zones of the trees to be retained to minimize root disturbances. If erosion control is required inside the protection zones, straw wattles shall be used on the soil surface.

Attachment 4 includes additional recommendations to adequately protect the trees during construction.

Tree Density

Section 18.13.051 of the Camas Code requires 20 tree density units per net acre. The net acreage of the site is 61.23 acres (2,667,869 square feet). Therefore, 1,225 units of tree density is required.

A total of 1,068 onsite tree density units will be retained. Therefore, an additional 157 tree density units will need to be planted.

Conclusion

Five hundred fifty-nine (559) trees are proposed for removal to construct the Camas Business Center project. The 235 trees to be retained will provide 1,068 onsite tree density units. The minimum required tree density is 1,225 units, so an additional 157 tree density units are required to be planted.

Trees on adjacent properties directly adjacent to the property lines should be further evaluated in coordination with the neighboring property owners to make a final determination as to whether they will be retained or removed. Property owner approval is required prior to removing trees on neighboring properties.

Please contact me if you have questions, concerns, or need any additional information.

Sincerely,

Todd Prager

Todd Prager
ASCA Registered Consulting Arborist #597
ISA Board Certified Master Arborist, WE-6723B
ISA Qualified Tree Risk Assessor
AICP, American Planning Association

Attachment 1: Existing Conditions with Existing Trees
Attachment 2: Proposed Site Plan with Preserved Trees and Tree Protection
Attachment 3: Tree Inventory
Attachment 4: Additional Tree Protection Recommendations
Attachment 5: Assumptions and Limiting Conditions

LEGEND

DECIDUOUS TREE
CONIFEROUS TREE
FIRE HYDRANT
WATER METER
WATER VALVE
WATER VAULT
SANITARY SEWER CLEAN OUT
SANITARY SEWER MANHOLE
GAS METER
GAS VALVE

STORM SEWER CLEAN OUT
STORM SEWER CATCH BASIN
STORM SEWER COMBINATION INLET
STORM SEWER MANHOLE
POWER JUNCTION BOX
POWER TRANSFORMER
GUY WIRE ANCHOR
UTILITY POLE
POWER VAULT
STREET LIGHT

TELEPHONE/TELEVISION VAULT
TELEPHONE/TELEVISION JUNCTION BOX
TELEPHONE/TELEVISION RISER
TELEPHONE/TELEVISION MANHOLE
SIGN
MAILBOX

1"-1.5" DIAMETER WOOD POLES FOR NETTING
FOUND SURVEY MONUMENT
RECORD INFORMATION ( )

RIGHT-OF-WAY LINE
BOUNDARY LINE
PROPERTY LINE
CENTERLINE
CURB
EDGE OF PAVEMENT
EASEMENT
FENCE LINE
GRAVEL EDGE

POWER LINE
OVERHEAD WIRE
TELEPHONE LINE
GAS LINE
STORM SEWER LINE
SANITARY SEWER LINE
WATER LINE
WETLAND BOUNDARY

STORM SEWER INFORMATION

SD16 CATCH BASIN
RIM = 250.83'
10" IN (NW)
10" OUT (E)
FLOWLINE I.E. = 243.9'

SD17 MANHOLE
RIM = 250.90'
10" I.E. IN (W) = 243.7'
10" I.E. IN (NW) = 243.4'
12" I.E. OUT (E) = 243.3'

SD18 CATCH BASIN
RIM = 249.37'
12" IN (W)
12" OUT (E)
FLOWLINE I.E. = 242.3'

SD19 CATCH BASIN
RIM = 248.29'
12" I.E. OUT (NE) = 241.8'

SD20 MANHOLE
RIM = 247.83'
12" I.E. IN (W) = 241.4'
12" I.E. OUT (NE) = 241.2'

SD21 MANHOLE
RIM = 244.98'
12" IN (NW & SW)
12" OUT (SE)
FLOWLINE I.E. = 240.9'

SD22 MANHOLE
RIM = 243.53'
10" I.E. IN (NE) = 239.7'
12" IN (NW)
12" OUT (SE)
FLOWLINE I.E. = 239.2'

SD23 CURB INLET
RIM = 243.46'
GUTTER/GRADE = 242.73'
10" I.E. OUT (SW) = 240.2'

DOC. NO. 4284809 D
TPN: 172976-000

DOC. NO. 4396777 D
TPN: 172971-000

DOC. NO. 4396777 D
TPN: 986028-109

NW CAMAS MEADOWS DRIVE

ROCK RETAINING WALL

PARKING STRIPE (TYPICAL)

TRASH ENCLOSURE WITH 6' CYCLONE GATE

4' BARBED WIRE FENCE

N89°19'01"W 1318.61'

659.31'

4' BARBED WIRE FENCE ON PROPERTY LINE

RIGHT-OF-WAY LINE PER DOC. NO. 4723457

DOUBLE YELLOW SOLID/SKIP STRIPE

4" GAS LINE

APPROXIMATE LOCATION OF SANITARY FORCE MAIN

4' HIGH BARBED WIRE FENCE

END BARBED WIRE FENCE

WETLAND AREA 'D'

WETLAND AREA 'A'

WETLAND AREA 'B'

AREA OF DENSE BRUSH, CONTOURS ARE APPROXIMATE

DOC. NO. 4634966 D
TPN: 176187-000

N01°24'59"E 1340.57'

TPN: 176170-000

TPN: 176155-000

DOC. NO. 4182262 D
TPN: 175983-000

SCALE 1" = 50 FEET

SEE SHEET 2

Attachment 1

NORTHWEST SURVEYING, INC.
1815 NW 169th PLACE, SUITE 2090
BEAVERTON, OR. 97006
PH:(503) 848-2127 FAX:(503) 848-2179
EMAIL: nwsurveying@nwsrvy.com

LOCATED IN THE SE 1/4 OF SECTION 29, TOWNSHIP 2 NORTH, RANGE 3 EAST, W.M., CITY OF CAMAS, CLARK COUNTY, WASHINGTON

TOPOGRAPHIC MAP
4707/4723 NW LAKE ROAD
CAMAS, WASHINGTON

DRAWING NO.:	2295 TOPO
SCALE:	AS NOTED
DRAWING GENERATED BY	LD2004
DRAWN BY:	CDW
CHECKED BY:	CHS

PREPARED FOR:
PANATTONI DEVELOPMENT COMPANY, INC.
1821 DOCK STREET, SUITE 100
TACOMA, WA 98402

REVISIONS:
INITIAL RELEASE: SEPT. 28, 2021

9/29/2021
CLINTON H. STUBBS JR.
STATE OF WASHINGTON
41081
REGISTERED
PROFESSIONAL LAND SURVEYOR

JOB NUMBER
2295

SHEET
1 OF 5

SEE SHEET 1

TPN: 176161-000

TPN: 176170-000

TPN: 176155-000

WETLAND AREA 'B'

WETLAND AREA 'C'

AREA OF DENSE BRUSH AND ±200 4" TO 12" COTTONWOOD TREES. INDIVIDUAL TREES WERE NOT MAPPED

4' HIGH BARBED WIRE FENCE

4' BARBED WIRE FENCE

4' HOG WIRE/BARBED WIRE FENCE

END HOG WIRE / BARBED WIRE FENCE

GATE

12" CMP I.E. = 278.15

S89°06'16"E 179.27'

N01°30'45"E 2645.23'

ASPHALT

6' CHAIN LINK FENCE WITH BARBED WIRE

DOC. NO. 5152869 D
TPN: 176183-000

CATCH BASIN
RIM = 258.25'
18" I.E. OUT (NW) = 256.0'

DOC. NO. 4222692 D
TPN: 175936-000

DIRT ROAD

5' HIGH ELECTRICAL WIRE FENCE

SCALE 1" = 50 FEET

SEE SHEET 3

Attachment 1

NORTHWEST SURVEYING, INC.
1815 NW 169th PLACE, SUITE 2090
BEAVERTON, OR. 97006
PH:(503) 848-2127 FAX:(503) 848-2179
EMAIL: nwsurveying@nwsrvy.com

LOCATED IN THE SE 1/4 OF SECTION 29, TOWNSHIP 2 NORTH, RANGE 3 EAST, W.M., CITY OF CAMAS, CLARK COUNTY, WASHINGTON

TOPOGRAPHIC MAP
4707/4723 NW LAKE ROAD
CAMAS, WASHINGTON

DRAWING NO.:	2295 TOPO
SCALE:	AS NOTED
DRAWING GENERATED BY LD2004	
DRAWN BY:	CDW
CHECKED BY:	CHS

PREPARED FOR:
PANATTONI DEVELOPMENT COMPANY, INC.
1821 DOCK STREET, SUITE 100
TACOMA, WA 98402

REVISIONS:
INITIAL RELEASE: SEPT. 28 2021

7/29/2021
CLINTON H. STUBBS JR.
STATE OF WASHINGTON
41081
REGISTERED
PROFESSIONAL LAND SURVEYOR

JOB NUMBER
2295

SHEET
2 OF 5

SEE SHEET 2

DOC. NO. 5695813 D
TPN: 176154-000

DOC. NO. 5375998 D
TPN: 176168-000

TPN: 176170-000

TPN: 176155-000

DOC. NO. 4222692 D
TPN: 175936-000

ASPHALT

N01°31'50"E 1295.99'

4' BARBED WIRE FENCE

6' HIGH METAL FENCE (LIVESTOCK CORRAL)

STOCK POND

PROPERTY LINE

LIVESTOCK FEED SHED

DIRT ROAD

4' HIGH HOG WIRE FENCE

BARN/SHOP

5' HIGH ELECTRICAL WIRE FENCE

6' HIGH BARBED WIRE FENCE

5' HIGH CYCLONE FENCE

5'x6' PUMP HOUSE

GATE

BARN / SHOP

GRAVEL

SINGLE STORY HOUSE

POLE WITH DOWN DROP

5' CHAIN LINK FENCE

POWER POLE WITH DROP

4' BARBED WIRE FENCE ON PROPERTY LINE

LENGTH=59.87'
RADIUS=8320.00'
DELTA=00°24'44"
CHORD=S88°42'26"E 59.87'

N88°54'48"W 120.36'

480.49'

N88°54'48"W 1257.69'

N88°54'48"W 1737.65'

657.16'

SCALE 1" = 50 FEET

SEE SHEET 4 FOR DETAIL STREET INFORMATION

SEE SHEET 4 FOR DETAIL STREET INFORMATION

Attachment 1

NORTHWEST SURVEYING, INC.
1815 NW 169th PLACE, SUITE 2090
BEAVERTON, OR. 97006
PH:(503) 848-2127 FAX:(503) 848-2179
EMAIL: nwsurveying@nwsrvy.com

LOCATED IN THE SE 1/4 OF SECTION 29, TOWNSHIP 2 NORTH, RANGE 3 EAST, W.M., CITY OF CAMAS, CLARK COUNTY, WASHINGTON

TOPOGRAPHIC MAP
4707/4723 NW LAKE ROAD
CAMAS, WASHINGTON

DRAWING NO.:	2295 TOPO
SCALE:	AS NOTED
DRAWING GENERATED BY LD2004	
DRAWN BY:	CDW
CHECKED BY:	CHS

PREPARED FOR:
PANATTONI DEVELOPMENT COMPANY, INC.
1821 DOCK STREET, SUITE 100
TACOMA, WA 98402

REVISIONS:
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CLINTON H. STUBBS JR
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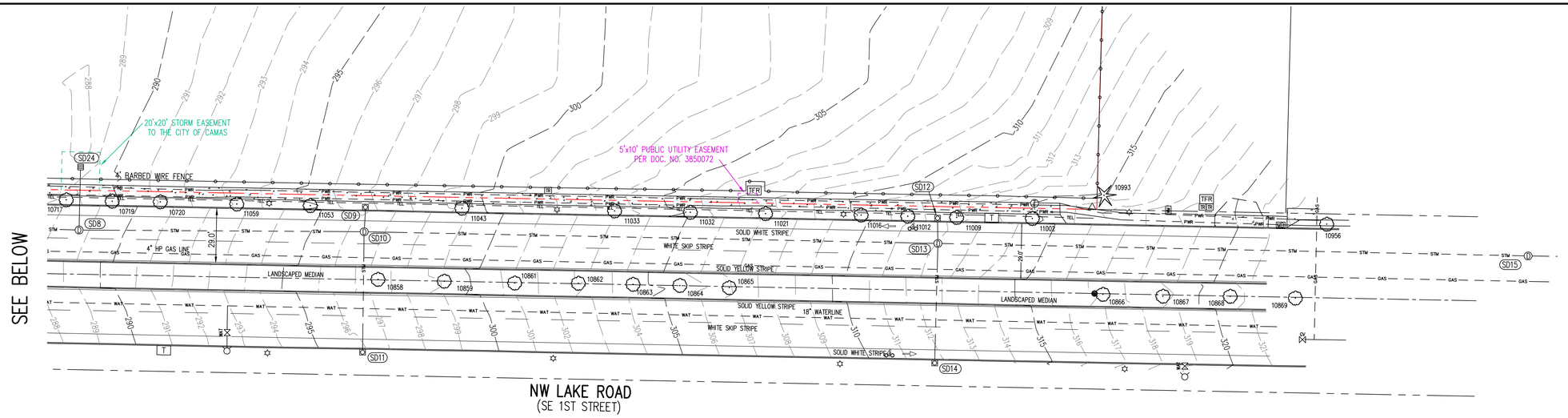
PROFESSIONAL LAND SURVEYOR

JOB NUMBER
2295

SHEET
3 OF 5



STORM SEWER INFORMATION

SD1 CATCH BASIN
RIM = 266.23'
10" I.E. OUT (SW) = 263.3'

SD2 MANHOLE
RIM = 266.42'
10" I.E. IN (NE) = 262.0'
10" I.E. IN (S) = 261.7'
24" I.E. IN (E) = 258.7'
24" I.E. OUT (W) = 258.5'

SD3 CATCH BASIN
RIM = 266.76'
10" IN (S)
10" OUT (N)
FLOWLINE I.E. = 262.6'

SD4 CATCH BASIN
RIM = 266.30'
12" I.E. OUT (N) = 263.4'

SD5 CURB INLET / CATCH BASIN
RIM = 276.81'
GUTTER/GRATE = 276.09'
10" I.E. OUT (S) = 272.4'

SD6 MANHOLE
RIM = 276.54'
10" I.E. IN (N) = 271.0'
10" I.E. IN (S) = 271.0'
24" I.E. IN (E) = 269.8'
24" I.E. OUT (W) = 269.6'

SD7 CURB INLET / CATCH BASIN
RIM = 276.71'
GUTTER/GRATE = 275.99'
10" I.E. OUT (N) = 271.2'

SD8 MANHOLE
RIM = 288.62'
10" I.E. IN (N) = 282.7'
24" IN (E)
24" OUT (W)
FLOWLINE I.E. = 279.6'

SD9 CURB INLET / CATCH BASIN
RIM = 296.68'
GUTTER/GRATE = 295.93'
10" I.E. OUT (S) = 292.1'

SD10 MANHOLE
RIM = 296.39'
10" I.E. IN (N) = 290.0'
10" I.E. IN (S) = 290.4'
24" IN (E)
24" OUT (W)
FLOWLINE I.E. = 286.8'

SD11 CURB INLET / CATCH BASIN
RIM = 296.73'
GUTTER/GRATE = 295.99'
10" I.E. OUT (N) = 292.1'

SD12 CURB INLET / CATCH BASIN
RIM = 312.29'
GUTTER/GRATE = 311.57'
10" I.E. OUT (S) = 309.0'

SD13 MANHOLE
RIM = 312.16'
10" I.E. IN (N) = 306.5'
10" I.E. IN (S) = 303.9'
24" IN (E)
24" OUT (W)
FLOWLINE I.E. = 301.9'

SD14 CURB INLET / CATCH BASIN
RIM = 312.29'
GUTTER/GRATE = 311.58'
10" I.E. OUT (N) = 308.84'

SD15 MANHOLE
RIM = 328.12'
24" IN (E)
24" OUT (W)
FLOWLINE I.E. = 317.32'

SD24 DITCH INLET
RIM = ±286.2'
10" I.E. OUT (S) = ±283.5'

SCALE 1" = 30 FEET

NOTES

1) THE FIELD SURVEY FOR THIS MAP WAS COMPLETED ON SEPTEMBER 15, 2021.

2) ELEVATIONS AND CONTOURS ARE BASED ON CLARK COUNTY BENCHMARK ID NUMBER 265. THE BENCHMARK IS THE SOUTHEAST CORNER OF SECTION 29, BEING A BRASS DISK IN CONCRETE WITHIN A MONUMENT CASE. THE BENCHMARK IS LOCATED IN THE CENTERLINE OF NW LAKE ROAD NEAR THE SOUTHEAST CORNER OF THE SURVEYED PROPERTY. IT HAS AN ELEVATION OF 316.85 FEET BASED ON THE NGVD 1929(47) VERTICAL DATUM.

3) THE WETLAND DELINEATION MARKERS WERE PROVIDED BY SOUNDVIEW CONSULTANTS LLC. FIELD TIES OF THE MARKERS WERE OUTLINED TO REPRESENT THE WETLAND BOUNDARIES ON THE SURVEYED PROPERTY.

4) THE BASIS OF BEARINGS FOR THIS SURVEY IS BOOK 58, PAGE 46, CLARK COUNTY SURVEY RECORDS.

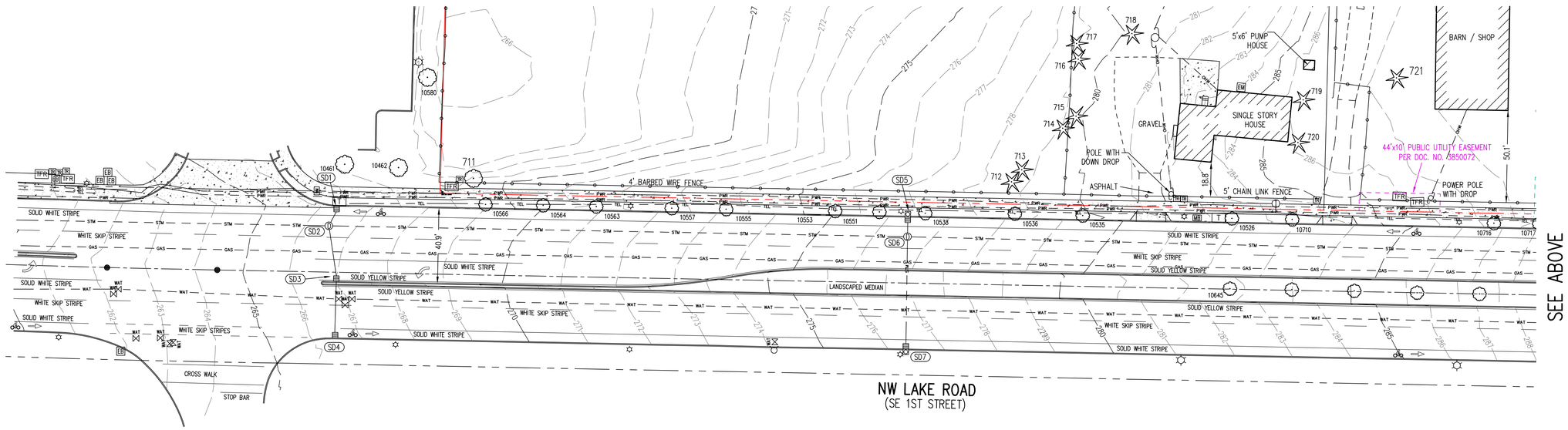
5) THE RIGHT-OF-WAY WIDTHS WERE ESTABLISH USING INFORMATION FROM RECORD SURVEYS AND THE TAX ASSESSOR'S MAP.

6) THE EASEMENTS SHOWN ON THIS MAP ARE BASED ON THE TITLE REPORT, PREPARED BY FIRST AMERICAN TITLE INSURANCE COMPANY WITH FILE NUMBER NCS-1040430-WAI AND WITH AN EFFECTIVE DATE OF NOVEMBER 18, 2020 AT 7:30 AM.

7) THE UNDERGROUND UTILITIES ARE BASED ON THE MARKINGS PER LOCATE TICKET NUMBERS 212004127 AND 21204165.

UTILITY STATEMENT

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.



Attachment 1

NORTHWEST SURVEYING, INC.
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PH:(503) 848-2127 FAX:(503) 848-2179
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LOCATED IN THE SE 1/4 OF SECTION 29,
TOWNSHIP 2 NORTH, RANGE 3 EAST, W.M.,
CITY OF CAMAS,
CLARK COUNTY, WASHINGTON

TOPOGRAPHIC MAP
4707/4723 NW LAKE ROAD
CAMAS, WASHINGTON

DRAWING NO.: 2295 ALTA
SCALE: AS NOTED
DRAWING GENERATED BY LD2004
DRAWN BY: CDW
CHECKED BY: CHS

PREPARED FOR:
PANATTONI DEVELOPMENT COMPANY, INC.
1821 DOCK STREET, SUITE 100
TACOMA, WA 98402

REVISIONS:
INITIAL RELEASE: SEPT. 28, 2021

9/29/2021
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PROFESSIONAL LAND SURVEYOR

JOB NUMBER
2295

SHEET
4 OF 5

Attachment 2

N

GRAPHIC SCALE
0 50 100 200
1" = 100 FEET

BUILDING C
FF: 256.00

BUILDING B
FF: 273.00

BUILDING A
FF: 285.00

STORM POND
TOP: 250.00±
BOTTOM: 240.00±

Typical minimum construction setback radius of 5 feet per inch of DBH

Typical root protection zone radius of 1 foot per inch of DBH

Retain stumps of trees removed from tree protection zones to protect root systems of adjacent trees

Tree protection fence

Coordinate with neighboring property owner on proposed tree removals

Coordinate with neighboring property owner on potential tree impacts and removals

Coordinate with neighboring property owner on potential tree impacts and removals

Coordinate with neighboring property owner on potential tree impacts and removals

AHBL
2215 North 30th Street,
Suite 300,
Tacoma, WA 98403
253.383.2422 TEL
253.383.2572 FAX

CAMAS BUSINESS CENTER

ROUGH GRADING PLAN

JOB NO. 2200867.10

DATE: 9/30/2021

EX-A

Attachment 3

Survey Number	Existing Number	DBH[1]	Multi-stem DBH[2]	Common Name	Scientific Name	Condition[3]	Structure[3]	Comments	Not On Property	Treatment	Tree Density Units Retained
601	601	15		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Thin crown		retain	4
602	602	12		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Dead top		retain	2
603	603	8		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Thin crown		retain	2
604	604	11		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	2
605	605	9		Oregon ash	*Fraxinus latifolia*	Poor	Very Poor	Dead top		retain	2
606	606	8		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	2
607	607	9		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Thin crown		retain	2
608	608	16		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Decay in stem, dead limbs in crown		retain	4
609	609	14		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Dead limbs in crown		retain	3
610	610	12		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Dead limbs in crown		retain	2
611	611	13		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Dead top		retain	3
612	612	17		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Decay in stem		retain	5
613	613	19		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	6
614	614	10		Oregon ash	*Fraxinus latifolia*	Poor	Very Poor	Dead top		retain	2
615	615	8		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Broken top		retain	2
616	616	7		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	2
617	617	10		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Broken top		retain	2
618	618	17		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	5
619	619	14		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Decay in stem		retain	3
620	620	13		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	3
621	621	14		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Broken top		retain	3
622	622	15		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Decay in stem		retain	4
623	623	16		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Decay in stem		retain	4
624	624	11		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	2
625	625	8, 7	11	Oregon ash	*Fraxinus latifolia*	Poor	Poor	Decay in one stem		retain	2
626	626	9		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Decay in stem		retain	2
627	627	32		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Decay at base		retain	12
628	628	17		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Thin crown		retain	5
629	629	10		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Decay in stem		retain	2
630	630	12		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Decay in stem and at base		retain	2
631	631	8		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Decay in stem		retain	2
632	632	8		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Heavy lean		retain	2
633	633	18		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Heavy lean		retain	5
634	634	18		Oregon ash	*Fraxinus latifolia*	Fair	Good	Thin crown		retain	5
635	635	18		Oregon ash	*Fraxinus latifolia*	Poor	Fair	Dead limbs in crown, heavy lean		retain	5
636	636	18		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Multiple stems		retain	5
637	637	12		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Multiple stems		retain	2
638	638	12		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	2
639	639	18		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Thin crown, dead limbs in crown		retain	5
640	640	14, 10	17	Oregon ash	*Fraxinus latifolia*	Poor	Poor	Decay at base, one dead stem		retain	4
641	641	16		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Decay high in stem, co-dominant top		retain	4
642	642	12		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Decay at base, thin crown		retain	2
643	643	20		Oregon ash	*Fraxinus latifolia*	Poor	Very Poor	Broken top		retain	6
644	644	16		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Broken top		retain	4
645	645	24		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Epicormic stems, poor structure		retain	8
646	646	8		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Multiple stems, heavy lean		retain	2
647	647	8		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Multiple stems		retain	2
648	648	36		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Decay in stem		retain	14
649	649	5		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Multiple stems, heavy lean		retain	1
650	650	6		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Decay at base		retain	2
651	651	7		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Decay at base		retain	2
652	652	5		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Heavy lean, co-dominant stem at base		retain	1
653	653	15		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Tree in decline		retain	4
654	654	14		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Tree in decline		retain	3
655	655	22		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Decay in stem, dead limbs in crown		retain	7
656	656	9		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Decay in stem, thin crown		retain	2
657	657	17		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Broken stem, decay in stem		retain	5
658	658	13		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Decay in stem		retain	3

Attachment 3

Survey Number	Existing Number	DBH[1]	Multi-stem DBH[2]	Common Name	Scientific Name	Condition[3]	Structure[3]	Comments	Not On Property	Treatment	Tree Density Units Retained
659	659	18		Oregon ash	*Fraxinus latifolia*	Good	Good			retain	5
660	660	7		Oregon ash	*Fraxinus latifolia*	Good	Fair	Multi stem with included bark		retain	2
661	661	9		Oregon ash	*Fraxinus latifolia*	Good	Fair	Multi stem with included bark		retain	2
662	662	10		Oregon ash	*Fraxinus latifolia*	Good	Fair	Multi stem with included bark		retain	2
663	663	11		Oregon ash	*Fraxinus latifolia*	Poor	Very Poor	Broken top		retain	2
664	664	12		Oregon ash	*Fraxinus latifolia*	Very poor	Very poor	Multiple stems, decay in stem		retain	2
665	665	8		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Dead top		retain	2
666	666	11		Oregon ash	*Fraxinus latifolia*	Very poor	Very poor	Decay in stem		retain	2
667	667	10		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	2
668	668	18		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Thin crown		retain	5
669	669	20, 13	24	Oregon ash	*Fraxinus latifolia*	Poor	Poor	Thin crown, co-dominant stem with included bark		retain	8
670	670	8		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Broken top		retain	2
671	671	7		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Decay in stem		retain	2
672	672	7		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Broken top		retain	2
673	673	15		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Decay in stem, heavy lean		retain	4
674	674	14		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	3
675	675	11		Oregon ash	*Fraxinus latifolia*	Poor	Fair	Dead limbs in crown		retain	2
676	676	20		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Co-dominant top, necrotic leaves in crown		retain	6
677	677	25		Oregon ash	*Fraxinus latifolia*	Good	Fair	Over extended limbs		retain	9
678	678	13		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Co-dominant stem, thin crown		retain	3
679	679	11		Oregon ash	*Fraxinus latifolia*	Dead	Dead			retain	2
680	680	13		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Broken limbs in crown		retain	3
681	681	14		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Decay in stem		retain	3
682	682	22		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	7
683	683	12		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Decay at base		retain	2
684	684	13		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Multiple bark inclusions		retain	3
685	685	11		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Dead top		retain	2
686	686	9		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Decay in stem		retain	2
687	687	17		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Decay in stem		retain	5
688	688	16		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Over extended limbs		retain	4
689	689	26		Oregon ash	*Fraxinus latifolia*	Poor	Very Poor	Co-dominant stem with included bark, one stem in heavy decline		retain	9
690	690	20		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Dead top		retain	6
691	691	15		Oregon ash	*Fraxinus latifolia*	Good	Fair	Co-dominant top		retain	4
692	692	14		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Decay in stem		retain	3
693	693	11		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Decay at base, heavy lean		retain	2
694	694	13		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Decay at base		retain	3
695	695	13		Oregon ash	*Fraxinus latifolia*	Good	Poor	Decay in stem		retain	3
696	696	9		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Tree in decline		retain	2
697	697	9		Oregon ash	*Fraxinus latifolia*	Good	Fair	Low dead limb		retain	2
698	698	8		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	2
699	699	15		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Co-dominant stem, thin crown		retain	4
700	700	12		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Co-dominant stem, thin crown		retain	2
701	701	10		Oregon ash	*Fraxinus latifolia*	Good	Fair	Co-dominant stem at base		retain	2
702	702	7		Oregon ash	*Fraxinus latifolia*	Poor	Very Poor	Decay in stem		retain	2
703	703	20		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Thin crown, co-dominant top		retain	6
704	704	9		Oregon ash	*Fraxinus latifolia*	Fair	Good	Thin crown		retain	2
705	705	9		Oregon ash	*Fraxinus latifolia*	Good	Good			retain	2
707	707	7		Oregon ash	*Fraxinus latifolia*	Good	Fair	Co-dominant stem with included bark		retain	2
708	708	15		Oregon ash	*Fraxinus latifolia*	Good	Poor	Dead snag hung up in crown		retain	4
709	709	19		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			retain	6
710	710	50		Oregon white oak	*Quercus garryana*	Good	Fair	Decay in stem at base		retain	21
723	723	6, 6, 10, 10, 7	18	Oregon ash	*Fraxinus latifolia*	Poor	Poor	Thin crown, multiple stems with decay		remove	0
801	801	24		Douglas-fir	*Pseudotsuga menziesii*	Good	Good	Tree on other side of barbed wire fence	Not On Property	remove	0
802	802	22		Douglas-fir	*Pseudotsuga menziesii*	Good	Good	Tree on other side of barbed wire fence	Not On Property	remove	0
803	803	23		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Tree on other side of barbed wire fence, co-dominant top	Not On Property	remove	0
803.1		15		Douglas-fir	*Pseudotsuga menziesii*	Dead	Dead	Tree on other side of barbed wire fence	Not On Property	remove	0
804	804	12		red alder	*Alnus rubra*	Fair	Poor	Tree on other side of barbed wire fence, crack in stem	Not On Property	remove	0

Attachment 3

Survey Number	Existing Number	DBH[1]	Multi-stem DBH[2]	Common Name	Scientific Name	Condition[3]	Structure[3]	Comments	Not On Property	Treatment	Tree Density Units Retained
804.1		12		red alder	*Alnus rubra*	Dead	Dead	Tree on other side of barbed wire fence	Not On Property	remove	0
805	805	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
806	806	18		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
807	807	18		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
808	808	21		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
809	809	15		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
810	810	13		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
811	811	7		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
812	812	12		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
813	813	13		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
814	814	23		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
815	815	32		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
816	816	40		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
817	817	15		Oregon white oak	*Quercus garryana*	Good	Good			remove	0
818	818	28		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Old torsion crack in stem at base		remove	0
819	819	32		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Blackberry covering base		remove	0
820	820	23		Douglas-fir	*Pseudotsuga menziesii*	Fair	Poor	Decay at base on south side		remove	0
821	821	22		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Blackberry covering base		remove	0
822	822	40		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
823	823	58		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant stem with included bark at base		remove	0
824	824	39		Douglas-fir	*Pseudotsuga menziesii*	Dead	Dead			remove	0
825	825	25		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Broken limbs in canopy, epicormic growth in crown, over extended limbs		remove	0
826	826	27		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Pitch streamers at base, dead limbs in crown		remove	0
827	827	32		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Broken limb in crown		remove	0
828	828	33, 17	37	Douglas-fir	*Pseudotsuga menziesii*	Poor	Poor	Co-dominant stem at base, dead top in larger stem		remove	0
829	829	40		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
830	830	42		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
831	831	40		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Tree visually assessed, blackberry covering base		remove	0
832	832	39		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Thin crown, blackberry covering base		remove	0
833	833	29		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
834	834	31		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Swelling at base next to hazelnut group		remove	0
835	835	28		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Blackberry covering base		remove	0
835.1		25		red alder	*Alnus rubra*	Dead	Dead			remove	0
836	836	28		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Blackberry covering base		remove	0
837	837	23		Douglas-fir	*Pseudotsuga menziesii*	Fair	Poor	Contorted stem at 20'		remove	0
838	838	31		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant top		remove	0
839	839	30		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Thin crown		remove	0
840	840	25		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
841	841	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
843	843	31		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
844	844	22		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant stem at base		remove	0
845	845	29		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant stem at base		remove	0
846	846	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
847	847	36		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
848	848	33		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant stem at base with included bark, sap sucker damage at base		remove	0
849	849	24		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant stem at base with included bark, sap sucker damage at base		remove	0
850	850	30		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
851	851	36		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
852	852	31		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
853	853	29		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant stem at base		remove	0
854	854	33		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant stem at base		remove	0
855	855	35		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
856	856	37		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
857	857	32		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
858	858	25		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
859	859	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
860	860	42		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0

Attachment 3

Survey Number	Existing Number	DBH[1]	Multi-stem DBH[2]	Common Name	Scientific Name	Condition[3]	Structure[3]	Comments	Not On Property	Treatment	Tree Density Units Retained
861	861	8		Douglas-fir	*Pseudotsuga menziesii*	Very Poor	Very Poor	Red ring rot, tree in decline		remove	0
862	862	42		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant top		remove	0
863	863	25		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
864	864	9		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
865	865	23		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
866	866	35		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
867	867	34		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
868	868	30		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Contorted stem at 15'		remove	0
869	869	33		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
870	870	37		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
871	871	45		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Over extended limbs		remove	0
872	872	43		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
873	873	8, 8	11	English hawthorn	*Crataegus monogyna*	Good	Poor	Co-dominant stem at base, blackberry growing into crown		remove	0
874	874	51		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Torsion crack visible at 35'		remove	0
875	875	42		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
876	876	28		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
877	877	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
878	878	34		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
879	879	35		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
880	880	29		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
881	881	33		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Thin crown		remove	0
882	882	41		Douglas-fir	*Pseudotsuga menziesii*	Dead	Dead			remove	0
883	883	42		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
888	888	13		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Decay in stem, included bark		retain	3
889	889	18		Oregon ash	*Fraxinus latifolia*	Good	Good			retain	5
890	890	38		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Seam with decay in stem at 20'		remove	0
891	891	36		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant stem at base		remove	0
892	892	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant stem		remove	0
893	893	27		Oregon ash	*Fraxinus latifolia*	Good	Fair	Cavity at base		retain	10
894	894	10, 8	13	Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Decay in stems		retain	3
895	895	13		Oregon ash	*Fraxinus latifolia*	Fair	Very Poor	Decay in stem		retain	3
896	896	7		crab apple	*Malus sp.*	Poor	Poor	Thin crown, decay in stem		retain	2
897	897	10		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Tree in decline		retain	2
898	898	7		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Decay in stem		retain	2
899	899	9		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Heavy lean, thin crown		retain	2
900	900	7		Oregon ash	*Fraxinus latifolia*	Poor	Very Poor	Dead top		remove	0
1001	1001	15		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Broken top		retain	4
1001.1		18, 18, 10, 13	30	Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Group of short dead stems		retain	11
1002	1002	16		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	4
1003	1003	13		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Broken top		retain	3
1004	1004	24		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Tree in heavy decline		retain	8
1005	1005	13		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Decay in stem		retain	3
1006	1006	13		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Tree in decline		retain	3
1007	1007	7		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Tree in decline		retain	2
1008	1008	9		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Tree in decline		retain	2
1009	1009	17		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	5
1010	1010	11		Oregon ash	*Fraxinus latifolia*	Dead	Dead			retain	2
1011	1011	22		Oregon ash	*Fraxinus latifolia*	Fair	Very Poor	Decay in stem, heavy lean		retain	7
1012	1012	12		Oregon ash	*Fraxinus latifolia*	Poor	Very poor	Decay at base, dead top		retain	2
1013	1013	12		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Decay at base, tree in decline		retain	2
1014	1014	16		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Tree in decline		retain	4
1015	1015	11		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Decay in stem		retain	2
1017	1017	15		Oregon ash	*Fraxinus latifolia*	Good	Poor	Over extended limbs		retain	4
1018	1018	7		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	2
1019	1019	13		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Broken limb in crown, thin crown		retain	3
1020	1020	8		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Decay at base		retain	2
1021	1021	6		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Decay at base		retain	2

Attachment 3

Survey Number	Existing Number	DBH[1]	Multi-stem DBH[2]	Common Name	Scientific Name	Condition[3]	Structure[3]	Comments	Not On Property	Treatment	Tree Density Units Retained
1022	1022	7		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Decay at base		retain	2
1023	1023	7		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Decaying stem		retain	2
1024	1024	30		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Tree in decline, decay at base		retain	11
1025	1025	11		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Heavy lean		retain	2
1026	1026	22		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	7
1027	1027	20		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	6
1028	1028	14		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	3
1029	1029	18		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	5
1030	1030	9		hawthorn	*Crataegus monogyna*	Fair	Poor	Co-dominant stem with included bark		retain	2
1031	1031	5		hawthorn	*Crataegus monogyna*	Fair	Poor	Co-dominant stem with included bark		retain	1
1033	1033	8		Oregon ash	*Fraxinus latifolia*	Good	Poor	Heavy lean		retain	2
1034	1034	15		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	4
1035	1035	16		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Hollow stem		retain	4
1036	1036	16		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	4
1037	1037	12		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	2
1038	1038	11		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Broken dead top		retain	2
1039	1039	7		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	2
1040	1040	11		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	2
1041	1041	16		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Decay at base		remove	0
1042	1042	18		Oregon ash	*Fraxinus latifolia*	Good	Fair	Co-dominant stem at base, co-dominant top		retain	5
1043	1043	16		Oregon ash	*Fraxinus latifolia*	Poor	Fair	Thin crown		remove	0
1044	1044	8		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Co-dominant stem at base		retain	2
1045	1045	21		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Dead top		retain	7
1046	1046	13		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Half of stem is dead		retain	3
1048	1048	22		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Heavy lean with shear plane crack, broken top		retain	7
1049	1049	6		Oregon ash	*Fraxinus latifolia*	Good	Poor	Multiple stems at base, co-dominant top		retain	2
1050	1050	6		Oregon ash	*Fraxinus latifolia*	Good	Fair	Multiple stems at base		retain	2
1051	1051	16		Oregon ash	*Fraxinus latifolia*	Good	Fair	Co-dominant top		retain	4
1052	1052	24		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Thin crown, co-dominant top		retain	8
1052.1		13		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Cavity in stem at base		retain	3
1053	1053	20		Oregon ash	*Fraxinus latifolia*	Good	Fair	Over extended limbs		retain	6
1054	1054	18		red alder	*Alnus rubra*	Dead	Dead	Dead		retain	5
1055	1055	23		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			retain	8
1056	1056	24		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Large broken limbs		retain	8
1057	1057	22		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Multi stem with included bark		retain	7
1058	1058	14		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Multi stem with included bark		retain	3
1059		6		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Multi stem with included bark		retain	2
1060	1060	10		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Multi stem with included bark		retain	2
1061	1061	11		Oregon ash	*Fraxinus latifolia*	Good	Fair	Subordinated by larger tree		retain	2
1062	1062	17		Oregon ash	*Fraxinus latifolia*	Good	Good			retain	5
1063	1063	22		Oregon ash	*Fraxinus latifolia*	Good	Fair	Co-dominant stem		retain	7
1064	1064	18		Oregon ash	*Fraxinus latifolia*	Good	Fair	Co-dominant stem with included bark		retain	5
1065		21		Oregon ash	*Fraxinus latifolia*	Good	Good			retain	7
1066	1066	17		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Large broken limbs		retain	5
1067	1067	14		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Large decay cavity in lower stem		retain	3
1068	1068	19		Oregon ash	*Fraxinus latifolia*	Good	Fair	Included bark, heavy lean		retain	6
1069	1069	17		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Heavy lean, subordinated by larger tree		retain	5
1070	1070	23		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Co-dominant top, heavy lean		retain	8
1071	1071	23		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Large cavity at 35 feet		retain	8
1074	1074	43		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			retain	18
1075	1075	41		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			retain	17
1076	1076	40		Douglas-fir	*Pseudotsuga menziesii*	Good	Good	Warning! Wasps at base of tree and in area		retain	16
1077	1077	22		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Co-dominant stem		retain	7
1078	1078	28		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Decay at base, co-dominant top		retain	10
1079	1079	40		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Co-dominant stem with included bark, dead limbs in crown		remove	0
1080	1080	34		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1081	1081	24		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Dense tree group		remove	0

Attachment 3

Survey Number	Existing Number	DBH[1]	Multi-stem DBH[2]	Common Name	Scientific Name	Condition[3]	Structure[3]	Comments	Not On Property	Treatment	Tree Density Units Retained
1082	1082	15		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Dense tree group		remove	0
1083	1083	22		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Dense tree group		remove	0
1084	1084	25		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1085	1085	42		Douglas-fir	*Pseudotsuga menziesii*	Fair	Good	Thin crown		remove	0
1086	1086	31		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1087	1087	40		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant top		remove	0
1088	1088	27		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Thin crown, bend in stem		remove	0
1089	1089	32		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Dead limbs, thin crown		retain	12
1090	1090	29		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Epicormic sprouting		retain	11
1091	1091	37		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1092	1092	28		Douglas-fir	*Pseudotsuga menziesii*	Fair	Good	Epicormic sprouting		retain	10
1093	1093	28		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Decay in stem, over extended limbs		retain	10
1094	1094	35		Douglas-fir	*Pseudotsuga menziesii*	Dead	Dead			remove	0
1095	1095	46		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1096	1096	39		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Swelling at base		remove	0
1097	1097	33		Douglas-fir	*Pseudotsuga menziesii*	Poor	Poor	Co-dominant top, swelling in stem		remove	0
1099	1099	30		Douglas-fir	*Pseudotsuga menziesii*	Fair	Good	Thin crown		remove	0
1100	1100	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1101	1101	39		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant stem at base		remove	0
1102	1102	50		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Decay in stem at 30' on north side		remove	0
1103	1103	30		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Insect damage on north side at base		remove	0
1104	1104	46		Douglas-fir	*Pseudotsuga menziesii*	Fair	Poor	Insect damage at base, sloughing bark		remove	0
1105	1105	43		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1106	1106	39		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1107	1107	53		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1108	1108	31		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Co-dominant top		remove	0
1109	1109	50		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			retain	21
1110	1110	70		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Major swelling at base, lean		remove	0
1111	1111	32		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1112	1112	11		red alder	*Alnus rubra*	Dead	Dead			remove	0
1113	1113	18		bigleaf maple	*Acer macrophyllum*	Fair	Poor	Swelling at base, suppressed crown		remove	0
1114	1114	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1115	1115	31		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1116	1116	27		bigleaf maple	*Acer macrophyllum*	Fair	Poor	Dead top		remove	0
1117	1117	37		bigleaf maple	*Acer macrophyllum*	Fair	Poor	Dead top, multiple stems at base		remove	0
1118	1118	13		bigleaf maple	*Acer macrophyllum*	Good	Poor	Multiple stems at base, heavy lean		remove	0
1119	1119	20		red alder	*Alnus rubra*	Poor	Poor	Co-dominant stem, ivy covering base, thin crown		remove	0
1120	1120	10		red alder	*Alnus rubra*	Poor	Poor	Co-dominant stem, ivy covering base		remove	0
1120.1		12		red alder	*Alnus rubra*	Dead	Dead			remove	0
1121	1121	8		red alder	*Alnus rubra*	Very Poor	Very Poor	Tree in decline		remove	0
1122	1122	11		red alder	*Alnus rubra*	Dead	Dead			remove	0
1123	1123	30		red alder	*Alnus rubra*	Dead	Dead			remove	0
1124	1124	32		red alder	*Alnus rubra*	Dead	Dead			remove	0
1125	1125	31		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Over extended limbs, dead limbs in crown		retain	12
1126	1126	23		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Over extended limbs, dead limbs in crown		retain	8
1127	1127	14		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Heavy lean, multiple stems at base, dead limbs in crown		retain	3
1128	1128	14		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Multiple stems at base, over extended limbs, dead branches hanging in crown		retain	3
1129	1129	40		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Multiple stems with included bark, decay in stem, dead limbs in crown		retain	16
1130	1130	30		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Co-dominant too, top, dead limbs in crown		retain	11
1131	1131	11		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Heavy lean, multiple stems with included bark		retain	2
1132	1132	24		Oregon ash	*Fraxinus latifolia*	Poor	Very Poor	Cavity at base, multiple stems at base		retain	8
1133	1133	12		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Over extended limbs, multiple stems with included bark		retain	2
1133.1		20		western hemlock	*Tsuga heterophylla*	Poor	Poor	Tree visually assessed, ivy growing into crown		retain	6
1133.2		16		sweet cherry	*Prunus avium*	Fair	Poor	Tree visually assessed, blackberry covering base		retain	4
1134	1134	15		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Multiple stems at base with included bark, over extended limbs		retain	4
1135	1135	18		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Multiple stems with included bark, dead limbs in crown		retain	5
1136	1136	26		Douglas-fir	*Pseudotsuga menziesii*	Fair	Good	Dead limbs in crown		remove	0

Attachment 3

Survey Number	Existing Number	DBH[1]	Multi-stem DBH[2]	Common Name	Scientific Name	Condition[3]	Structure[3]	Comments	Not On Property	Treatment	Tree Density Units Retained
1137	1137	29		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1138	1138	32		Douglas-fir	*Pseudotsuga menziesii*	Fair	Poor	Damaged roots at base, heavy lean		remove	0
1139	1139	37		Douglas-fir	*Pseudotsuga menziesii*	Fair	Good	Blackberry covering base		remove	0
1140	1140	42		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Blackberry covering base		remove	0
1141	1141	40		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Dead limbs in crown		remove	0
1142	1142	39		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1143	1143	35		Douglas-fir	*Pseudotsuga menziesii*	Fair	Good	Thin crown		remove	0
1144	1144	34		Douglas-fir	*Pseudotsuga menziesii*	Fair	Good	Blackberry covering base, thin crown		remove	0
1145	1145	22		Douglas-fir	*Pseudotsuga menziesii*	Fair	Good	Blackberry covering base		remove	0
1146	1146	29		Douglas-fir	*Pseudotsuga menziesii*	Fair	Good	Blackberry covering base		remove	0
1147	1147	12		sweet cherry	*Prunus avium*	Fair	Fair	Blackberry covering base		retain	2
1148	1148	24		western hemlock	*Tsuga heterophylla*	Poor	Very Poor	Decay at base, blackberry covering base		retain	8
1149	1149	17		bigleaf maple	*Acer macrophyllum*	Fair	Fair	Co-dominant top		remove	0
1150	1150	31		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Decay at base, ivy covering base, sap sucker damage at base		remove	0
1151	1151	13		Oregon ash	*Fraxinus latifolia*	Good	Poor	Co-dominant stem		remove	0
1152	1152	16		Oregon ash	*Fraxinus latifolia*	Good	Fair	Co-dominant stem		remove	0
1153	1153	14		Oregon ash	*Fraxinus latifolia*	Good	Good			remove	0
1154	1154	12		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Heavy lean		remove	0
1155	1155	22		red alder	*Alnus rubra*	Very Poor	Very Poor	Tree in decline		remove	0
1156	1156	17, 17	24	Oregon ash	*Fraxinus latifolia*	Poor	Poor	One large dead stem, included bark at base		remove	0
1157	1157	28		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Co-dominant top		retain	10
1158	1158	34		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Dead limbs in crown		remove	0
1159	1159	14		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Ivy covering base		retain	3
1160	1160	8		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Ivy covering base		retain	2
1161	1161	7		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Ivy covering base		retain	2
1162	1162	6		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Ivy covering base		retain	2
1163	1163	7		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Ivy covering base		retain	2
1164	1164	26		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Ivy covering base		retain	9
1165	1165	29		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Ivy covering base		retain	11
1166	1166	23		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Ivy covering base		retain	8
1167	1167	14		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Co-dominant stem with included bark		remove	0
1168	1168	15		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Heavy lean, thin crown		remove	0
1169	1169	12		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Co-dominant stem with included bark		remove	0
1170	1170	6		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Thin crown, multiple stems		remove	0
1171	1171	12		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Tree in decline		remove	0
1172	1172	9		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Tree in decline		remove	0
1173	1173	13		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Tree in decline		remove	0
1174	1174	27		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Large broken limb in crown, co-dominant stem		remove	0
1175	1175	25, 12, 8	29	Oregon ash	*Fraxinus latifolia*	Fair	Fair	Multiple stems, thin crown		remove	0
1176	1176	9		red alder	*Alnus rubra*	Poor	Poor	Tree in decline		remove	0
1177	1177	9		red alder	*Alnus rubra*	Poor	Poor	Tree in decline		remove	0
1178	1178	11		red alder	*Alnus rubra*	Poor	Poor	Tree in decline		remove	0
1179	1179	28		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Co-dominant top		remove	0
1180	1180	26		red alder	*Alnus rubra*	Very Poor	Very Poor	Tree in decline		remove	0
1181	1181	22		red alder	*Alnus rubra*	Very Poor	Very Poor	Tree in decline		remove	0
1182	1182	30		red alder	*Alnus rubra*	Dead	Dead			remove	0
1183	1183	26		red alder	*Alnus rubra*	Very Poor	Very Poor	Tree in decline		remove	0
1184	1184	6		Oregon ash	*Fraxinus latifolia*	Poor	Poor	Heavy lean, ivy covering base		remove	0
1185	1185	26		red alder	*Alnus rubra*	Dead	Dead			remove	0
1186	1186	12		red alder	*Alnus rubra*	Very Poor	Very Poor	Tree in decline		remove	0
1187	1187	7		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Ivy covering base		retain	2
1188	1188	6		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Ivy covering base		retain	2
1189	1189	7		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Do-dominant stem		retain	2
1190	1190	9		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Co-dominant stem		retain	2
1191	1191	8		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Ivy covering base		retain	2
1192	1192	8		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Ivy covering base		retain	2
1193	1193	14		red alder	*Alnus rubra*	Very Poor	Very Poor	Tree in decline		retain	3

Attachment 3

Survey Number	Existing Number	DBH[1]	Multi-stem DBH[2]	Common Name	Scientific Name	Condition[3]	Structure[3]	Comments	Not On Property	Treatment	Tree Density Units Retained
1194	1194	29, 24	38	Oregon ash	*Fraxinus latifolia*	Fair	Poor	Large broken limbs in crown		remove	0
1195	1195	15		sweet cherry	*Prunus avium*	Poor	Poor	Blackberry covering base, co-dominant stem		remove	0
1196	1196	52		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1197	1197	33, 33	47	Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant stem with included bark		remove	0
1198	1198	25		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1198	1198	28		red alder	*Alnus rubra*	Very Poor	Very Poor	Tree visually assessed, dead top, thin crown		remove	0
1199	1199	35		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1200	1200	38		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Broken branches in crown		remove	0
1201	1201	32		Oregon ash	*Fraxinus latifolia*	Fair	Poor	Co-dominant stem, dead limbs in crown		remove	0
1202	1202	32		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Decay at base, fruiting body on south side		retain	12
1203	1203	33		Douglas-fir	*Pseudotsuga menziesii*	Very Poor	Very Poor	Decay in stem		remove	0
1204	1204	27		Douglas-fir	*Pseudotsuga menziesii*	Poor	Fair	Thin crown		remove	0
1205	1205	26		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1206	1206	27		Douglas-fir	*Pseudotsuga menziesii*	Fair	Good	Thin crown		remove	0
1207	1207	29		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1208	1208	35		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1209	1209	36		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1210	1210	33		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1211	1211	31		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1212	1212	37		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Old torsion crack on stem		remove	0
1213	1213	30		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Swelling in stem at 15'		remove	0
1214	1214	38		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1215	1215	40		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1216	1216	42		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1217	1217	42		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1218	1218	37		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Blackberry covering base		remove	0
1219	1219	36		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Ivy growing into crown		remove	0
1220	1220	24		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Lean with corrected top		remove	0
1221	1220	22		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Leaning		remove	0
1222	1221	24		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1222.1		24		red alder	*Alnus rubra*	Dead	Dead			remove	0
1223	1222	30		Douglas-fir	*Pseudotsuga menziesii*	Poor	Poor	Thin crown		remove	0
1224	1224	38		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1225	1225	34		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1226	1226	32		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1227	1227	32		Douglas-fir	*Pseudotsuga menziesii*	Fair	Good	Thin crown		remove	0
1228	1228	36		Douglas-fir	*Pseudotsuga menziesii*	Fair	Good	Thin crown		remove	0
1229	1229	32		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1230	1230	25		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1231	1231	32		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1232	1232	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1233	1233	43		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1234	1234	28		Douglas-fir	*Pseudotsuga menziesii*	Fair	Good	Thin crown		remove	0
1235	1235	38		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Swelling in stem, dead limbs in crown		remove	0
1236	1236	39		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1237	1237	37		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1238	1238	37		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1239	1239	34		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Over extended limbs		retain	13
1240	1240	31		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1241	1241	36		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Damage to cambium on roots		remove	0
1242	1242	24, 9	26	red alder	*Alnus rubra*	Poor	Poor	Co-dominant stem with included bark, over extended limbs, declining top		remove	0
1242.1		20		red alder	*Alnus rubra*	Dead	Dead			remove	0
1243	1243	29		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Dead limbs in crown		remove	0
1244	1244	36		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Dead limbs in crown		remove	0
1245	1245	34		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Dead limbs in crown		remove	0
1246	1246	40		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Broken limbs in crown		remove	0
1247	1247	28		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Dead limbs in crown		remove	0

Attachment 3

Survey Number	Existing Number	DBH[1]	Multi-stem DBH[2]	Common Name	Scientific Name	Condition[3]	Structure[3]	Comments	Not On Property	Treatment	Tree Density Units Retained
1248	1248	40		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Over extended limbs		remove	0
1249	1249	31		Douglas-fir	*Pseudotsuga menziesii*	Fair	Good	Ivy growing into crown		remove	0
1250	1250	29		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1251	1251	42		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1252	1252	39		Douglas-fir	*Pseudotsuga menziesii*	Good	Poor	Co-dominant stem with included bark		remove	0
1253	1253	35		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1254	1254	29		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1255	1255	36		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1256	1256	29		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1257	1257	42		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1259	1259	19		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1260	1260	30		Douglas-fir	*Pseudotsuga menziesii*	Fair	Poor	Sloughing bark at base, pistol butt		remove	0
1261	1261	19		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1262	1262	34		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Cavity at base, dead limbs in crown		remove	0
1263	1263	13		Douglas-fir	*Pseudotsuga menziesii*	Very Poor	Very Poor	Top broken out		remove	0
1264	1264	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1265	1265	16		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Contorted stem		remove	0
1266	1266	32		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1267	1267	18		Douglas-fir	*Pseudotsuga menziesii*	Fair	Poor	Suppressed tree		remove	0
1268	1268	13		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant stem at base		remove	0
1269	1269	19		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant stem at base		remove	0
1270	1270	23		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1271	1271	20		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1272	1272	35		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Sap sucker damage at base		remove	0
1273	1273	13		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Suppressed tree		remove	0
1274	1274	21		Douglas-fir	*Pseudotsuga menziesii*	Poor	Very Poor	Swelling on stem, decay in stem		remove	0
1275	1275	32		Douglas-fir	*Pseudotsuga menziesii*	Poor	Fair	Thin crown		remove	0
1276	1276	21		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1277	1277	33		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1278	1278	30		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1283	1283	35		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1284	1284	29		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1285	1285	19		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Bark damage at base		remove	0
1286	1286	18		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1293	1293	42		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1294	1294	22		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1295	1295	30		red alder	*Alnus rubra*	Dead	Dead			remove	0
1296	1296	40		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1297	1297	31		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1298	1298	7		red alder	*Alnus rubra*	Poor	Poor	Heavy lean, thin crown		remove	0
1299	1299	33		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Dead branches in crown		remove	0
1300	1300	38		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Dead limbs in crown		remove	0
1301	1301	34		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1302	1302	17		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1303	1303	6		Douglas-fir	*Pseudotsuga menziesii*	Poor	Poor	Suppressed tree		remove	0
1304	1304	7		Douglas-fir	*Pseudotsuga menziesii*	Poor	Poor	Suppressed tree		remove	0
1305	1305	33		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1306	1306	35		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1307	1307	15		Douglas-fir	*Pseudotsuga menziesii*	Poor	Poor	Suppressed tree, heavy lean		remove	0
1308	1308	15, 15	21	Douglas-fir	*Pseudotsuga menziesii*	Poor	Poor	Co-dominant stem, suppressed tree, heavy lean		remove	0
1309	1309	21		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1310	1310	21		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1311	1311	11		Douglas-fir	*Pseudotsuga menziesii*	Very Poor	Very Poor	Suppressed tree		remove	0
1312	1312	33		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1313	1313	7		Douglas-fir	*Pseudotsuga menziesii*	Dead	Dead			remove	0
1314	1314	33		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Small stem attached at base is in decline		remove	0
1315	1315	19		Douglas-fir	*Pseudotsuga menziesii*	Fair	Good	Thin crown		remove	0

Attachment 3

Survey Number	Existing Number	DBH[1]	Multi-stem DBH[2]	Common Name	Scientific Name	Condition[3]	Structure[3]	Comments	Not On Property	Treatment	Tree Density Units Retained
1316	1316	18		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Contorted top		remove	0
1317	1317	24		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1318	1318	26		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1319	1319	9		Douglas-fir	*Pseudotsuga menziesii*	Fair	Good	Thin crown		remove	0
1320	1320	15		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1321	1321	11		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Contorted top		remove	0
1322	1322	20		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Contorted top		remove	0
1323	1323	10		Douglas-fir	*Pseudotsuga menziesii*	Fair	Good	Thin crown		remove	0
1324	1324	9		Douglas-fir	*Pseudotsuga menziesii*	Fair	Good	Thin crown		remove	0
1325	1325	21		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1326	1326	31, 8	32	Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Smaller stem attached at base with included bark		remove	0
1327	1327	19		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1328	1328	13		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1329	1329	12		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1330	1330	14		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1331	1331	15		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1332	1332	21, 12	24	Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Swelling at base, co-dominant stem with included bark		remove	0
1333	1333	12		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1334	1334	21		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1335	1335	21		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1336	1336	7		Douglas-fir	*Pseudotsuga menziesii*	Poor	Poor	Thin crown, heavy lean		remove	0
1337	1337	25		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1338	1338	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1340	1340	23		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1341	1341	24		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1342	1342	26		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1343	1343	24		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1344	1344	32		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1345	1345	25		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Pistol butt		remove	0
1346	1346	38		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Broken limbs in crown		remove	0
1347	1347	33		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1348	1348	40		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant top		remove	0
1349	1349	34		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Good limbs in crown		remove	0
1350	1350	18		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Suppressed tree		remove	0
1351	1351	47		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1352	1352	33		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1353	1353	32		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1354	1354	33		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1355	1355	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1356	1356	19		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1357	1357	13		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1358	1358	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1359	1359	31		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1360	1360	31		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1361	1361	17		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Swelling at base		remove	0
1362	1362	38		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1363	1363	17		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1364	1364	23		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Contorted stem		remove	0
1365	1365	13		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1366	1366	30		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1367	1367	16		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Blackberry covering base		remove	0
1368	1368	16		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1369	1369	11		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Blackberry in canopy		remove	0
1370	1370	23		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1371	1371	13		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1372	1372	12		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1373	1373	14		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0

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Survey Number	Existing Number	DBH[1]	Multi-stem DBH[2]	Common Name	Scientific Name	Condition[3]	Structure[3]	Comments	Not On Property	Treatment	Tree Density Units Retained
1374	1374	14		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1375	1375	12		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1376	1376	25		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1377	1377	18		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1377.1		10		Douglas-fir	*Pseudotsuga menziesii*	Dead	Dead			remove	0
1377.2		21		red alder	*Alnus rubra*	Dead	Dead			remove	0
1378	1378	23		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1379	1379	19		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1380	1380	17		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Bark damage at base		remove	0
1381	1381	24		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1382	1382	19		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1383	1383	24		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Bark damage at base		remove	0
1384	1384	23		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Red ring rot		remove	0
1385	1385	23		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Co-dominant stem, other stem previously removed, blackberry covering base		remove	0
1386	1386	15		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1387	1387	19, 18	26	Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant stem with included bark at base		remove	0
1390	1390	23		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1391	1391	26		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1392	1392	12, 12	17	red alder	*Alnus rubra*	Very Poor	Very Poor	Co-dominant stem, one dead stem		remove	0
1393	1393	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1394	1394	30		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1395	1395	26, 13	29	Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1397	1397	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1398	1398	20		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1399	1399	10		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1400	1400	29		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1601	1601	26		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1602	1602	26, 24	35	red alder	*Alnus rubra*	Dead	Dead			remove	0
1602.1		28		red alder	*Alnus rubra*	Dead	Dead			remove	0
1603	1603	23		red alder	*Alnus rubra*	Very Poor	Poor	Tree in heavy decline		remove	0
1604	1604	33		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Over extended limbs, blackberry covering base		remove	0
1605	1605	31		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1606	1606	19		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1607	1607	34		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1608	1608	36		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1609	1609	38		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1610	1610	30		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant top		remove	0
1611	1611	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1612	1612	21		Douglas-fir	*Pseudotsuga menziesii*	Dead	Dead			remove	0
1613	1613	30		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1614	1614	28		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Bark damage at base		remove	0
1615	1615	20		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1616	1616	20		Douglas-fir	*Pseudotsuga menziesii*	Dead	Dead			remove	0
1617	1617	23		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1618	1618	20		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Heavy lean		remove	0
1619	1619	31		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1620	1620	20		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Decay on stem at 15'		remove	0
1621	1621	28		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Decay low on stem at old broken branch		remove	0
1622	1622	13		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1623	1623	23		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1624	1624	29		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1625	1625	31		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant top		remove	0
1626	1626	22		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant stem with included bark		remove	0
1627	1627	39		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1628	1628	30, 14	33	Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Multiple stems, included bark at base		remove	0
1629	1629	31		Douglas-fir	*Pseudotsuga menziesii*	Poor	Fair	Co-dominant stem with included bark, dead top		remove	0
1630	1630	12		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0

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Survey Number	Existing Number	DBH[1]	Multi-stem DBH[2]	Common Name	Scientific Name	Condition[3]	Structure[3]	Comments	Not On Property	Treatment	Tree Density Units Retained
1631	1631	19		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1632	1632	18		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1633	1633	16, 21	26	Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant stem at base		remove	0
1634	1634	25		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1635	1635	12		Douglas-fir	*Pseudotsuga menziesii*	Poor	Poor	Co-dominant top, suppressed tree		remove	0
1636	1636	16		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1637	1637	21		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1638	1638	28		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Low broken branch		remove	0
1639	1639	27		Douglas-fir	*Pseudotsuga menziesii*	Fair	Good	Thin crown		remove	0
1640	1640	23		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1641	1641	25		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1642	1642	23		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1643	1643	29		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1644	1644	31		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant stem with included bark		remove	0
1645	1645	9		sweet cherry	*Prunus avium*	Good	Good			remove	0
1646	1646	14		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Blackberry covering base		remove	0
1647	1647	12		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1648	1648	15		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1649	1649	30		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant stem with included bark		remove	0
1650	1650	17		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1651	1651	32		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1652	1652	17		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1653	1653	21		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1653.1		15, 19	24	Douglas-fir	*Pseudotsuga menziesii*	Dead	Dead			remove	0
1654	1654	20		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1655	1655	12		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Contorted top		remove	0
1656	1656	29		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1657	1657	14		Douglas-fir	*Pseudotsuga menziesii*	Dead	Dead			remove	0
1658	1658	15		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1659	1659	10		Douglas-fir	*Pseudotsuga menziesii*	Dead	Dead			remove	0
1660	1660	12		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1661	1661	17		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1662	1662	14		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1663	1663	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Decay in stem at 15'		remove	0
1664	1664	22		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1665	1665	14		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1666	1666	25		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1667	1667	30		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Swelling on stem at base	Not On Property	remove	0
1668	1668	25		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1669	1669	14		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1901	1901	34		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Blackberry covering base		remove	0
1910	1910	16		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Broken top		retain	4
1911	1911	8		Oregon ash	*Fraxinus latifolia*	Poor	Very Poor	Dead snag in crown, decay in stem		retain	2
1912	1912	12		Oregon ash	*Fraxinus latifolia*	Very Poor	Very Poor	Broken top		retain	2
1914	1914	20, 23, 28	41	Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Multiple stems with included bark		remove	0
1915	1915	22		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1916	1916	20		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1917	1917	14		Douglas-fir	*Pseudotsuga menziesii*	Very Poor	Very Poor	Dead top, foliage scorch		remove	0
1918	1918	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1919	1919	13		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1920	1920	25, 11	27	Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Multiple stems with included bark at base		remove	0
1921	1921	9		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1922	1922	19		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1923	1923	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1924	1924	21		Douglas-fir	*Pseudotsuga menziesii*	Poor	Poor	Dead top		remove	0
1925	1925	20		Douglas-fir	*Pseudotsuga menziesii*	Poor	Poor	Red ring rot		remove	0
1926	1926	23		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0

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Survey Number	Existing Number	DBH[1]	Multi-stem DBH[2]	Common Name	Scientific Name	Condition[3]	Structure[3]	Comments	Not On Property	Treatment	Tree Density Units Retained
1927	1927	11		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1928	1928	17		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1929	1929	21		Douglas-fir	*Pseudotsuga menziesii*	Dead	Dead			remove	0
1930	1930	14		Douglas-fir	*Pseudotsuga menziesii*	Dead	Dead			remove	0
1932	1932	20		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Poison oak on stem		remove	0
1933	1933	11		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1934	1934	16		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Poison oak on stem, thin crown		remove	0
1935	1935	26		Douglas-fir	*Pseudotsuga menziesii*	Poor	Poor	Poison oak covering stem, thin crown		remove	0
1936	1936	20		Douglas-fir	*Pseudotsuga menziesii*	Very Poor	Very Poor	Poison oak covering stem, tree in decline		remove	0
1937	1937	20		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1938	1938	22		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1939	1939	13		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1940	1940	32		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1941	1941	24		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1942	1942	39		Douglas-fir	*Pseudotsuga menziesii*	Fair	Good	Sloughing bark in areas at base		remove	0
1943	1943	16		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1944	1944	20		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1945	1945	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1946	1946	12		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1947	1947	12		Douglas-fir	*Pseudotsuga menziesii*	Very Poor	Poor	Red ring rot, tree in heavy decline		remove	0
1948	1948	13		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Included bark at base		remove	0
1949	1949	19		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1950	1950	22		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1951	1951	30, 31	43	Douglas-fir	*Pseudotsuga menziesii*	Good	Poor	Co-dominant stem with included bark, heavy lean on west stem		remove	0
1952	1952	25		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1953	1953	21		Douglas-fir	*Pseudotsuga menziesii*	Fair	Good	Thin crown		remove	0
1954	1954	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1954.1		22		red alder	*Alnus rubra*	Dead	Dead	Dead short snag		remove	0
1955	1955	32		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1956	1956	35		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant stem with included bark		remove	0
1957	1957	23		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1958	1958	24		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1959	1959	26		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1960	1960	17		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Blackberry covering base		remove	0
1961	1961	34		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1962	1962	13		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1963	1963	25		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1964	1964	28		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1965	1965	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1966	1966	30		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1967	1967	31		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1968	1968	22		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1968.1		15		Douglas-fir	*Pseudotsuga menziesii*	Dead	Dead			remove	0
1969	1969	20		Douglas-fir	*Pseudotsuga menziesii*	Very Poor	Very Poor	Tree in heavy decline		remove	0
1970	1970	41		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant stem with included bark		remove	0
1971	1971	25		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1972	1972	35		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1972.1	1913	51		Oregon ash	*Fraxinus latifolia*	Fair	Fair	Multiple stems with included bark, over-extended limbs		remove	0
1973	1973	34		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1979	1279	35		Douglas-fir	*Pseudotsuga menziesii*	Poor	Very Poor	Shear plane crack at base, heavy lean		remove	0
1980	1280	14		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1981	1281	22		Douglas-fir	*Pseudotsuga menziesii*	Fair	Poor	Co-dominant stem with included bark		remove	0
1982	1282	22		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1982	1982	36		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1983	1983	23		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1984	1984	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1985	1985	25		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0

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Survey Number	Existing Number	DBH[1]	Multi-stem DBH[2]	Common Name	Scientific Name	Condition[3]	Structure[3]	Comments	Not On Property	Treatment	Tree Density Units Retained
1986	1986	17		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1987	1287	18		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Sap sucker damage at base		remove	0
1987	1987	23		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1988	1988	17		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Co-dominant stem, other stem previously cut, blackberry covering base		remove	0
1988	1288	25		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1989	1289	14		Douglas-fir	*Pseudotsuga menziesii*	Fair	Fair	Thin crown		remove	0
1989	1989	30		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1990	1290	27		Douglas-fir	*Pseudotsuga menziesii*	Fair	Poor	Decay on south side at base		remove	0
1990	1990	33		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1991	1291	22		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1991	1991	31		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1992	1992	11		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1992	1292	24		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1993	1993	27		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1994	1994	23		Douglas-fir	*Pseudotsuga menziesii*	Poor	Poor	Top broken out, co-dominant top		remove	0
1995	1995	39		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1996	1996	19		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1997	1997	9		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Decay at old branches at base		remove	0
1998	1998	20		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
1999	1999	30		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
2000	2000	33		Douglas-fir	*Pseudotsuga menziesii*	Good	Poor	Co-dominant stem with included bark		remove	0
10606	714	19		Engelmann spruce	*Picea engelmannii*	Good	Fair	Co-dominant stem with included bark		remove	0
10608	713	13, 13, 11	21	Engelmann spruce	*Picea engelmannii*	Good	Fair	Multiple stems with included bark		remove	0
10609	712	15, 10	18	Engelmann spruce	*Picea engelmannii*	Fair	Fair	Co-dominant stem with included bark, thin crown		remove	0
11316	1904	40		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Over extended limbs		remove	0
11361	720	16		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
11363	719	35		incense cedar	*Calocedrus decurrens*	Dead	Dead			remove	0
11999	842	33, 20	39	bigleaf maple	*Acer macrophyllum*	Poor	Very Poor	Broken tops, over extended limbs		remove	0
12085	1907	40		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
12086	1905	39		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			retain	16
12087	1906	9		Douglas-fir	*Pseudotsuga menziesii*	Fair	Poor	Suppressed tree		retain	2
12214	1903	39		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			retain	16
12215	1902	38		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
12249	722	8, 6, 6, 4, 4	13	English holly	*Ilex aquifolium*	Good	Poor			remove	0
12252	1909	38		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
12253	1908	42		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
12986	12986	29		Douglas-fir	*Pseudotsuga menziesii*				Not On Property	remove	0
15601	1980	35		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Over-extended limbs		remove	0
15603	1981	32		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Over-extended limbs, blackberry covering base		remove	0
15606	721	33		incense cedar	*Calocedrus decurrens*	Dead	Dead			remove	0
15631	1976	51		Douglas-fir	*Pseudotsuga menziesii*	Poor	Poor	Thin crown, over-extended limbs, dead branches in crown		remove	0
15631.1	1974	33		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
15631.2	1975	37		Douglas-fir	*Pseudotsuga menziesii*	Good	Good			remove	0
15632	1977	43, 31	53	Douglas-fir	*Pseudotsuga menziesii*	Very poor	Very poor	Larger stem is dead, other stem is in decline		remove	0
15633	1978	37		Douglas-fir	*Pseudotsuga menziesii*	Dead	Dead			remove	0
15634	1979	33		Douglas-fir	*Pseudotsuga menziesii*	Dead	Dead			remove	0
15634.1		46		Douglas-fir	*Pseudotsuga menziesii*	Good	Fair	Over-extended limbs		remove	0
15634.2		9		sweet cherry	*Prunus avium*	Poor	Poor	Thin crown, blackberry covering base		remove	0
15988	715	19		Engelmann spruce	*Picea engelmannii*	Good	Fair	Co-dominant stem with included bark, heavy lean		remove	0
15990	716	13, 16	20	Engelmann spruce	*Picea engelmannii*	Good	Fair	Co-dominant stem with included bark		remove	0
15991	171	15		Engelmann spruce	*Picea engelmannii*	Poor	Fair	Over-extended limb, thin crown		remove	0
15992	718	28		Norway spruce	*Picea abies*	Good	Good			remove	0
										Totals	**1068**

[1]**DBH** is the trunk diameter in inches, measured at 4.5 feet above the soil line. The DBH measurement is rounded down to the nearest whole number.

[2]**Multi-stem DBH** is the DBH for the combined trunks of a tree with multiple stems attached 6 inches above the soil line. The DBH for the tree is found by taking the square root of the sum of all squared stem DBHs rounding to the nearest whole number.

[3]**Condition and Structure** ratings: Dead, Very Poor, Poor, Fair, and Good.

Attachment 4
Tree Protection Recommendations

Before Construction Begins

1. Notify all contractors of tree protection procedures. For successful tree protection on a construction site, all contractors must know and understand the goals of tree protection.
    a. Hold a tree protection meeting with all contractors to explain the goals of tree protection.
    c. Have all contractors sign memoranda of understanding regarding the goals of tree protection. The memoranda should include a penalty for violating the tree protection plan. The penalty should equal the resulting fines issued by the local jurisdiction plus the appraised value of the tree(s) within the violated tree protection zone per the current Trunk Formula Method as outlined in the current edition of the ***Guide for Plant Appraisal*** by the Council of Tree & Landscape Appraisers. The penalty should be paid to the owner of the property.
2. Fencing
    a. Tree protection fencing may be set as shown in Attachment 2.
    b. The fencing should be put in place before the ground is cleared to protect the trees and the soil around the trees from disturbances.
    c. Fencing should be established by the project arborist based on the needs of the trees to be protected and to facilitate construction.
    d. Fencing should consist of 4-foot high steel fencing on concrete blocks or 4-foot metal fencing secured to the ground with 6-foot metal posts to prevent it from being moved by contractors, sagging, or falling down.
    e. Fencing should remain in the position that is established by the project arborist and not be moved without approval from the project arborist until final project approval.
3. Signage
    a. All tree protection fencing should have signage as follows so that all contractors understand the purpose of the fencing:

> **TREE PROTECTION ZONE**
>
> **DO NOT REMOVE OR ADJUST THE LOCATION OF THIS TREE PROTECTION FENCING**
> **UNAUTHORIZED ENCROACHMENT MAY RESULT IN FINES**
>
> Please contact the project arborist if alterations to the location of the tree protection fencing are necessary.
>
> Todd Prager, Project Arborist, Teragan & Associates, 971-295-4835

    b. Signage should be placed every 75-feet or less.

During Construction

1. Protection Guidelines Within the Tree Protection Zones:
    a. No new buildings; grade change or cut and fill, during or after construction; new impervious surfaces; or utility or drainage field placement should be allowed within the tree protection zones.
    b. No traffic should be allowed within the tree protection zones. This includes but is not limited to vehicle, heavy equipment, or even repeated foot traffic.
    c. No storage of materials including but not limiting to soil, construction material, or waste from the site should be permitted within the tree protection zones. Waste includes but is not limited to concrete wash out, gasoline, diesel, paint, cleaner, thinners, etc.
    d. Construction trailers should not be parked/placed within the tree protection zones.
    e. No vehicles should be allowed to park within the tree protection zones.
    f. No other activities should be allowed that will cause soil compaction within the tree protection zones.
2. The trees should be protected from any cutting, skinning or breaking of branches, trunks or woody roots.
3. The project arborist should be notified prior to the cutting of woody roots from trees that are to be retained to evaluate and oversee the proper cutting of roots with sharp cutting tools. Cut roots should be immediately covered with soil or mulch to prevent them from drying out.
4. Trees that have woody roots cut should be provided supplemental water during the summer months.
5. Any necessary passage of utilities through the tree protection zones should be by means of tunneling under woody roots by hand digging or boring with oversight by the project arborist.
6. Any deviation from the recommendations in this section should receive prior approval from the project arborist.

After Construction

1. Carefully landscape the areas within the tree protection zones. Do not allow trenching for irrigation or other utilities within the tree protection zones.
2. Carefully plant new plants within the tree protection zones. Avoid cutting the woody roots of trees that are retained.
3. Do not install permanent irrigation within the tree protection zones unless it is drip irrigation to support a specific planting or the irrigation is approved by the project arborist.
4. Provide adequate drainage within the tree protection zones and do not alter soil hydrology significantly from existing conditions for the trees to be retained.
5. Provide for the ongoing inspection and treatment of insect and disease populations that are capable of damaging the retained trees and plants.
6. The retained trees may need to be fertilized if recommended by the project arborist.
7. Any deviation from the recommendations in this section should receive prior approval from the project arborist.

Attachment 5
Assumptions and Limiting Conditions

1. Any legal description provided to the consultant is assumed to be correct. The information provided by Panattoni Development Company and their consultants was the basis of the information provided in this report.
2. It is assumed that this property is not in violation of any codes, statutes, ordinances, or other governmental regulations.
3. The consultant is not responsible for information gathered from others involved in various activities pertaining to this project. Care has been taken to obtain information from reliable sources.
4. Loss or alteration of any part of this delivered report invalidates the entire report.
5. Drawings and information contained in this report may not be to scale and are intended to be used as display points of reference only.
6. The consultant's role is only to make recommendations. Inaction on the part of those receiving the report is not the responsibility of the consultant.
7. The purpose of this report is to:
    - Provide an assessment of the existing trees;
    - Provide recommendations for tree removal and retention based on the proposed site improvements; and
    - Provide protection recommendations for the trees to be retained.

WETLAND AND FISH AND WILDLIFE HABITAT ASSESSMENT REPORT

CAMAS BUSINESS CENTER

OCTOBER 2021

Soundview Consultants
Environmental Assessment
Planning + Land Use Solutions

WETLAND AND FISH AND WILDLIFE HABITAT ASSESSMENT REPORT

CAMAS BUSINESS CENTER

OCTOBER 8, 2021

PROJECT LOCATION

4707 & 4723 NORTHWEST LAKE ROAD
CAMAS, WASHINGTON 98607

PREPARED FOR

PANATTONI DEVELOPMENT COMPANY, INC.
1821 DOCK STREET, SUITE 100
TACOMA, WASHINGTON 98402

PREPARED BY

SOUNDVIEW CONSULTANTS LLC
2907 HARBORVIEW DRIVE
GIG HARBOR, WASHINGTON 98335
(253) 514-8952

Soundview Consultants
Environmental Assessment
Planning + Land Use Solutions

Executive Summary

Soundview Consultants LLC (SVC) has been assisting Panattoni Development Company Inc. (Applicant) with a wetland and fish and wildlife habitat assessment and environmental planning to support the proposed Camas Business Center industrial development on a 74.06-acre site located at 4707 & 4723 Northwest Lake Road in the City of Camas, Washington. The subject property consists of two tax parcels situated in the Southeast ¼ of Section 29, Township 02 North, Range 03 East, W.M (Clark County Tax Parcel Numbers 176155000, and 176170000).

SVC performed an investigation and assessment of potentially regulated wetlands, streams, and other fish and wildlife habitat conservation areas on the subject property and publicly accessible areas within 300 feet of the site in December 2020, with follow-up investigations in April 2021. Using current methodology, SVC identified four potentially regulated wetlands (Wetlands A - D) on the subject property, and one potentially regulated stream (Offsite Stream Z) offsite to the west of the subject property. Wetland A is classified as Category III wetland with 4 total habitat points, and subject to a standard 80-foot buffer based on proposed high intensity land use per Camas Municipal Code (CMC) 16.53.040.B.2 Table 16.53.040-1. Wetland B is classified as a Category III wetland with 5 total habitat points and subject to a standard 120-foot buffer per CMC 16.53.040.B.2 Table 16.53.040-3. Wetland C is classified as a Category IV wetland and is likely exempt from buffer regulations per Camas Municipal Code (CMC) 16.53.010.C.2.a due to its isolated location in the landscape and small size (less than 4,350 square feet). Wetland D is classified as a Category III wetland with 6 total habitat points and subject to a standard 135-foot buffer per CMC 16.53.040.B.2 Table 16.53.040-3. Offsite Stream Z is likely a Type F stream with no known salmonid presence in accordance with Washington Department of Fish and Wildlife (WDFW) SalmonScape data and subject to a standard 75-foot buffer per CMC 16.61.040.D. The stream buffer is not anticiapted to project onto the subject property. No other potentially regulated wetlands or fish and wildlife habitat conservation areas were identified within 300 feet of the subject property.

The Applicant proposes industrial development of the subject property to create a business center that includes three buildings, internal access roads, parking and loading areas, utilities, and stormwater facilities. Necessary critical area impacts and mitigation requirements are outlined in a wetland mitigation plan prepared under separate cover. The table below summarizes the identified wetlands and streams and summarizes the potential regulatory status by local, state, and federal agencies.

Feature Name	Size/Length Onsite	Category/ Type[1]	Regulated Under CMC 16.53 & 16.61	Regulated Under RCW 90.48	Regulated Under Clean Water Act
Wetland A	56,558 sf	III	Yes	Yes	Likely
Wetland B	32,343 sf	III	Yes	Yes	Likely
Wetland C	3,167 sf	IV	No - Exempt	Yes	Not Likely
Wetland D	9,074 sf	III	Yes	Yes	Assumed
Offsite Stream Z	N/A (Offsite)	F	Yes	Yes	Likely

1. Wetlands classified according to Washington State Department of Ecology (WSDOE) wetland rating system for western Washington (Hruby, 2014); streams classified according Washington Department of Natural Resources (DNR) Water Typing System and CMC 16.61.040.

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Appendix A — Methods and Tools
Appendix B — Background Information
Appendix C — Existing Conditions Map
Appendix D — Data Forms
Appendix E — Wetland Rating Forms
Appendix F — Wetland Rating Maps
Appendix G – Qualifications

Chapter 1. Introduction

Soundview Consultants LLC (SVC) has been assisting Panattoni Development Company Inc. (Applicant) with a wetland and fish and wildlife habitat assessment and environmental planning to support the proposed Camas Business Center industrial development on a 74.06-acre site located at 4707 & 4723 Northwest Lake Road in the City of Camas, Washington. The subject property consists of two tax parcels situated in the Southeast ¼ of Section 29, Township 02 North, Range 03 East, W.M (Clark County Tax Parcel Numbers 176155000, and 176170000).

The purpose of the wetland and fish and wildlife habitat assessment report is to identify the presence of potentially regulated wetlands and fish and wildlife habitat conservation areas that may be found on or near the subject property.

This report provides conclusions and recommendations regarding:

- Site description and area of assessment;
- Background research and identification of potential critical areas within the vicinity of the site;
- Identification and assessment of potentially regulated wetlands and streams;
- Existing site map detailing identified wetlands and offsite stream; and
- Supplemental information necessary for local, state, and federal regulatory review.

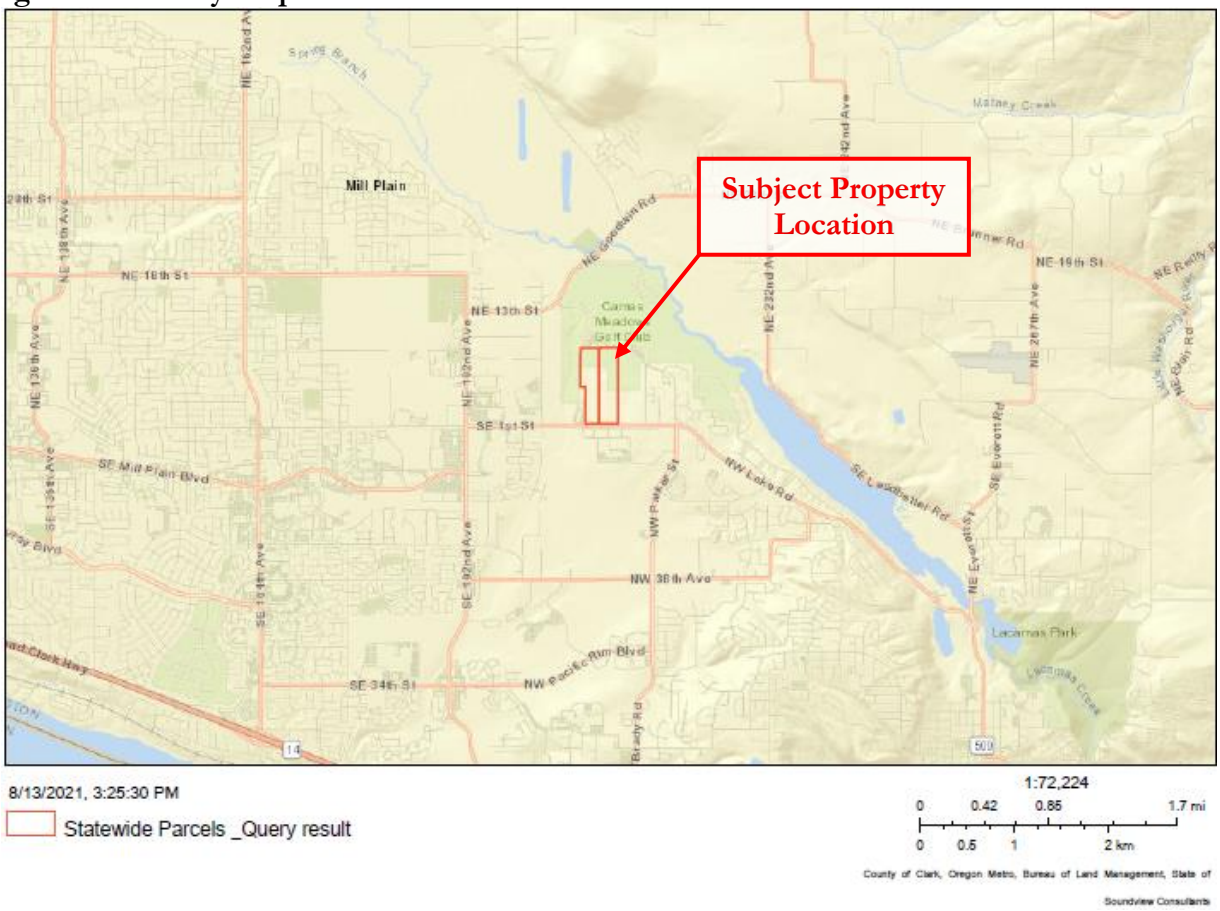
Chapter 2. Property Location

2.1 Proposed Location

The subject property is located at located at 4707 & 4723 Northwest Lake Road in the City of Camas, Washington. The subject property consists of two tax parcels situated in the Southeast ¼ of Section 29, Township 02 North, Range 03 East, W.M (Clark County Tax Parcel Numbers 176155000, and 176170000).

To access the subject property, heading southbound on Interstate-5 from the Ridgefield area, keep right at the fork to take the exit for Interstate 205 S toward Salem. After 10.1 miles, use the right two lanes to take exit 27 for Washington-14 East towards Camas. Continue for 4.3 miles, then take exit 10 for Southeast 192nd Avenue. Turn left on Southeast 192nd Avenue then right on Southeast Brady Road. At the traffic circle in 0.1 mile, take the first exit and stay on Southeast Brady Road. Follow Southeast Brady Road for 1.6 miles where it becomes Northwest Parker Street. Continue for 1.6 miles, and then turn left on Northwest Lake Road, where the property will be located on the right-hand side after 0.5 miles.

Figure 1. Vicinity Map.



2.2 Proposed Project

The Applicant proposes industrial development of the subject property to create a business center that includes three buildings, internal access roads, parking and loading areas, utilities, and stormwater facilities. Necessary critical area impacts and mitigation requirements are outlined in a wetland mitigation plan prepared under separate cover.

Chapter 3. Methods

SVC investigated, assessed, and/or delineated potentially regulated wetlands, streams and other fish and wildlife habitat on the subject property in December 2020 and April 2021. All determinations were made using observable vegetation, hydrology, and soils in conjunction with data from the U.S. Geological Survey (USGS) topographic maps, National Resource Conservation Service (NRCS) soil survey, U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI), Washington State Department of Natural Resources (DNR) water typing system, Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) and SalmonScape mapping tools, Clark County GIS, and various orthophotographic resources. Appendix A contains further details for the methods and tools used to prepare this report.

Wetland boundaries were determined using the routine approach described in the U.S. Army Corps of Engineers (USACE) *Wetlands Delineation Manual* (Environmental Laboratory, 1987) and modified according to the guidelines established in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0) (USACE, 2010) and *Field Indicators of Hydric Soils in the United States* (NRCS, 2018). Qualified wetland scientists marked boundaries of wetlands with orange surveyor's flagging labeled alpha-numerically and tied to 3-foot lath or vegetation along the wetland boundary. Pink surveyor's flagging was labeled alpha-numerically and tied to 3-foot lath or vegetation at formal sampling locations (DP-1 through DP-21) to mark the points where detailed data was collected. Additional tests pits were excavated at regular intervals inside and outside of the wetland boundaries to further confirm the delineation.

SVC classified all wetlands using both the hydrogeomorphic (Brinson, 1993) and Cowardin (Cowardin, 1979) classification systems. Following classification and assessment, WSDOE-trained scientists rated and categorized all wetlands using the *Washington State Wetlands Rating System for Western Washington* (Hruby, 2014) and the definitions established in Camas Municipal Code (CMC) 16.53.020.

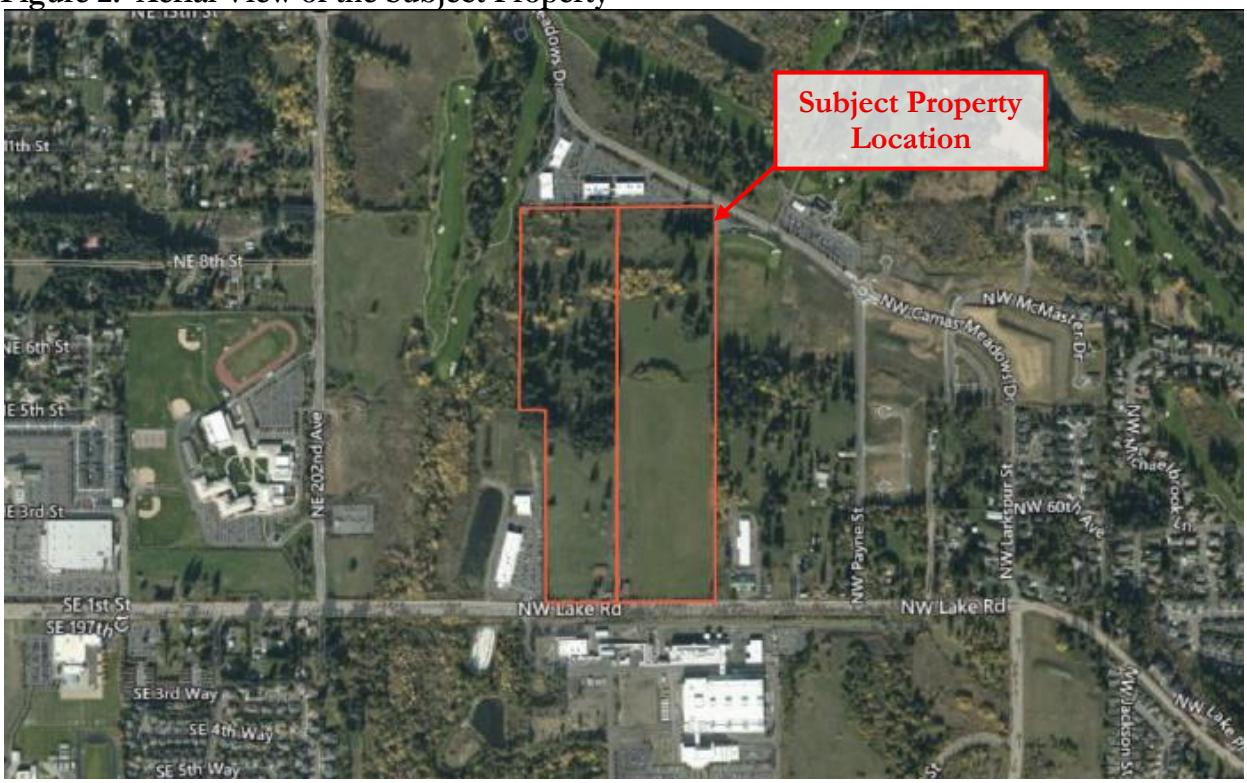
The fish and wildlife habitat assessment was conducted during the same site visit by qualified fish and wildlife biologists. The experienced biologists made visual observations using stationary and walking survey methods for both aquatic and upland habitats noting any special habitat features or signs of fish and wildlife activity.

Chapter 4. Existing Conditions

4.1 Landscape Setting

The subject property is located in a mixed light-commercial and industrial setting in the City of Camas. The parcels are undeveloped and sparsely forested, and currently used as grazing land for cattle (Figure 2). A single-family residence and associated infrastructure including a driveway, detached garage, and equipment storage shed/barn is located on the southern portion of the subject property. The site is bounded by commercial buildings to the north, undeveloped land and commercial buildings to the east, Northwest Lake Road to the south, and a golf course and commercial properties to the west. Topography onsite is generally flat with a slight downwards slope from to south to north. Elevation ranges from approximately 295 feet above mean sea level (amsl) on the southern portion of the site to approximately 244 feet amsl on the northern portion of the site. A topographic map is provided in Appendix B1. The subject property is located within Water Resource Inventory Area (WRIA) 28 – Salmon-Washougal.

Figure 2. Aerial View of the Subject Property



4.2 Soils

The NRCS Soil Survey of Clark County, Washington identifies four soil series on the subject property: Cove silty clay loam, thin solum, 0 to 3 percent (CwA), Hesson clay loam, 0 to 8 percent slopes (HcB), Hesson clay loam, 8 to 20 percent slopes (HcD), and Powell silt loam, 0 to 8 percent slopes (PoB). A soil map is provided in Appendix B2. Below is a detailed description of each soil series.

Cove silty clay loam, thin solum, 0 to 3 percent (CwA)
According to the survey, Cove silty clay loam, thin solum, 0 to 3 percent (CwA) is part of the Cove series of soils mapped by the NRCS in Clark County. The Cove series consists of deep, very poorly drained soils that were formed in water-laid deposits in old lakes and ponds. The CwA soils occur in low, wet basins and depressions on terraces in the central part of the county. A typical soil profile is a silty clay loam for the first 10 inches of depth and is a very dark grayish brown. From 10 to 14 inches, the soil is a dark-gray silty loam. Immediately below, is an extremely firm, black clay layer about 7 inches thick. The underlying material to a depth of about 60 inches is and olive-colored silt laom. Cove silty clay loam, thin solum, 0 to 3 percent slopes, is listed as hydric on the Clark County Hydric Soils List (NRCS, N.d.).

Hesson clay loam, 0 to 8 percent slopes (HcB)
According to the survey, Hesson clay loam, 0 to 8 percent slopes (HcB) is part of the Hesson series of soils mapped by the NRCS in Clark County. The Hesson series consists well-drained soils in mostly level to gently rolling terrain. Parent material is deeply weathered, old alluvium that consists of varying amounts of gravel. Annual precipitation typically varies between 50 and 60 inches. In a typical profile, the surface layer is a dark reddish-brown clay loam about 4 inches thick. Below this layer is a friable, dark reddish-brown clay loam about 10 inches thick. A reddish-brown clay to a depth of about 91 inches. The Hesson clay loam, 0 to 8 percent slopes (HcB) is listed as non-hydric on the Clark County Hydric Soils List (NRCS, N.d.).

Hesson clay loam, 8 to 20 percent slopes (HcD)
According to the survey, this soil is similar to the Hesson clay loam 0 to 8 percent except the surface layer is generally, 1 to 2 inches thinner, and up to 4 inches thinner where erosion has been active. The Hesson clay loam, 8 to 20 percent slopes (HcD) is listed as non-hydric on the Clark County Hydric Soils List (NRCS, N.d.).

Powell silt loam, 0 to 8 percent slopes (PoB)
According to the survey, the Powell series is a moderately, well-drained, medium textured soil found in rolling terrains. The annual precipitation is typically around 50 inches. Powell soils are used for row crops, hay production, pasture and timber. The Powell silt loam, 0 to 8 percent slopes (PoB) surface layer is dark brown silt loam to a depth of about 17 inches. Below the surface layer is a friable, mottled, grayish-brown silt loam about 6 inches thick. The following layer, to a depth of approximately 22 inches is a dark yellowish-brown silt loam that is firm, and mottled brown heavy silt loam in the lower part. Below this layer to a depth of approximately 63 inches is a firm, mottled, dark-brown heavy silt loam. The Powell silt loam, 0 to 8 percent slopes (PoW) is listed as non-hydric on the Clark County Hydric Soils List (NRCS, N.d.)

4.3 Vegetation

Vegetation on the subject property consists of an actively grazed pasture with partially forested areas on the west and northern portions of the property. The grazed areas on the property exhibited evidence of disturbance and heavily compacted soils from cattle activity. Vegetation in these areas consisted of common pasture grasses including tall fescue (*Schedonorus arundinaceus*), common velvetgrass (*Holcus lanatus*), orchard grass (*Dactylis glomerata*), Kentucky bluegrass (*Poa pratensis*), and soft rush (*Juncus effusus*). The forested portion of the site is generally dominated by a canopy of Oregon ash (*Fraxinus latifolia*), with smaller amounts of Douglas fir (*Psuedotsuga menziesii*), oneseed hawthorn (*Crataegus monogyna*), and hardhack (*Spiraea douglasii*). Non-native, invasive species were prevalent

throughout the site, including Himalayan blackberry (*Rubus armeniacus*) (particularly in the north and northwest portions of the property), reed canarygrass (*Phalaris arundinacea*), and bird's-foot trefoil (*Lotus corniculatus*).

4.4 Wetland and Stream Inventories and Priority Habitats and Species

The USFWS NWI map (Appendix B3), WDFW PHS Map (Appendix B4), and Clark County Stream and Wetland Inventory (Appendix B5) do not identify any potentially regulated wetlands, streams, or priority habitats or species on the subject property. The Clark County Stream and Wetland Inventory map and the USFWS NWI map identify potential wetlands offsite within 300 feet to the west of the subject property, associated with a potential offsite stream identified by Clark County and DNR (Appendix B6). DNR classifies the offsite stream as a Type F (fish-bearing) stream. The WDFW SalmonScape map (Appendix B7) does not identify potential salmonid presence within the offsite stream, or within 300 feet of the site. The WDFW PHS map identifies potential caves or cave-rich areas within the township, but not necessarily on the subject property. No other potential wetlands, streams, or other priority habitats or species are documented on or within 300 feet of the subject property.

4.6 Precipitation

Precipitation data was obtained from the National Oceanic and Atmospheric Administration (NOAA) weather station at Portland International Airport in order to obtain percent of normal precipitation during and preceding the investigation. A summary of data collected is provided in Table 1.

Table 1. Precipitation Summary[1].

Date	Day of	Day Before	1 Week Prior	2 Weeks Prior	30 Days Prior (Observed/Normal)	Year to Date (Observed/Normal)[2]	Percent of Normal (Year to Date[2])
12/21/2020	0.33	1.43	2.80	3.96	4.99/5.98	10.80/12.89	84
04/06/2021	0.00	0.00	0.00	0.33	1.37/3.82	24.19/27.99	86
04/07/2021	0.00	0.00	0.00	0.33	1.12/3.79	24.19/28.09	86

1. Precipitation levels provided in inches. Data obtained from NOAA (http://w2.weather.gov/climate/xmacis.php?wfo=pqr) for Sea-Tac airport.
2. Year-to-Date precipitation is for the water year from the preceding October 1st to the onsite date.

Precipitation data during the December 21, 2020 site investigation were within the statistical normal range for the prior 30 days and for the year-to-date (approximately 84 percent of normal). This investigation followed a heavy storm event where 1.43 inches of precipitation accumulation was reported the previous day, and 1.76 inches reported in the prior 24-48 hours. Precipitation data for the April 6 and 7, 2021 site visits were drier than normal for the prior 30 days though within the statistical normal range for the year-to-date (approximately 86 percent of normal). Precipitation data suggests that conditions were at the lower end of the normal range during the April 2021 delineation work, which was completed during the early growing season. Such conditions were considered in making professional wetland boundary determinations.

Chapter 5. Results

The site investigations on December 21, 2020, and April 6 and 7, 2021 identified and delineated four wetlands (Wetlands A - D) on the subject property and identified one stream (Offsite Stream Z) offsite to the west of the subject property. No other wetlands, streams, or other fish and wildlife habitat conservation areas were identified within 300 feet of the subject property during the site investigations.

5.1 Wetlands

SVC identified and delineated four wetlands (Wetlands A - D) on the subject property. The identified wetlands contained indicators of wetland hydrology, hydric soils, and a predominance of hydrophytic vegetation according to current wetland delineation methodology. The data forms (DP-1 through DP-21), wetland rating forms, and wetland rating maps are provided in Appendices D, E, and F, respectively. Table 2 summarizes the wetlands identified during the site investigations.

Table 2. Wetland Summary

Wetland	Predominant Wetland Classification / Rating				Wetland Size Onsite (sq ft)	Standard Buffer Width (feet)
	Cowardin[1]	HGM[2]	WSDOE[3]	City of Camas[4]		
A	PFOC	Depressional	III	III	56,558	80
B	PFO/EMBC	Slope	III	III	32,343	120
C	PEMB	Slope	IV	IV	3,167	N/A[5]
D	PFO/SS/EMBC	Depressional	III	III	9,074	135

Notes:
1. Cowardin et al. (1979); Federal Geographic Data Committee (2013); class based on vegetation: PFO = Palustrine Forested, PSS = Scrub-Shrub, PEM = Palustrine Emergent. Modifiers for Water Regime: B = Seasonally Saturated, C = Seasonally Flooded.
2. Brinson, M. M. (1993).
3. Current WSDOE rating (Hruby, 2014).
4. Current WSDOE rating system (Hruby, 2014) per CMC 16.53.020.B.
5. Exempt per CMC 16.53.010.C.2.a

5.1.1 Wetland A

Wetland A is 56,558 square feet (1.30 acres) in size and is located on the northern portion of the subject property. Hydrology for Wetland A is provided by direct precipitation, a seasonally high water table, and surface runoff from adjacent uplands. A culvert is located on the west end of the wetland and reduces the storage capacity of the wetland. Wetland vegetation is dominated by an overstory of Oregon ash, with an understory of oneseed hawthorn, hardhack, and shortawn foxtail (*Alopecurus aequalis*). Non-native, invasive species observed in Wetland A include Himalayan blackberry, reed canarygrass, meadow foxtail, and bird's-foot trefoil. Wetland A is a Palustrine Forested, Seasonally Flooded (PFOC) wetland. Wetland A is a Category III depressional wetland with a habitat score of 4 points under current WSDOE wetland rating methodology (Hruby, 2014). Table 3 provides a detailed summary of Wetland A.

5.1.2 Wetland B

Wetland B is 32,343 square feet (0.74 acre) in size and is located on the western portion of the subject property, extending offsite to the west. Hydrology for Wetland B is provided by direct precipitation, a seasonally high-water table, and surface runoff from adjacent uplands. A culvert provides hydraulic connectivity between Wetland A and Wetland B. Wetland vegetation is dominated by an overstory of Oregon ash, with an understory dominated by tall fescue and Kentucky bluegrass, and non-native, invasives Himalayan blackberry, reed canarygrass, and bird's-foot trefoil. Wetland B is a Palustrine Forested/Emergent, Seasonally Flooded/Seasonally Saturated (PFO/EMBC) wetland. Wetland B is a Category III slope wetland with a habitat score of 5 points under current WSDOE wetland rating methodology (Hruby, 2014). Table 4 provides a detailed summary of Wetland B.

5.1.2 Wetland C

Wetland C is 3,167 square feet (0.07 acre) in size and located on the eastern portion of the subject property. Hydrology for Wetland C is provided by direct precipitation, a seasonally high water table, and surface runoff from adjacent uplands. Wetland vegetation is dominated by soft rush, with smaller amounts of common velvetgrass, Kentucky bluegrass, and tall fescue. Wetland C is a Palustrine, Emergent, Seasonally Saturated (PEMB) wetland. Wetland C is a Category IV slope wetland under current WSDOE wetland rating methodology (Hruby, 2014). Table 4 provides a detailed summary of Wetland C.

5.1.2 Wetland D

Wetland D is 9,074 square feet (0.21 acre) in size and located in the northwestern corner of the subject property. Hydrology for Wetland B is provided by direct precipitation, a seasonally high water table, and surface runoff from adjacent uplands. Wetland vegetation is dominated by an overstory of Oregon ash with an understory consisting of hardhack, oneseed hawthorn, soft rush, and fringed willow herb (*Epilobium ciliatum*), as well non-native invasive species including Himalayan blackberry, rambler rose (*Rosa multiflora*), bull thistle (*Cirsium vulgare*), reed canarygrass, tall fescue, and bird's foot trefoil. Wetland D is a Palustrine Forested/Scrub-shrub/Emergent, Seasonally Flooded/Seasonally Saturated (PFO/SS/EMBC) wetland. Wetland D is a Category III depressional wetland with a habitat score of 6 points under current WSDOE wetland rating methodology (Hruby, 2014). Table 4 provides a detailed summary of Wetland D.

Table 3. Wetland A Summary

WETLAND A – INFORMATION SUMMARY			
Location:	Located on the northern portion of the subject property, centrally located.		
		Local Jurisdiction	City of Camas
		WRIA	28 – Salmon-Washougal
		WSDOE Rating (Hruby, 2014)	III
		City of Camas Rating	III
		City of Camas Buffer Width	80
		Wetland Size	56,558 SF
		Cowardin Classification	PFOC
		HGM Classification	Depressional
		Wetland Data Sheet(s)	DP-3W
		Upland Data Sheet(s)	DP-4U
		Boundary Flag color	Orange
Dominant Vegetation	Wetland vegetation is dominated by an overstory of Oregon ash., with an understory comprised of native and non-native shrubs and herbaceous plants including reed canary grass, Himalayan blackberry, shortawn foxtail, hardhack and tall fescue.		
Soils	Hydric soil indicator F3 (Depleted Matrix) was observed.		
Hydrology	Hydrology for Wetland A is provided by direct precipitation, a seasonally high water table, and surface runoff from adjacent wetlands.		
Rationale for Delineation	Wetland boundaries were determined by topographic drop and a transition to a hydrophytic plant community.		
Rationale for Local Rating	Wetland rating based on the current WSDOE wetland rating system for Western Washington (Hruby, 2014) per CMC 16.53.020.B.		
Wetland Functions Summary			
Water Quality	Wetland A has moderate potential to improve water quality due to the presence of an outlet, seasonal ponding in more than half the wetland unit, and being located in an area of land use that generates pollutants. However, these functions are limited by the small amount of persistent, ungrazed plants throughout the wetland unit and lack of stormwater entering the wetland. The value of any water quality improvement functions within the wetland is increased as the wetland is located in a sub-basin with 303(d) listed waters and an area identified as important for maintaining water quality. This wetland scores 7 out of 9 points for water quality functions.		
Hydrologic	This wetland has moderate potential to reduce flooding and erosion due to moderate storage potential during wet periods, the moderate contribution of storage within the watershed, and the presence of a constricted outlet (culvert) leading to a downgradient wetland. These functions are limited by less the 25% of the contributing basin being covered in intensive human land uses. This wetland scores 6 out of 9 points for hydrologic functions.		
Habitat	Wildlife habitat functions provided by the wetland are considered low and may include small mammal and bird forage and cover. Wetland A has only one Cowardin class and hydroperiod, and is relatively low in species diversity. However, Wetland A contains limited priority and special habitat features (snags and logs). The surrounding landscape has a limited potential to support habitat connectivity between the wetland and other potential habitat due to existing habitat fragmentation and surrounding land uses. Wetland A scores 4 out of 9 points for habitat function.		
Buffer Condition	The buffer for Wetland A is considered degraded as it contains extensive amounts of non-native invasive, Himalayan blackberry.		

Table 4. Wetland B Summary

WETLAND B – INFORMATION SUMMARY			
Location:	Located on the western portion of the subject property, extending offsite to the west.		
		Local Jurisdiction	City of Camas
		WRIA	28 – Salmon-Washougal
		WSDOE Rating (Hruby, 2014)	III
		City of Camas Rating	III
		City of Camas Buffer Width	120
		Wetland Size	32,343 SF
		Cowardin Classification	PFO/EMBC
		HGM Classification	Slope
		Wetland Data Sheet(s)	DP-5W
		Upland Data Sheet(s)	DP-4U and DP-15U
		Boundary Flag color	Orange
Dominant Vegetation	Wetland vegetation is dominated by an overstory of Oregon ash, with an understory dominated by tall fescue and Kentucky bluegrass, and non-native, invasives Himalayan blackberry, reed canarygrass, and bird's-foot trefoil.		
Soils	Hydric soil indicator F3 (Depleted Matrix) was observed.		
Hydrology	Hydrology for Wetland B is provided by direct precipitation, a seasonally high water table, and surface runoff from adjacent wetlands.		
Rationale for Delineation	Wetland boundaries were determined by a transition to a hydrophytic plant community and hydric soils.		
Rationale for Local Rating	Wetland rating based on the current WSDOE wetland rating system for Western Washington (Hruby, 2014) per CMC 16.53.020.B.		
Wetland Functions Summary			
Water Quality	Wetland B has some potential to improve water quality due to relatively low slope grade of the wetland unit, surrounding land uses that generate pollutants and being located in a sub-basin with 303(d) listed waters and an area identified as important for maintaining water quality. However, the wetland lacks the appropriate types and coverage of plants needed to trap sediments and pollutants. This wetland scores 6 out of 9 points for water quality function.		
Hydrologic	This wetland has some potential to reduce flooding and erosion due to being located in an area that generates excess surface runoff and surface flooding problems down-gradient. However, these functions are limited by the lack of dense, uncut, rigid plants in the wetland unit required to reduce surface water velocities. This wetland scores 5 out of 9 points for hydrologic function.		
Habitat	Wildlife habitat functions provided by the wetland are considered low and may include small mammal and bird forage and cover. Wetland B contains some plant diversity with two Cowardin classes, two hydroperiods, and low interspersion of habitat. The surrounding landscape has a low potential to support habitat connectivity between the wetland and other potential habitat due to existing habitat fragmentation and surrounding high intensity land uses. Wetland B scores 5 out of 9 points for habitat function.		
Buffer Condition	The offsite buffer for Wetland A is considered degraded as it contains extensive amounts of non-native invasive, Himalayan blackberry.		

Table 5. Wetland C Summary

<table>
<tr><th colspan="3">WETLAND C – INFORMATION SUMMARY</th></tr>
<tr><td>Location:</td><td colspan="2">Located on the eastern boundary of the subject property.</td></tr>
<tr><td colspan="2" rowspan="10"> </td><td>Local Jurisdiction</td><td>City of Camas</td></tr>
<tr><td>WRIA</td><td>28 – Salmon-Washougal</td></tr>
<tr><td>WSDOE Rating (Hruby, 2014)</td><td>IV</td></tr>
<tr><td>Clark County Rating</td><td>IV</td></tr>
<tr><td>Clark County Buffer Width</td><td>N/A</td></tr>
<tr><td>Wetland Size</td><td>3,167 SF</td></tr>
<tr><td>Cowardin Classification</td><td>PEMB</td></tr>
<tr><td>HGM Classification</td><td>Slope</td></tr>
<tr><td>Wetland Data Sheet(s)</td><td>DP-10W</td></tr>
<tr><td>Upland Data Sheet(s)</td><td>DP-11U</td></tr>
<tr><td>Dominant Vegetation</td><td colspan="2">Wetland vegetation is dominated by soft rush, with smaller amounts of common velvetgrass, Kentucky bluegrass, and tall fescue.</td></tr>
<tr><td>Soils</td><td colspan="2">Hydric soil indicator F6 (Redox Dark Surface) was observed.</td></tr>
<tr><td>Hydrology</td><td colspan="2">Hydrology for Wetland C is provided by direct precipitation, a seasonally high water table, and surface runoff from adjacent wetlands.</td></tr>
<tr><td>Rationale for Delineation</td><td colspan="2">Wetland boundaries were determined by a transition to hydric soils and a hydrophytic plant community.</td></tr>
<tr><td>Rationale for Local Rating</td><td colspan="2">Wetland rating based on the current WSDOE wetland rating system for Western Washington (Hruby, 2014) per CMC 16.53.020.B.</td></tr>
<tr><th colspan="3">Wetland Functions Summary</th></tr>
<tr><td>Water Quality</td><td colspan="2">Wetland C has some potential to improve water quality due to the relatively low slope grade of the wetland and being located in an area with surrounding land uses that generate pollutants. However, the wetland lacks the appropriate types and coverage of plants needed to trap sediments and pollutants. The value of any water quality improvement functions within the wetland is increased as the wetland is located in a sub-basin with 303(d) listed waters and in area identified as important for maintaining water quality. This wetland scores 6 out of 9 points for water quality functions.</td></tr>
<tr><td>Hydrologic</td><td colspan="2">This wetland has some potential to reduce flooding and erosion due to potential excess surface runoff entering the wetland, however, these functions are limited due to the lack of dense, uncut, rigid vegetation required to reduce surface water velocities. This wetland scores 5 out of 9 points for hydrologic functions</td></tr>
<tr><td>Habitat</td><td colspan="2">Wildlife habitat functions provided by the wetland are low and may include small mammal and bird forage and cover. Wetland C contains very little plant diversity with one Cowardin class, one hydroperiod, and no interspersion of habitat. The surrounding landscape has a low potential to support habitat connectivity between the wetland and other potential habitat due to existing habitat fragmentation and surrounding high intensity land uses. Wetland C scores 4 out of 9 points for habitat function</td></tr>
<tr><td>Buffer Condition</td><td colspan="2">The area surrounding Wetland C is considered degraded due to being an actively grazed cattle pasture. Wetland C buffer is likely waived from buffer requirements per CMC 16.53.010.C.2.a.</td></tr>
</table>

Table 5. Wetland D Summary

WETLAND D – INFORMATION SUMMARY			
Location:	Located on the northwest corner of the subject property.		
		Local Jurisdiction	City of Camas
		WRIA	28 – Salmon-Washougal
		WSDOE Rating (Hruby, 2014)	III
		City of Camas Rating	III
		City of Camas Buffer Width	135
		Wetland Size	9,074 SF
		Cowardin Classification	PFO/SS/EMBC
		HGM Classification	Depressional
		Wetland Data Sheet(s)	DP-12W
		Upland Data Sheet(s)	DP-13U
		Boundary Flag color	Orange
Dominant Vegetation	Wetland vegetation is dominated by a canopy of Oregon ash with an understory consisting of hardhack, oneseed hawthorn, soft rush, and fringed willow herb, and non-native invasive species including Himalayan blackberry, rambler rose, bull thistle, reed canarygrass, tall fescue, and bird's foot trefoil.		
Soils	Hydric soil indicators A11 (Depleted Below Dark Surface) and F3 (Depleted Matrix) were observed.		
Hydrology	Hydrology for Wetland D is provided by direct precipitation, a seasonally high water table, and surface runoff from adjacent wetlands.		
Rationale for Delineation	Wetland boundaries were determined by topographic drop and a transition to a hydrophytic plant community.		
Rationale for Local Rating	Wetland rating based on the current WSDOE wetland rating system for Western Washington (Hruby, 2014) per CMC 16.53.020.B.		
Wetland Functions Summary			
Water Quality	Wetland D has moderate potential to improve water quality due to the lack of an outlet, persistent, ungrazed vegetation of more than 50 percent of the areas, and seasonal ponding in greater than half the unit. However, the land use in the area immediately surrounding the wetland does not generate pollutants and stormwater discharge, limiting potential for water quality improvement. The value of any water quality improvement functions within the wetland is increased as the wetland is located in a sub-basin with 303(d) listed waters and an area identified as important for maintain water quality. This wetland scores 7 out of 9 points for water quality functions.		
Hydrologic	This wetland has some potential to reduce flooding and erosion due to the lack of an outlet and moderate storage potential during wet periods. The small size of the wetland relative to the size of the watershed results in lower hydrologic benefit to the surrounding area. The immediate surrounding area generates excessive runoff, stormwater discharge, and intensive human land uses. The hydrologic functions provided onsite are valuable to society. This wetland scores 6 out of 9 points for hydrologic function		
Habitat	Wildlife habitat functions provided by the wetland is moderate and may include small mammal and bird forage and cover. Wetland D contains moderate diversity with three Cowardin classes, two hydroperiods, moderate interspersion of habitat and multiple priority and habitat features. The surrounding landscape has a low potential to support habitat connectivity between the wetland and other potential habitat due to existing habitat fragmentation and surrounding high intensity land uses. Wetland D scores 6 out of 9 points for habitat function.		
Buffer Condition	Wetland D buffer is in fair condition with dominant vegetation including Oregon ash, quaking aspen (*Populus tremuloides*), and Himalayan blackberry.		

5.2 Offsite Stream Z

One stream (Offsite Stream Z) was identified offsite to the west of the subject property. Offsite Stream Z is identified by the DNR water typing map as a Type F (fish habitat) stream. The WDFW SalmonScape inventory does not identify any potential salmonid presence within Offsite Stream Z. SVC was unable to access the offsite stream; however high-resolution LiDAR imagery, topographic maps, and aerial imagery suggest that Offsite Stream Z may be a tributary to Lacamas Creek. Based on the WDFW SalmonScape Inventory and DNR water typing map, Offsite Stream Z is a Type F stream that lacks documented or potential salmonid presence. As such, Offsite Stream Z is classified as a Type F stream (without anadromous salmonids).

5.3 Non-Regulated Farm Pond

An excavated farm pond was identified on the south-central portion of the subject property during the site investigations. The farm pond was located in the middle of an actively grazed cattle pasture and utilized by livestock. The farm pond exhibited sharp edges typical of artificially excavated features rather than natural wetland conditions. The farm pond is slightly elevated relative to the surrounding land suggesting the banks are occasionally built up and reinforced. Topography in this area of the site slopes downgradient from east to west. An elevated dirt road/trail bisects the property in a north south direction and acts as an impoundment of overland storm flows, creating surface water in the farm pond during the rainy season. Therefore, the farm pond was determined to be an artificially and intentionally created feature for use by cattle based on land use, the presence of a road, and geomorphic positioning. Per CMC 16.53.010.C.2.b, *wetlands created from nonwetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, stormwater facilities, farm ponds, and landscape amenities,* shall be exempt from wetland regulations. As such, the farm pond is likely considered a non-regulated feature by the City of Camas.

Chapter 6. Regulatory Considerations

The site investigations in December of 2020 and April of 2021 identified and delineated four wetlands (Wetlands A - D) on the subject property and one stream (Offsite Stream Z) offsite to the west of the subject property. No other wetlands, streams, or other fish and wildlife habitat conservation areas were identified within 300 feet of the subject property during the site investigations.

6.1 Local Critical Areas Buffer Requirements

CMC 16.53.020.B describes wetland categorizations with reference to the *Washington State Wetlands Rating System for Western Washington-Revised – Washington State Department of Ecology Publication No. 04-06-029, published August 2014* (Hruby, 2014). Category IV wetlands are typically more disturbed, smaller, and/or more isolated in the landscape than Category I, II, or III wetlands. Category IV wetlands provide low levels of functions and score less than 16 out of 27 points on the *Revised Washington State Wetland Rating System for Western Washington* (Hruby, 2014). Category III wetlands have generally been disturbed in some ways and are often less diverse or more isolated from other natural resources in the landscape than Category II wetlands. Category III provide moderate levels of functions and score between 16 to 19 points on the *Revised Washington State Wetland Rating System for Western Washington* (Hruby, 2014).

Wetland A is classified as Category III wetland with 4 total habitat points, and subject to a standard 80-foot buffer based on proposed high intensity land use per CMC 16.53.040 Table-3. Wetland B is classified as a Category III wetland with 5 total habitat points and subject to a standard 120-foot buffer based on the proposed high intensity land use. Wetland C is classified as a Category IV wetland and is likely exempt from buffer regulations per CMC 16.53.010.C.2.a. Wetland D is classified as a Category III wetland with 6 total habitat points and subject to a standard 135-foot buffer.

Offsite Stream Z is likely a Type F stream with no known salmonid presence in accordance with Washington Department of Fish and Wildlife (WDFW) SalmonScape data and subject to a standard 75-foot buffer per CMC 16.61.040.D. The stream buffer is not anticipated to project onto the subject property.

6.2 State and Federal Considerations

In a December 2, 2008 memorandum from the Environmental Protection Agency (EPA) and USACE, joint guidance is provided that describes waters that are to be regulated under section 404 of the CWA (USACE, 2008). This memorandum was amended on February 2, 2012 where the EPA and USACE issued a final guidance letter on waters protected by the CWA.

The 2012 guidance describes the following waters where jurisdiction would be asserted: 1) traditional navigable waters, 2) interstate waters, 3) wetlands adjacent to traditional navigable waters, 4) non-navigable tributaries of traditional navigable waters that are relatively permanent meaning they contain water at least seasonally (e.g. typically three months and does not include ephemeral waters), and 5) wetlands that directly abut permanent waters. The regulated waters are those associated with naturally occurring waters and water courses and not artificial waters (i.e. stormwater pond outfalls).

The 2012 memorandum further goes on to describe waters where jurisdiction would likely require further analysis: 1) Tributaries to traditional navigable waters or interstate waters, 2) Wetlands adjacent to jurisdictional tributaries to traditional navigable waters or interstate waters, and 3) Waters that fall under the "other waters" category of the regulations.

In addition, the 2012 guidance identifies thirteen waters or areas where jurisdiction will not be asserted: 1) Wet areas that are not tributaries or open waters and do not meet the agencies regulatory definition of "wetlands", 2) Waters excluded from coverage under the CWA by existing regulations, 3) Waters that lack a "significant nexus: where one is required for a water to be jurisdictional, 4) Artificially irrigated areas that would revert to upland if the irrigation ceased, 5) Artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing, 6) Artificial reflecting pools or swimming pools excavated in uplands, 7) Small ornamental waters created by excavating and/or diking dry land to retain water for primarily aesthetic reasons, and puddles, 8) Water-filled depressions created incidental to construction activity, 9) Groundwater, including groundwater drained through subsurface drainage systems, 10) Erosional features (gullies and rills), 11) Non-wetland swales, 12) Ditches that are excavated wholly in uplands, drain only uplands or non-jurisdictional waters, and have no more than ephemeral flow, and 13) Ditches that do not contribute flow, either directly or through other waterbodies, to a traditional navigable water, interstate water, or territorial sea.

As a tributary to a traditionally navigable water, Offsite Stream Z Creek is likely regulated by USACE as WOTUS. Wetlands A and B likely contribute surface waters to Offsite Stream Z and are likely regulated as an adjacent wetlands. Wetlands C and D are likely non-jurisdictional waters as they do not have surface water connections to Offsite Stream Z, they do not contain direct surface water connection to any traditional navigable water or a tributary to a traditional navigable water, and are also not considered "adjacent" wetlands. However, the project will assume jurisdiction of Wetland D to expedite the review process.

Future industrial development is anticipated to require complete fill of Wetland C. Once an approved jurisdictional determination is obtained from the USACE confirming the non-jurisdictional status of the identified wetland, an Administrative Order will be sought from WSDOE for the required wetland fill.

All identified wetlands (Wetlands A-D) and stream (Offsite Stream Z) are likely to be regulated as waters of the state by WSDOE under RCW 90.48.

Chapter 7. Closure

The findings and conclusions documented in this report have been prepared for specific application to this project. They have been developed in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in the area. Our work was also performed in accordance with the terms and conditions set forth in our proposal. The conclusions and recommendations presented in this report are professional opinions based on an interpretation of information currently available to us and are made within the operation scope, budget, and schedule of this project. No warranty, expressed or implied, is made. In addition, changes in government codes, regulations, or laws may occur. Due to such changes, our observations and conclusions applicable to this project may need to be revised wholly or in part.

All wetland boundaries delineated by SVC are based on conditions present at the time of the site inspection and considered preliminary until the flagged wetland boundaries are validated by the jurisdictional agencies. Validation of the wetland boundaries by the regulating agency provides a certification, usually written, that the wetland boundaries verified are the boundaries that will be regulated by the agencies until a specific date or until the regulations are modified. Only the regulating agencies can provide this certification.

As wetlands are dynamic communities affected by both natural and human activities, changes in wetland and waterbody boundaries may be expected; therefore, wetland delineations cannot remain valid for an indefinite period of time. Local agencies typically recognize the validity of wetland delineations for a period of five years after completion of a wetland delineation report. Development activities on a site five years after the completion of this wetland delineation report may require revision of the wetland delineation. In addition, changes in government codes, regulations, or laws may occur. Due to such changes, our observations and conclusions applicable to this site may need to be revised wholly or in part.

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Appendix A — Methods and Tools

Table A1. Methods and tools used to prepare the report.

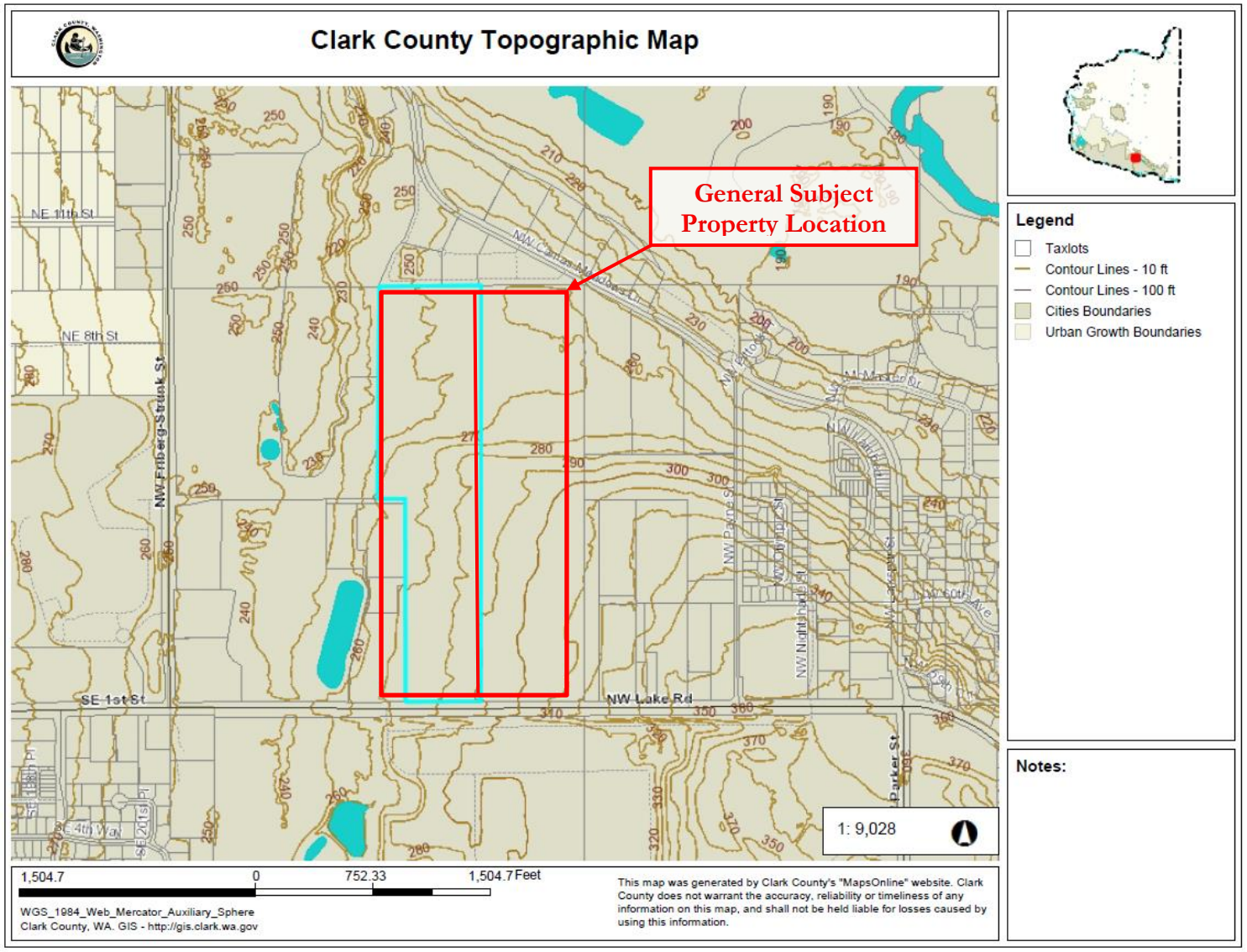
Parameter	Method or Tool	Website	Reference
Wetland Delineation	USACE 1987 Wetland Delineation Manual	http://el.erdc.usace.army.mil/elpubs/pdf/wlman87.pdf	**Environmental Laboratory.** 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, US Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.
	Western Mountains, Valleys, and Coast Region Regional Supplement	http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/west_mt_finalsupp.pdf	**U.S. Army Corps of Engineers.** 2010. *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-10-3. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
Wetland Classification	USFWS / Cowardin Classification System	http://www.fws.gov/wetlands/Documents/Classification-of-Wetlands-and-Deepwater-Habitats-of-the-United-States.pdf https://www.fgdc.gov/standards/projects/wetlands/nvcs-2013	**Cowardin**, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. Government Printing Office, Washington, D.C. **Federal Geographic Data Committee.** 2013. Classification of Wetlands and Deepwater Habitats of the United States. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC.
	Hydrogeomorphic Classification (HGM) System	http://el.erdc.usace.army.mil/wetlands/pdfs/wrpde4.pdf	**Brinson**, M. M. (1993). "A hydrogeomorphic classification for wetlands," Technical Report WRP-DE-4, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
Wetland Rating	2014 Washington State Wetland Rating System	http://www.ecy.wa.gov/biblio/0406025.html	**Hruby, T**. 2014. Washington State wetland rating system for western Washington –Revised. Publication # 04-06-025.
Wetland Indicator Status	2018 National Wetland Plant List	http://wetland-plants.usace.army.mil/	**U.S. Army Corps of Engineers.** 2018. National Wetland Plant List, version 3.4**.**
Plant Names	USDA Plant Database	http://plants.usda.gov/	Website.
Soils Data	NRCS Soil Survey	http://websoilsurvey.nrcs.usda.gov/app/	Website GIS data based upon: **McGee, Dale A.** 1972. Soil Survey of Clark County Area, Washington. Soil Conservation Service United States Department of Agriculture, Soil Conservation Service, in cooperation with the Washington Agricultural Experiment Station. Natural Resource Conservation Service.
	Clark County Hydric Soils List	http://www.wa.nrcs.usda.gov/technical/soils/hydric_lists/hydsoil-wa-653.pdf	**Natural Resources Conservation Service.** 2001. *Hydric Soils List: Clark County Area, Washington*. U.S. Department of Agriculture. Washington D.C.

Parameter	Method or Tool	Website	Reference
Threatened and Endangered Species	Washington Natural Heritage Program	http://data-wadnr.opendata.arcgis.com/datasets/wnhp-current-element-occurrences	**Washington Natural Heritage Program** (Data published 07/19/17). Endangered, threatened, and sensitive plants of Washington. Washington State Department of Natural Resources, Washington Natural Heritage Program, Olympia, WA
	Washington Priority Habitats and Species	http://wdfw.wa.gov/hab/phspage.htm	**Priority Habitats and Species (PHS) Program** Map of priority habitats and species in project vicinity. Washington Department of Fish and Wildlife.
Species of Local Importance	WDFW GIS Data	http://wdfw.wa.gov/mapping/salmonscape/	Website
Report Preparation	Camas Municipal Code (CMC)	https://library.municode.com/wa/camas/codes/code_of_ordinances?nodeId=TIT16EN_CRAR	CMC Title 16 – Environment – Critical Areas

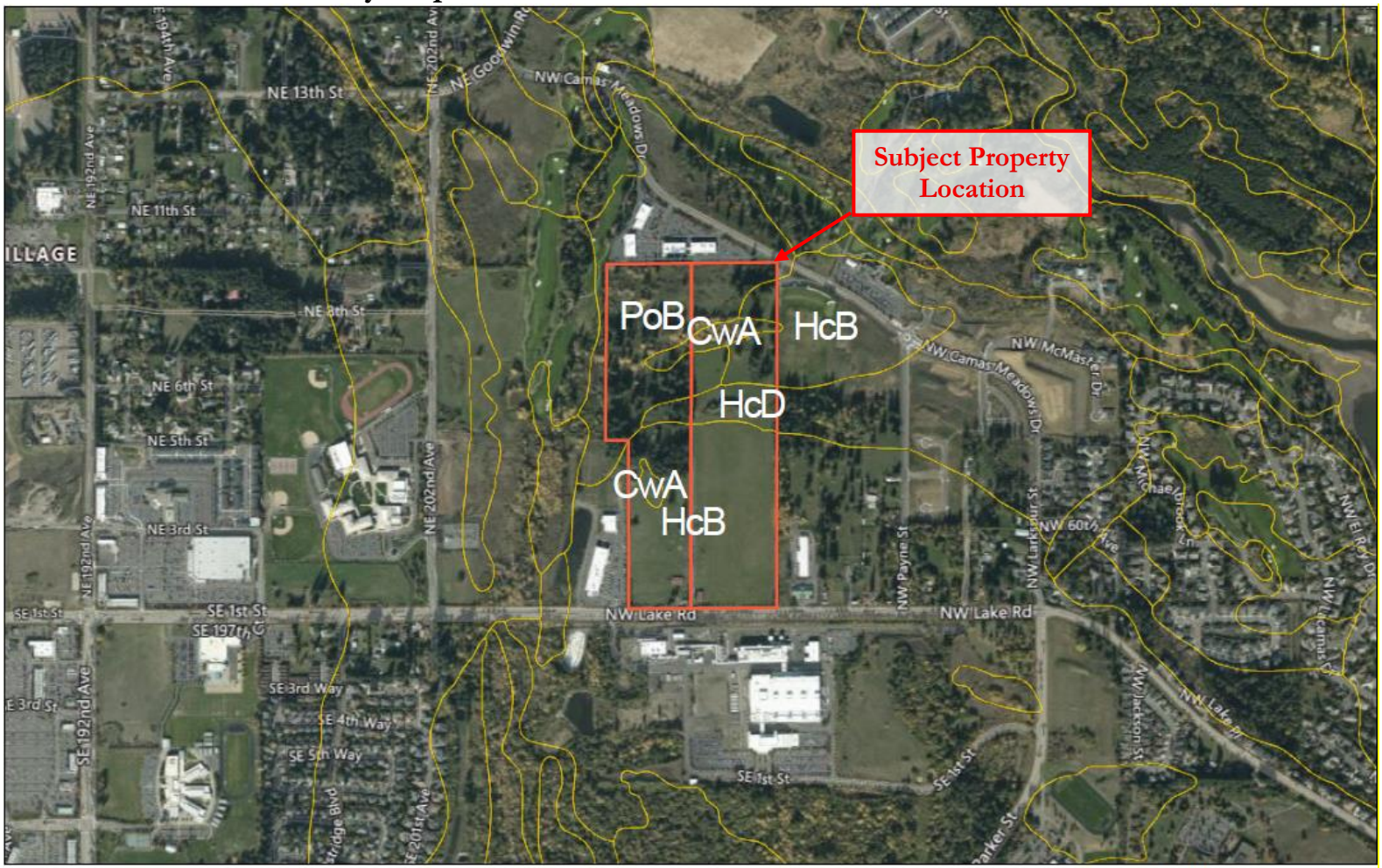
Appendix B — Background Information

This appendix includes a Clark County Topographic map (B1); NRCS Soil Survey map (B2); USFWS NWI map (B3); WDFW PHS map (B4); Clark County Stream and Wetland Inventory map (B5); DNR Stream Typing map (B6); and WDFW SalmonScape map (B7).

Appendix B1. Clark County Topographic Map

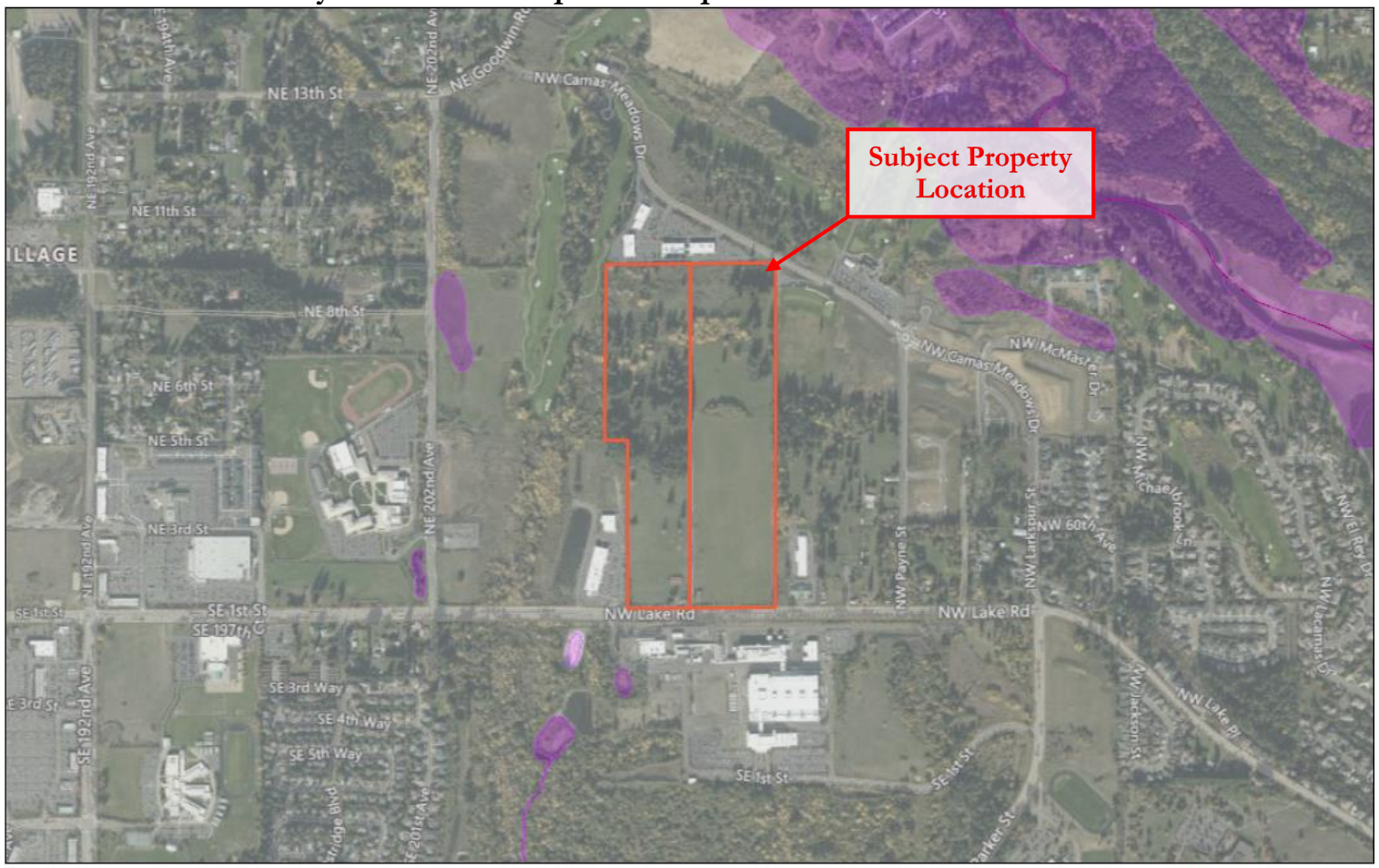


Appendix B2. NRCS Soil Survey Map



Appendix B3. USFWS National Wetland Inventory Map

Appendix B4. WDFW Priority Habitats and Species Map



PHS Species/Habitats Overview:

Occurence Name	Federal Status	State Status	Generalized Location
Freshwater Forested/Shrub Wetland	N/A	N/A	No
Caves Or Cave-rich Areas	N/A	N/A	Yes

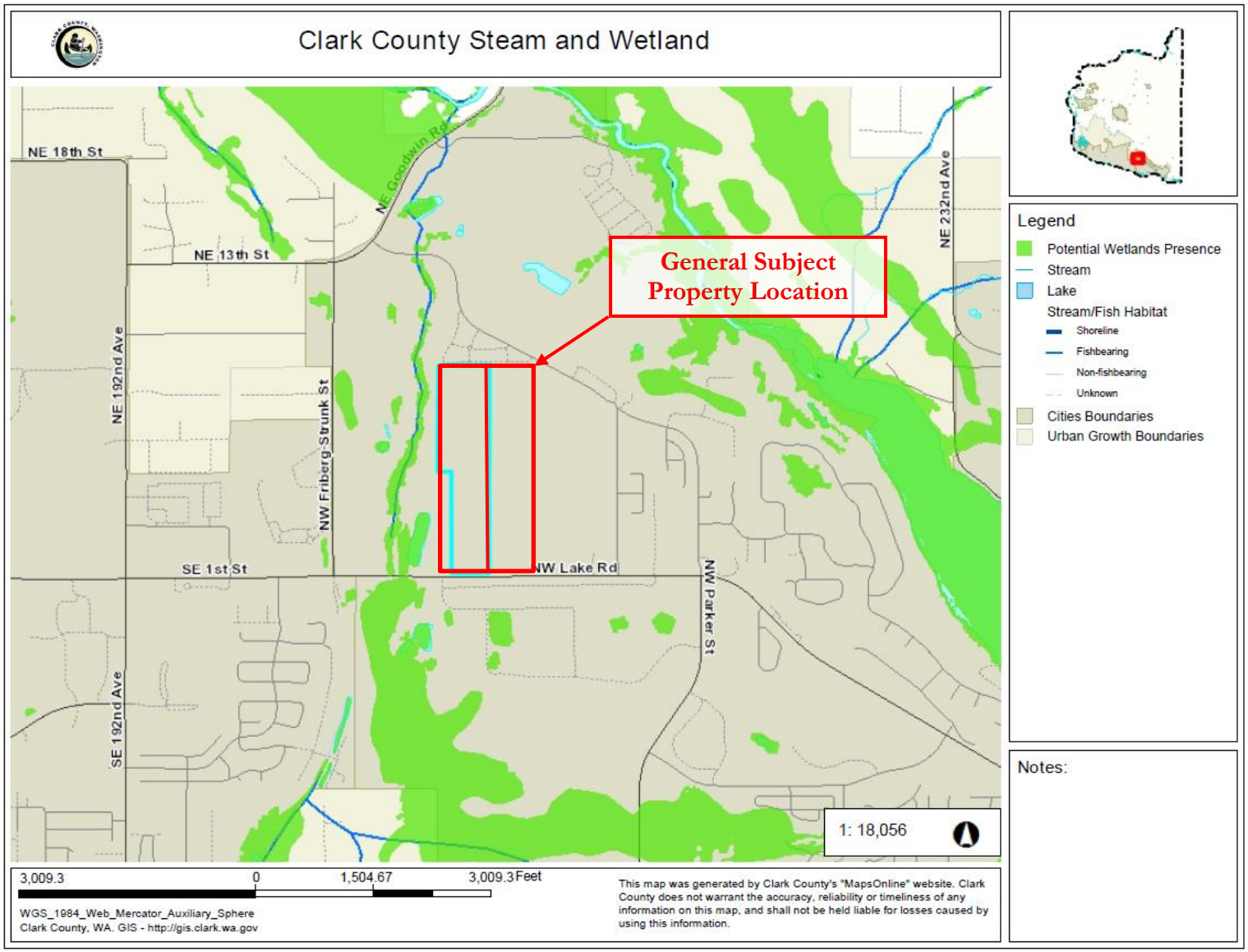
PHS Species/Habitats Details:

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PFOA
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Caves Or Cave-rich Areas	
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release (360-902-2543) for obtaining information about masked sensitive species and habitats.
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
SGCN	N
Display Resolution	TOWNSHIP

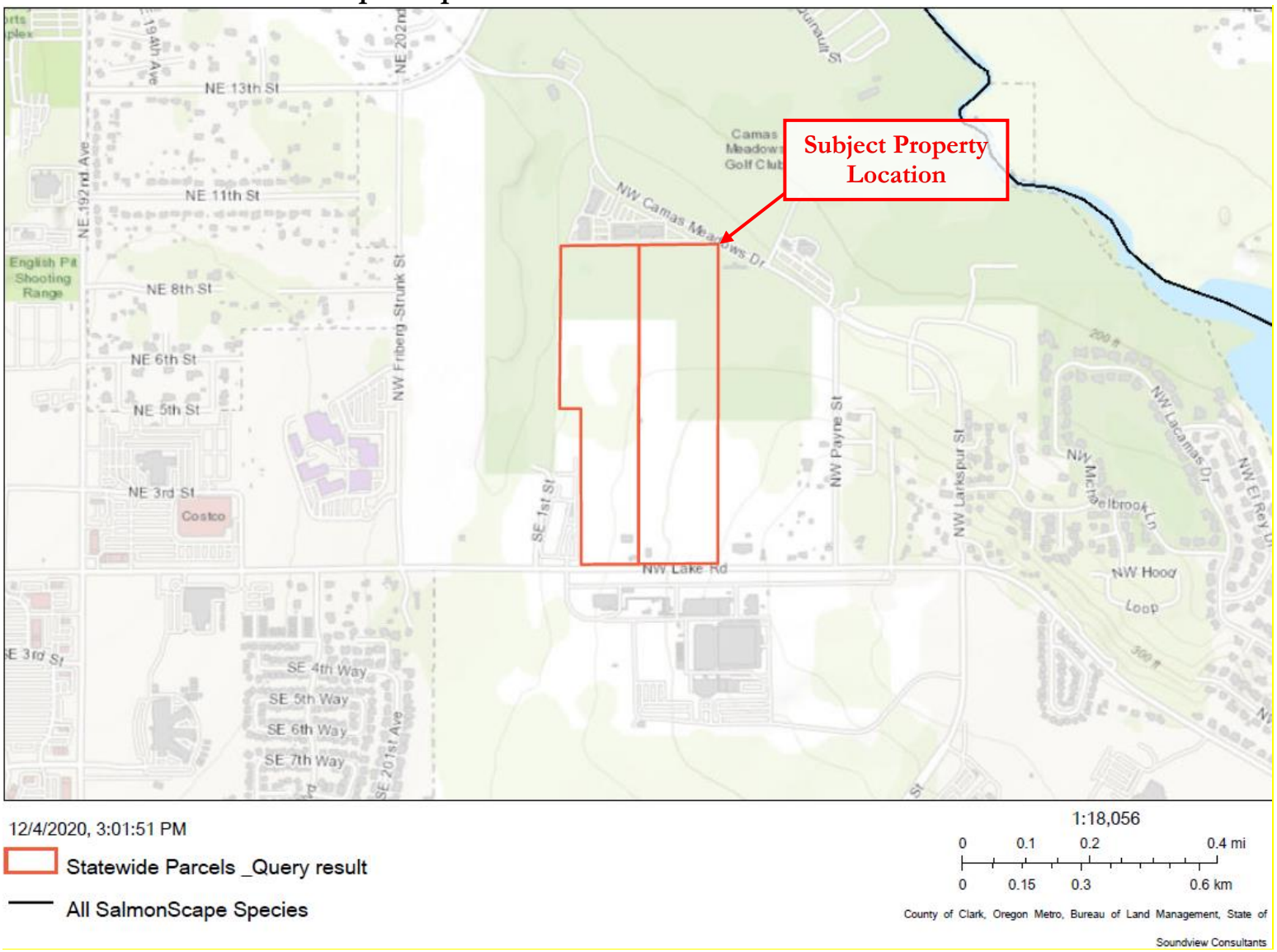
DISCLAIMER. This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents the location of fish and wildlife resources to the best of our knowledge. It is not a complete inventory and it is important to note that fish and wildlife resources may occur in areas not currently known to WDFW biologists, or in areas for which comprehensive surveys have not been conducted. Site specific surveys are frequently necessary to rule out the presence of priority resources. Locations of fish and wildlife resources are subject to variation caused by disturbance, changes in season and weather, and other factors. WDFW does not recommend using reports more than six months old.

Appendix B5. Clark County Stream and Wetland Inventory Map



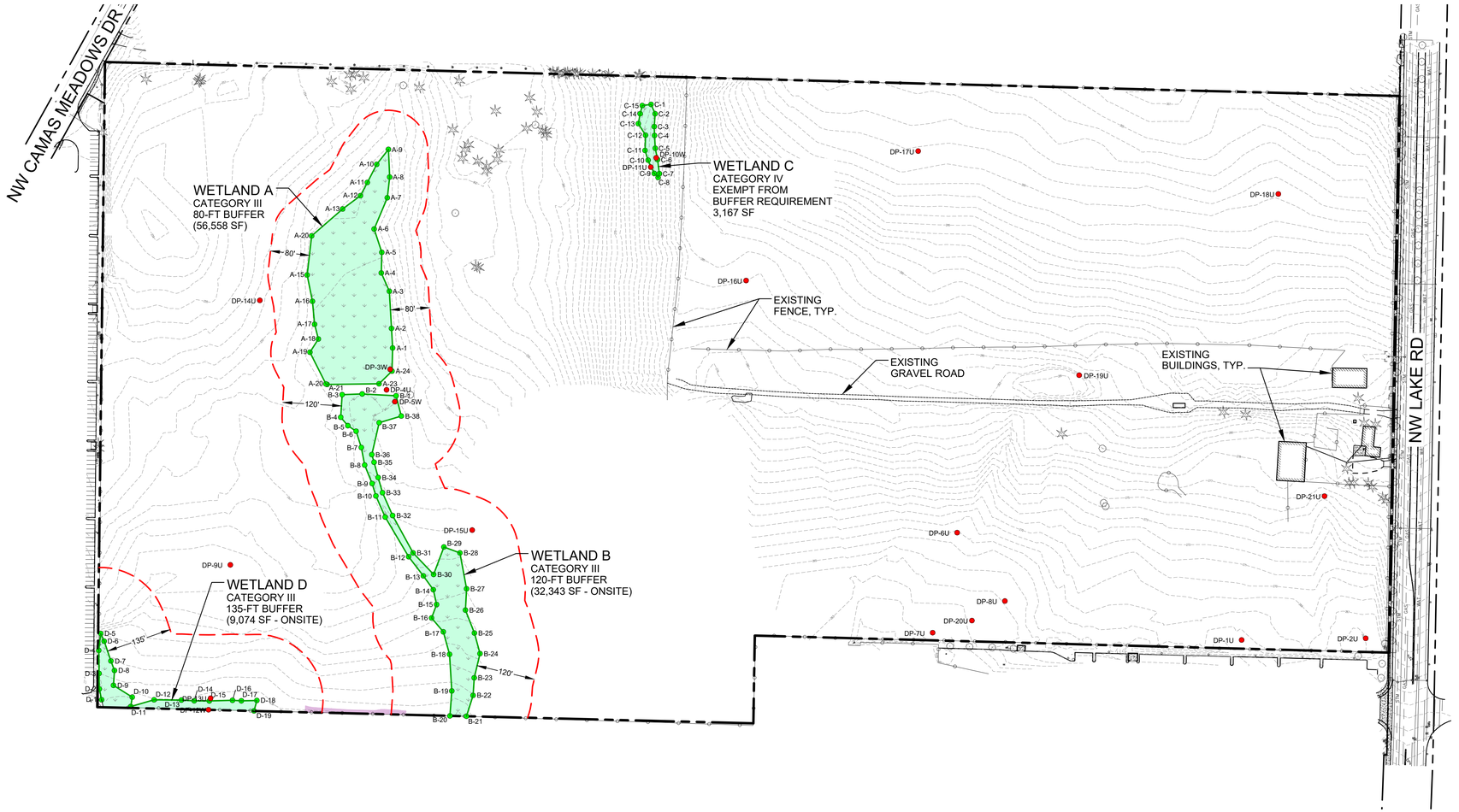
Appendix B6. DNR Stream Typing Map

Appendix B7. WDFW SalmonScape Map



Appendix C — Existing Conditions Map

CAMAS - EXISTING CONDITIONS



0 125 250 500

GRAPHIC SCALE
1"= 125'

PLAN LEGEND

- PROPERTY LINE
- EXISTING WETLAND BOUNDARY
- APPROXIMATED WETLAND BOUNDARY (NOT SURVEYED)
- WETLAND BUFFER
- W-# WETLAND FLAG LOCATION
- DP-# DATA PLOT LOCATION
- EXISTING 1-FT CONTOURS

VICINITY MAP

SOURCE: CLARK COUNTY GIS
(ACCESSED 8/17/2021)

LOCATION

THE SE ¼ OF SECTION 29,

TOWNSHIP 02N, RANGE 03E, WM

APPLICANT/OWNER

PANATTONI DEVELOPMENT COMPANY, INC
1821 DOCK STREET, SUITE 100
TACOMA, WASHINGTON 98402
CONTACT: BJORN BRYNESTAD, DEVELOPMENT MGR.
PHONE: (206) 838-1730
PHONE: BJORN@PANATTONI.COM

ENVIRONMENTAL CONSULTANT

SOUNDVIEW CONSULTANTS LLC
2907 HARBORVIEW DRIVE, SUITE D
GIG HARBOR, WA 98355
(253) 514-8952

SHEET INDEX

SHEET NUMBER	SHEET TITLE
1	EXISTING CONDITIONS

SOURCES:

SYNTHESIS PLLC
THE FUSION OF ARCHITECTURE, DESIGN TECHNOLOGY & PEOPLE

Soundview Consultants LLC
Environmental Assessment • Planning • Land Use Solutions
2907 HARBORVIEW DRIVE, SUITE D P. 253.514.8952
GIG HARBOR, WASHINGTON 98335 F. 253.514.8954
WWW.SOUNDVIEWCONSULTANTS.COM

CAMAS BUSINESS CENTER
4707 & 4723 NW LAKE ROAD
CAMAS, WASHINGTON 98607

CLARK COUNTY
PARCEL NUMBER(S):
176155000 & 176170000

DATE: 10/6/2021
JOB: 1144.0027
BY: MW
SCALE: AS SHOWN
SHEET: 1

Appendix D — Data Forms

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-1u

Investigator(s): Rachael Hyland Section, Township, Range: 29, 02N, 03E, SE

Landform (hillslope, terrace, etc.): Top of Slope Local relief (concave, convex, none): Concave Slope (%): 1%

Subregion (LRR): A2 Lat: 45.622295 Long: -122.45968640 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria met; only hydrophytic vegetation and hydric soils present. Data collected on the southwest corner of the property near the property line, approximately 300 feet north of NW Lake Road.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Rubus spectabilis	5	Yes	FAC
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Schedonorus arundinaceus	50	Yes	FAC
2. Poa pratensis	50	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-1u

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 2/2	95	5 YR 3/4	5	C	M	SiLo	Silt Loam
9-16	10 YR 4/3	83	7.5 YR 4/4	C	7	M	SiClLo	Silty Clay Loam
9-16	10YR 3/1	10	-	-	-	-	SiClLo	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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F6.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches. Data was collected early in the growing season when precipitation was within the normal range for the water year and the calendar year.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-2u

Investigator(s): Rachael Hyland Section, Township, Range: 29, 02N, 03E, SE

Landform (hillslope, terrace, etc.): Terrace; swale Local relief (concave, convex, none): Concave Slope (%): 0%

Subregion (LRR): A2 Lat: 45.621607 Long: -122.45965103 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☐ No ☒	

Remarks:
Not all three wetland criteria met; only hydric soils present. Data collected on the southwest portion of the property near the property line, approximately 70 feet north of NW Lake Road.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Rubus spectabilis	20	Yes	FAC
2. Symphoricarpos albus	5	Yes	FACU
3.			
4.			
5.			
	25	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Poa pratensis	70	Yes	FAC
2. Dactylis glomerata	20	Yes	FACU
3. Schedonorus arundinaceus	5	No	FAC
4. Jacobaea vulgaris	5	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= 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: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
No hydrophytic vegetation criteria met.
Prevalence Index not warranted due to combined back of hydric soils and wetland hydrology.

SOIL

Sampling Point: DP-2u

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 2/2	95	10YR 3/2	10	C	M	SiClLo	Silt Clay Loam
0-12	-	-	7.5 YR 3/4	10	C	M	SiClLo	Silty Clay Loam
12-16	10YR 3/1	60	7.5 YR 3/4	10	C	M	SiClLo	Mixed Matrix, Silty Clay Loam
12-16	10 YR 3/2	30	-	-	-	-	-	Mixed Matrix, 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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F6.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-3w

Investigator(s): Jacob Layman Section, Township, Range: 29, 02N, 03E, SE

Landform (hillslope, terrace, etc.): Valley bottom on terrace Local relief (concave, convex, none): Concave Slope (%): 2%

Subregion (LRR): A2 Lat: 45.627118 Long: -122.45771061 Datum: WGS 84

Soil Map Unit Name: Cove silty clay loam, thin solum, 0 to 3 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** Yes ☒ No ☐

Remarks:
All three wetland criteria met. Data collected on the north-central portion of the property in Wetland A.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus latifolia	15	Yes	FACW
2.			
3.			
4.			
	15	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Rubus spectabilis	10	Yes	FAC
2. Symphoricarpos albus	5	Yes	FACU
3. Fraxinus latifolia	5	Yes	FACW
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Alopecurus aequalis	25	Yes	OBL
2. Schedonorus arundinaceus	25	Yes	FAC
3. Juncus effusus	25	Yes	FACW
4. Poa pratensis	10	No	FAC
5. Ranunculus repens	5	No	FAC
6. Geum macrophyllum	1	No	FAC
7.			
8.			
9.			
10.			
11.			
	91	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 9

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 86% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-3W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5 YR 4/1	95	5YR 3/4	5	C	M, PL	SiClLo	Silt Clay Loam
6-16	10 YR 4/1	93	7.5 YR 4/6	7	C	M	SiClLo	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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F3.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☒ No ☐ Depth (inches): 10"

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): 7"

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Hydrologic criteria met through primary indicators A2 & A3.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-4U

Investigator(s): Rachael Hyland, Jacob Layman Section, Township, Range: 29,02N,03E,SE

Landform (hillslope, terrace, etc.): Berm Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): A2 Lat: 45.627137 Long: -122.45787799 Datum: WGS 84

Soil Map Unit Name: Cove silty clay loam, thin solum, 0 to 3 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☒ Hydric Soil Present? Yes ☐ No ☒ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
No wetland criteria met. Data collected on the north-central portion of the property in an upland area between Wetlands A and B.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Rubus aremniacus	60	Yes	FAC
2.			
3.			
4.			
5.			
	60	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Poa pratensis	30	Yes	FAC
2. Foeniculum vulgare	30	Yes	UPL
3. Carex hoodii	20	Yes	FACU
4. Leucanthemum vulgare	2	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	82	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 18

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
No hydrophytic vegetation criteria met.

SOIL

Sampling Point: DP-4U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5YR 2.5/2	100	-	-	-	-	SiLo	Silty Loam
12-16	7.5YR 2.5/2	98	7.5YR 3/3	2	C	M	SiClLo	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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil indicators met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-5w

Investigator(s): Jacob Layman Section, Township, Range: 29, 02N, 03E, SE

Landform (hillslope, terrace, etc.): Terrace; swale Local relief (concave, convex, none): Concave Slope (%): 0%

Subregion (LRR): A2 Lat: 45.627088 Long: -122.45797095 Datum: WGS 84

Soil Map Unit Name: Cove silty clay loam, thin solum, 0 to 3 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** Yes ☒ No ☐

Remarks:
All three wetland criteria met. Data collected on the north-central portion of the property, inside Wetland B.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Rubus spectabilis	30	Yes	FAC
2.			
3.			
4.			
5.			
	30 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Poa pratensis	50	Yes	FAC
2. Alopecurus pratensis	35	Yes	FAC
3. Holcus lanatus	10	No	FAC
4. Taraxacum officinale	2	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	97 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 3

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-5W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/1	95	2.5 YR 3/6	5	C	M, PL	SiClLo	Silt Clay Loam
6-16	7.5 YR 4/1	90	7.5 YR 4/6	10	C	M	SiClLo	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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F3.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☒ No ☐ Depth (inches): 12"

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): 9"

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Hydrologic criteria met through primary indicator A3.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-6U

Investigator(s): Rachael Hyland, Jacob Layman Section, Township, Range: 29,02N,03E,SE

Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): A2 Lat: 45.623905 Long: -122.45889649 Datum: WGS 84

Soil Map Unit Name: Cove silty clay loam, thin solum, 0 to 3 percent NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria met; only hydrophytic vegetation and hydric soils present. Data collected in an upland area on the western portion of the property.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Poa pratensis	50	Yes	FAC
2. Schedonorus arundinaceus	20	Yes	FAC
3. Dactylis glomerata	20	Yes	FACU
4. Alopecurus pratensis	10	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= 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: 67% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-6U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	82	7.5YR 2.5/2	10	C	M	SiLo	Silt Loam
0-4	-	-	5YR 3/4	8	C	M	SiLo	Silt loam
4-16	10YR 2/2	84	5YR 3/4	8	CM		SiLo	Silt Loam; 8% charcoal found in matrix

[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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F6.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches. Data was collected early in the growing season when precipitation was within the normal range for the water year and the calendar year. Additionally, no hydrology indicators were observed in the December 2020 reconnaissance investigation, immediately following a heavy rain event.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-7u

Investigator(s): Rachael Hyland, Jacob Layman Section, Township, Range: 29,02N,03E,SE

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): A2 Lat: 45.624025 Long: -122.45970392 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam, 8 to 20 percent NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria met; only hydrophytic vegetation and hydric soil present. Data collected in an upland area approximately 20 feet from the western property boundary.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Poa pratensis	40	Yes	FAC
2. Alopecurus pratensis	30	Yes	FAC
3. Dactylis glomerata	20	Yes	FACU
4. Schedonorus arundinaceus	5	No	FAC
5. Juncus effusus	5	No	FACW
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= 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: 67% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation met through dominance test

SOIL

Sampling Point: DP-7u

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5Y 3/1	90	7.5YR 2.5/3	10	C	M	SiLo	Silty Loam w/ manure
6-12	2.5Y 3/1	80	5YR 3/4	20	C	M	SiLo	Silty Loam
12-16	2.5Y 3/1	90	10YR 4/4	10	C	M	Cl	Clay

[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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soils met through indicator F6.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches. Data was collected early in the growing season when precipitation was within the normal range for the water year and the calendar year.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-8u

Investigator(s): Rachael Hyland, Jacob Layman Section, Township, Range: 29,02N,03E,SE

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): A2 Lat: 45.623624 Long: -122.45943141 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria met; only hydrophytic vegetation and hydric soils present. Data collected in an upland area approximately 80 feet east of the western property boundary.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Schedonorus arundinaceus	50	Yes	FAC
2. Poa pratensis	40	Yes	FAC
3. Alopecurus pratensis	10	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= 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: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation met through dominance test.

SOIL

Sampling Point: DP-6u

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/1	90	5YR 3/4	10	C	M	SiLo	Silty Loam
10-16	10YR 4/2	90	7.5YR 4/4	10	C	M	SiLo	Silty 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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F6.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches. Data was collected early in the growing season when precipitation was within the normal range for the water year and the calendar year.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-9u

Investigator(s): Rachael Hyland, Jacob Layman Section, Township, Range: 29,02N,03E,SE

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): A2 Lat: 45.627994 Long: -122.45925618 Datum: WGS 84

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria met; only hydrophytic vegetation and hydric soils present. Data collected in an upland area on the northwest portion of the property.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus latifolia	35	Yes	FACW
2.			
3.			
4.			
	35	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Rubus aremiacus	70	Yes	FAC
2. Lonicera involucrata	5	No	FAC
3. Symphoricarpos albus	5	No	FAC
4.			
5.			
	80	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Geum macrophyllum	40	Yes	FAC
2. Carex hoodii	5	No	FACU
3. Epilobium cilliatum	1	No	FACW
4. Urtica dioica	1	No	FAC
5. Lotus corniculatus	1	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	48	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 2

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation met through dominance test. Approximately 50% moss was observed in the herbaceous stratum.

SOIL

Sampling Point: DP-9u

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	100	-	-	-	-	SiLo	Silty Loam with roots
12-16	10YR 4/1	30	-	-	-	-	SiLo	Silty Loam
12-16	10YR 4/2	65	10YR 3/4	5	C	M	SiLo	Silty 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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator A11.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches. Data was collected early in the growing season when precipitation was within the normal range for the water year and the calendar year. Additionally, no hydrology indicators were observed in the December 2020 reconnaissance investigation, immediately following a heavy rain event.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-10w

Investigator(s): Jacob Layman Section, Township, Range: 29, 02N, 03E, SE

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 5%

Subregion (LRR): A2 Lat: 45.625686 Long: -122.45595449 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** Yes ☒ No ☐

Remarks:
All three wetland criteria met. Data collected on the eastern portion of the property, inside Wetland C.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Holcus lanatus	35	Yes	FAC
2. Juncus effusus	25	Yes	FACW
3. Poa pratensis	15	No	FAC
4. Alopecurus aequalis	10	No	OBL
5. Schedonorus arundinaceus	10	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-10W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	100	-	-	-	-	-	Silt Clay Loam
4-11	7.5 YR 3/2	93	2.5 YR 3/4	7	C	M	SiClLo	Clay Loam
11-16	7.5 YR 3/3	98	5 YR 4/4	2	C	C	GrSaClLo	Gravelly, Sandy, 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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F6.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☒ No ☐ Depth (inches): 5"

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): 2"

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Hydrologic criteria observed through primary indicators A2 and A3.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-11u

Investigator(s): Jacob Layman Section, Township, Range: 29, 02N, 03E, SE

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 5%

Subregion (LRR): A2 Lat: 45.625705 Long: -122.45602020 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☐ No ☒ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria not met; only hydrophytic vegetation present. Data collected on the eastern portion of the property outside Wetland C.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Holcus lanatus	40	Yes	FAC
2. Poa pratensis	30	Yes	FAC
3. Alopecurus pratensis	10	No	FAC
4. Juncus effusus	5	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	85	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 15

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-11d

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	7.5 YR 3/2	100	-	-	-	-	-	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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil indicators met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): 16"

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic criteria met.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-12w

Investigator(s): Rachel Hyland, Jacob Layman Section, Township, Range: 29, 02N, 03E, SE

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 1%

Subregion (LRR): A2 Lat: 45.628098 Long: -122.46040961 Datum: WGS 84

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** Yes ☒ No ☐

Remarks:
All three wetland criteria not met. Data collected on the northwest portion of the property, near the western property boundary, inside Wetland D.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus latifolia	30	Yes	FACW
2. Crataegus monogyna	10	Yes	FAC
3. Salix sp.*	10	Yes	FACW
4.			
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Fraxinus latifolia	20	Yes	FACW
2. Rubus armeniacus	15	Yes	FAC
3. Crataegus monogyna	2	No	FAC
4. Symphiocarpus alba	1	No	FACU
5.			
	38	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Poa pratensis	1	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	1	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 99

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.
*Salix species considered FACW for scoring purposes.

SOIL

Sampling Point: DP-12W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-11	10 YR 3/2	90	2.5 YR 3/6	10	C	M	SaClLo	Sandy Clay Loam
11-16	10 YR 4/2	94	7.5 YR 4/1	5	D	M	SaClLo	Sandy Clay Loam
11-16	-	-	2.5 YR 3/6	1	C	M	SaClLO	Sandy 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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☒ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria through indicators F6 and A11.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☒ No ☐ Depth (inches): 12"

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): 9"

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Hydrologic criteria observed through primary indicators A2 and A3.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/07/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-13U

Investigator(s): Rachael Hyland, Jacob Layman Section, Township, Range: 29,02N,03E,SE

Landform (hillslope, terrace, etc.): hillsope Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): A2 Lat: 45.628087 Long: -122.46031821 Datum: WGS 84

Soil Map Unit Name: Powell silt loam, 0 to 8 percent NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☐ No ☒ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria met, only hydrophytic vegetation present. Data collected on the northwest portion of the subject property, near the western property boundary, outside Wetland D.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus latifolia	20	Yes	FACW
2. Crataegus monogyna	15	Yes	FAC
3.			
4.			
	35	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Rubus armeniacus	30	Yes	FAC
2. Rubus laciniatus	10	Yes	FACU
3. Symphoricarpos albus	10	Yes	FACU
4.			
5.			
	50	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Geum macrophyllum	50	Yes	FAC
2. Geranium molle	3	No	UPL
3. Epilobium ciliatum	2	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	55	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 45

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test. Approximately 20% moss was observed in the herbaceous stratum.

SOIL

Sampling Point: DP-13C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	100	-	-	-	-	SiLo	Silt Loam
12-14	10YR 3/2	78	10YR 4/2	20	D	M	SiLo	Silt Loam
12-14	10YR 3/4	2	-	-	C	M	SiLo	Silt 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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil indicators met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology criteria met.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/07/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-14U

Investigator(s): Rachael Hyland, Jacob Layman Section, Township, Range: 29,02N,03E,SE

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 2

Subregion (LRR): A2 Lat: 45.627869 Long: -122.45716955 Datum: WGS 84

Soil Map Unit Name: Powell silt loam, 0 to 8 percent NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☐ No ☒ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria met; only hydrophytic vegetation present. Data collected in an upland area on the northeast portion of the property.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Poa pratensis	35	Yes	FAC
2. Schedonorus arundinaceus	20	Yes	FAC
3. Leucantheum vulgare	20	Yes	FACU
4. Lupinus sp.	15	No	FAC
5. Hypochaeris radicata	5	No	FACU
6. Trifolium repens	5	No	FAC
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= 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: 67% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.
Lupinus species considered facultative for scoring purposes.

SOIL

Sampling Point: DP-14C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100	-	-	-	-	Lo	Loam
4-8	10YR 3/2	98	2.5YR 5/8	2	C	M	Lo	Loam
8-16	7.5YR 3/3	98	5YR 4/6	2	C	M	SiClLo	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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil indicators met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/07/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-15U

Investigator(s): Rachael Hyland, Jacob Layman Section, Township, Range: 29,02N,03E,SE

Landform (hillslope, terrace, etc.): Toe of Slope Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): A2 Lat: 45.626657 Long: -122.45893760 Datum: WGS 84

Soil Map Unit Name: Cove silty clay loam, thin solum, 0 to 3 percent NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks: **Not all three wetland criteria met; only hydrophytic vegetation and hydric soils present. Data collected on the west-central portion of the property, outside Wetland B.**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Rubus armeniacus	5	Yes	FAC
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Agrostis capillaris	40	Yes	FAC
2. Hypochaeris radicata	20	Yes	FACU
3. Schedonorus arundinaceus	10	No	FAC
4. Trifolium repens	10	No	FAC
5. Leucanthemum vulgare	5	No	FACU
6. Holcus lanatus	5	No	FAC
7. Taraxacum officinale	3	No	FACU
8. Ranunculus repens	2	No	FAC
9.			
10.			
11.			
	95	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 5

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: 67% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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: Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-15U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 4/1	98	5YR 3/4	2	C	PL	SiClLo	Silty Clay Loam
6-11	5YR 4/1	2	-	-	-	-	SiClLo	Silty Clay Loam; Mixed Matrix
6-11	10YR 5/2	35	7.5YR 4/6	5	C	M/PL	SiClLo	Silty Clay Loam; Mixed Matrix
11-13	10YR 5/2	90	7.5YR 5/8	10	C	M	SiClLo	Silty Clay Loam
13-16	10YR 4/1	98	5YR 4/6	2	C	PL	SiClLo	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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F3.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches. Data was collected early in the growing season when precipitation was within the normal range for the water year and the calendar year. Additionally, no hydrology indicators were observed in the December 2020 reconnaissance investigation, immediately following a heavy rain event.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/07/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-16U

Investigator(s): Rachael Hyland, Jacob Layman Section, Township, Range: 29,02N,03E,SE

Landform (hillslope, terrace, etc.): rolling Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): A2 Lat: 45.625117 Long: -122.45694596 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☐ No ☒ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria met; only hydrophytic vegetation present. Data collected on the east-central portion of the property.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Trifolium repens	30	Yes	FAC
2. Poa pratensis	25	Yes	FAC
3. Alopecurus pratensis	20	Yes	FAC
4. Anthoxanthum odoratum	10	No	FACU
5. Schedonorus arundinaceus	10	No	FAC
6. Taraxacum officinale	5	No	FACU
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-16O

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 2.5/3	100	-	-	-	-	Lo	Loam
4-8	7.5YR 2.5/3	60	-	-	-	-	Lo	Loam; mixed matrix
4-8	7.5YR 2.5/1	40					SiClLo	Silty Clay Loam; mixed matrix
8-10	7.5YR 2.5/1	100					SiClLo	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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil criteria met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/07/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-17u

Investigator(s): Rachel Hyland, Jacob Layman Section, Township, Range: 29, 02N, 03E, SE

Landform (hillslope, terrace, etc.): Terrace; Swale Local relief (concave, convex, none): Concave Slope (%): 2%

Subregion (LRR): A2 Lat: 45.624178 Long: -122.45586859 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☐ No ☒ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria met; only hydrophytic vegetation present. Data collected on the eastern portion of the subject property.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Poa pratensis	40	Yes	FAC
2. Trifolium repens	30	Yes	FAC
3. Hypochaeris radicata	20	Yes	FACU
4. Agrostis capillaris	10	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= 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: 67% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-17d

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-9	7.5 YR 3/2	100	-	-	-	-	MeLo	Medium Loam
9-15	7.5 YR 3/2	98	7.5 YR 3/4	2	C	M	MeLo	Medium 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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☒ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil criteria met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/07/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-18u

Investigator(s): Jacob Layman Section, Township, Range: 29, 02N, 03E, SE

Landform (hillslope, terrace, etc.): Terrace; Swale Local relief (concave, convex, none): Concave Slope (%): 2%

Subregion (LRR): A2 Lat: 45.622168 Long: -122.45612559 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☐ No ☒ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks: Not all three wetland criteria not met; only hydrophytic vegetation present. Data collected in an upland area on the southeast portion of the property.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Poa pratensis	40	Yes	FAC
2. Trifolium repens	35	Yes	FAC
3. Agrostis capillaris	20	Yes	FAC
4. Hypochaeris radicata	2	No	FACU
5. Taraxacum officinale	2	No	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	99	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 1

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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: Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-16d

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	7.5 YR 3/2	100	-	-	-	-	MeLo	Medium Loam
10-15	7.5 YR 3/2	99	7.5 YR 3/4	1	C	M	MeLo	Medium 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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil criteria met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/07/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-19u

Investigator(s): Jacob Layman Section, Township, Range: 29, 02N, 03E, SE

Landform (hillslope, terrace, etc.): Terrace; Swale Local relief (concave, convex, none): Concave Slope (%): 2%

Subregion (LRR): A2 Lat: 45.623253 Long: -122.45761989 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks: Not all three wetland criteria not met; only hydric soils and hydrophytic vegetation present. Data collected in an upland area on the south-central portion of the site.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Agrostis capillaris	60	Yes	FAC
2. Poa pratensis	40	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0 = 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: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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: Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-19d

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5 YR 3/2	60	2.5 YR 3/6	7	C	M, PL	MeLo	Medium Loam; Mixed matrix
0-4	5Y 3/1	33	-	-	-	-	MeLo	Medium Loam; Mixed matrix
4-12	7.5 YR 3/2	100	-	-	-	-	ClLo	Clay Loam
12-18	7.5 YR 3/2	98	7.5 YR 3/4	2	C	M	ClLO	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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F6.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches. Data was collected early in the growing season when precipitation was within the normal range for the water year and the calendar year. Additionally, no hydrology indicators were observed in the December 2020 reconnaissance investigation, immediately following a heavy rain event.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/07/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-20U

Investigator(s): Rachael Hyland, Jacob Layman Section, Township, Range: 29,02N,03E,SE

Landform (hillslope, terrace, etc.): Rolling Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): A2 Lat: 45.623806 Long: -122.45958918 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all wetland criteria met; only hydrophytic vegetation and hydric soils present. Data collected in an upland area near the western property boundary approximately 845 feet north of NW Lake Road.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Agrostis capillaris	40	Yes	FAC
2. Poa pratensis	30	Yes	FAC
3. Alopercurus pratensis	20	Yes	FAC
4. Alopecurus aequalis	5	No	OBL
5. Anthoxanthum odoratum	5	No	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-26G

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-9	7.5YR 3/1	75	5YR 3/4	25	C	M/PL	SiClLo	Silty Clay Loam
9-16	7.5YR 3/1	70	7.5YR 3/4	30	C	M	ClLo	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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F6.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches. Data was collected early in the growing season when precipitation was within the normal range for the water year and the calendar year.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/07/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-21U

Investigator(s): Rachael Hyland, Jacob Layman Section, Township, Range: 29,02N,03E,SE

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): A2 Lat: 45.621863 Long: -122.45851848 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks: Not all three wetland criteria met; only hydrophytic vegetation and hydric soil present. Data collected in southern portion of property approximately 150 feet northwest of the existing residence driveway.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Agrostis capillaris	70	Yes	FAC
2. Poa pratensis	20	Yes	FAC
3. Schedonorus arundinaceus	10	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= 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: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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: Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-210

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 3/1	85	7.5YR 3/3	15	C	M/PL	SiLo	Silty Loam
6-16	7.5YR 3/2	92	7.5YR 3/3	8	C	M	SiLo	Silty 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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F6. Soil was highly compacted.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches. Data was collected early in the growing season when precipitation was within the normal range for the water year and the calendar year. Additionally, no hydrology indicators were observed in the December 2020 reconnaissance investigation, immediately following a heavy rain event.

Appendix E — Wetland Rating Forms

Wetland name or number A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): A Date of site visit: 04/07/21

Rated by Jake Layman Trained by Ecology? ✔ Yes ___No Date of training_____

HGM Class used for rating Depressional Wetland has multiple HGM classes?___Y ✔ N

NOTE: **Form is not complete without the figures requested** *(figures can be combined)*.

Source of base aerial photo/map ESRI ArcGIS

OVERALL WETLAND CATEGORY III (based on functions ✔ 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	
		Circle the appropriate ratings		
Site Potential	M	M	L	
Landscape Potential	M	M	L	
Value	H	M	M	**TOTAL**
Score Based on Ratings	7	6	4	17

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	N/A

Wetland name or number 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	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

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 undisturbed 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 undisturbed 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 undisturbed 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 name or number 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 sheetflow, 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).

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.

Wetland name or number A

☒ 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 name or number 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	1
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	4
Total for D 1 Add the points in the boxes above	7

Rating of Site Potential If score is: ___ **12-16 = H** X **6-11 = M** ___ **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	0
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	0
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 Golf course Yes = 1 No = 0	1
Total for D 2 Add the points in the boxes above	2

Rating of Landscape Potential If score is: ___ **3 or 4 = H** X **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 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*

NOTES and FIELD OBSERVATIONS:

Wetland name or number 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 or 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	3
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 wetland 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	8

Rating of Site Potential If score is: ___ **12-16 = H** _X_ **6-11 = M** ___ **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	0
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	0
Total for D 5 Add the points in the boxes above	1

Rating of Landscape Potential If score is: ___ **3 = H** _X_ **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. The unit is 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 down-gradient 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 down-gradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther down-gradient. 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	1
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	1

Rating of Value If score is: ___ **2-4 = H** _X_ **1 = M** ___ **0 = L** *Record the rating on the first page*

Wetland name or number 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 or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

____Aquatic bed	4 structures or more: points = 4
____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:

__x__The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) 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 or ¼ 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
____Saturated only	1 type present: points = 0
____Permanently flowing stream or river in, or adjacent to, the wetland	
____Seasonally flowing stream in, or adjacent to, the wetland	
____**Lake Fringe wetland**	**2 points**
____**Freshwater tidal wetland**	**2 points**

0

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.

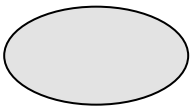
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

If you counted: > 19 species	points = 2
5 - 19 species	points = 1
< 5 species	points = 0

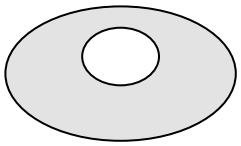
1

H 1.4. Interspersion of habitats

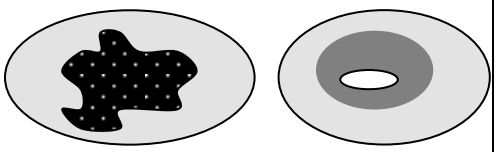
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*



None = 0 points

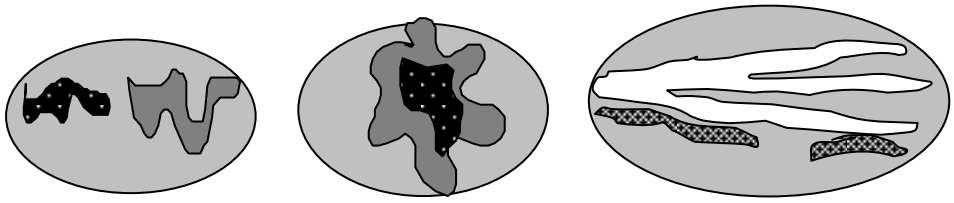


Low = 1 point



Moderate = 2 points

All three diagrams in this row are **HIGH** = 3points



0

Wetland name or number 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.* __×__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 extends at least 3.3 ft (1 m) over 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 for list of strata*)	3
Total for H 1 Add the points in the boxes above	5

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 that directly abuts wetland unit*). *Calculate:* [0.00] % undisturbed habitat **+** [(% moderate and low intensity land uses) [12.35] /2] **=** 6.175 % If 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. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* [9.1] % undisturbed habitat **+** [(% moderate and low intensity land uses) [33.73] /2] **=** 25.964999999999 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 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 — 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 name or number A

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **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 (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **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) 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.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

— **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **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.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **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.

— **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.

X **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.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number 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**	
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 page 25) ☐ 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**	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes **– Go to SC 2.2** ☒ No **– Go to SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes **= Category I** ☒ No **= Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes **– Contact WNHP/WDNR and go to SC 2.4** ☒ No **= Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes **= Category I** ☒ No **= Not a WHCV**	
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 = **Is 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 = **Is a 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 = **Is a Category I bog** ☐ No **= Is not a bog**	

Wetland name or number 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**

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)*

☐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 on p. 100).
- 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**

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

☐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**

Category of wetland based on Special Characteristics

If you answered No for all types, enter "Not Applicable" on Summary Form

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Wetland name or number B

RATING SUMMARY – Western Washington

Name of wetland (or ID #): B Date of site visit: 04/07/21

Rated by Jake Layman Trained by Ecology? ✔ Yes ___No Date of training_____

HGM Class used for rating Slope Wetland has multiple HGM classes?___Y ✔ N

NOTE: **Form is not complete without the figures requested** *(figures can be combined)*.

Source of base aerial photo/map ESRI ArcGIS

OVERALL WETLAND CATEGORY III (based on functions ✔ 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	
		Circle the appropriate ratings		
Site Potential	L	L	L	
Landscape Potential	M	M	L	
Value	H	M	H	TOTAL
Score Based on Ratings	6	5	5	16

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	N/A

Wetland name or number B

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	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

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 undisturbed 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 undisturbed 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 undisturbed 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 name or number B

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 sheetflow, 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).

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.

Wetland name or number B

☐ 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 name or number B

SLOPE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

S 1.0. Does the site have the potential to improve water quality?	
S 1.1. Characteristics of the average slope of the wetland: *(a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance*) Slope is 1% or less points = 3 Slope is > 1%-2% points = 2 Slope is > 2%-5% points = 1 Slope is greater than 5% points = 0	2
S 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*: Yes = 3 No = 0	0
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. *Dense means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.* Dense, uncut, herbaceous plants > 90% of the wetland area points = 6 Dense, uncut, herbaceous plants > ½ of area points = 3 Dense, woody, plants > ½ of area points = 2 Dense, uncut, herbaceous plants > ¼ of area points = 1 Does not meet any of the criteria above for plants points = 0	0
Total for S 1 Add the points in the boxes above	2

Rating of Site Potential If score is: ___ **12 = H** ___ **6-11 = M** X **0-5 = L** *Record the rating on the first page*

S 2.0. Does the landscape have the potential to support the water quality function of the site?	
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other sources _____ Yes = 1 No = 0	1
Total for S 2 Add the points in the boxes above	2

Rating of Landscape Potential If score is: X **1-2 = M** **0 = L** *Record the rating on the first page*

S 3.0. Is the water quality improvement provided by the site valuable to society?	
S 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
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? *At least one aquatic resource in the basin is on the 303(d) list*. Yes = 1 No = 0	1
S 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 for the basin in which unit is found.* Yes = 2 No = 0	2
Total for S 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 name or number B

SLOPE WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream erosion

S 4.0. Does the site have the potential to reduce flooding and stream erosion?	
S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. *Stems of plants should be thick enough (usually > 1/8 in), or dense enough, to remain erect during surface flows.* Dense, uncut, **rigid** plants cover > 90% of the area of the wetland points = 1 All other conditions points = 0	0

Rating of Site Potential If score is: ___ **1 = M** X **0 = L** *Record the rating on the first page*

S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?	
S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff? Yes = 1 No = 0	1

Rating of Landscape Potential If score is: X **1 = M** ___ **0 = L** *Record the rating on the first page*

S 6.0. Are the hydrologic functions provided by the site valuable to society?	
S 6.1. Distance to the nearest areas downstream that have flooding problems: The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) points = 2 Surface flooding problems are in a sub-basin farther down-gradient points = 1 No flooding problems anywhere downstream points = 0	1
S 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 S 6 Add the points in the boxes above	1

Rating of Value If score is: ___ **2-4 = H** X **1 = M** ___ **0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number B

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 or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

____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/ground-cover) 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 or ¼ 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	
____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.

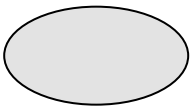
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

If you counted: > 19 species	points = 2
5 - 19 species	points = 1
< 5 species	points = 0

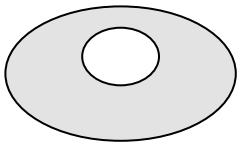
1

H 1.4. Interspersion of habitats

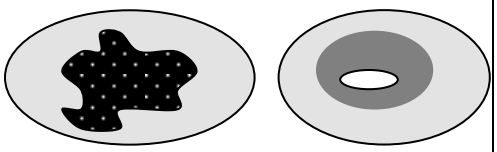
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*



None = 0 points

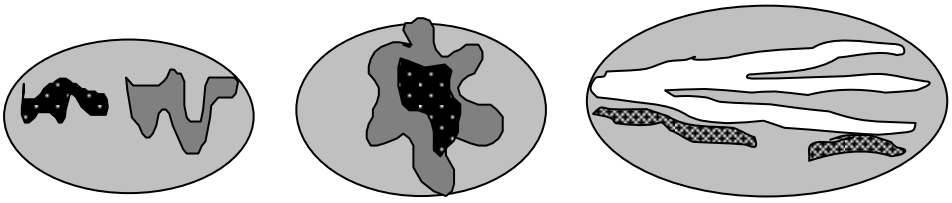


Low = 1 point



Moderate = 2 points

All three diagrams in this row are **HIGH** = 3points



1

Wetland name or number B

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.* ____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 extends at least 3.3 ft (1 m) over 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)* __x__Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	1
Total for H 1 Add the points in the boxes above	5

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 that directly abuts wetland unit*). *Calculate:* [0.00] % undisturbed habitat **+** [(% moderate and low intensity land uses) [12.35] /2] **=** 6.175 % If 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. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* [9.17] % undisturbed habitat **+** [(% moderate and low intensity land uses) [33.73] /2] **=** 26.034999999998 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 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 __x__ 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 — 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	2

Rating of Value If score is: __X__ **2 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **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 (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **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) 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.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

X **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

X **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.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **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.

— **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.

X **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.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number B

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**	
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 page 25) ☐ 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**	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes **– Go to SC 2.2** ☒ No **– Go to SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes **= Category I** ☒ No **= Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes **– Contact WNHP/WDNR and go to SC 2.4** ☒ No **= Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes **= Category I** ☒ No **= Not a WHCV**	
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 = **Is 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 = **Is a 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 = **Is a Category I bog** ☐ No **= Is not a bog**	

Wetland name or number B

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**

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)*

☐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 on p. 100).
- 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**

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

☐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**

Category of wetland based on Special Characteristics

If you answered No for all types, enter "Not Applicable" on Summary Form

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Wetland name or number C

RATING SUMMARY – Western Washington

Name of wetland (or ID #): C Date of site visit: 04/07/21

Rated by Jake Layman Trained by Ecology? ✔ Yes ___No Date of training_____

HGM Class used for rating Slope Wetland has multiple HGM classes?___Y ✔ N

NOTE: **Form is not complete without the figures requested** *(figures can be combined)*.

Source of base aerial photo/map ESRI ArcGIS

OVERALL WETLAND CATEGORY IV (based on functions ✔ or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

_____**Category II** – Total score = 20 - 22

_____**Category III** – Total score = 16 - 19

__X__**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
		Circle the appropriate ratings		
Site Potential	L	L	L	
Landscape Potential	M	M	L	
Value	H	M	M	TOTAL
Score Based on Ratings	6	5	4	15

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	N/A

Wetland name or number C

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	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

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 undisturbed 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 undisturbed 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 undisturbed 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 name or number C

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 sheetflow, 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).

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.

Wetland name or number C

☐ 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 name or number C

SLOPE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

S 1.0. Does the site have the potential to improve water quality?	
S 1.1. Characteristics of the average slope of the wetland: *(a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance*) Slope is 1% or less points = 3 Slope is > 1%-2% points = 2 Slope is > 2%-5% points = 3 Slope is greater than 5% points = 0	1
S 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*: Yes = 3 No = 0	0
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. *Dense means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.* Dense, uncut, herbaceous plants > 90% of the wetland area points = 6 Dense, uncut, herbaceous plants > ½ of area points = 3 Dense, woody, plants > ½ of area points = 2 Dense, uncut, herbaceous plants > ¼ of area points = 1 Does not meet any of the criteria above for plants points = 0	0
Total for S 1 Add the points in the boxes above	1

Rating of Site Potential If score is: ___ **12 = H** ___ **6-11 = M** X **0-5 = L** *Record the rating on the first page*

S 2.0. Does the landscape have the potential to support the water quality function of the site?	
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other sources _____ Yes = 1 No = 0	0
Total for S 2 Add the points in the boxes above	1

Rating of Landscape Potential If score is: X **1-2 = M** **0 = L** *Record the rating on the first page*

S 3.0. Is the water quality improvement provided by the site valuable to society?	
S 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
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? *At least one aquatic resource in the basin is on the 303(d) list*. Yes = 1 No = 0	1
S 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 for the basin in which unit is found.* Yes = 2 No = 0	2
Total for S 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 name or number C

SLOPE WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream erosion

S 4.0. Does the site have the potential to reduce flooding and stream erosion?	
S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. *Stems of plants should be thick enough (usually > 1/8 in), or dense enough, to remain erect during surface flows.* Dense, uncut, **rigid** plants cover > 90% of the area of the wetland points = 1 All other conditions points = 0	0

Rating of Site Potential If score is: ___ **1 = M** X **0 = L** *Record the rating on the first page*

S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?	
S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff? Yes = 1 No = 0	1

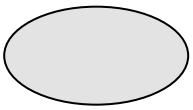
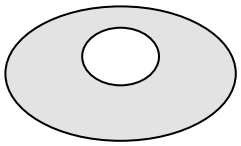
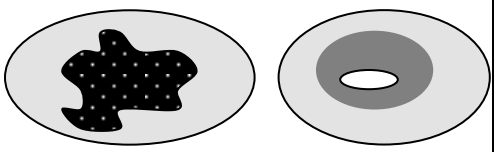
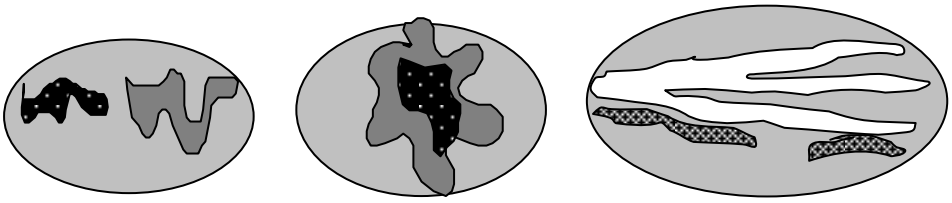
Rating of Landscape Potential If score is: X **1 = M** ___ **0 = L** *Record the rating on the first page*

S 6.0. Are the hydrologic functions provided by the site valuable to society?	
S 6.1. Distance to the nearest areas downstream that have flooding problems: The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) points = 2 Surface flooding problems are in a sub-basin farther down-gradient points = 1 No flooding problems anywhere downstream points = 0	1
S 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 S 6 Add the points in the boxes above	1

Rating of Value If score is: ___ **2-4 = H** X **1 = M** ___ **0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number C

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 or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ____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 ____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/ground-cover) that each cover 20% within the Forested polygon	0
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 or ¼ ac to count (*see text for descriptions of hydroperiods*). ____Permanently flooded or inundated — 4 or more types present: points = 3 ____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 ____Seasonally flowing stream in, or adjacent to, the wetland ____**Lake Fringe wetland** — **2 points** ____**Freshwater tidal wetland** — **2 points**	0
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, Canadian thistle*** If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	1
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** = 3points 	0

Wetland name or number C

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.* ____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 extends at least 3.3 ft (1 m) over 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 for list of strata*)	1
Total for H 1 Add the points in the boxes above	2

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 that directly abuts wetland unit*). *Calculate:* [0.00] % undisturbed habitat **+** [(% moderate and low intensity land uses) [12.35] /2] **=** 6.175 % If 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. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* [9.17] % undisturbed habitat **+** [(% moderate and low intensity land uses) [33.73] /2] **=** 26.034999999998 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 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 — 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*

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **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 (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **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) 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.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

— **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **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.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **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.

— **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.

X **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.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number C

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**	
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 page 25) ☐ 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**	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes **– Go to SC 2.2** ☒ No **– Go to SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes **= Category I** ☒ No **= Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes **– Contact WNHP/WDNR and go to SC 2.4** ☒ No **= Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes **= Category I** ☒ No **= Not a WHCV**	
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 = **Is 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 = **Is a 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 = **Is a Category I bog** ☐ No **= Is not a bog**	

Wetland name or number C

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**

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)*

☐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 on p. 100).
- 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**

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

☐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**

Category of wetland based on Special Characteristics

If you answered No for all types, enter "Not Applicable" on Summary Form

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Wetland name or number D

RATING SUMMARY – Western Washington

Name of wetland (or ID #): D Date of site visit: 04/07/21

Rated by Rachael Hyland, Jake Layman Trained by Ecology? ✔ Yes ___No Date of training_____

HGM Class used for rating Depressional Wetland has multiple HGM classes?___Y ✔ N

NOTE: **Form is not complete without the figures requested** *(figures can be combined)*.

Source of base aerial photo/map ESRI ArcGIS

OVERALL WETLAND CATEGORY III (based on functions ✔ 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	
		Circle the appropriate ratings		
Site Potential	M	M	M	
Landscape Potential	M	M	L	
Value	H	M	H	TOTAL
Score Based on Ratings	7	6	6	19

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	N/A

Wetland name or number D

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	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

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 undisturbed 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 undisturbed 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 undisturbed 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 name or number D

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 sheetflow, 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).

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.

Wetland name or number D

☒ 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 name or number D

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	3
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	4
Total for D 1 Add the points in the boxes above	10

Rating of Site Potential If score is: ___ **12-16 = H** _X_ **6-11 = M** ___ **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	0
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	2

Rating of Landscape Potential If score is: ___ **3 or 4 = H** _X_ **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 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*

NOTES and FIELD OBSERVATIONS:

Wetland name or number D

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 or 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	4
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	3
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 wetland 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	10

Rating of Site Potential If score is: ___ **12-16 = H** _X_ **6-11 = M** ___ **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	0
Total for D 5 Add the points in the boxes above	2

Rating of Landscape Potential If score is: ___ **3 = H** _X_ **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. The unit is 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 down-gradient 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 down-gradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther down-gradient. 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	1
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	1

Rating of Value If score is: ___ **2-4 = H** _X_ **1 = M** ___ **0 = L** *Record the rating on the first page*

Wetland name or number D

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 or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

____Aquatic bed	4 structures or more: points = 4	2
__x__Emergent	3 structures: points = 2	
__x__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/ground-cover) that each cover 20% within the Forested polygon

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 or ¼ ac to count (*see text for descriptions of hydroperiods*).

____Permanently flooded or inundated	4 or more types present: points = 3	1
__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		
____Seasonally flowing stream in, or adjacent to, the wetland		
____**Lake Fringe wetland**	**2 points**	
____**Freshwater tidal wetland**	**2 points**	

H 1.3. Richness of plant species

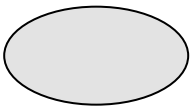
Count the number of plant species in the wetland that cover at least 10 ft^2.

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, Canadian thistle***

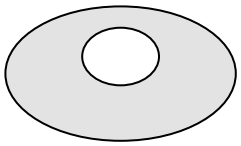
If you counted: > 19 species	points = 2	1
5 - 19 species	points = 1	
< 5 species	points = 0	

H 1.4. Interspersion of habitats

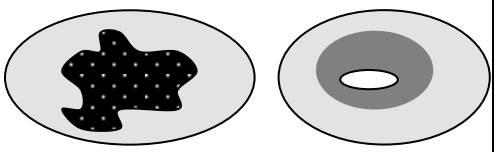
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*



None = 0 points



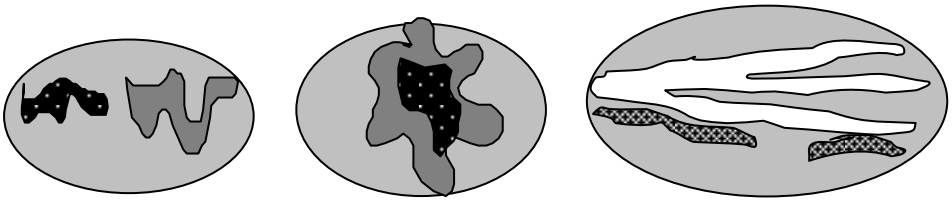
Low = 1 point



Moderate = 2 points

2

All three diagrams in this row are **HIGH** = 3points



Wetland name or number D

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 extends at least 3.3 ft (1 m) over 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 for list of strata*)	1
Total for H 1 Add the points in the boxes above	7

Rating of Site Potential If score is:___**15-18 = H** __X__**7-14 = M** ___**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 that directly abuts wetland unit*). *Calculate:* [0.00] % undisturbed habitat **+** [(% moderate and low intensity land uses) [12.35] /2] **=** 6.175 % If 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. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* [9.17] % undisturbed habitat **+** [(% moderate and low intensity land uses) [33.73] /2] **=** 26.034999999999 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 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 __x__ 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 __ 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	2

Rating of Value If score is: __X__ **2 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **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 (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **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) 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.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

X **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

X **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.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **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.

— **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.

X **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.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number D

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**	
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 page 25) ☐ 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**	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes **– Go to SC 2.2** ☒ No **– Go to SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes **= Category I** ☒ No **= Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes **– Contact WNHP/WDNR and go to SC 2.4** ☒ No **= Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes **= Category I** ☒ No **= Not a WHCV**	
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 = **Is 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 = **Is a 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 = **Is a Category I bog** ☐ No **= Is not a bog**	

Wetland name or number D

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**

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)*

☐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 on p. 100).
- 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**

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

☐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**

Category of wetland based on Special Characteristics

If you answered No for all types, enter "Not Applicable" on Summary Form

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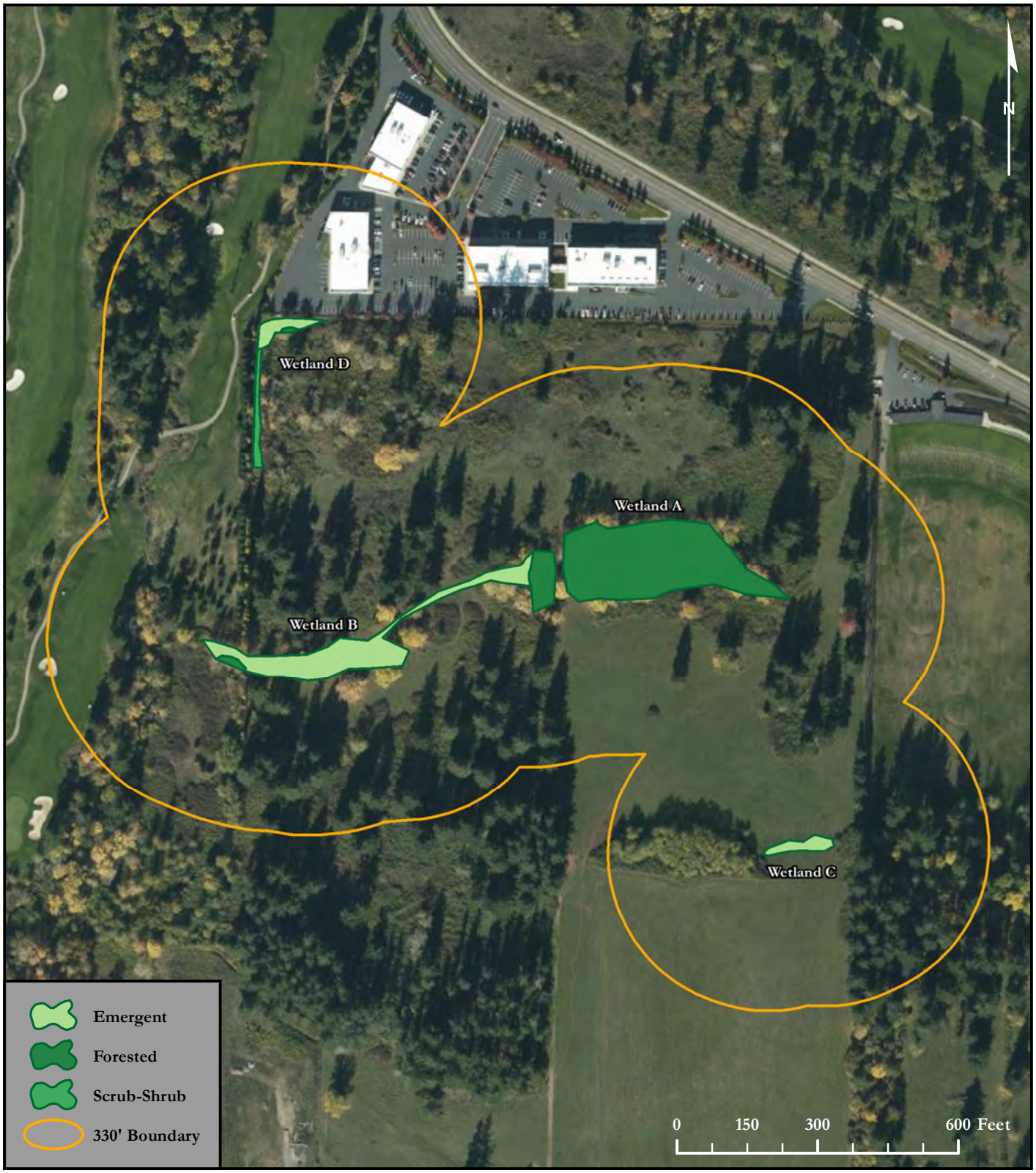
Appendix F — Wetland Rating Maps

CAMAS BUSINESS CENTER - COWARDIN MAP



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Phone: (253) 514-8952 Fax: (253) 514-8954
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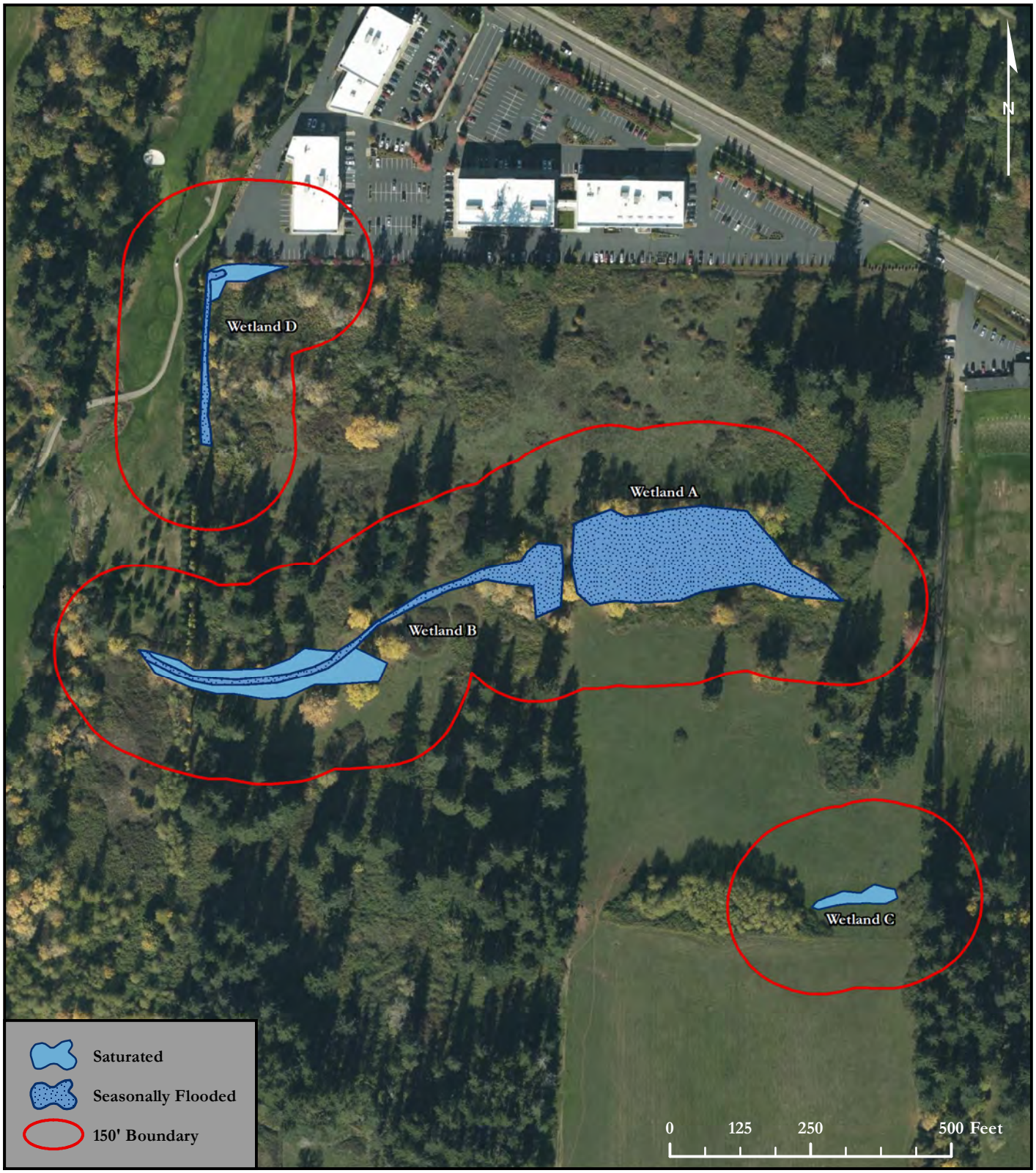
CAMAS BUSINESS CENTER
4707 & 4723 NW LAKE ROAD CAMAS, WA 98607

CLARK COUNTY PARCEL NUMBERS:
176155000 and 176170000

DATE:	8/16/2021
JOB:	1144.0027
BY:	DDS
SCALE:	1 " = 300 '
FIGURE NO.	1 of 5

CAMAS BUSINESS CENTER - HYDROPERIOD MAP



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CAMAS BUSINESS CENTER
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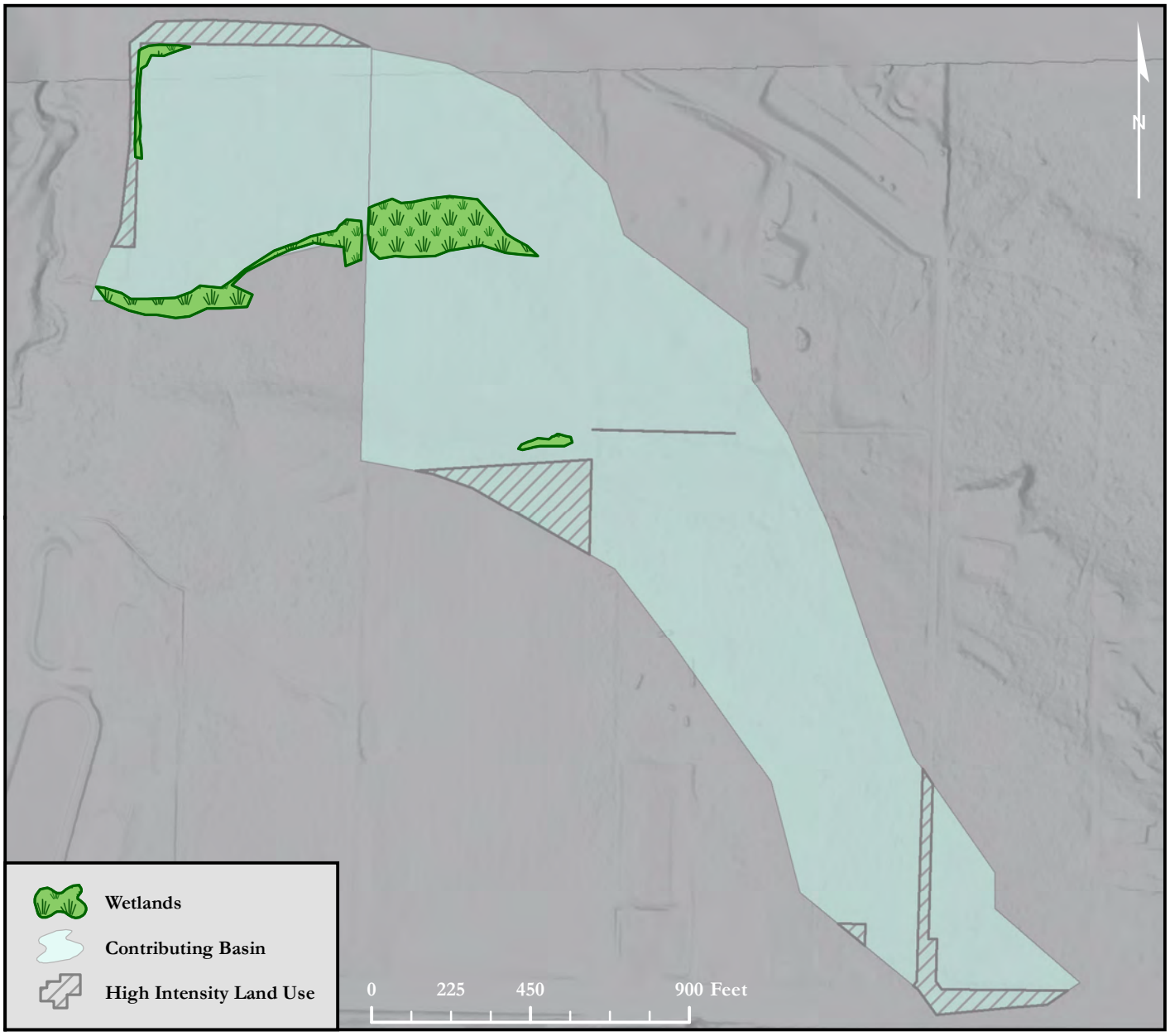
CLARK COUNTY PARCEL NUMBERS:
176155000 and 176170000

DATE:	8/16/2021
JOB:	1144.0027
BY:	DDS
SCALE:	1 " = 250 '
FIGURE NO.	2 of 5

CAMAS BUSINESS CENTER - CONTRIBUTING BASIN MAP



D.4.0		
D.4.3		
	Area of Contributing Basin (SF)	1,852,722
	Area of Wetland A (SF)	57,197
	Percent of Wetland A within Contributing Basin	**3.087%**
D.5.0		
D.5.3		
	Area of Contributing Basin	1,852,722
	Area of Intensive Human Land Uses	104,292
	Percent of Intensive Human Land Use within Contributing Basin	**6%**

D.4.0		
D.4.3		
	Area of Contributing Basin (SF)	488,807
	Area of Wetland D (SF)	7,089
	Percent of Wetland D within Contributing Basin	**1.450%**
D.5.0		
D.5.3		
	Area of Contributing Basin	488,807
	Area of Intensive Human Land Uses	53,728
	Percent of Intensive Human Land Use within Contributing Basin	**11%**

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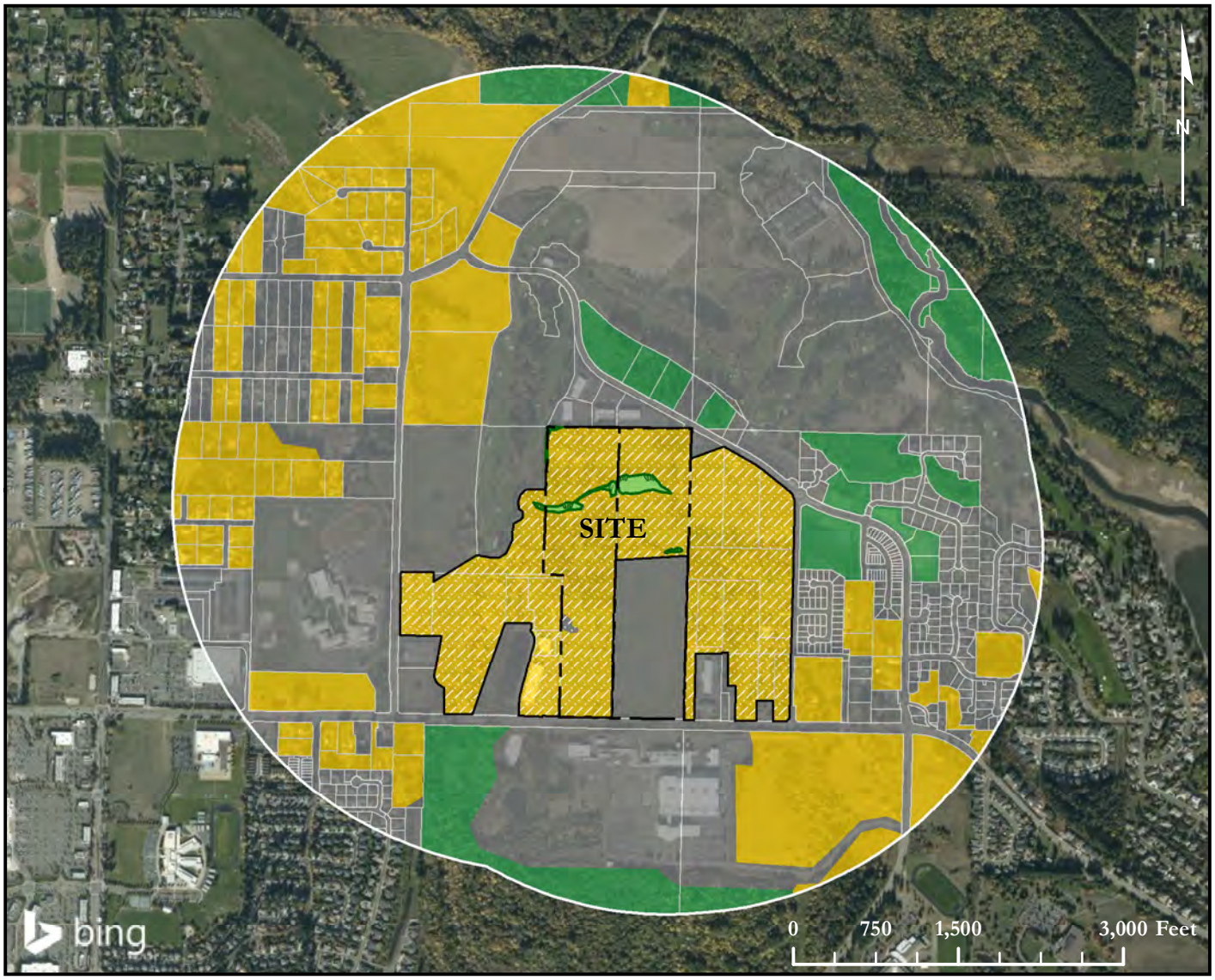
CAMAS BUSINESS CENTER
4707 & 4723 NW LAKE ROAD CAMAS, WA 98607

CLARK COUNTY PARCEL NUMBERS:
176155000 and 176170000

DATE: 8/16/2021
JOB: 1144.0027
BY: DDS
SCALE: 1 " = 450 '
FIGURE NO. 3 of 5

CAMAS BUSINESS CENTER - HABITAT MAP



H.2.0 Wetland A		
H.2.1		
	Abutting Undisturbed Habitat	0.00%
	Abutting Moderate & Low Intensity Land Uses	12.35%
	Accessible Habitat	**6.18%**
H.2.2		
	Undisturbed Habitat	9.17%
	Moderate & Low Intensity Land Uses	33.73%
	Undisturbed Habitat in 1 KM Polygon	**26.03%**
H.2.3		
	High Intensity Land Use in 1 KM Polygon	**57.10%**

- **1 KM Polygon**
- **Accessible Habitat**
- **High Intensity**
- **Moderate & Low Intensity**
- **Undisturbed Habitat**

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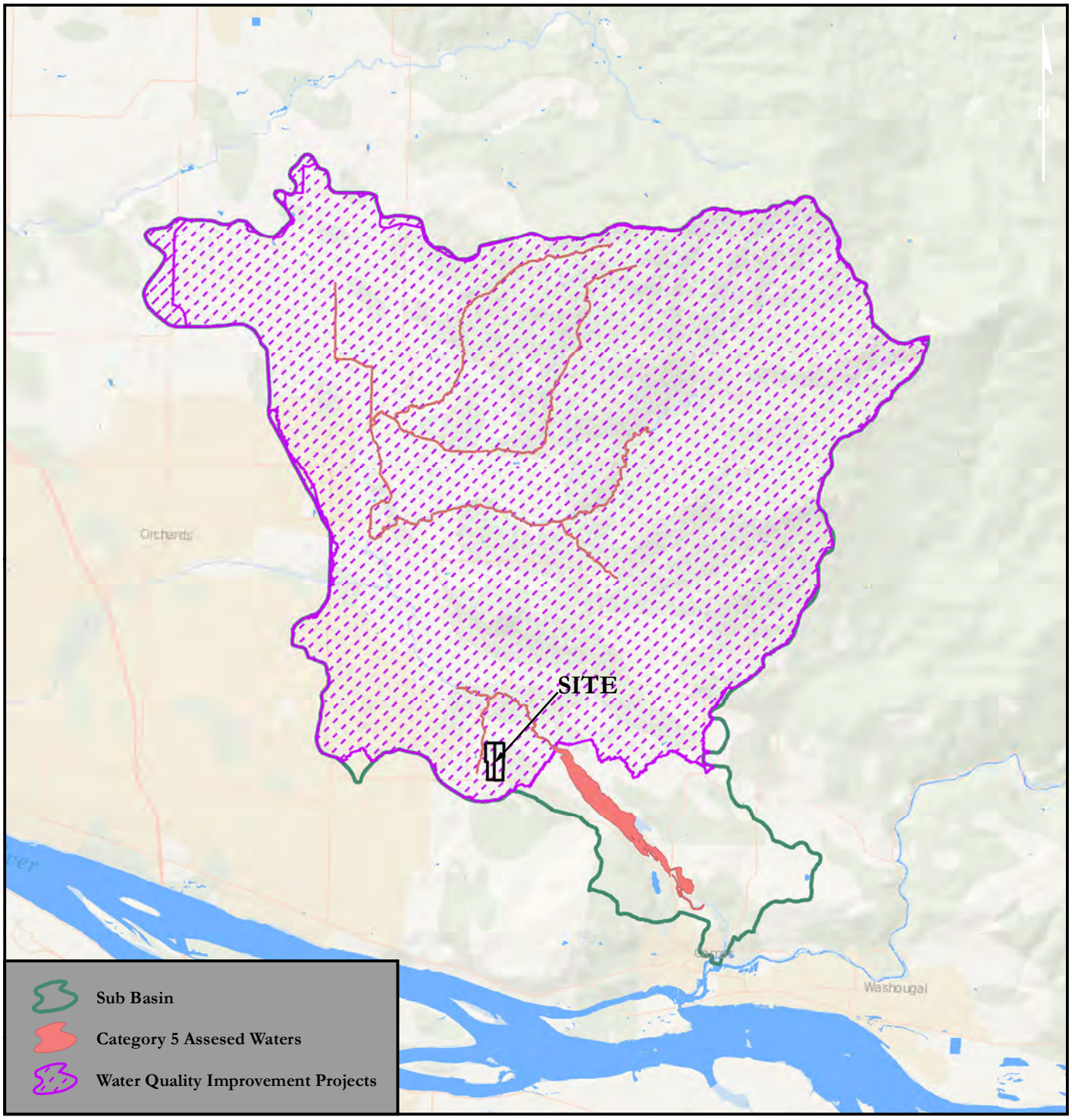
CAMAS BUSINESS CENTER
4707 & 4723 NW LAKE ROAD CAMAS, WA 98607

CLARK COUNTY PARCEL NUMBERS:
176155000 and 176170000

DATE: 8/16/2021
JOB: 1144.0027
BY: DDS
SCALE: 1 " = 1,500 '
FIGURE NO. 4 of 5

CAMAS BUSINESS CENTER CENTER - 303D MAP



Name	Pollutants	TMDL ID	WRIA	Year Approved
Salmon Creek Bacteria and Turbidity TMDL	Bacteria, Turbidity	33	28	2001
Salmon Creek Watershed Temperature TMDL	Temperature	123	28	2011

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CAMAS BUSINESS CENTER
4707 & 4723 NW LAKE ROAD CAMAS, WA 98607

CLARK COUNTY PARCEL NUMBERS:
176155000 and 176170000

DATE: 8/16/2021
JOB: 1144.0027
BY: DDS
SCALE: 1 " = 2 mi
FIGURE NO. 5 of 5

Appendix G – Qualifications

All field inspections, wetland determinations, habitat assessments, and supporting documentation, including this ***Wetland and Fish and Wildlife Habitat Assessment Report*** prepared for the ***Camas Commerce Center*** property were prepared by, or under the direction of, Matt DeCaro of SVC. In addition, the site investigations were performed by Rachael Hyland and Jake Layman, and report preparation was completed by Casey Lanier and Kelly Kramer

Matt DeCaro

Associate Principal
Professional Experience: 13 years

Matt DeCaro is an Associate Principal and Senior Scientist with a diverse background in environmental planning, wetland science, stream ecology, water quality, site remediation, NEPA compliance, and project management. He manages a wide range of industrial, commercial, and multi-family residential projects throughout Western Washington, providing environmental permitting and regulatory compliance assistance for land use projects from their planning stages through entitlement and construction. His local expertise, diverse professional background, and positive relationships with regulatory personnel are integral components of his successful project outcomes.

Matt earned a Bachelor of Science degree with a focus in Environmental Science from the Evergreen State College in Olympia, Washington, with additional graduate-level coursework and research in aquatic restoration and salmonid ecology. Matt has received 40-hour wetland delineation training (*Western Mountains, Valleys, & Coast and Arid West Regional Supplements*) and regularly performs wetland, stream, and shoreline delineations. Matt has been formally trained in the use of the *2014 Washington State Wetland Rating System* and *Determination of Ordinary High Water Mark* by WSDOE, and he is a Pierce County Qualified Wetland Specialist and Wildlife Biologist. He has attended USFWS survey workshops for multiple threatened and endangered species, and he is a Senior Author of WSDOT Biological Assessments. Matt holds 40-hour HAZWOPER training and has managed Phase I Environmental Site Assessments, subsurface investigations, and contaminant remediation projects throughout the Pacific Northwest. His diverse experience also includes NEPA compliance for federal permitting projects; noxious weed abatement; army ant research in the Costa Rican tropical rainforest; spotted owl surveys on federal and private lands; and salmonid spawning and migration surveys.

Jake Layman

Environmental Scientist
Professional Experience: 12+ years

Jake Layman is an Environmental Scientist with a varied background in fisheries, wildlife, and aquatic invertebrate biology and stream and lake ecology. Jakes's expertise includes endangered species monitoring, lake limnology assessments, water chemistry profiles, off-channel habitat characterization, laboratory management, and terrestrial and aquatic amphibian identification with associated habitat assessments. Jake also has experience in fish population assessments, stream typing, spawning escapement, environmental disaster recovery, and amphibian toxicology research. Jake has over 10 years of experience at the federal and state levels conducting ecological monitoring surveys throughout Eastern and Western Washington. He worked with the National Park Service to conduct environmental compliance monitoring on park construction projects, infrastructure maintenance

projects, and federal highways projects. This position also included environmental spill response, fish exclusion surveys in support of construction, and effectiveness monitoring on Engineered Log Jam (ELJ) projects. Jake has worked with the Washington Department of Fish and Wildlife (WDFW) to assess and inventory fish passage barriers and monitor culvert removal projects throughout Western Washington. While working for WDFW, Jake managed the daily operation for the intensive habitat study, on off-channel wetlands, for the Chehalis Aquatic Resources Protection Plan (ASRP).

Jake earned bachelor's degrees in both Biology, with an Ecology specialization, and Geography, with a Natural Resource Management specialization, from Central Washington University. In addition, Jake has a Minor in Environmental Studies and a Certificate in Geographic Information Systems (GIS) and Cartography form Central Washington University. Jake has received a 40-hour wetland delineation training (Western Mtns, Valleys, & Coast and Arid West Regional Supplement) and training from the Washington State Department of Ecology in Environmental Negotiations; Navigating SEPA; Conducting Forage Fish Surveys; Puget Sound Coastal Processes, Shoreline Modifications, and Beach Restoration; Using the Marine Shoreline Design Guidelines for Marine Shoreline Stabilization; How to Determine the Ordinary High Water Mark; and Using the Revised Washington State Wetland Rating System (2014) in Western Washington.

Rachael Hyland

Environmental Scientist & Certified Ecologist
Professional Experience: 7 years

Rachael Hyland is a Wetland Professional in Training (WPIT) through the Society of Wetland Scientists and a Certified Ecologist through the Ecological Society of America. Rachael has a background in wetland and ecological habitat assessments in various states, most notably Washington, Connecticut, Massachusetts, Rhode Island, and Ohio. She has experience in assessing tidal, stream, and wetland systems, reporting on biological evaluations, permitting, and site assessments. She also has extensive knowledge of bats and white nose syndrome (*Pseudogymnoascus destructans*), a fungal disease affecting bats which was recently documented in Washington.

Rachael earned a Bachelor of Science degree in Ecology and Evolutionary Biology from the University of Connecticut, with additional ecology studies at the graduate level. Rachael has completed 40-hour wetland delineation training for Western Mountains, Valleys, & Coast and Arid West Regional Supplement, in addition to formal training for the Northcentral and Northeast supplement, and experience with the Eastern Mountains and Piedmont and Atlantic and Gulf Coast supplements. She has also received formal training from the Washington State Department of Ecology in the Using the Revised 2014 Wetland Rating System for Western Washington, How to Determine the Ordinary High Water Mark, Navigating SEPA, and Selecting Wetland Mitigation Sites Using a Watershed Approach. Rachael has also received training from the Washington State Department of Transportation in Biological Assessment Preparation for Transportation Projects and is listed by WSDOT as a junior author for preparing Biological Assessments.

MITIGATION BANK USE AND CONCEPTUAL MITIGATION PLAN

CAMAS BUSINESS CENTER

OCTOBER 2021

Soundview Consultants
Environmental Assessment
Planning + Land Use Solutions

MITIGATION BANK USE AND CONCEPTUAL MITIGATION PLAN

CAMAS BUSINESS CENTER

OCTOBER 8, 2021

PROJECT LOCATION
4707 AND 4723 NW LAKE ROAD
CAMAS, WASHINGTON, 98607

PREPARED FOR
BJORN BRYNESTAD
PANATTONI DEVELOPMENT COMPANY, INC.
1821 DOCK STREET
SUITE 100
TACOMA, WASHINGTON 98402

PREPARED BY
SOUNDVIEW CONSULTANTS LLC
2907 HARBORVIEW DRIVE
GIG HARBOR, WASHINGTON 98335
(253) 514-8952

Soundview Consultants
Environmental Assessment
Planning + Land Use Solutions

Executive Summary

Soundview Consultants LLC (SVC) has been assisting Panattoni Development Company Inc. (Applicant) with a wetland and fish and wildlife habitat assessment and environmental planning to support the proposed Camas Business Center industrial development on a 74.06-acre site located at 4707 & 4723 Northwest Lake Road in the City of Camas, Washington. The subject property consists of two tax parcels situated in the Southeast ¼ of Section 29, Township 02 North, Range 03 East, W.M (Clark County Tax Parcel Numbers 176155000, and 176170000).

SVC performed an investigation and assessment of potentially regulated wetlands, streams, and other fish and wildlife habitat conservation areas on the subject property and publicly accessible areas within 300 feet of the site in December 2020, with follow-up investigations in April 2021. Using current methodology, SVC identified four potentially regulated wetlands (Wetlands A - D) on the subject property, and one potentially regulated stream (Offsite Stream Z) offsite to the west of the subject property. Wetland A is classified as Category III wetland with 4 total habitat points, and subject to a standard 80-foot buffer based on proposed high intensity land use per Camas Municipal Code (CMC) 16.53.040.B.2 Table 16.53.040-1. Wetland B is classified as a Category III wetland with 5 total habitat points and subject to a standard 120-foot buffer per CMC 16.53.040.B.2 Table 16.53.040-3. Wetland C is classified as a Category IV wetland and is likely exempt from buffer regulations per Camas Municipal Code (CMC) 16.53.010.C.2.a due to its isolated location in the landscape and small size (less than 4,350 square feet). Wetland D is classified as a Category III wetland with 6 total habitat points and subject to a standard 135-foot buffer per CMC 16.53.040.B.2 Table 16.53.040-3. Offsite Stream Z is likely a Type F stream with no known salmonid presence in accordance with Washington Department of Fish and Wildlife (WDFW) SalmonScape data and subject to a standard 75-foot buffer per CMC 16.61.040.D. The stream buffer is not anticiapted to project onto the subject property. No other potentially regulated wetlands or fish and wildlife habitat conservation areas were identified within 300 feet of the subject property. Please see the *Wetland and Fish and Wildlife Habitat Assessment Report* (SVC, 2021) for additional details.

The Applicant proposes industrial development of the subject property to create a business center that includes three buildings, internal access roads, parking and loading areas, utilities, and stormwater facilities. The proposed project was carefully designed to avoid and minimize impacts to the identified critical areas by utilizing the developable upland areas onsite, and direct impacts to the larger, higher functioning wetlands (Wetlands A, B, and D) onsite and offsite Stream Z are avoided entirely. However, complete avoidance is not possible due to the spatial requirements to support an industrial facilities and associated infrastructure and the encumbrance of the identified wetlands and associated buffers on the central portions of the subject property. The project has undergone several design revisions to minimize impacts, including reducing the number of proposed buildings, reducing the size and orientation of the proposed buildings, and reducing the size of the proposed stormwater facilities. No other feasible option in design would result in less impacts to the identified critical areas while allowing for reasonable development of the subject property. As such, the project requires the necessary and unavoidable total fill of one low-functioning Category IV wetland (Wetland C) on the subject property to meet the associated infrastructure demands for the three industrial buildings. The proposed project will implement minimization measures to reduce the impacts of the proposed high intensity land use and reduce the buffers of Wetlands A, B, and D as allowed pursuant to CMC 16.53.050.C.1.a. The proposed parking areas will encroach on reduced wetland buffers by 3,703 square feet, and buffer averaging is proposed to offset these encroachments per CMC 16.53.050.C.2.

13,485 square feet of additional buffer area will be protected via the proposed buffer averaging, providing a net gain of 9,782 square feet of buffer. 64,095 square feet of temporary buffer grading impacts will be restored through replanting with native trees, shrubs, and groundcovers. The proposed native replacement plantings are anticipated to result in a net gain of existing ecological functions when compared to the existing buffers that are degraded by non-native, invasive species. To minimize temporary impacts, all appropriate best management practices (BMPs) and temporary erosion and sediment control (TESC) measures including installing silt fencing between construction activities and the remaining wetlands and associated buffer areas onsite will be implemented throughout the course of construction.

Compensatory mitigation for the total fill of the small, low-functioning Category IV wetland (Wetland C) is proposed to be provided through the purchase of 0.061 acre-credits from the TMB as allowed under CMC 16.53.050.D.5.a and state and federal guidance. The overarching goals of the TMB are to improve hydrologic, water quality, and habitat functions and provide a self-sustaining, diverse forest, scrub-shrub, and emergent wetland and stream complex. TMB verified in email correspondence that while no mitigation bank credits are currently available, the release of additional credits is anticipated in late 2021 or early 2022. Onsite compensatory mitigation is not possible due to the spatial requirements of the mitigation area and associated buffers that would be required which would impact the development feasibility of the site. Offsite, permittee-responsible mitigation was considered, but no suitable mitigation sites were available in the area during the planning phase of this project. As such, mitigation bank use was determined to be the most ecologically feasible option that meets the needs of the project and will likely provide a higher level of ecological lift than onsite or offsite, in-kind permittee-responsible mitigation. Overall, these actions will likely result in a net increase in ecological functions within the Salmon-Washougal watershed (Water Resource Inventory Area 28) when compared to the existing degraded conditions of the wetland proposed to be impacted.

The table below identifies the onsite critical areas and summarizes the potential regulatory status by local, state, and federal agencies.

Feature Name	Size/Length Onsite	Category/ Type[1]	Regulated Under CMC 16.53 & 16.61	Regulated Under RCW 90.48	Regulated Under Clean Water Act
Wetland A	56,558 sf	III	Yes	Yes	Likely
Wetland B	32,343 sf	III	Yes	Yes	Likely
Wetland C	3,167 sf	IV	Yes	Yes	Not Likely
Wetland D	9,074 sf	III	Yes	Yes	Assumed
Offsite Stream Z	N/A (Offsite)	F	Yes	Yes	Likely

1. Wetlands classified according to Washington State Department of Ecology (WSDOE) wetland rating system for western Washington (Hruby, 2014); streams classified according Washington Department of Natural Resources (DNR) Water Typing System and CMC 16.61.040.

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Chapter 1. Introduction

1.1 Background

Soundview Consultants LLC (SVC) has been assisting Panattoni Development (Applicant) with a wetland and fish and wildlife habitat assessment and environmental planning to support the proposed industrial development of a 74.06-acre site located at 4707 & 4723 Northwest Lake Road in the City of Camas, Clark County, Washington. The subject property consists of two tax parcels that are situated in the Southeast ¼ of Section 29, Township 02 North, Range 03 East, W.M (Clark County Tax Parcel Numbers 176155000, and 176170000).

Using current methodology, SVC identified four potentially regulated wetlands (Wetlands A - D) on the subject property, and one potentially regulated stream (Offsite Stream Z) offsite to the west of the subject property. Wetland A is classified as Category III wetland with 4 total habitat points, and subject to a standard 80-foot buffer based on proposed high intensity land use per Camas Municipal Code (CMC) 16.53.040.B.2 Table 16.53.040-1. Wetland B is classified as a Category III wetland with 5 total habitat points and subject to a standard 120-foot buffer based on the proposed high intensity land use per CMC 16.53.040.B.2 Table 16.53.040-3. Wetland C is classified as a Category IV wetland and is likely exempt from buffer regulations per CMC 16.53.010.C.2.a due to its isolated location in the landscape and small size (less than 4,350 square feet). Wetland D is classified as a Category III wetland with 6 total habitat points and subject to a standard 135-foot buffer based on the proposed high intensity land use per CMC 16.53.040.B.2 Table 16.53.040-3. Offsite Stream Z is likely a Type F stream with no known salmonid presence in accordance with Washington Department of Fish and Wildlife (WDFW) SalmonScape data and subject to a standard 75-foot buffer per CMC 16.61.040.D. The stream buffer is not anticiapted to project onto the subject property. No other potentially regulated wetlands or fish and wildlife habitat conservation areas were identified within 300 feet of the subject property.

This Mitigation Bank Use and Conceptual Mitigation Plan describes the rationale for purchasing credits at the Terrace Mitigation Bank (TMB) to compensate for wetland impacts from the proposed project and was prepared following agency guidance on preparing mitigation plans and the use of mitigation banks including: the Interagency Review Team for Washington State Guidance Paper on *Using Credits from Mitigation Banks: Guidance to Applicants on Submittal Contents for Bank Use Plans* (2020), Washington State's Mitigation Banking Statutes (RCW 90.84 and WAC 173-700), the Washington State Department of Ecology's (WSDOE) *Wetland Mitigation in Washington State, Versions 1 and 2* (2006 and 2021) and , and the U.S. Army Corps of Engineers (USACE) *Compensatory Mitigation for Losses of Aquatic Resources* (33 C.F.R. § 332)(2008). In addition, this plan describes the use of buffer reduction and averaging as allowed under CMC 16.53.050.C.1 and 16.53.050.C.2 and restoration of temporary buffer impacts.

1.2 Project Description

The Applicant proposes industrial development of the subject property to create a business center that includes three buildings, internal access roads, parking and loading areas, utilities, and stormwater facilities. The proposed project was carefully designed to avoid and minimize impacts to the identified critical areas by utilizing the developable upland areas onsite, and direct impacts to the larger, higher functioning wetlands (Wetlands A, B, and D) onsite and offsite Stream Z are avoided entirely.

However, complete avoidance is not possible due to the spatial requirements to support an industrial facilities and associated infrastructure and the encumbrance of the identified wetlands and associated buffers on the central portions of the subject property. The project has undergone several design revisions to minimize impacts, including reducing the number of proposed buildings, reducing the size and orientation of the proposed buildings, and reducing the size of the proposed stormwater facilities. No other feasible option in design would result in less impacts to the identified critical areas while allowing for reasonable development of the subject property. As such, the project requires the necessary and unavoidable total fill of one low-functioning Category IV wetland (Wetland C) on the subject property to meet the associated infrastructure demands for the three industrial buildings. The proposed project will implement minimization measures to reduce the impacts of the proposed high intensity land use and reduce the buffers of Wetlands A, B, and D as allowed pursuant to CMC 16.53.050.C.1.a. The proposed parking areas will encroach on reduced wetland buffers by 3,703 square feet, and buffer averaging is proposed to offset these encroachments per CMC 16.53.050.C.2. 13,485 square feet of additional buffer area will be protected, exceeding the 1:1 requirements for buffer averaging. 64,095 square feet of temporary buffer grading impacts will be restored through replanting with native trees, shrubs, and groundcovers. The proposed native replacement plantings are anticipated to result in a net gain of existing ecological functions when compared to the existing buffers that are degraded by non-native, invasive species. To minimize temporary impacts, all appropriate best management practices (BMPs) and temporary erosion and sediment control (TESC) measures including installing silt fencing between construction activities and the remaining wetlands and associated buffer areas onsite will be implemented throughout the course of construction.

Compensatory mitigation for the total fill of the small, low-functioning Category IV wetland (Wetland C) is proposed to be provided through the purchase of mitigation bank credits from the TMB as allowed under CMC 16.53.050.D.5.a and state and federal guidance. Onsite compensatory mitigation is not possible due to the spatial requirements of the mitigation area and associated buffers that would be required which would impact the development feasibility of the site. Offsite, permittee-responsible mitigation was considered, but no suitable mitigation sites were available in the area during the planning phase of this project. As such, mitigation bank use was determined to be the most ecologically feasible option that meets the needs of the project and will likely provide a higher level of ecological lift than onsite or offsite, in-kind permittee-responsible mitigation. Overall, these actions will likely result in a net increase in ecological functions within the Salmon-Washougal watershed (Water Resource Inventory Area 28) when compared to the existing degraded conditions of the wetland proposed to be impacted.

1.3 Onsite Existing Conditions

1.3.1 Landscape Setting

The subject property is located in a mixed light-commercial and residential setting in the City of Camas. The parcels are undeveloped and sparsely forested, and currently used as grazing land for cattle (Figure 2). A single-family residence and associated infrastructure including a driveway, detached garage, and equipment storage shed/barn is located on the southern portion of the subject property. The site is bounded by commercial buildings to the north, undeveloped land and commercial buildings to the east, Northwest Lake Road to the south, and a golf course and commercial properties to the west. Topography onsite is generally flat with a slight downwards slope from to south to north. Elevation ranges from approximately 295 feet above mean sea level (amsl) on the southern portion of the site to approximately 244 feet amsl on the northern portion of the site. A topographic map is provided in Appendix B1. The subject property is located within Water Resource Inventory Area (WRIA) 28 – Salmon-Washougal.

Figure 1. Project Location.

1.3.2 Soils

The NRCS Soil Survey of Clark County, Washington identifies four soil series on the subject property: Cove silty clay loam, thin solum 0 to 3 percent (CwA), Hesson clay loam 0 to 8 percent slopes (HcB),

Hesson clay loam 8 to 20 percent slopes (HcD), and Powell silt loam 0 to 8 percent slopes (PoB). Below is a detailed description of each soil series.

Cove silty clay loam, thin solum, 0 to 3 percent (CwA)
According to the survey, Cove silty clay loam, thin solum, 0 to 3 percent (CwA) is part of the Cove series of soils mapped by the NRCS in Clark County. The Cove series consists of deep, very poorly drained soils that were formed in water-laid deposits in old lakes and ponds. The CwA soils occur in low, wet basins and depressions on terraces in the central part of the county. A typical soil profile is a silty clay loam for the first 10 inches of depth and is a very dark grayish brown. From 10 to 14 inches, the soil is a dark-gray silty loam. Immediately below, is an extremely firm, black clay layer about 7 inches thick. The underlying material to a depth of about 60 inches is and olive-colored silt laom. Cove silty clay loam, thin solum, 0 to 3 percent slopes, is listed as hydric on the Clark County Hydric Soils List (NRCS, N.d.).

Hesson clay loam, 0 to 8 percent slopes (HcB)
According to the survey, Hesson clay loam, 0 to 8 percent slopes (HcB) is part of the Hesson series of soils mapped by the NRCS in Clark County. The Hesson series consists well-drained soils in mostly level to gently rolling terrain. Parent material is deeply weathered, old alluvium that consists of varying amounts of gravel. Annual precipitation typically varies between 50 and 60 inches. In a typical profile, the surface layer is a dark reddish-brown clay loam about 4 inches thick. Below this layer is a friable, dark reddish-brown clay loam about 10 inches thick. A reddish-brown clay to a depth of about 91 inches. The Hesson clay loam, 0 to 8 percent slopes (HcB) is listed as non-hydric on the Clark County Hydric Soils List (NRCS, N.d.).

Hesson clay loam, 8 to 20 percent slopes (HcD)
According to the survey, this soil is similar to the Hesson clay loam 0 to 8 percent except the surface layer is generally, 1 to 2 inches thinner, and up to 4 inches thinner where erosion has been active. The Hesson clay loam, 8 to 20 percent slopes (HcD) is listed as non-hydric on the Clark County Hydric Soils List (NRCS, N.d.).

Powell silt loam, 0 to 8 percent slopes (PoB)
According to the survey, the Powell series is a moderately, well-drained, medium textured soil found in rolling terrains. The annual precipitation is typically around 50 inches. Powell soils are used for row crops, hay production, pasture and timber. The Powell silt loam, 0 to 8 percent slopes (PoB) surface layer is dark brown silt loam to a depth of about 17 inches. Below the surface layer is a friable, mottled, grayish-brown silt loam about 6 inches thick. The following layer, to a depth of approximately 22 inches is a dark yellowish-brown silt loam that is firm, and mottled brown heavy silt loam in the lower part. Below this layer to a depth of approximately 63 inches is a firm, mottled, dark-brown heavy silt loam. The Powell silt loam, 0 to 8 percent slopes (PoW) is listed as non-hydric on the Clark County Hydric Soils List (NRCS, N.d.)

1.2.3 Vegetation

Vegetation on the subject property generally consists of an actively grazed pasture, with partially forested areas on the west and northern portions of the property. The grazed areas on the property exhibited evidence of disturbance and heavily compacted soils from cattle activity. Vegetation in these areas consisted of common pasture grasses including tall fescue (*Schedonorus arundinaceus*), common velvetgrass (*Holcus lanatus*), orchard grass (*Dactylis glomerata*), Kentucky bluegrass (*Poa pratensis*), and soft rush (*Juncus effusus*). The forested portion of the site is generally dominated by a canopy of Oregon

ash (*Fraxinus latifolia*), with smaller amounts of Douglas fir (*Psuedotsuga menziesii*), oneseed hawthorn (*Crataegus monogyna*), and hardhack (*Spiraea douglasii*). Non-native, invasive species were prevalent throughout the site, including Himalayan blackberry (*Rubus armeniacus*) (particularly in the north and northwest portions of the property), reed canarygrass (*Phalaris arundinacea*), and bird's-foot trefoil (*Lotus corniculatus*).

1.2.4 Wetlands

SVC identified and delineated four wetlands (Wetlands A - D) on the subject property. The identified wetlands contained indicators of wetland hydrology, hydric soils, and a predominance of hydrophytic vegetation according to current wetland delineation methodology. Table 2 summarizes the wetlands identified during the site investigations.

Table 1. Wetland Summary

Wetland	Predominant Wetland Classification / Rating				Wetland Size Onsite (sq ft)	Standard Buffer Width (feet)
	Cowardin[1]	HGM[2]	WSDOE[3]	City of Camas[4]		
A	PFOC	Depressional	III	III	56,558	80
B	PFO/EMBC	Slope	III	III	32,343	120
C	PEMB	Slope	IV	IV	3,167	N/A[5]
D	PFO/SS/EMBC	Depressional	III	III	9,074	135

Notes:
1. Cowardin et al. (1979); Federal Geographic Data Committee (2013); class based on vegetation: PFO = Palustrine Forested, PSS = Scrub-Shrub, PEM = Palustrine Emergent. Modifiers for Water Regime: B = Seasonally Saturated, C = Seasonally Flooded.
2. Brinson, M. M. (1993).
3. Current WSDOE rating (Hruby, 2014).
4. Current WSDOE rating system (Hruby, 2014) per CMC 16.53.020.B.
5. Exempt per CMC 16.53.010.C.2.a

Wetland A

Wetland A is 56,558 square feet (1.30 acres) in size and is located on the northern portion of the subject property. Hydrology for Wetland A is provided by direct precipitation, a seasonally high water table, and surface runoff from adjacent uplands. A culvert is located on the west end of the wetland and reduces the storage capacity of the wetland. Wetland vegetation is dominated by an overstory of Oregon ash, with an understory of oneseed hawthorn, hardhack, and shortawn foxtail (*Alopecurus aequalis*). Non-native, invasive species observed in Wetland A include Himalayan blackberry, reed canarygrass, meadow foxtail, and bird's-foot trefoil. Wetland A is a Palustrine Forested, Seasonally Flooded (PFOC) wetland. Wetland A is a Category III depressional wetland with a habitat score of 4 points under current WSDOE wetland rating methodology (Hruby, 2014).

Wetland B

Wetland B is 32,343 square feet (0.74 acre) in size and is located on the western portion of the subject property, extending offsite to the west. Hydrology for Wetland B is provided by direct precipitation, a seasonally high-water table, and surface runoff from adjacent uplands. A culvert provides hydraulic connectivity between Wetland A and Wetland B. Wetland vegetation is dominated by an overstory of

Oregon ash, with an understory dominated by tall fescue and Kentucky bluegrass, and non-native, invasives Himalayan blackberry, reed canarygrass, and bird's-foot trefoil. Wetland B is a Palustrine Forested/Emergent, Seasonally Flooded/Seasonally Saturated (PFO/EMBC) wetland. Wetland B is a Category III slope wetland with a habitat score of 5 points under current WSDOE wetland rating methodology (Hruby, 2014).

Wetland C

Wetland C is 3,167 square feet (0.07 acre) in size and located on the eastern portion of the subject property. Hydrology for Wetland C is provided by direct precipitation, a seasonally high water table, and surface runoff from adjacent uplands. Wetland vegetation is dominated by soft rush, with smaller amounts of common velvetgrass, Kentucky bluegrass, and tall fescue. Wetland C is a Palustrine, Emergent, Seasonally Saturated (PEMB) wetland. Wetland C is a Category IV slope wetland under current WSDOE wetland rating methodology (Hruby, 2014).

Wetland D

Wetland D is approximately 9,074 square feet (0.21 acre) in size and located in the northwestern corner of the subject property. Hydrology for Wetland B is provided by direct precipitation, a seasonally high water table, and surface runoff from adjacent uplands. Wetland vegetation is dominated by an overstory of Oregon ash with an understory consisting of hardhack, oneseed hawthorn, soft rush, and fringed willow herb (*Epilobium ciliatum*), as well non-native invasive species including Himalayan blackberry, rambler rose (*Rosa multiflora*), bull thistle (*Cirsium vulgare*), reed canarygrass, tall fescue, and bird's foot trefoil. Wetland D is a Palustrine Forested/Scrub-shrub/Emergent, Seasonally Flooded/Seasonally Saturated (PFO/SS/EMBC) wetland. Wetland D is a Category III depressional wetland with a habitat score of 6 points under current WSDOE wetland rating methodology (Hruby, 2014).

1.2.5 Excavated Farm Pond

An excavated farm pond was identified on the south-central portion of the subject property during the site investigations. The farm pond was located in the middle of an actively grazed cattle pasture and utilized by livestock. The farm pond exhibited sharp edges typical of artificially excavated features rather than natural wetland conditions. The farm pond is slightly elevated relative to the surrounding land suggesting the banks are occasionally built up and reinforced. Topography in this area of the site slopes downgradient from east to west. An elevated dirt road/trail bisects the property in a north south direction and acts as an impoundment of overland storm flows, creating surface water in the farm pond during the rainy season. Therefore, the farm pond was determined to be an artificially and intentionally created feature for use by cattle based on land use, the presence of a road, and geomorphic positioning. Per CMC 16.53.010.C.2.b, *wetlands created from nonwetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, stormwater facilities, farm ponds, and landscape amenities,* shall be exempt from wetland regulations. As such, the farm pond is likely considered a non-regulated feature by the City of Camas.

Chapter 2. Regulatory Considerations

The site investigations in December 2020 and April 2021 identified and delineated four potentially regulated wetlands (Wetlands A-D) onsite the subject property as well as one offsite stream (Offsite Stream Z) within 300 feet of the subject property. No other potentially regulated wetlands, waterbodies, priority fish and wildlife habitat, or priority species were identified on or within 300 of the subject property during the site investigations.

2.1 Local Critical Area Requirements

2.1.1 Buffer Standards

CMC 16.53.020.B describes wetland categorizations with reference to the *Washington State Wetlands Rating System for Western Washington-Revised – Washington State Department of Ecology Publication No. 04-06-029, published August 2014* (Hruby, 2014). Category IV wetlands are typically more disturbed, smaller, and/or more isolated in the landscape than Category I, II, or III wetlands. Category IV wetlands provide low levels of functions and score less than 16 out of 27 points on the *Revised Washington State Wetland Rating System for Western Washington* (Hruby, 2014). Category III wetlands have generally been disturbed in some ways and are often less diverse or more isolated from other natural resources in the landscape than Category II wetlands. Category III provide moderate levels of functions and score between 16 to 19 points on the *Revised Washington State Wetland Rating System for Western Washington* (Hruby, 2014).

Wetland A is classified as Category III wetland with 4 total habitat points, and subject to a standard 80-foot buffer based on proposed high intensity land use per CMC 16.53.040 Table-3. Wetland B is classified as a Category III wetland with 5 total habitat points and subject to a standard 120-foot buffer based on the proposed high intensity land use. Wetland C is classified as a Category IV wetland and is likely exempt from buffer regulations per CMC 16.53.010.C.2.a. Wetland D is classified as a Category III wetland with 6 total habitat points and subject to a standard 135-foot buffer.

Offsite Stream Z is likely a Type F stream with no known salmonid presence in accordance with Washington Department of Fish and Wildlife (WDFW) SalmonScape data and subject to a standard 75-foot buffer per CMC 16.61.040.D. The stream buffer is not anticipated to project onto the subject property.

2.1.2 Mitigation Sequencing

The proposed industrial development will result in the total fill of on low-functioning Category IV wetland (Wetland C) and will reduce and average the buffers of Wetlands A, B, and D onsite. Per CMC 16.51.170, Applicant must demonstrate that reasonable efforts have been examined with the intent to mitigation impacts to critical areas following the preferred sequencing under CMC 16.51.170. The mitigation sequencing is as follows:

A. Avoiding the impact altogether by not taking a certain action or parts of an action (usually by either finding another site or changing the location on the site).

The proposed project was carefully designed to avoid and minimize impacts to the identified critical areas by utilizing the developable upland areas onsite, and direct impacts to Wetlands

A, B, and D and offsite Stream Z are avoided entirely. However, complete avoidance is not possible due to the spatial requirements to support the proposed business center and associated infrastructure, and the encumbrance of the identified wetlands and associated buffers on the central portions of the subject property. In order to accommodate the purpose and need for industrial development that will support job growth in the City of Camas and greater Clark County area, the project requires the necessary and avoidable total fill of one low-functioning Category IV wetland (Wetland C) on the subject property. Additionally, the project requires the reduction of the buffers of Wetlands A, B, and D with additional averaging of Wetlands A and B buffers as allowed pursuant to CMC 16.53.050.C.1.a and 16.53.050.C.2 to provide necessary parking and stormwater infrastructure for the proposed development. Temporary buffer impacts are required to support site grading as allowed under CMC 16.53.050.C.5.

B. *Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps, such as project design, developable area configuration, relocation, or timing, to avoid or reduce impacts.*

As described above, the total fill of Wetland C is unavoidable and necessary to support the proposed business center and associated infrastructure. The project has undergone several design revisions to minimize impacts to the greatest extent feasible including reducing the number of proposed buildings, reducing the size and orientation of the proposed buildings and changing the location and size of the proposed stormwater facilities to avoid direct impacts to Wetlands A, B, and D. No other feasible option in design would result in less impacts to critical areas while allowing for reasonable development of the subject property due to the encumbrance of the identified wetlands and associated buffers on the central portions of the subject property. Minimization measures will be implemented to reduce the impacts of the proposed high intensity land use; this reduction in impacts will result in reduced buffers for Wetlands A, B, and D as allowed per CMC 16.53.050.C.1.a. Temporary impacts during construction will be minimized through the use of best management practices (BMPs) and temporary erosion and sediment control (TESC) measures such as silt fencing between project activities and the remaining critical areas and associated buffers onsite.

C. *Minimizing or eliminating the hazard by restoring or stabilizing the hazard area through engineered or other methods.*

No hazard or hazard areas exist onsite. Any soils disturbed following construction will be seeded with a grass-seed mix to stabilize and restore soils to pre-construction conditions which will prevent hazards associated with increased erosion.

D. *Reducing or eliminating the impact or hazard over time by preservation and maintenance operations during the life of the action.*

The remaining Wetlands A, B, and D and associated buffer areas onsite will be protected via a critical areas tract, conservations easement, or other protective mechanism acceptable by the City of Camas to limit development in perpetuity. In addition, a split-rail fence and critical areas signage will be placed around the preserved wetlands and associated buffer areas post-development to limit intrusion into the areas as required per CMC 16.51.210.

E. Compensating for the impact to critical areas by replacing, enhancing, or providing substitute resources or environments.

The necessary and unavoidable total fill one low-functioning, Category IV wetland (Wetland C) will be compensated for through the purchase of mitigation bank credits from the TMB. The TMB consists of a 113.04-acre site focused on restoring portions of the Orchards Peat Area, an area classified as historical peat marsh. The overarching goals of the TMB are to improve hydrologic, water quality, and habitat functions and provide a self-sustaining, diverse forest, scrub-shrub, and emergent wetland and stream complex. Mitigation banks provide large-scale mitigation that create high functioning wetlands with longer-term maintenance and management than typical permittee-responsible mitigation projects. Full compensatory mitigation onsite is not possible due to the spatial requirements of the mitigation area and associated buffers which will impact the development feasibility of the site. As such, the use of a wetland mitigation bank was determined to be the best strategy that will result in a net gain in ecological functions within the greater Salmon-Washougal watershed.

F. Monitoring the hazard or other required mitigation and taking remedial action when necessary.

The onsite buffer restoration areas will be maintained and monitored for a period of up to 5 years per CMC 16.51.180.D to ensure the success of temporary buffer impact restoration.

G. Rectifying the impact to critical areas by repairing, rehabilitating, or restoring the affected environment to the historical conditions, or the conditions existing at the time of the initiation of the project.

The proposed temporary buffer impacts will be fully restored by replanting impacted areas with native trees, shrubs, and groundcovers. The proposed buffer restoration is anticipated to result in a net gain of ecological functions when compared to the existing buffers that are degraded by non-native invasive species. The proposed parking and loading areas will encroach into the reduced buffers of Wetlands A and B; these encroachments are proposed to be offset via buffer averaging as allowed per CMC 16.53.050.C.2. The proposed buffer areas to be added via buffer averaging will be greater than the areas that will be impacted, exceeding full rectification of those impacts.

2.1.3 Standards for Activities in Wetlands

In addition to mitigation sequencing and requirements that are applicable to all critical areas identified in CMC Chapter 16.51, the following sequencing listed under CMC 16.53.050.D.1 must be addressed for activities permitted within in wetlands:

a. Avoid impacts to wetlands unless the responsible official finds that:
- *i. For Categories I and II wetlands, avoiding all impact is not in the public interest or will deny all reasonable economic use of the site;*
- *ii. For Categories III and IV wetlands, avoiding all impact will result in a project that is either:*
  - *A. Inconsistent with the city of Camas comprehensive plan;*
  - *B. Inconsistent with critical area conservation goals; or*
  - *C. Not feasible to construct.*

The proposed project includes impacts to one Category IV wetland (Wetland C) onsite. The proposed project will increase job opportunities within the City of Camas consistent with the goals of the City's comprehensive plan to support a diverse range of employment opportunities and support industrial development in the Grass Valley planning area. The project has undergone all reasonable measures to avoid impacts to the onsite critical areas possible (see part A of the mitigation sequencing described under section 2.1.2 above), and any further reduction in the size or scope of the project to avoid impacts would impact the economic feasibility of the project. The wetland proposed to be impacted is a small, slope wetland located within an actively grazed pasture and provides limited water quality, hydrologic, and habitat functions onsite and within the greater Salmon-Washougal watershed. The purchase of mitigation bank credits from the TMB is proposed to compensate for the total fill of Wetland C and will provide a net lift in ecological functions in the watershed when compared to the existing degraded conditions onsite.

b. Minimize impacts to wetlands if complete avoidance is infeasible. The responsible official must find that the applicant has limited the degree or magnitude of impact to wetlands by using appropriate technology and by taking affirmative steps to reduce impact through efforts such as:

- *i. Seeking easements or agreements with adjacent land owners or project proponents where appropriate;*
- *ii. Seeking reasonable relief that may be provided through application of other city zoning and design standards;*
- *iii. Site design; and*
- *iv. Construction techniques and timing.*

The proposed project has undergone all reasonable measures to minimize impacts to onsite wetlands to the greatest extent feasible, including reducing the number of proposed buildings, reducing the size and orientation of the proposed buildings, and reducing the scale of parking areas and the proposed stormwater facilities (See Part B of the mitigation sequencing described under section 2.1.2 above). These design iterations have minimized wetland impacts by enabling the preservation of Wetlands A, B, and D, which occupy a significant portion of the northern half of the site. The proposed development is consistent with the zoning of the subject property (light industrial / business parks). BMPs and TESC measures will be implemented throughout the duration of the proposed project to minimize impacts to the remaining wetlands (Wetlands A, B, and D) onsite.

c. Compensate for wetland impacts that will occur, after efforts to minimize have been exhausted. The responsible official must find that:

- *i. The affected wetlands are restored to the conditions existing at the time of the initiation of the project;*
- *ii. Unavoidable impacts are mitigated in accordance with this subsection; and*
- *iii. The required mitigation is monitored and remedial action is taken when necessary to ensure the success of mitigation activities.*

Compensatory mitigation for the total fill of Wetland C onsite will be provided through the purchase of mitigation bank credits from the TMB, consistent with CMC 16.53.050.D.5. The purchase of mitigation bank credits will provide a net lift in ecological functions within the Salmon-Washougal watershed when compared to the existing degraded condition of Wetland C onsite.

Per CMC 16.53.050.D.2, wetland mitigation for unavoidable impacts shall be located using the following prioritization:

a. On-Site. Locate mitigation according to the following priority:

i. Within or adjacent to the same wetland as the impact;

ii. Within or adjacent to a different wetland on the same site;

Onsite compensatory mitigation for the total fill of Wetland C is not possible due to the spatial requirements of the mitigation area, which will impact the development of the site. The proposed use of the TMB will support higher functioning wetlands than could be created onsite.

b. Off-Site. Locate mitigation within the same watershed or use an established wetland mitigation bank; the service area determined by the mitigation bank review team and identified in the executed mitigation bank instrument;

Compensatory mitigation for the total fill of Wetland C will be provided through the purchase of mitigation bank credits from the TMB, located approximately 3.5 miles northwest of the subject property. The subject property is within the mitigation bank's established service area (Attachment B).

c. In-Kind. Locate or create wetlands with similar landscape position and the same hydro-geomorphic (HGM) classification based on a reference to a naturally occurring wetland system; and

The wetland areas created at the TMB mitigation site consist of forested, scrub-shrub, and emergent wetland habitats located in a similar landscape to the wetland proposed to be impacted. Wetland C is a degraded slope wetland located within a pasture actively grazed by cattle. As such, the purchase of mitigation bank credits from the TMB will provide in-kind mitigation that results a net lift in wetland functions when compared to the existing degraded conditions associated with Wetland C onsite.

2.1.4 Wetland Buffer Reduction and Averaging

The project proposes to reduce the buffers of Wetlands A, B, and D and to further average the buffers of Wetlands A and B to provide adequate parking and storm water facilities to support the proposed development. Wetland buffer reduction is permitted pursuant to CMC 16.53.050.C.1.a. Per CMC 16.53.050.C.1.a, the buffer widths recommended for proposed land uses with high-intensity impacts to wetlands can be reduced to those for moderate-intensity impacts if both of the following criteria are met:

i. A relatively undisturbed, vegetated corridor at least one hundred feet wide is protected between the wetland and any other priority habitats that are present as defined by the Washington State Department of Fish and Wildlife; and

Wetlands A and B are approximately 15 feet apart on the central portion of the subject property, and the corridor between the two wetlands will be maintained for habitat accessibility. Wetland D is greater than 300 feet north of Wetland B on the northwest corner of the subject property. The existing buffers of Wetland B and D will be connected through the protection of additional buffer area between these two wetlands.

ii. Measures to minimize the impacts of the land use adjacent to the wetlands are applied, such as infiltration of stormwater, retention of as much native vegetation and soils as possible, direction of noise and light away from the wetland, and other measures that may be suggested by a qualified wetland professional.

Stormwater from the proposed development will be conveyed to a stormwater pond/facility east of Wetland D which will detain and treat stormwater from the proposed development. Lights and noise from the proposed development will be directed away from the wetlands where feasible. Native vegetation and soils will be retained to the greatest extent possible, however the buffers of Wetlands A, B, and D are largely degraded by non-native invasive Himalayan blackberry (*Rubus armeniacus*). Native plants, including trees and shrubs, will be planted in temporarily impacted buffer areas to provide a net gain in buffer functions.

Per CMC 16.53.050.C.2, averaging buffers is allowed in conjunction with any of the other provisions for reductions in buffer width provided that the minimum buffer widths of CMC 16.53.050.C.1(c) are adhered to. CMC 16.53.050.C.1(c) states that buffer width reductions may be added provided that minimum buffer widths are never less than 75 percent of the required buffer width for Category I and II wetlands, less than 50 feet for Category III wetlands, and 25 feet for Category IV wetlands. The proposed buffer averaging reductions to the Category III Wetlands A and B will maintain at least 50-foot-wide buffers for these two wetlands.

The following criteria are required for buffer averaging:

a. The total area contained in the buffer after averaging is no less than that contained within the buffer prior to averaging;

The proposed project requires a 3,703-square-foot intrusion of parking and loading areas into the reduced wetland buffers. 13,486 square feet of additional buffer is proposed to be protected through buffer averaging, resulting in a net buffer gain of 9,783 square feet.

b. Decreases in width are generally located where wetland functions may be less sensitive to adjacent land uses, and increases are generally located where wetland functions may be more sensitive to adjacent land uses, to achieve no net loss or a net gain in functions;

The proposed buffer decreases will be located adjacent to parking and loading areas near Wetlands A and B. The proposed buffer increases will be located adjacent to the same parking and loading areas as well as along the northwest boundary of the subject property in order to provide contiguous buffer that surrounds Wetlands A, B, and D.

d. The averaged buffer, at its narrowest point, shall not result in a width less than seventy-five percent of the required width, provided that minimum buffer widths shall never be less than fifty feet for all Category I, Category II, and Category III wetlands, and twenty-five feet for all Category IV wetlands; and

Wetlands A and B are Category III wetlands that require a 60-foot reduced buffer and 90-foot reduced buffer respectively. The proposed buffer averaging avoids decreasing buffers beyond 75 percent of the required buffer width and preserves at least 50 feet of buffer width for these Category III wetlands.

d. Effect of Mitigation. If wetland mitigation occurs such that the rating of the wetland changes, the requirements for the category of the wetland after mitigation shall apply.

No wetland mitigation is proposed.

2.1.5 Mitigation Bank Use

The project proposes the purchase of mitigation bank credits from the TMB in order to compensate for the necessary, unavoidable total fill of one low-functioning Category IV wetland (Wetland C) onsite. Per CMC 16.53.050.D.5.a., projects proposing the purchase of credits from a wetland mitigation bank must comply with the following requirements:

i. Credits from a wetland mitigation bank may be approved for use as compensation for unavoidable impacts to wetland when:

A. The bank is certified under state rules;

The TMB was certified for use under state rules as of March 2017.

B. The administrator determines that the wetland mitigation bank provides appropriate compensation for the authorized impacts; and

The necessary and unavoidable total fill of Wetland C onsite will be compensated through the purchase of mitigation bank credits from the TMB. Onsite compensatory mitigation is not possible due to the spatial requirements of the mitigation area, which will impact the development of the site. The use of a mitigation bank will likely provide a higher level of ecological lift than small onsite or offsite, in-kind permittee-responsible mitigation, especially with the established resources for maintenance and monitoring over a longer term to ensure the success of mitigation actions. As such, the use of a mitigation bank will result in a net gain in ecological functions within the Salmon-Washougal watershed over the existing degraded condition of the wetland that will be impacted.

C. The proposed use of credits is consistent with the terms and conditions of the certified bank instrument.

The purchase of credits will be consistent with the terms and conditions of the certified bank instrument.

ii. Replacement ratios for projects using bank credits shall be consistent with replacement ratios specified in the certified bank instrument.

Impacts to the low-functioning Category IV wetland (Wetland C) onsite will be compensated at the 0.85:1 ratio specified in the TMB Mitigation Bank Instrument (MBI).

iii. Credits from a certified wetland mitigation bank may be used to compensate for impacts located within the service area specified in the certified bank instrument. In some cases, the service area of the bank may include portions of more than one adjacent drainage basin for specific wetland functions.

The subject property is located approximately 3.5 miles southeast of the Terrace Mitigation Bank site and is within the service area specified for the TMB.

2.2 State and Federal Considerations

In a December 2, 2008 memorandum from the Environmental Protection Agency (EPA) and USACE, joint guidance is provided that describes waters that are to be regulated under section 404 of the CWA (USACE, 2008). This memorandum was amended on February 2, 2012 where the EPA and USACE issued a final guidance letter on waters protected by the CWA.

The 2012 guidance describes the following waters where jurisdiction would be asserted: 1) traditional navigable waters, 2) interstate waters, 3) wetlands adjacent to traditional navigable waters, 4) non-navigable tributaries of traditional navigable waters that are relatively permanent meaning they contain water at least seasonally (e.g. typically three months and does not include ephemeral waters), and 5) wetlands that directly abut permanent waters. The regulated waters are those associated with naturally occurring waters and water courses and not artificial waters (i.e. stormwater pond outfalls).

The 2012 memorandum further goes on to describe waters where jurisdiction would likely require further analysis: 1) Tributaries to traditional navigable waters or interstate waters, 2) Wetlands adjacent to jurisdictional tributaries to traditional navigable waters or interstate waters, and 3) Waters that fall under the "other waters" category of the regulations.

In addition, the 2012 guidance identifies thirteen waters or areas where jurisdiction will not be asserted: 1) Wet areas that are not tributaries or open waters and do not meet the agencies regulatory definition of "wetlands", 2) Waters excluded from coverage under the CWA by existing regulations, 3) Waters that lack a "significant nexus: where one is required for a water to be jurisdictional, 4) Artificially irrigated areas that would revert to upland if the irrigation ceased, 5) Artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing, 6) Artificial reflecting pools or swimming pools excavated in uplands, 7) Small ornamental waters created by excavating and/or diking dry land to retain water for primarily aesthetic reasons, and puddles, 8) Water-filled depressions created incidental to construction activity, 9) Groundwater, including groundwater drained through subsurface drainage systems, 10) Erosional features (gullies and rills), 11) Non-wetland swales, 12) Ditches that are excavated wholly in uplands, drain only uplands or non-jurisdictional waters, and have no more than ephemeral flow, and 13) Ditches that do not contribute flow, either directly or through other waterbodies, to a traditional navigable water, interstate water, or territorial sea.

As a tributary to a traditionally navigable water, Offsite Stream Z Creek is likely regulated by USACE as WOTUS. Wetlands A and B likely contribute surface waters to Offsite Stream Z and are likely regulated as an adjacent wetlands. Wetlands C and D are likely non-jurisdictional waters as they do not have surface water connections to Offsite Stream Z, they do not contain direct surface water connection to any traditional navigable water or a tributary to a traditional navigable water and are also not considered "adjacent" wetlands. However, the project will assume jurisdiction of Wetland D to expedite the review process.

The proposed project will require complete fill of Wetland C. Once an approved jurisdictional determination is obtained from the USACE confirming the non-jurisdictional status of the identified wetland, an Administrative Order will be sought from WSDOE for the required wetland fill.

All identified wetlands (Wetlands A-D) and stream (Offsite Stream Z) are likely to be regulated as waters of the state by WSDOE under RCW 90.48.

Chapter 3. Conceptual Mitigation Plan

The proposed compensatory mitigation actions for the project attempt to strike a balance between achieving project goals as well as a positive result in terms of ecological lift. In general, joint USACE and EPA rules have been established that require more careful mitigation planning efforts utilizing a watershed approach in site selection, establishment of enforceable performance standards, and preference for use of mitigation banks or ILF's wherever possible (USACE & EPA, 2008). The proposed wetland impacts and compensatory mitigation actions attempt to closely adhere to these rules while also utilizing the best available science (Granger et al., 2005; Hruby et al., 2009; Sheldon et al., 2005; and WSDOE, 2006). This chapter presents the mitigation details for the proposed development project of the business center.

3.1 Purpose and Need

The purpose of the proposed project is to provide a business center in the City of Camas to support the local economy by providing new jobs and new services to the area. The project is consistent with local zoning designations and the economic goals outlined in the City's comprehensive plan.

3.2 Avoidance and Minimization of Impacts

The proposed project was carefully designed to avoid and minimize impacts to the identified critical areas by utilizing the developable upland areas onsite, and direct impacts to the larger, higher functioning wetlands (Wetlands A, B, and D) onsite and offsite Stream Z are avoided entirely. However, complete avoidance is not possible due to the spatial requirements to support an business center and associated infrastructure and the encumbrance of the identified wetlands and associated buffers on the central portions of the subject property. The project has undergone several design revisions to minimize impacts, including reducing the number of proposed buildings, reducing the size and orientation of the proposed buildings, and reducing the size of the proposed stormwater facilities. No other feasible option in design would result in less impacts to the identified critical areas while allowing for reasonable development of the subject property. As such, the project requires the necessary and unavoidable total fill of one low-functioning Category IV wetland (Wetland C) on the subject property to meet the associated infrastructure demands for the three industrial buildings. The proposed project will implement minimization measures to reduce the impacts of the proposed high intensity land use and reduce the buffers of Wetlands A, B, and D as allowed pursuant to CMC 16.53.050.C.1.a. The proposed parking areas will encroach on reduced wetland buffers by 3,703 square feet, and buffer averaging is proposed to offset these encroachments per CMC 16.53.050.C.2. 13,485 square feet of additional buffer area will be protected, providing a net gain of 9,782 square feet of buffer. 64,095 square feet of temporary buffer grading impacts will be restored through replanting with native trees, shrubs, and groundcovers. To minimize temporary impacts, all appropriate BMPs and TESC measures including installing silt fencing between construction activities and the remaining wetlands and associated buffer areas onsite will be implemented throughout the course of construction.

3.3 Description of Unavoidable Impacts

The total fill of one small, low-functioning Category IV wetland (Wetland C) is necessary and unavoidable to accommodate the purpose and need of the proposed business center and the necessary infrastructure to support operations. The proposed unavoidable impacts are summarized in Table 2 below.

Table 2. Summary of Wetland Impacts

Impacted Wetland	WSDOE Rating[1]	Cowardin Class[2]	HGM Class[3]	Impact Type	Impact Area (sq. ft.)
Wetland C	IV	PEMB	Slope	Direct (fill)	3,167 SF
				Direct Total	**3,167 SF**

Notes:

1. WSDOE rating according to Washington State wetland rating system for Western Washington – Revised (Hruby, 2014).
2. Cowardin et al. (1979); Federal Geographic Data Committee (2013); class based on vegetation: PEM = Palustrine Emergent; Modifiers for Water Regime or Special Situations: B = Seasonally Saturated.
3. Brinson, M. M. (1993).

3.4 Impacted Wetland Functions

The proposed project will result in the total fill of one small, low functioning Category IV wetland (Wetland C) onsite. A wetland function impact analysis is provided below.

- **Water Quality:** The wetland proposed to be filled is a slope wetland that exhibit seasonal saturation. In general, Wetland C has some potential to improve water quality leaving the site due to its low-grade slope and the presence of land uses upslope of the wetland that generate excess pollutants. However, this function is limited as the wetland is located within portions of the site that are actively grazed by cattle and lacks persistent, ungrazed vegetation to filter sediment and pollutants.

  Water quality functions associated with Wetland C will be improved through the purchase of mitigation bank credits from the TMB. Wetlands created by the TMB will be larger and provide increased plant structure and areas of ponding to improve filtration when compared to the existing degraded wetland onsite. Overall, these actions will result in a net increase in water quality functions in the Salmon-Washougal watershed.

- **Hydrologic:** The primary sources of hydrology for Wetland C direct precipitation, surface sheet flow from adjacent uplands, and a seasonally high groundwater table. Opportunity for Wetland C to provide hydrologic functions is low due to its small size and lack of storage capacity, and a lack of dense, uncut rigid vegetation which limits the wetland's capacity to reduce runoff velocities during heavy rain events. However, Wetland C is located 150 feet downslope of land uses that generate excess runoff and is located in a landscape with surface flooding issues further down gradient from the wetland. As such, Wetland C has a minor potential to reduce flow velocities associated with downstream erosion.

  Hydrologic functions associated with Wetland C will be improved through the purchase of mitigation credits from the TMB. Wetlands created by the TMB will be larger and will provide increased plant structure that will provide increased storage depth and improve flood attenuation

when compared to the existing wetland onsite. Overall, these actions will result in a net increase in hydrologic functions within the Salmon-Washougal watershed.

- **Habitat:** Wetland C provides very minimal habitat functions due to its low vegetation species richness, low habitat interspersion, and a limited amount of species habitat features or priority habitats in proximity to the wetland. Additionally, this habitat is largely inaccessible due to surrounding industrial, commercial, residential, and high-intensity recreational (Camas Meadows Golfcourse) developments. Due to the low-functioning habitat conditions, the proposed wetland fill will result in limited habitat removal.

  Overall, habitat functions associated with Wetland C will be replaced and improved through the purchase of mitigation bank credits from the TMB. Wetlands at the TMB include forested, scrub-shrub, and emergent wetland habitat areas in a connected corridor. Additionally, restoration actions at the TMB have incorporated special habitat features including woody debris and standing snags. These actions provide increased plant structure and diversity and increased habitat complexity which provide browse, cover, and forage for small mammals and in turn provides prey for raptors and other larger mammals. As such, the purchase of mitigation credits from the TMB will result in a net increase in habitat functions within the Salmon-Washougal watershed.

3.5 Mitigation Strategy

Compensatory mitigation for the total fill of the small, low-functioning Category IV wetland (Wetland C) is proposed to be provided through the purchase of mitigation bank credits from the TMB as allowed under CMC 16.53.050.D.5.a and state and federal guidance. The overarching goals of the TMB are to improve hydrologic, water quality, and habitat functions and provide a self-sustaining, diverse forest, scrub-shrub, and emergent wetland and stream complex. Mitigation banks provide large-scale mitigation that create high functioning wetlands with longer-term maintenance and management than typical permittee-responsible mitigation projects. Onsite compensatory mitigation is not possible due to the spatial requirements of the mitigation area and associated buffers that would be required which would impact the development feasibility of the site. Offsite, permittee-responsible mitigation was considered, but no suitable mitigation sites were available in the area during the planning phase of this project. As such, mitigation bank use was determined to be the most ecologically feasible option that meets the needs of the project and will likely provide a higher level of ecological lift than onsite or offsite, in-kind permittee-responsible mitigation. Onsite temporary buffer impacts will be restored by replanting impacted areas with native trees, shrubs, and groundcovers. Overall, these actions will likely result in a net increase in ecological functions within the Salmon-Washougal watershed when compared to the existing degraded conditions of the wetlands proposed to be impacted.

3.5.1 Mitigation Bank Use

The identified wetland (Wetland C) provides limited critical wetland functions due to its small and active cattle grazing onsite, which has degraded the wetland condition. Therefore, full wetland compensation is better provided elsewhere, through a consolidated mitigation program that has greater potential to provide valuable wetland functions as well as the landscape potential to maintain those functions.

3.5.2 Site Selection Rationale

Onsite permittee-responsible mitigation is not possible due to the spatial area required for the mitigation area with adequate associated buffers. Off-site permittee-responsible wetland mitigation has been carefully considered; however, no suitable mitigation sites were available in the area during the planning phase of this project. In addition, for small wetlands, permittee-responsible mitigation is not as ecologically beneficial due to the size of the wetland created and lack of watershed benefits when compared to purchasing wetland bank credits. Invasive species management may also be a limiting factor for permittee-responsible mitigation. These problematic issues can easily be alleviated through mitigation bank programs where the mitigation is done on a large scale and the benefits of the purchased credits provide watershed scale benefits, with longer term maintenance and management then permittee-responsible mitigation. As such, the purchase of mitigation bank credits from the TMB will provide the best mitigation solution that will result in an ecological lift when compared to the degraded condition of the wetlands proposed to be filled.

Joint USACE and EPA rules (USACE & EPA, 2008) and interagency guidance (WSDOE & USACE 2006; Hruby et al., 2009) have been established that require more careful mitigation planning efforts utilizing a watershed approach in site selection, establishment of enforceable performance standards, and preference for use of mitigation banks wherever possible. The subject property is currently located within the TMB's service area, thus allowing for the proposed project to utilize the approved mitigation banking program for compensatory mitigation within the same watershed as project impacts. Refer to Appendix B for the Mitigation Bank Service Area map. The TMB consists of a 113.04-acre site focused on restoring portions of the Orchards Peat Area, an area classified as historic peat marsh. The overarching goals of the TMB are to improve hydrologic, water quality, and habitat functions at the TMB site; and provide a self-sustaining, diverse forest, scrub-shrub, and emergent wetland and stream complex that will not require continued maintenance. The purchase of mitigation banking credits will allow for the proposed project to achieve no net loss of aquatic resource functions.

The TMB, administered by Terrace Mitigation Bank, LLC creates a comprehensive, equitable, and consistent program to ensure successful mitigation actions. Oversight of this mitigation banking program is provided by an Interagency Review Team (IRT) that includes representatives from the USACE, WSDOE, tribes, and other federal, state, and local regulatory agencies.

3.5.3 Proposed Mitigation Credits

The proposed project will result in 3,167 square feet of permanent direct impacts to one low-functioning, Category IV wetland (Wetland C) on the subject property. Utilizing the 0.85:1 impact to mitigation ratio for Category IV wetland impacts described in the TMB Mitigation Banking Instrument (Terrace Mitigation Bank LLC, 2017), this equates to 0.061-acre credits to be purchased. Table 3 below summarizes the replacement ratios and calculation of bank credits required for the TMB.

Table 3. Replacement Ratios and Calculation of Bank Credits Required

Feature	WSDOE Rating[1]	Mitigation Ratio (Credits Needed per Acre of Impacted Wetland)[2]	Permanent Impact Area (sq. ft.)/(acre)	Bank Credits Needed (acre-credits)
Wetland C	IV	0.85:1	3,167/0.072	0.061
Direct Total			**3,167/0.072**	**0.061**

Notes:
1. WSDOE rating according to Washington State wetland rating system for Western Washington – Revised (Hruby, 2014).
2. Credit calculation methods are derived from the TMB MBI document (Terrace Mitigation Bank LLC, 2017).

3.5.4 Credit Purchase or Transfer Timing

Negotiations of terms of the mitigation bank credit purchase will be made with the IRT with preliminary approvals of the proposed project by the City of Camas, after formal approval of the Bank Use Plan by all appropriate agencies. Proof of credit purchase and transfer will be provided to regulatory agencies via a Statement of Sale from the Applicant. Prior to any impacts to wetlands, the Statement of Sale will be provided to the appropriate state or federal agency and the City of Camas.

3.5.5 Temporary Buffer Impact Restoration

Restoration of temporary buffer replanting disturbed areas with native vegetation to improve habitat functions and critical area protection provided by the site. A diverse assortment of native trees, shrubs, and groundcover will be established to provide browse, cover, and nesting for small mammals, which in turn provide prey for raptors and other mammals. The native plant structure also has the potential to improve filtration and flood attenuation, which will improve hydrology and quality of water leaving the project site. In addition, the establishment of dense vegetation within the wetland buffers will provide increased screening between the remaining wetlands and the proposed development. Overall, the onsite wetland buffer restoration actions will improve ecological functions when compared to the existing degraded condition of the wetland buffers proposed to be reduced.

The non-compensatory restoration of temporary buffer impacts will include, but may not be limited to the following recommendations:

- Restore the onsite wetland buffer areas as shown in Appendix C;
- An approved native seed mix will be used to seed the temporary buffer impact areas;
- Maintain and control invasive plants annually, at a minimum, or more frequently if necessary. Maintenance to reduce the growth and spread of invasive plants is not restricted to chemical applications but may include hand removal, if warranted;
- Provide dry-season irrigation as necessary to ensure native plant survival;
- Direct exterior lights away from the critical areas wherever possible; and
- Place all activities that generate excessive noise (e.g., generators and air conditioning equipment) away from the wetlands where feasible.

3.6 Approach and Best Management Practices

Restoration of temporary buffer impacts should occur immediately after grading is complete. TESC measures will be implemented that consists of high-visibility fencing (HVF) installed around native

vegetation along the modified perimeter of the buffer, silt fencing between the graded areas and undisturbed buffer, plastic sheeting on stockpiled materials, and seeding of disturbed soils. These TESC measures should be installed prior to the start of development or restoration actions and actively managed for the duration of the project.

All equipment staging and materials stockpiles should be kept out of the critical areas and associated buffers, and the area will need to be kept free of spills and/or hazardous materials. All fill material and road surfacing should be sourced from upland areas onsite or from approved suppliers and will need to be free of pollutants and hazardous materials. Construction materials along with all construction waste and debris should be effectively managed and stockpiled on paved surfaces and kept free of the remaining critical areas. Following completion of the development, the entire site should be cleaned and detail graded using hand tools wherever necessary, and TESC measures will need to be removed.

3.7 Goals, Objectives, and Performance Standards

The goals and objectives for the proposed buffer restoration actions are based on providing habitat and protection Wetlands A, B, and D, and providing supplementary water quality and hydrological functions. The goals and objectives of the restoration actions are as follows:

Goal 1 – Restore temporarily impacted buffer areas (64,095 square feet).

> ***Objective 1.1*** – Establish dense cover of native trees, shrubs, and grasses and forbs within the buffer to create diverse horizontal and vertical vegetation structure and improve wildlife habitat.
>
> > **Performance Standard 1.1.1** – By the end of Year 5, the buffer restoration areas will have at least 1 species of native trees and 3 species of native shrubs (native volunteer species can be included) present. To be considered, the native species must make up at least 5 percent of the vegetation class.
> >
> > **Performance Standard 1.1.2** – Minimum native woody species cover in the enhancement areas will be a minimum 30 percent total cover at the end of Year 3 and 50 percent at the end of Year 5. Native recruits may be counted towards areal cover totals.
> >
> > **Performance Standard 1.1.3** – Non-native invasive plants will not make up more than 20 percent total cover in any growing season during the monitoring period following Year 1.

3.8 Plant Materials and Installation

3.8.1 Plant Materials

All plant materials to be used for buffer enhancement actions will be nursery grown stock from a reputable, local source. Only native species are to be used; no hybrids or cultivars will be allowed. Plant material provided will be typical of their species or variety; if not cuttings they will exhibit normal,

densely developed branches and vigorous, fibrous root systems. Plants will be sound, healthy, vigorous plants free from defects, and all forms of disease and infestation.

Container stock shall have been grown in its delivery container for not less than six months but not more than two years. Plants shall not exhibit rootbound conditions. Under no circumstances shall container stock be handled by their trunks, stems, or tops. Seed mixture used for hand or hydroseeding shall contain fresh, clean, and new crop seed mixed by an approved method. The mixture is specified in the plan set.

All plant material shall be inspected by the qualified Project Scientist upon delivery. Plant material not conforming to the specifications below will be rejected and replaced by the planting contractor. Rejected plant materials shall be immediately removed from the site.

Fertilizer will be in the form of Agroform plant tabs or an approved like form. Mulch will consist of sterile wheat straw for seeded areas (if necessary) and clean recycled wood chips approximately 1/2 inch to 1 inch in size and 1/2 inch thick for woody plants. The mulch material may be sourced from non-invasive woody materials sourced from the land clearing activities.

3.8.2 Plant Scheduling, Species, Size, and Spacing

Plant installation should occur as close to conclusion of the clearing and grading activities as possible to limit erosion and limit the temporal loss of function provided by the wetland buffers. All planting should occur between September 1 and May 1 to ensure plants do not dry out after installation, or temporary irrigation measures may be necessary. All planting will be installed according to the procedures detailed in the following subsections using the species and densities outlined in the plan set in Appendix C.

3.8.3 Quality Control for Planting Plan

All plant material shall be inspected by a qualified Project Scientist upon delivery. Plant material not conforming to the specifications above will be rejected and replaced by the planting contractor. Rejected plant materials shall be immediately removed from the site. Under no circumstances shall container stock be handled by their trunks, stems, or tops.

The landscape contractor shall provide the responsible Project Scientist with documentation of plant material that includes the supplying nursery contact information, plant species, plant quantities, and plant sizes.

3.8.4 Product Handling, Delivery, and Storage

All seed and fertilizer should be delivered in original, unopened, and undamaged containers showing weight, analysis, and name of manufacturer. This material should be stored in a manner to prevent wetting and deterioration. All precautions customary in good trade practice shall be taken in preparing plants for moving. Workmanship that fails to meet industry standards will be rejected. Plants will be packed, transported, and handled with care to ensure protection against injury and from drying out. If plants cannot be planted immediately upon delivery they should be protected with soil, wet peat moss, or in a manner acceptable to the responsible Project Scientist. Plants, fertilizer, and mulch not installed immediately upon delivery shall be secured on the site to prevent theft or tampering. No

plant shall be bound with rope or wire in a manner that could damage or break the branches. Plants transported on open vehicles should be secured with a protective covering to prevent windburn.

3.8.5 Preparation and Installation of Plant Materials

The planting contractor shall verify the location of all elements of the enhancement plan with the responsible Project Scientist prior to installation. The responsible Project Scientist reserves the right to adjust the locations of landscape elements during the installation period as appropriate. If obstructions are encountered that are not shown on the drawings, planting operations will cease until alternate plant locations have been selected by and/or approved by the Project Scientist.

Circular plant pits with vertical sides will be excavated for all container stock. The pits should be at least 1.5-times the width of the rootball, and the depth of the pit should accommodate the entire root system.

Broken roots should be pruned with a sharp instrument and rootballs should be thoroughly soaked prior to installation. Set plant material upright in the planting pit to proper grade and alignment. Water plants thoroughly midway through backfilling and add Agroform tablets. Water pits again upon completion of backfilling. No filling should occur around trunks or stems. Do not use frozen or muddy mixtures for backfilling. Form a ring of soil around the edge of each planting pit to retain water and install a four- to six-inch layer of mulch around the base of each container plant.

3.8.6 Temporary Irrigation Specifications

While the native species selected for enhancement actions are hardy and typically thrive in northwest conditions and the proposed actions are planned in areas with sufficient hydroperiods for the species selected, some individual plants might perish due to dry conditions. Therefore, irrigation or regular watering may be provided as necessary for the duration of the first two growing seasons, two times per week while the native plantings become established. If used, irrigation will be discontinued after two growing seasons. Frequency and amount of irrigation will be dependent upon climatic conditions and may require more or less frequency watering than two times per week.

3.8.7 Invasive Plant Control and Removal

Invasive species onsite to be removed include Himalayan blackberry, and any listed noxious weeds or other invasive species. These species can also be found nearby; therefore, to ensure these species do not expand following the restoration actions, spot treatment of any other invasive vegetation should be performed again each fall prior to leaf senescence for a minimum of three years.

3.9 Maintenance & Monitoring Plan

Conceptual Maintenance and Monitoring Plans are described below in accordance with CMC 16.53.050.E.3.d. The Applicant is committed to compliance with the conceptual mitigation plan and overall success of the project. As such, the Applicant will continue to maintain the project, keeping the site free from non-native invasive vegetation and trash.

The wetland buffer restoration plan will require continued monitoring and maintenance to ensure the actions are successful. Therefore, the project site will be monitored for a period of five years with formal inspections by a qualified Project Scientist. Monitoring events will be scheduled at the time of construction, 30 days after planting, during the growing season for Year 1, and annually in Years 2, 3,

and 5. Closeout assessment will also be conducted in Year 5 to ensure the restoration area was established.

Monitoring will consist of percent cover measurements at permanent monitoring stations, walk-through surveys to identify invasive species presence and dead or dying enhancement plantings, photographs taken at fixed photo points, wildlife observations, and general qualitative habitat and wetland function observations.

To determine percent cover, observed vegetation will be identified and recorded by species and an estimate of areal cover of dominant species within each sampling plots. Circular sample plots, approximately 30 feet in diameter (706 square feet), are centered at each monitoring station. The sample plots encompass the specified wetland areas and terminate at the observed wetland boundary. Trees and shrubs within each 30-foot diameter monitoring plot are then recorded to species and areal cover. Herbaceous vegetation is sampled from a 10-foot diameter (78.5 square feet) within each monitoring plot, established at the same location as the center of each tree and shrub sample plot. Herbaceous vegetation within each monitoring plot is then recorded to genus and includes an estimate of percent areal cover. A list of observed tree, shrub, and herbaceous species including percent areal cover of each species or genus and wetland status is included within the monitoring report.

3.10 Reporting

Following each monitoring event, a brief monitoring report detailing the current ecological status of the restoration actions, measurement of performance standards, and management recommendations will be prepared and submitted to the City within 90 days of each monitoring event to ensure full compliance with the buffer restoration plan. The monitoring reports from events at the time of construction and 30 days after planting may be combined.

3.11 Contingency Plan

If monitoring results indicate that performance standards are not being met, it may be necessary to implement all or part of the contingency plan. Careful attention to maintenance is essential in ensuring that problems do not arise. Should any portion of the site fail to meet the success criteria, a contingency plan will be developed and implemented with City approval. Such plans are adaptive and should be prepared on a case-by-case basis to reflect the failed restoration characteristics. Contingency plans can include additional plant installation, erosion control, and plant substitutions including type, size, and location. The Contingency measures outlined below can also be utilized in perpetuity to maintain the wetland and buffers associated with the proposed project site.

Contingency/maintenance activities may include, but are not limited to:

1. Using plugs instead of seed for emergent vegetation coverage where seeded material does not become well-established;
2. Replacing plants lost to vandalism, drought, or disease, as necessary;
3. Replacing any plant species with a 20 percent or greater mortality rate after 2 growing seasons with the same species or native species of similar form and function;
4. Spot treat non-native invasive plant species; and
5. Removing all trash or undesirable debris from the wetland and buffer areas as necessary.

3.12 Critical Area Protective Measures

Per CMC 16.53.240, long-term protection of the wetland buffer enhancement area shall be provided by placement in a separate tract on which development is prohibited or by execution of an easement dedicated to the public agency, a conservation organization, land trust, or similarly preserved through a permanent protective mechanism acceptable to the city. The location and limitations associated with the critical areas and associated buffers shall be shown on the face of the deed or plat applicable to the property and shall be recorded with the Clark County recording department.

3.13 Performance and Monitoring Security

Pursuant to CMC 16.51.250, a performance security (bond) and performance monitoring security in accordance with CMC 16.53.050.J is required to assure that all actions approved under this Mitigation Plan are satisfactorily and completed in accordance with the mitigation plan, performance standards, and regulatory conditions of approval. Prior to final inspection, a maintenance and warranty security (bond) shall be obtained in an amount equal to 125 percent of the total fair market cost of construction/installation labor and materials. A bond quantity worksheet will be prepared during the Final Mitigation Plan.

Chapter 4. Closure

The findings and conclusions documented in this report have been prepared for specific application to this project. They have been developed in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in the area. Our work was also performed in accordance with the terms and conditions set forth in our proposal. The conclusions and recommendations presented in this report are professional opinions based on an interpretation of information currently available to us and are made within the operation scope, budget, and schedule of this project. No warranty, expressed or implied, is made. In addition, changes in government codes, regulations, or laws may occur. Due to such changes, our observations and conclusions applicable to this project may need to be revised wholly or in part.

Chapter 5. References

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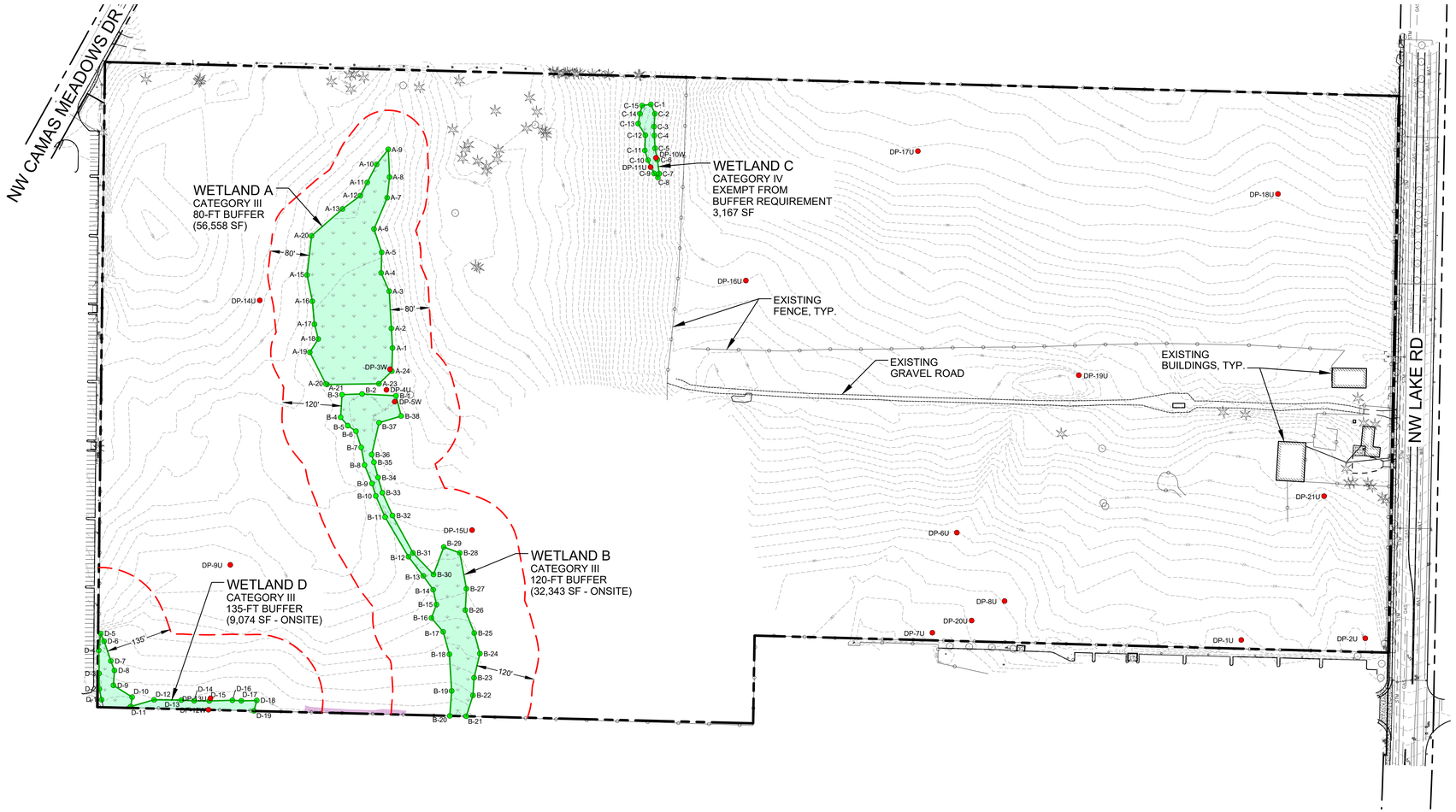
Appendix A – Conceptual Mitigation Drawings

CAMAS - EXISTING CONDITIONS



VICINITY MAP

SOURCE: CLARK COUNTY GIS
(ACCESSED 8/17/2021)

LOCATION

THE SE ¼ OF SECTION 29,

TOWNSHIP 02N, RANGE 03E, WM

APPLICANT/OWNER

PANATTONI DEVELOPMENT COMPANY, INC
1821 DOCK STREET, SUITE 100
TACOMA, WASHINGTON 98402
CONTACT: BJORN BRYNESTAD, DEVELOPMENT MGR.
PHONE: (206) 838-1730
PHONE: BJORN@PANATTONI.COM

ENVIRONMENTAL CONSULTANT

SOUNDVIEW CONSULTANTS LLC
2907 HARBORVIEW DRIVE, SUITE D
GIG HARBOR, WA 98355
(253) 514-8952

0 125 250 500

GRAPHIC SCALE
1"= 125'

PLAN LEGEND

- PROPERTY LINE
- EXISTING WETLAND BOUNDARY
- APPROXIMATED WETLAND BOUNDARY (NOT SURVEYED)
- WETLAND BUFFER
- W-# WETLAND FLAG LOCATION
- DP-# DATA PLOT LOCATION
- EXISTING 1-FT CONTOURS

SHEET INDEX

SHEET NUMBER	SHEET TITLE
1	EXISTING CONDITIONS
2	PROPOSED SITE PLAN, IMPACTS & MITIGATION
3	PLANTING PLAN OVERVIEW & PLANTING TYPICALS
4	PLANT SCHEDULE & DETAILS

SOURCES:

SYNTHESIS PLLC
THE FUSION OF ARCHITECTURE, DESIGN TECHNOLOGY & PEOPLE

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GIG HARBOR, WASHINGTON 98335 F. 253.514.8954
WWW.SOUNDVIEWCONSULTANTS.COM

CAMAS BUSINESS CENTER
4707 & 4723 NW LAKE ROAD
CAMAS, WASHINGTON 98607

CLARK COUNTY
PARCEL NUMBER(S):
176155000 & 176170000

DATE: 10/6/2021
JOB: 1144.0027
BY: MW
SCALE: AS SHOWN
SHEET: 1

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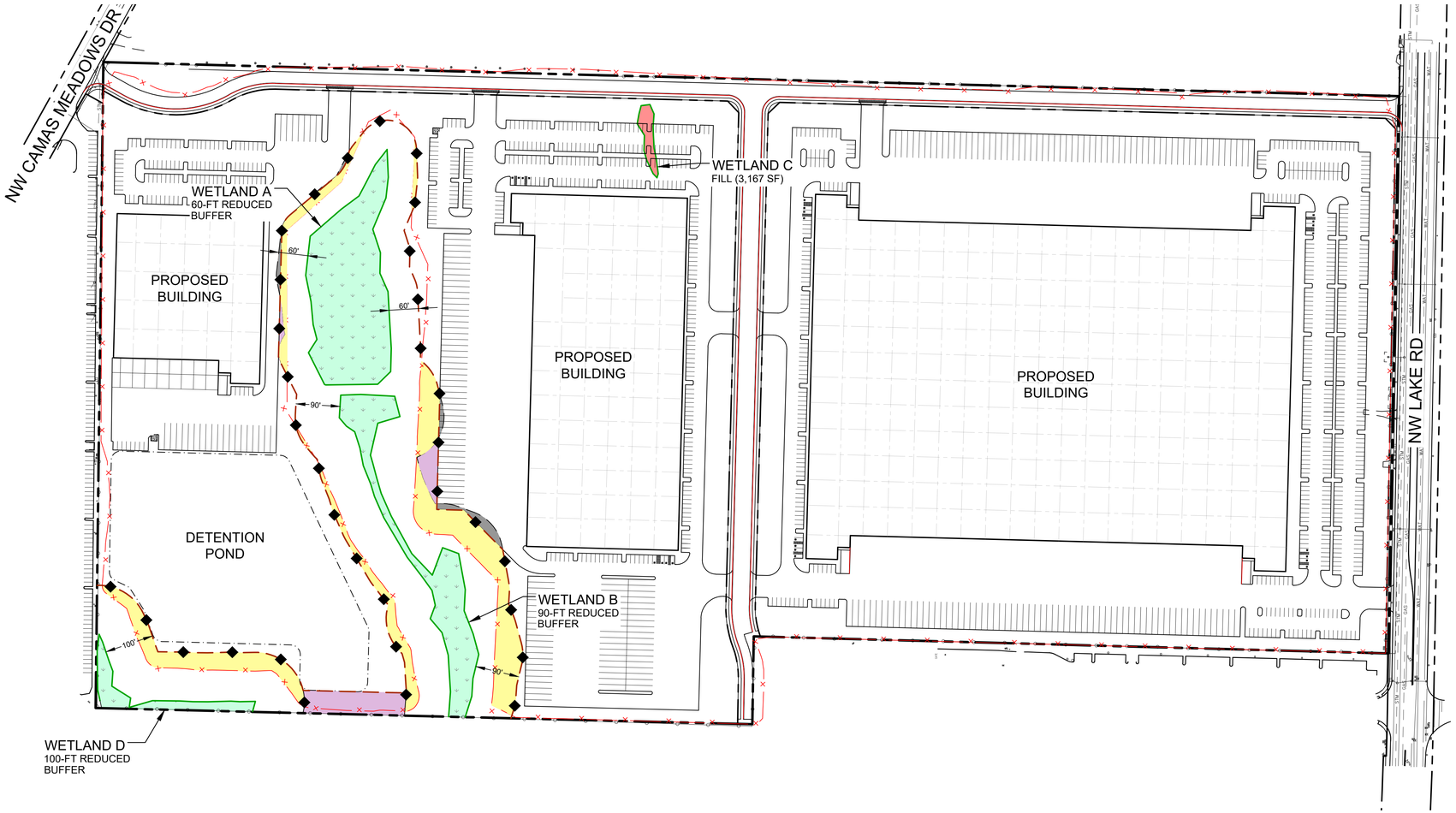
Plotted October 7, 2021

PROPOSED SITE PLAN, IMPACTS & MITIGATION



0 125 250 500

GRAPHIC SCALE
1"=125'

PLAN LEGEND

- PROPERTY LINE
- EXISTING WETLAND BOUNDARY
- APPROXIMATED WETLAND BOUNDARY (NOT SURVEYED)
- WETLAND BUFFER - REDUCED
- PROPOSED CLEARING & GRADING LIMITS

MITIGATION LEGEND

WETLAND & BUFFER IMPACTS

WETLAND C FILL	3,167 SF
WETLAND BUFFER REDUCTION	3,703 SF
TEMPORARY BUFFER GRADING IMPACTS	64,095 SF

WETLAND & BUFFER MITIGATION

WETLAND BUFFER ADDITION	13,485 SF
RESTORATION OF TEMPORARY BUFFER GRADING IMPACTS	64,095 SF

- POST-CONSTRUCTION BUFFER / SPLIT RAIL FENCE
- CRITICAL AREA SIGN - 33 SIGNS

SOURCES:

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GIG HARBOR, WASHINGTON 98335
P. 253.514.8952
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SHEET: 2

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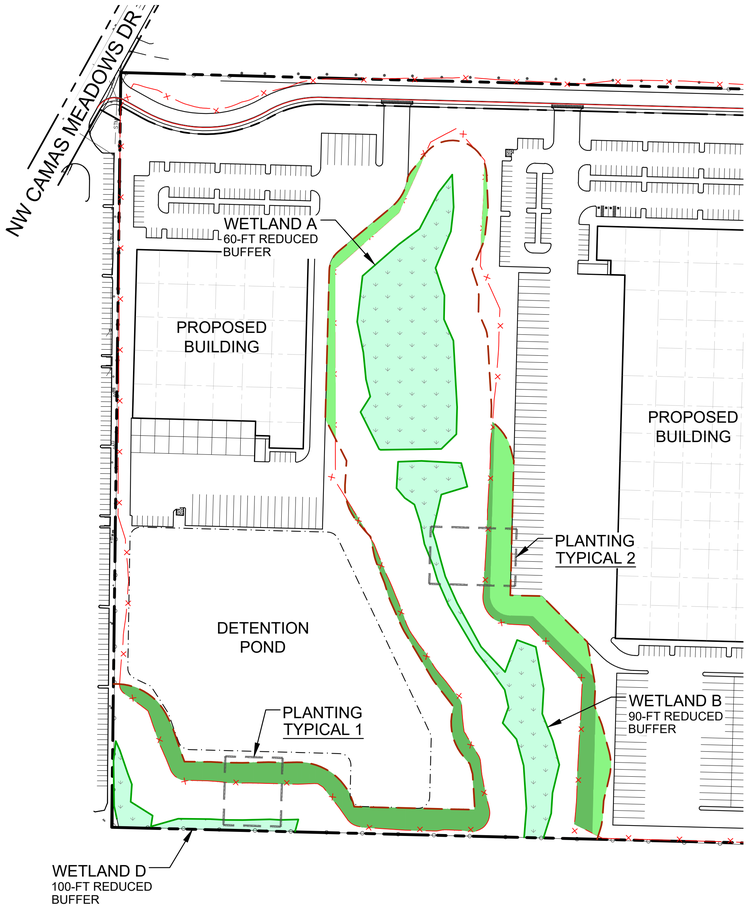
Plotted October 7, 2021

PLANTING PLAN OVERVIEW & PLANTING TYPICALS



PLANTING PLAN

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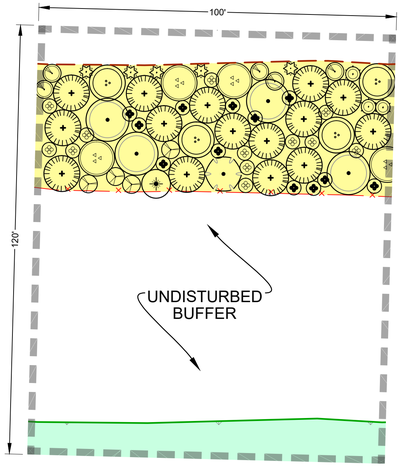
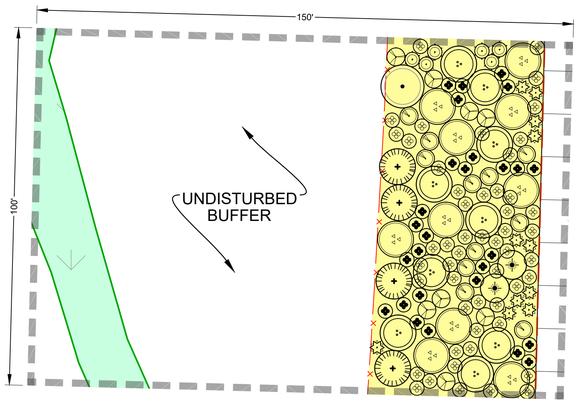
GRAPHIC SCALE
1"= 125'



PLANTING TYPICAL 1

SCALE: 1"=20'



PLANTING TYPICAL 2

0 20 40 80

GRAPHIC SCALE
1"= 20'

PLAN LEGEND

- PROPERTY LINE
- EXISTING WETLAND BOUNDARY
- APPROXIMATED WETLAND BOUNDARY (NOT SURVEYED)
- POST-CONSTRUCTION BUFFER / SPLIT RAIL FENCE
- PROPOSED CLEARING & GRADING LIMITS

PLANTING LEGEND

	SCRUB-SHRUB BUFFER RESTORATION	29,254 SF
	FORESTED/SCRUB-SHRUB BUFFER RESTORATION	46,476 SF
	TOTAL PLANTED AREA:	75,730 SF

PLANT LIST

Scientific Name	Common Name
TREES	
Acer macrophyllum	bigleaf maple
Frangula purshiana	cascara
Pseudotsuga menziesii	Douglas fir
SHRUBS	
Acer circinatum	vine maple
Amelanchier alnifolia	serviceberry
Corylus cornuta var. californica	western hazlenut
NO SYMBOL *Gaultheria shallon*	salal
Holodiscus discolor	oceanspray
Mahonia aquifolium	tall Oregon grape
NO SYMBOL *Mahonia nervosa*	low Oregon grape
Oemleria cerasiformis	Indian plum
Rosa gymnocarpa	bald hip rose
Symphoricarpos albus var. laevigatus	common snowberry
Symphoricarpos mollis	trailing snowberry
SEED MIXES (www.riverrefugeseed.com)	
Native Upland Grass Mix #9	**20 lbs/acre**
Elymus glaucus	Blue wildrye
Bromus carinatus	California brome
Hordeum brachyantherum	Meadow barley
Festuca roemeri	Roemer's fescue
Deschampsia elongata	Slender hairgrass
Agrostis exarata	Spike bentgrass
Deschampsia cespitosa	Tufted hairgrass
Festuca rubra var. rubra	Red fescue

NOTE: SALAL & LOW OREGON GRAPE TO BE PLANTED THROUGHOUT BUFFER RESTORATION AREAS, IN GROUPINGS OF 3 TO 5

SOURCES:

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S:\CURRENT\1144 Panattoni Construction\1144.0027 Camas\Graphics & Maps\CAD\A - CURRENT SVC DRAWINGS\A - Current Base DWGs\1144.0027 (2021-10) base.dwg
Plotted October 7, 2021

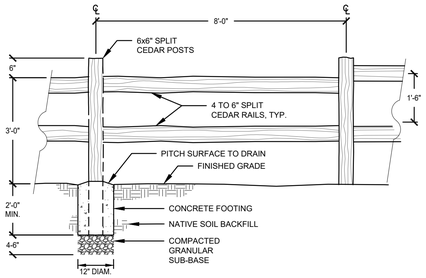
PLANT SCHEDULE

		Area (sf):	**29,254**	**46,476**	**75,730**				
		Cov'g (%):	**100**	**100**					
		Trees (%):	**0**	**50**					
		Shrubs (%):	**100**	**50**					
Scientific Name	**Common Name**	**WL Status**	**Scrub-Shrub Buffer Restoration**	**Forested/ Scrub-Shrub Buffer Restoration**	**TOTAL**	**Spacing (min.)**	**Height (min.)**	**Size (min.)**	**Planting Area**
TREES									
Acer macrophyllum	bigleaf maple	FACU	-	56	**56**	**10 ft**	**3 ft**	**2 gal**	**Dry**
Frangula purshiana	cascara	FAC	-	14	**14**	**10 ft**	**3 ft**	**1 gal**	**Dry**
Pseudotsuga menziesii	Douglas fir	FACU	-	198	**198**	**10 ft**	**3 ft**	**2 gal**	**Dry**
		Total:	**0**	**268**	**268**				
SHRUBS									
Acer circinatum	vine maple	FAC	70	55	**125**	**10 ft**	**4 ft**	**2 gal**	**Dry/Moist**
Amelanchier ainifolia	serviceberry	FACU	15	15	**30**	**8 ft**	**3 ft**	**2 gal**	**Dry**
Corylus cornuta var. californica	western hazlenut	FACU	75	55	**130**	**10 ft**	**2 ft**	**2 gal**	**Moist**
Gaultheria shallon	salal	FACU	105	85	**190**	**4 ft**	**1 ft**	**1 gal**	**Dry**
Holodiscus discolor	oceanspray	FACU	85	65	**150**	**5 ft**	**2 ft**	**1 gal**	**Dry**
Mahonia aquifolium	tall Oregon grape	FACU	85	70	**155**	**4 ft**	**2 ft**	**1 gal**	**Dry**
Mahonia nervosa	low Oregon grape	FACU	425	335	**760**	**4 ft**	**1 ft**	**1 gal**	**Dry/Moist**
Oemleria cerasiformis	Indian plum	FACU	60	50	**110**	**5 ft**	**2 ft**	**2 gal**	**Dry**
Rosa gymnocarpa	bald hip rose	FACU	55	45	**100**	**4 ft**	**2 ft**	**1 gal**	**Dry/Moist**
Symphoricarpos albus var. laevigatus	common snowberry	FACU	200	160	**360**	**4 ft**	**2 ft**	**1 gal**	**Dry**
Symphoricarpos mollis	trailing snowberry	FACU	175	140	**315**				
		Total:	**1350**	**1075**	**2425**				
SEED MIXES (www.riverrefugeseed.com)		**WL Status**	**Scrub-Shrub Buffer Restoration**	**Forested/ Scrub-Shrub Buffer Restoration**	**TOTAL**				
Native Upland Grass Mix #9	**20 lbs/acre**								
Elymus glaucus	Blue wildrye	30%							
Bromus carinatus	California brome	25%							
Hordeum brachyantherum	Meadow barley	10%							
Festuca roemeri	Roemer's fescue	10%							
Deschampsia elongata	Slender hairgrass	10%							
Agrostis exarata	Spike bentgrass	5%							
Deschampsia cespitosa	Tufted hairgrass	5%							
Festuca rubra var. rubra	Red fescue	5%							
		Total (lbs):	**14**	**22**	**36**				

1 - Scientific names and species identification taken from *Flora of the Pacific Northwest, 2nd Edition (Hitchcock and Cronquist, Ed. by Giblin, Ledger, Zika, and Olmstead, 2018).*
2 - Over-sized container plants are suitable for replacement pending Wetland Scientist approval.
3 - Native plant species may be substituted or added with Wetland Scientist approval.
4 - All disturbed and bare soil areas in the buffer to be seeded with a native grass seed mix.
5 - Tree calculations based upon 10-ft average spacing.
6 - Shrub calculations based upon 5-ft average spacing.

SPLIT RAIL FENCE DETAIL

NOT TO SCALE

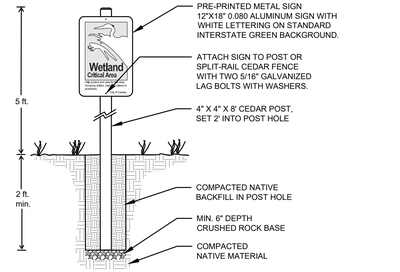


NOTES:

1. POSTS AND RAILINGS PRE-CUT FOR ASSEMBLY.
2. 3-RAIL DESIGNS ARE PERMITTED.
3. FENCE SHALL BE PLACED AT APPROVED BUFFER EDGE.

CRITICAL AREA SIGN DETAIL

NOT TO SCALE



CRITICAL AREA BOUNDARY SIGN NOTES:

1. THE APPLICANT INSTALL PERMANENT SIGNS ALONG THE BOUNDARY OF A CRITICAL AREA OR MANAGEMENT ZONE TO CITY STANDARDS.
2. ONE SIGN SHALL BE POSTED PER RESIDENTIAL LOT AND ONE SIGN PER 100 FEET FOR ALL PUBLIC RIGHTS-OF-WAY, TRAILS, PARKING AREAS, PLAYGROUNDS, AND ALL OTHER USES LOCATED ADJACENT TO WETLANDS AND ASSOCIATED BUFFERS.
3. PRE-PRINTED METAL SIGN AVAILABLE THROUGH SIGN, AVAILABLE THROUGH:
   ZUMAR INDUSTRIES
   PHONE: 1-800-426-7967,
   WEBSITE: WWW.ZUMAR.COM

TREE & SHRUB PLANTING DETAIL (TYPICAL)

NOT TO SCALE

NOTES:
1. PLANT SHRUBS OF THE SAME SPECIES IN GROUPS OF 3 to 9 AS APPROPRIATE, OR AS SHOWN ON PLAN. AVOID INSTALLING PLANTS IN STRAIGHT LINES TO ACHIEVE A NATURAL-LOOKING LAYOUT.
2. EXCAVATE PIT TO FULL DEPTH OF ROOT MASS AND 2 X ROOT MASS DIAMETER. SPREAD ROOTS TO FULL WIDTH OF CANOPY. SCARIFY SIDES OF PIT.
3. MIDWAY THROUGH PLANTING ADD AGROFORM TABLET AND WATER THOROUGHLY.
4. BACKFILL TO BE COMPACTED USING WATER ONLY.
5. WATER IMMEDIATELY AFTER INSTALLATION.

SOURCES:

SYNTHESIS PLLC
THE FUSION OF ARCHITECTURE, DESIGN TECHNOLOGY & PEOPLE

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CAMAS BUSINESS CENTER
4707 & 4723 NW LAKE ROAD
CAMAS, WASHINGTON 98607

CLARK COUNTY
PARCEL NUMBER(S):
176155000 & 176170000

DATE: 10/6/2021
JOB: 1144.0027
BY: MW
SCALE: AS SHOWN
SHEET: 4

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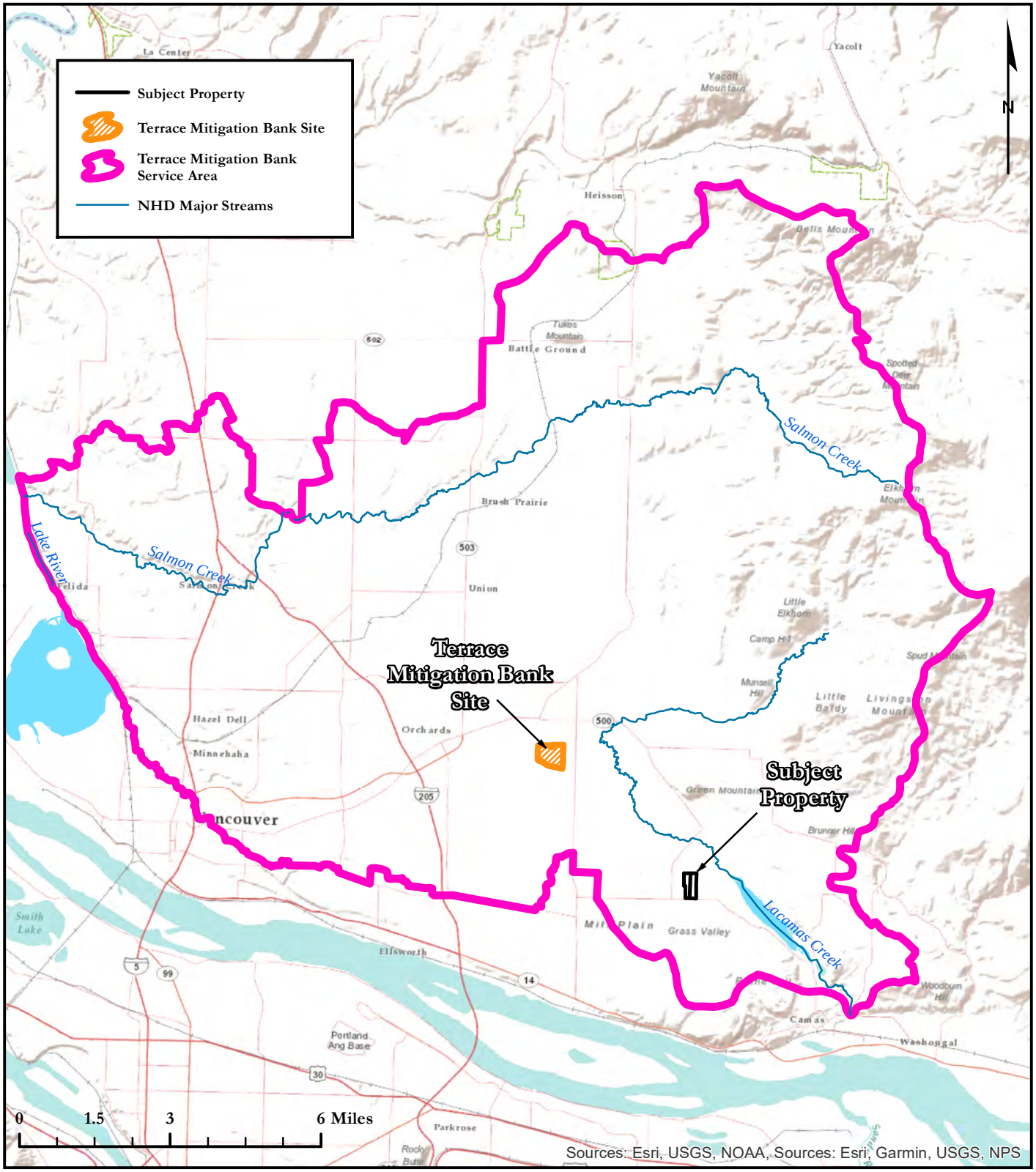
Plotted October 7, 2021

Appendix B - Proximity of Subject Property to Terrace Mitigation Bank Service Area

CAMAS BUSINESS CENTER - MITIGATION BANK SERVICE AREA EXH



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CAMAS BUSINESS CENTER

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CAMAS, WA 98607

CLARK COUNTY PARCEL NUMBERS:
176155000 and 176170000

DATE:	9/14/2021
JOB:	1144.0027
BY:	RJK
SCALE:	1 " = 3 mi
FIGURE NO.	1

Appendix C – Qualifications

All determinations and supporting documentation, including this ***Mitigation Bank Use and Conceptual Mitigation Plan*** prepared for the ***Camas Business Center*** site were prepared by, or under the direction of, Matt DeCaro of SVC. In addition, report preparation was completed by Casey Lanier and Morgan Kentch, and additional project oversight and quality assurance/quality control was completed by Laura Livingston.

Matt DeCaro

Associate Principal
Professional Experience: 12 years

Matt DeCaro is an Associate Principal and Senior Scientist with a diverse background in environmental planning, wetland science, stream ecology, water quality, site remediation, NEPA compliance, and project management. He manages a wide range of industrial, commercial, and multi-family residential projects throughout Western Washington, providing environmental permitting and regulatory compliance assistance for land use projects from their planning stages through entitlement and construction. His local expertise, diverse professional background, and positive relationships with regulatory personnel are integral components of his successful project outcomes.

Matt earned a Bachelor of Science degree with a focus in Environmental Science from the Evergreen State College in Olympia, Washington, with additional graduate-level coursework and research in aquatic restoration and salmonid ecology. Matt has received 40-hour wetland delineation training (*Western Mountains, Valleys, & Coast and Arid West Regional Supplements*) and regularly performs wetland, stream, and shoreline delineations. Matt has been formally trained in the use of the *2014 Washington State Wetland Rating System* and *Determination of Ordinary High Water Mark* by WSDOE, and he is a Pierce County Qualified Wetland Specialist and Wildlife Biologist. He has attended USFWS survey workshops for multiple threatened and endangered species, and he is a Senior Author of WSDOT Biological Assessments. Matt holds 40-hour HAZWOPER training and has managed Phase I Environmental Site Assessments, subsurface investigations, and contaminant remediation projects throughout the Pacific Northwest. His diverse experience also includes NEPA compliance for federal permitting projects; noxious weed abatement; army ant research in the Costa Rican tropical rainforest; spotted owl surveys on federal and private lands; and salmonid spawning and migration surveys.

Laura Livingston

Environmental Planner
Professional Experience: 8 years

Laura Livingston is an Environmental Planner with a background in water quality monitoring, invasive species monitoring, wildlife monitoring, wilderness stewardship, and erosion control projects. Laura has field experience working on natural resources projects, with an emphasis on stream and river projects, in the Northwest, Northeast, and Southwest United States. She has also worked on a variety of environmental science research, grant, and teaching projects requiring scientific writing, science communication, laboratory work, and statistical analysis. She currently performs ordinary high water delineations; conducts environmental code analysis; and prepares environmental assessment and mitigation reports, biological evaluations, and permit applications to support clients through the

regulatory and planning process. Laura has a particular interest in shoreline projects and has prepared a variety of application materials to support projects within Shoreline Master Program jurisdictions.

Laura earned a Master of Science degree in Environmental Science from Washington State University, Pullman. In addition, she has received training from the Washington State Department of Ecology in How to Administer Shoreline Development Permits in Western Washington's Shorelines, Determining the Ordinary High Water Mark, the revised Washington State Wetland Rating System, Puget Sound Coastal Processes, How to Conduct a Forage Fish Survey, and Using the Credit-Debit Method for Estimating Mitigation Needs. Laura has also received training from the Washington State Department of Transportation in Biological Assessment Preparation for Transportation Projects and is listed by WSDOT as a junior author for preparing Biological Assessments.

Casey Lanier

Environmental Scientist
Professional Experience: 10 years

Casey Lanier is an Environmental Scientist with a varied background in fisheries habitats, water quality monitoring, data telemetry and habitat restoration. He has over 10 years of experience within the private sector and county level conducting surface water investigations, anadromous fish passage surveys, long-term water quality monitoring, mitigation installation and monitoring. He has experience conducting presence absence surveys for migratory and nesting birds, environmental compliance monitoring on construction and infrastructure maintenance projects for county and public utilities.
Casey earned a Bachelor of Science degree in Environmental Science, Technology, and Policy with a specialization in Hydrology from California State University, Monterey Bay. In addition, Casey also has a graduate-level course work in Fisheries and Wildlife Management from Oregon State University. During his time at Cal State Monterey Bay, he worked as a research assistant conducting in depth analysis of steelhead habitats investigating potential impacts of post-wildfire sediment yields and fish passage restoration feasibility studies. He currently assists in wetland, stream, and shoreline delineations and fish and wildlife habitat assessments; conducts environmental code analysis; and prepares environmental assessment and mitigation reports, biological evaluations, and permit applications to support clients through the regulatory and planning process for various land use projects.

Morgan Kentch

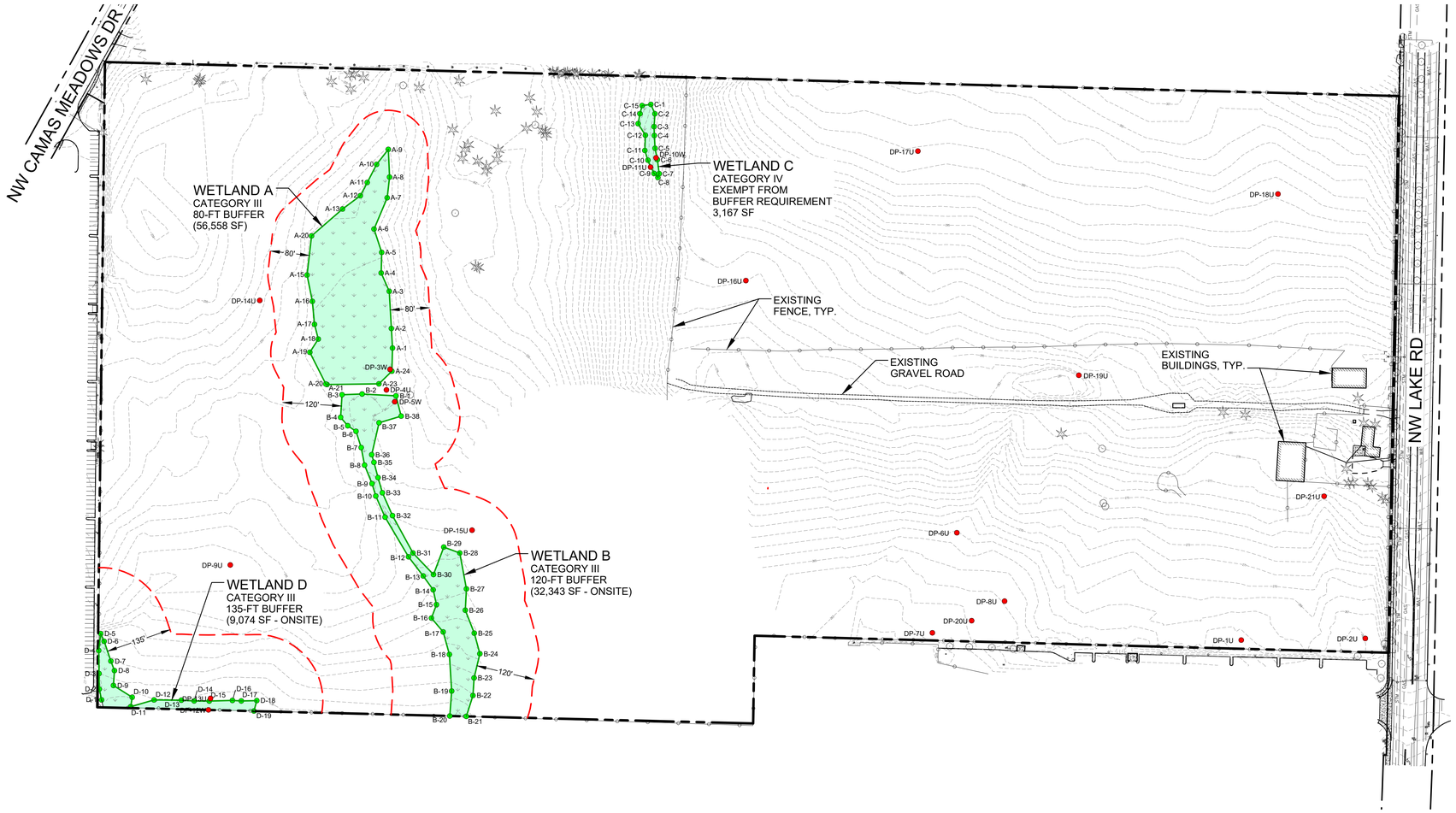
Staff Scientist
Professional Experience: 3 years

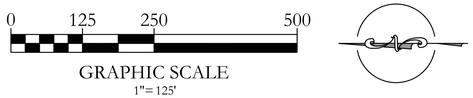
Morgan Kentch is a Staff Scientist with a background in marine biology and both marine and freshwater ecology in Washington State. Morgan earned her Bachelor of Science degree in Biology with marine emphasis from Western Washington University, Bellingham. There she received extensive, hands-on experience working in lab and field settings, and studying local marine and aquatic organisms and ecosystems. One of Morgan's more exceptional projects included monitoring a stream restoration project for the City of Bellingham by assessing stream habitat and biotic quality, collecting data, identifying local stream invertebrates, and writing a report outlining analyzed results. Morgan also participated in a study abroad program in La Paz, Baja California Sur, where she led an independent study on the effects of temperature on bioluminescent organisms in a local bay. Through

this project, she demonstrated a strong understanding of collecting background research, following the scientific method, conducting scientific research, and writing a scientific paper formatted for journal submission.

Morgan currently assists in wetland, stream, and shoreline delineations and fish and wildlife habitat assessments; conducts environmental code analysis; and prepares environmental assessment and mitigation reports, biological evaluations, and permit applications to support clients through the regulatory and planning process for various land use projects. She has received wetland delineation training (Western Mtns, Valleys, & Coast and Arid West Regional Supplement), and has received formal training through the Washington State Department of Ecology and Coastal Training Program in Using the 2014 Wetland Rating System, How to Determine the Ordinary High Water Mark, and How to Conduct a Forage Fish Survey.

CAMAS - EXISTING CONDITIONS





PLAN LEGEND

- PROPERTY LINE
- EXISTING WETLAND BOUNDARY
- APPROXIMATED WETLAND BOUNDARY (NOT SURVEYED)
- WETLAND BUFFER
- W-# WETLAND FLAG LOCATION
- DP-# DATA PLOT LOCATION
- EXISTING 1-FT CONTOURS

VICINITY MAP

SOURCE: CLARK COUNTY GIS
(ACCESSED 8/17/2021)

LOCATION

THE SE ¼ OF SECTION 29,

TOWNSHIP 02N, RANGE 03E, WM

APPLICANT/OWNER

PANATTONI DEVELOPMENT COMPANY, INC
1821 DOCK STREET, SUITE 100
TACOMA, WASHINGTON 98402
CONTACT: BJORN BRYNESTAD, DEVELOPMENT MGR.
PHONE: (206) 838-1730
PHONE: BJORN@PANATTONI.COM

ENVIRONMENTAL CONSULTANT

SOUNDVIEW CONSULTANTS LLC
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GIG HARBOR, WA 98355
(253) 514-8952

SHEET INDEX

SHEET NUMBER	SHEET TITLE
1	EXISTING CONDITIONS
2	PROPOSED SITE PLAN, IMPACTS & MITIGATION
3	PLANTING PLAN OVERVIEW & PLANTING TYPICALS
4	PLANT SCHEDULE & DETAILS

SOURCES:

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CAMAS, WASHINGTON 98607

CLARK COUNTY
PARCEL NUMBER(S):
176155000 & 176170000

DATE: 4/26/2022
JOB: 1144.0027
BY: MW
SCALE: AS SHOWN
SHEET: 1

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PROPOSED SITE PLAN, IMPACTS & MITIGATION

0 125 250 500

GRAPHIC SCALE
1"=125'

PLAN LEGEND

- PROPERTY LINE
- EXISTING WETLAND BOUNDARY
- APPROXIMATED WETLAND BOUNDARY (NOT SURVEYED)
- WETLAND BUFFER - REDUCED
- PROPOSED CLEARING & GRADING LIMITS

MITIGATION LEGEND

WETLAND & BUFFER IMPACTS

WETLAND C FILL	3,167 SF
WETLAND BUFFER REDUCTION	2,080 SF
TEMPORARY BUFFER GRADING IMPACTS	55,146 SF

WETLAND & BUFFER MITIGATION

WETLAND BUFFER ADDITION	9,770 SF
RESTORATION OF TEMPORARY BUFFER GRADING IMPACTS	55,146 SF

- POST-CONSTRUCTION BUFFER / SPLIT RAIL FENCE
- CRITICAL AREA SIGN - 33 SIGNS

SOURCES:

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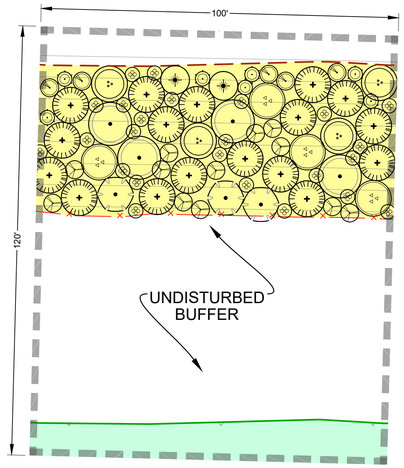
PLANTING PLAN OVERVIEW & PLANTING TYPICALS

PLANTING PLAN

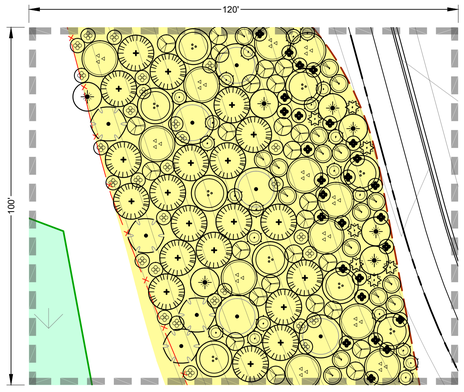
0 125 250 500

GRAPHIC SCALE
1"= 125'



PLANTING TYPICAL 1

SCALE: 1"=20'



PLANTING TYPICAL 2

0 20 40 80

GRAPHIC SCALE
1"= 20'

PLAN LEGEND

- PROPERTY LINE
- EXISTING WETLAND BOUNDARY
- APPROXIMATED WETLAND BOUNDARY (NOT SURVEYED)
- POST-CONSTRUCTION BUFFER / SPLIT RAIL FENCE
- PROPOSED CLEARING & GRADING LIMITS

PLANTING LEGEND

SCRUB-SHRUB BUFFER RESTORATION	12,200 SF
FORESTED/SCRUB-SHRUB BUFFER RESTORATION	51,498 SF
TOTAL PLANTED AREA:	63,698 SF

PLANT LIST

Scientific Name	Common Name
TREES	
Acer macrophyllum	bigleaf maple
Frangula purshiana	cascara
Pseudotsuga menziesii	Douglas fir
SHRUBS	
Acer circinatum	vine maple
Amelanchier alnifolia	serviceberry
Corylus cornuta var. californica	western hazlenut
NO SYMBOL *Gaultheria shallon*	salal
Holodiscus discolor	oceanspray
Mahonia aquifolium	tall Oregon grape
NO SYMBOL *Mahonia nervosa*	low Oregon grape
Oemleria cerasiformis	Indian plum
NO SYMBOL *Polystichum munitum*	western swordfern
Rosa gymnocarpa	bald hip rose
Symphoricarpos albus var. laevigatus	common snowberry
Symphoricarpos mollis	trailing snowberry
SEED MIXES (www.riverrefugeseed.com)	
Native Upland Grass Mix #9	**20 lbs/acre**
Elymus glaucus	Blue wildrye
Bromus carinatus	California brome
Hordeum brachyantherum	Meadow barley
Festuca roemeri	Roemer's fescue
Deschampsia elongata	Slender hairgrass
Agrostis exarata	Spike bentgrass
Deschampsia cespitosa	Tufted hairgrass
Festuca rubra var. rubra	Red fescue

NOTE: SALAL, SWORD FERN & LOW OREGON GRAPE TO BE PLANTED THROUGHOUT BUFFER RESTORATION AREAS, IN GROUPINGS OF 3 TO 5

SOURCES:

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Plotted: April 26, 2022

PLANT SCHEDULE

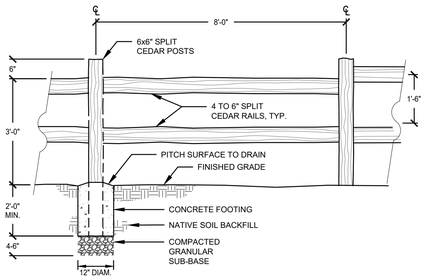
		Area (sf):	**12,200**	**51,498**	**63,698**				
		Cov'g (%):	**100**	**100**					
		Trees (%):	**0**	**50**					
		Shrubs (%):	**100**	**50**					
Scientific Name	**Common Name**	**WL Status**	**Scrub-Shrub Buffer Restoration**	**Forested/ Scrub-Shrub Buffer Restoration**	**TOTAL**	**Spacing (min.)**	**Height (min.)**	**Size (min.)**	**Planting Area**
TREES									
Acer macrophyllum	bigleaf maple	FACU	-	51	**51**	**10 ft**	**3 ft**	**2 gal**	**Dry**
Frangula purshiana	cascara	FAC	-	36	**36**	**10 ft**	**3 ft**	**1 gal**	**Dry**
Pseudotsuga menziesii	Douglas fir	FACU	-	210	**210**	**10 ft**	**3 ft**	**2 gal**	**Dry**
		Total:	**0**	**297**	**297**				
SHRUBS									
Acer circinatum	vine maple	FAC	25	50	**75**	**10 ft**	**4 ft**	**2 gal**	**Dry/Moist**
Amelanchier alnifolia	serviceberry	FACU	20	25	**45**	**8 ft**	**3 ft**	**2 gal**	**Dry**
Corylus cornuta var. californica	western hazlenut	FACU	40	50	**90**	**10 ft**	**2 ft**	**2 gal**	**Moist**
Gaultheria shallon	salal	FACU	-	175	**175**	**4 ft**	**1 ft**	**1 gal**	**Dry**
Holodiscus discolor	oceanspray	FACU	50	55	**105**	**5 ft**	**2 ft**	**1 gal**	**Dry**
Mahonia aquifolium	tall Oregon grape	FACU	30	-	**30**	**4 ft**	**2 ft**	**1 gal**	**Dry**
Mahonia nervosa	low Oregon grape	FACU	50	175	**225**	**4 ft**	**1 ft**	**1 gal**	**Dry/Moist**
Oemleria cerasiformis	Indian plum	FACU	100	150	**250**	**5 ft**	**2 ft**	**2 gal**	**Dry**
Polystichum munitum	western swordfern	FACU	75	130	**205**	**4 - 5 ft**	**1 ft**	**1 gal**	**Dry/Moist**
Rosa gymnocarpa	bald hip rose	FACU	50	90	**140**	**4 ft**	**2 ft**	**1 gal**	**Dry/Moist**
Symphoricarpos albus var. laevigatus	common snowberry	FACU	-	290	**290**	**4 ft**	**2 ft**	**1 gal**	**Dry**
Symphoricarpos mollis	trailing snowberry	FACU	125	-	**125**	**4 ft**	**2 ft**	**1 gal**	**Dry**
		Total:	**565**	**1190**	**1755**				

SEED MIXES (www.riverrefugeseed.com)		**WL Status**	**Scrub-Shrub Buffer Restoration**	**Forested/ Scrub-Shrub Buffer Restoration**	**TOTAL**
Native Upland Grass Mix #9	**20 lbs/acre**				
Elymus glaucus	Blue wildrye	30%			
Bromus carinatus	California brome	25%			
Hordeum brachyantherum	Meadow barley	10%			
Festuca roemeri	Roemer's fescue	10%			
Deschampsia elongata	Slender hairgrass	10%			
Agrostis exarata	Spike bentgrass	5%			
Deschampsia cespitosa	Tufted hairgrass	5%			
Festuca rubra var. rubra	Red fescue	5%			
		Total (lbs):	**6**	**24**	**30**

1 - Scientific names and species identification taken from *Flora of the Pacific Northwest, 2nd Edition (Hitchcock and Cronquist, Ed. by Giblin, Ledger, Zika, and Olmstead, 2018).*
2 - Over-sized container plants are suitable for replacement pending Wetland Scientist approval.
3 - Native plant species may be substituted or added with Wetland Scientist approval.
4 - All disturbed and bare soil areas in the buffer to be seeded with a native grass seed mix.
5 - Tree calculations based upon 10-ft average spacing.
6 - Shrub calculations based upon 5-ft average spacing.

SPLIT RAIL FENCE DETAIL

NOT TO SCALE

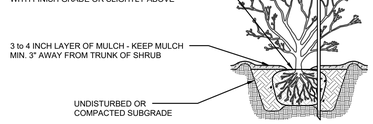


NOTES:

1. POSTS AND RAILINGS PRE-CUT FOR ASSEMBLY.
2. 3-RAIL DESIGNS ARE PERMITTED.
3. FENCE SHALL BE PLACED AT APPROVED BUFFER EDGE.

TREE & SHRUB PLANTING DETAIL (TYPICAL)

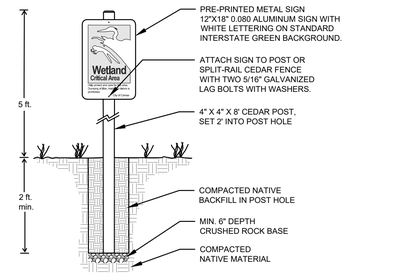
NOT TO SCALE



NOTES:
1. PLANT SHRUBS OF THE SAME SPECIES IN GROUPS OF 3 to 9 AS APPROPRIATE, OR AS SHOWN ON PLAN. AVOID INSTALLING PLANTS IN STRAIGHT LINES TO ACHIEVE A NATURAL-LOOKING LAYOUT.
2. EXCAVATE PIT TO FULL DEPTH OF ROOT MASS AND 2 X ROOT MASS DIAMETER. SPREAD ROOTS TO FULL WIDTH OF CANOPY. SCARIFY SIDES OF PIT.
3. MIDWAY THROUGH PLANTING ADD AGROFORM TABLET AND WATER THOROUGHLY.
4. BACKFILL TO BE COMPACTED USING WATER ONLY.
5. WATER IMMEDIATELY AFTER INSTALLATION.

CRITICAL AREA SIGN DETAIL

NOT TO SCALE



CRITICAL AREA BOUNDARY SIGN NOTES:
1. THE APPLICANT INSTALL PERMANENT SIGNS ALONG THE BOUNDARY OF A CRITICAL AREA OR MANAGEMENT ZONE TO CITY STANDARDS.
2. ONE SIGN SHALL BE POSTED PER RESIDENTIAL LOT AND ONE SIGN PER 100 FEET FOR ALL PUBLIC RIGHTS-OF-WAY, TRAILS, PARKING AREAS, PLAYGROUNDS, AND ALL OTHER USES LOCATED ADJACENT TO WETLANDS AND ASSOCIATED BUFFERS.
3. PRE-PRINTED METAL SIGN AVAILABLE THROUGH SIGN, AVAILABLE THROUGH:
   ZUMAR INDUSTRIES
   PHONE: 1-800-426-7967,
   WEBSITE: WWW.ZUMAR.COM

SOURCES:

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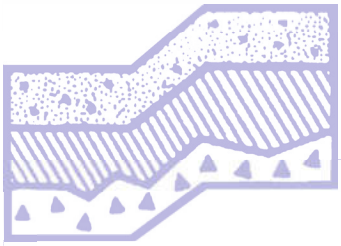
DRAFT

GEOTECHNICAL REPORT

Camas Business Center
4707 and 4723 – Northwest Lake Road
Camas, Washington

Project No. T-8553



Terra Associates, Inc.

Prepared for:

Panattoni Development Company
Tacoma, Washington

July 12, 2021

TERRA ASSOCIATES, Inc.
Consultants in Geotechnical Engineering, Geology
and
Environmental Earth Sciences

July 12, 2021
Project No. T-8553

Mr. Bjorn Brynestad
Panattoni Development Company
1821 Dock Street, Suite 100
Tacoma, Washington 98402

DRAFT

Subject: Geotechnical Report
Camas Business Center
4707 and 4723 – Northwest Lake Road
Camas, Washington

Dear Mr. Brynestad:

As requested, we have conducted a geotechnical engineering study for the subject project. The attached report presents our findings and recommendations for the geotechnical aspects of project design and construction.

Our field exploration indicates the site is generally underlain by 1 to 11 inches of organic topsoil overlying medium stiff to very stiff silts with varying amounts of sand and gravel to the termination of the test pits. Test pits in the central and south-central portions of the site terminated in deposits of medium dense sands with varying silt and gravel contents. Additionally, Columbia River Basalt was encountered in the north and north-central portions of the site within the upper three to nine feet. Groundwater was observed in 28 of the 80 test pits at depths of 2.5 to 12 feet.

In our opinion, soil and groundwater conditions at the site will be suitable for support of the development as planned, provided recommendations contained herein are incorporated into project design and construction specifications.

We trust the information provided in the attached report is sufficient for your current needs. If you have any questions or need additional information, please call.

Sincerely yours,
TERRA ASSOCIATES, INC.

Michael J. Xenos, E.I.T.
Staff Engineer

DRAFT

Carolyn S. Decker, P.E.
Project Engineer

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Geotechnical Report
Camas Business Center
4707 and 4723 – Northwest Lake Road
Camas, Washington

1.0 PROJECT DESCRIPTION

The project consists of developing the site with six industrial buildings with dock-high loading, along with a stormwater pond, associated access, parking, and utility improvements. Based on preliminary site plans prepared by Synthesis PLLC dated February 23, 2021, final floor areas are expected to range from approximately 35,775 square feet to 301,500 square feet. The preliminary site plans also show a stormwater pond in the northwestern portion of the site. Grading plans were not available at the time of this report. Based on the existing site topography we expect cuts and fills of up to approximately 10 feet will be required to achieve final pad elevations across the building area.

We anticipate the building will be constructed using precast reinforced concrete tilt-up perimeter wall panels with interior isolated columns supporting a steel or wood-truss roof system. We expect structural loads will be light, about 100 to 150 kips for isolated columns and 4 to 6 kips per foot for continuous perimeter bearing walls. Maximum product loading on the floors is not expected to exceed 350 pounds per square foot (psf).

The recommendations contained in the following sections of this report are based on the above design features. If actual features vary or changes are made, we should review them in order to modify our recommendations, as required. We should review the final design drawings and specifications to verify our recommendations have been properly interpreted and incorporated into project design and construction.

2.0 SCOPE OF WORK

Our work was completed in accordance with our authorized proposal dated January 21, 2021. Accordingly, on May 24, 2021, through May 26, 2021, we observed soil and groundwater conditions at 80 test pits excavated to maximum depths of 6 to 12 feet below current site grades. Using the information obtained from this subsurface exploration, we performed analyses to develop geotechnical recommendations for development at the site.

Specifically, this report addresses the following:

- Soil and groundwater conditions.
- Seismic design parameters per the current International Building Code (IBC).
- Geologic Hazards per the City of Camas Municipal Code.
- Site preparation and grading.
- Building preload/surcharge program.
- Excavations.

- Foundations including foundation alternatives.
- Slab-on-grade floors.
- Stormwater facilities.
- Infiltration feasibility.
- Drainage.
- Utilities.
- Pavements.

Recommendations outlined in this report regarding drainage are associated with soil strength, design earth pressures, erosion, and stability. Design and performance issues with respect to moisture as it relates to the structure environment are beyond Terra Associates, Inc.'s purview. A building envelope specialist or contractor should be consulted to address these issues, as needed.

3.0 SITE CONDITIONS

3.1 Surface

The site consists of 2 tax parcels totaling approximately 74 acres located at 4707 and 4723 NW Lake Road in Camas, Washington. The approximate site location is shown on Figure 1.

The site is currently occupied by 3 structures in the south-central portion of the site along with associated access and landscaping. The remainder of the site is vacant and predominately covered with brush and weeds, with the exception of the northwestern portion, which is covered with mature trees. Site topography in the southern portion of the site generally consists of a slope that descends from the east to the west with an overall relief of approximately 42 feet. At the approximate midpoint of the site from north to south, there is a moderate-to-steep slope that descends from the south to the north with an overall relief of approximately 48 feet. The grade then transitions to a slight slope, that continues to descend to the north with an overall relief of approximately 20 feet.

3.2 Soils

In general, the soil conditions at the site consist of approximately 1 to 11 inches of organic topsoil overlying 3 to 12 feet of medium stiff to very stiff silt with varying amounts of sand and gravel to the termination of the test pits. There were instances, most notably in the central and south-central portions of the site, where the test pits terminated in deposits of medium dense sand with silt and silty sand (with varying gravel contents), and similar deposits were occasionally exposed in the very north and southwest portions of the site. Additionally, Columbia River Basalt was encountered in the north and north-central portions of the site within the upper 3 to 9 feet. Test Pits TP-21 and TP-35, as well as several test pits located in the southwest of the site, also contained one to 6 feet of gravel with silt and sand to silty gravel with sand material underlying the upper silts. We observed, approximately 3 feet of fill material in Test Pit TP-78 with occasional organic and construction debris.

The *Geologic Map of the Camas Quadrangle, Clark County, Washington*, by R.C. Evarts and J.E. O'Connor (2008) maps the site as Quarternary-tertiary Sedimentary Conglomerate (Qt_c). This map unit is consistent with the underlying basalt bedrock observed in our field explorations. However, the upper silts, sands, and gravels observed in the test pits are more consistent with Sand and Silt Facies (Qf_s), and Gravel Facies (Qfg), which are mapped roughly 1,000 feet to the southwest and 2,000 feet to the northeast, respectively.

The preceding discussion is intended to be a brief review of the soil conditions observed at the site. More detailed descriptions are presented on the Test Pit Logs attached in Appendix A. The approximate location of the test pits is shown on attached Figure 2.

3.3 Groundwater

We observed minor to moderate groundwater seepage in 8 of the 80 test pits excavated. Groundwater was primarily observed in the test pits north of the wetland area, as well as in test pits located in the central, south-central, and southwest portions of the site at depths ranging from approximately 2.5 to 12 feet below existing grades. The observed seepage was typically observed within sandy or gravelly deposits, or perched within sandy seams or around pockets of gravel contained within the silt deposits.

Our observations in the test pits indicate observed groundwater levels correspond with the local groundwater table associated with Lacamas Creek located approximately 2,400 feet to the northeast. Groundwater seepage depth observations were made during the late spring, so groundwater is expected to be between seasonal high and seasonal low levels.

Mottled soils were observed throughout many of the test pits which indicated the presence of perched groundwater throughout much of the site. The occurrence of shallow perched groundwater is typical for sites underlain by fine-grained soils or relatively shallow bedrock. Fluctuations in the static groundwater level will occur seasonally. Typically, groundwater will reach maximum levels during the wet winter months. Based on our experience with groundwater conditions in the area, we would expect the seasonal high groundwater level to reach up to existing site grades.

3.4 Geologic Hazards

Chapter 16.59.010 of the City of Camas Municipal Code (CMC) defines geologic hazards as "…areas susceptible to erosion hazard, landslide hazard, seismic hazard, mine hazard, and other geologic events." We have evaluated the site for these hazards in the following sections below.

3.4.1 Erosion Hazard Areas

Chapter 16.59.020.A of the CMC defines erosion hazard areas as "…areas where there is not a mapped or designated landslide hazard, but where there are steep slopes equal to or greater than forty percent slope. Steep slopes which are less than ten feet in vertical height and not part of a larger steep slope system, and steep slopes created through previous legal grading activity are not regulated steep slope hazard areas."

The majority of the soils observed on the site are classified as Hesson clay loam, 0 to 8 percent slopes, in the south and northeast, and Powel silt loam, 0 to 8 percent slopes in the north by the United States Department of Agriculture Natural Resources Conservation Service (NRCS). Additionally, pockets of soils classified as Cove silty clay loam, thin solum, 0 to 3 percent slopes are located throughout the site. Over the site with existing slope gradients, these soils will have a slight to moderate potential for erosion when exposed.

The soils classified as Hesson clay loam, 8 to 20 percent slopes located at the approximate north-south midpoint along the moderate-to-steep slope will have a severe potential for erosion when exposed. Therefore, it is our opinion that an erosion hazard exists along the moderate-to-steep slope in the approximate center of the site.

Implementation of temporary and permanent Best Management Practices (BMPs) for preventing and controlling erosion will be required and will mitigate the erosion hazard. At a minimum, we recommend implementing the following erosion and sediment control BMPs prior to, during, and immediately following construction activities at the site.

Prevention

- Limit site clearing and grading activities to the relatively dry months (typically May through September).
- Limit disturbance to areas where construction is imminent.
- Locate temporary stockpiles of excavated soils no closer than ten feet from the crest of the slope.
- Provide temporary cover for cut slopes and soil stockpiles during periods of inactivity. Temporary cover may consist of durable plastic sheeting is securely anchored to the ground surface or straw mulch.
- Establish permanent cover by seeding, in conjunction with a mulch cover or appropriate hydroseeding, over exposed areas that will not be disturbed for a period of 30 days or more.

Containment

- Install a silt fence along site margins and downslope of areas that will be disturbed. The silt fence should be in place before clearing and grading is initiated.
- Intercept surface water flow and route the flow away from the slope to a stabilized discharge point. Surface water must not discharge at the top or onto the face of the steep slope.
- Provide onsite sediment retention for collected runoff.

The contractor should perform a daily review and maintenance of all erosion and sedimentation control measures at the site.

3.4.2 Landslide Hazard Areas

Chapter 16.59.020.B of the CMC defines landslide hazard areas as "…areas potentially subject to landslides based on a combination of geologic, topographic, and hydrologic factors. They include areas susceptible because of any combination of bedrock, soil, slope (gradient), slope aspect, structure, hydrology, or other factors. Examples of these may include, but are not limited to the following:

1. Areas of pervious slope failures including areas of unstable old or recent landslides;
2. Areas with all three of the following characteristics:
    a. Slopes steeper than 15 percent,
    b. Hillsides intersecting geologic contacts with permeable sediments overlying a low permeability sediment or bedrock, and
    c. Any springs or ground water seepage;
3. Slopes that are parallel or sub-parallel to planes of weakness, such as bedding planes, joint systems and fault planes in subsurface materials;
4. Areas mapped by:
    a. Washington Department of Natural Resources Open File Report: Slope Stability of Clark County, 1975, as having potential instability, historical or active landslides, or as older landslide debris, and
    b. The Washington Department of Natural Resources Open File Report: Geologic Map of the Vancouver Quadrangle, Washington and Oregon, 1987, as landslides;
5. Slopes greater than eighty percent, subject to rock fall during earthquake shaking;
6. Areas potentially unstable as a result of rapid stream incision, stream bank erosion, and stream undercutting the toe of the slope;
7. Areas located in a canyon or on an active alluvial fan, presently or potentially subject to inundation by debris flows, debris torrents, or catastrophic flooding."

The onsite slopes do not match any of the above descriptions nor is the site located on the Washington Department of Natural Resources' Geologic Landslide Hazard Map. Therefore, in our opinion, the site does not present a landslide hazard as defined by the CMC in our opinion.

3.4.3 Seismic Hazard Areas

Chapter 16.59.020.C of the CMC defines seismic hazard areas as "… areas that are subject to severe risk of damage as a result of earthquake-induced soil liquefaction, ground shaking amplification, slope failure, settlement, or surface faulting. Relative seismic hazard is mapped on the NEHRP site class map of Clark County, published by the Washington Department of Natural Resources."

Liquefaction is a phenomenon where there is a reduction or complete loss of soil strength due to an increase in water pressure induced by vibrations. Liquefaction mainly affects geologically recent deposits of fine-grained sands underlying the groundwater table. Soils of this nature derive their strength from intergranular friction. The generated water pressure or pore pressure essentially separates the soil grains and eliminates this intergranular friction; thus, eliminating the soil's strength.

The NEHRP Site Class Map of Clark County, published by the Washington State DNR and dated September 2004, classifies the site as Seismic Site Class B to C, which typically present negligible risk for soil liquefaction. Additionally, based on the soil and groundwater conditions we observed, the risk for soil liquefaction occurring at the site is negligible due to the relative density of the soils and amount of cohesive material that would be sufficient to resist the cyclical loading of a seismic event. Columbia River Basalt likely underlies most of the site as evidenced by the north and north-central test pits. Therefore, in our opinion, the site would not be considered a seismic hazard area as defined by the CMC.

3.5 Seismic Site Class

Based on soil conditions observed in the test pits and our knowledge of the area geology, per Chapter 16 of the 2018 International Building Code (IBC), Site Class "C" should be used in structural design.

4.0 DISCUSSION AND RECOMMENDATIONS

4.1 General

Based on our study, development of the site as proposed is feasible from a geotechnical engineering standpoint. The primary geotechnical concern at the site is the presence of soil strata susceptible to consolidation under the planned building loads. The compressible soils consist of layers of medium stiff to very stiff silts that vary in thickness across the site. These soils are compressible and, if not mitigated, will likely experience unacceptable levels of differential settlement under proposed project loads.

Given the depth to the compressible silt layers, in our opinion, the potential post-construction building settlements can be mitigated by implementing a preload/surcharge program. This would entail raising site grades to finish floor elevation for a period of time to induce settlements prior to application of building loads. Building construction can begin after completion of the preload/surcharge program. The building can be supported on conventional spread footings bearing on the preload structural fill. Floor slabs can be similarly supported on the preload structural fill and pavements can be supported on structural fill or compacted native soils.

If building schedules do not allow for a surcharge program to take place, the building can be supported on ground improved by installing vibrated stone columns, which would preclude the need for a fill surcharge program.

The upper silt soils and lower silty sand to silty gravel soils observed at the site contain a significant amount of fines and will be difficult to compact as structural fill when too wet. The ability to use native soil soils from site excavations as structural fill will depend on its moisture content and the prevailing weather conditions at the time of construction. If grading activities will take place during winter, the owner should be prepared to import clean granular material for use as structural fill and backfill. Alternatively, stabilizing the moisture in the native and existing fill soils with cement or lime can be considered.

Detailed recommendations regarding these issues and other geotechnical design considerations are provided in the following sections. These recommendations should be incorporated into the final design drawings and construction specifications.

4.2 Site Preparation and Grading

To prepare the site for construction, all vegetation, organic surface soils, and other deleterious material should be stripped and removed from the site. Surface stripping depths of 1 to 11 inches should be expected to remove the organic surface soils and vegetation. In the developed portions of the site, demolition of existing structures should include removal of existing foundations and buried asphalt, and abandonment of underground septic systems and other buried utilities. Abandoned utility pipes that fall outside of new building areas can be left in place, provided they are sealed to prevent intrusion of groundwater seepage and soil. Organic topsoil will not be suitable for use as structural fill, but may be used for limited depths in nonstructural areas.

Once clearing and stripping operations are complete, cut and fill operations can be initiated to establish desired building grades. Prior to placing fill, all exposed bearing surfaces should be observed by a representative of Terra Associates, Inc. to verify soil conditions are as expected and suitable for support of new fill or building elements. Our representative may request a proofroll using heavy rubber-tired equipment to determine if any isolated soft and yielding areas are present. If excessively yielding areas are observed and they cannot be stabilized in place by compaction, the affected soils should be excavated and removed to firm bearing and grade restored with new structural fill. If the depth of excavation to remove unstable soils is excessive, the use of geotextile fabrics such as Mirafi 500X or an equivalent fabric can be used in conjunction with clean granular structural fill. Our experience has shown, in general, a minimum of 18 inches of a clean, granular structural fill place and compacted over the geotextile fabric should establish a stable bearing surface.

Our study indicates a majority of the native soils contain a sufficient percentage of fines (silt- and clay-sized particles) that will make them difficult to compact as structural fill if they are too wet or too dry. Accordingly, the ability to use these upper native soils from site excavations as structural fill will depend on their moisture content and the prevailing weather conditions when site grading activities take place. Soils that are too wet to properly compact could be dried by aeration during dry weather conditions or mixed with an additive such as cement or lime to stabilize the soil and facilitate compaction. If an additive is used, additional Best Management Practices (BMPs) for its use will need to be incorporated into the Temporary Erosion and Sedimentation Control plan (TESC) for the project.

Additionally, the bedrock soils will be difficult to reuse as structural fill. If bedrock is used, it will need to be crushed into pieces that are smaller than 6 inches in diameter and then compacted in 6 inch lifts.

If grading activities are planned during the wet winter months, or if they are initiated during the summer and extend into fall and winter, the contractor should be prepared to import wet-weather structural fill. For this purpose, we recommend importing a granular soil that meets the following grading requirements:

U.S. Sieve Size	Percent Passing
6 inches	100
No. 4	75 maximum
No. 200	5 maximum*

*Based on the 3/4-inch fraction.

Prior to use, Terra Associates, Inc. should examine and test all materials to be imported to the site for use as structural fill.

Structural fill should be placed in uniform loose layers not exceeding 6 or 12 inches and compacted to a minimum of 95 percent of the soil's maximum dry density, as determined by American Society for Testing and Materials (ASTM) Test Designation D-698 (Standard Proctor). The moisture content of the soil at the time of compaction should be within two percent of its optimum, as determined by this ASTM standard. In nonstructural areas, the degree of compaction can be reduced to 90 percent.

4.3 Preload/Surcharge

We recommend preloading the building area to limit building and floor slab settlements to tolerable levels. For this procedure, we recommend placing structural fill in the building areas to the design floor elevation, and delaying building construction until settlement under this fill load has occurred. The preload fill should extend a minimum of two feet beyond the building perimeter. A minimum fill depth of five feet is recommended.

Total settlement under the preload/surcharge fill is estimated in the range of 8 to 13 inches. These settlements are expected to occur in about 4 to 6 weeks following full application of the building fill.

To verify the amount of settlement and the time rate of movement, the preload program should be monitored by installing settlement markers. The settlement markers should be installed on the existing grade prior to placing any building or preload fills. Once installed, elevations of both the fill height and marker should be taken daily until the full height of the preload is in place. Once fully preloaded, readings should continue weekly until the anticipated settlements have occurred. A typical settlement marker detail is provided as Figure 3.

It is critical that the grading contractor recognize the importance of the settlement marker installations. All efforts must be made to protect the markers from damage during fill placement. It is difficult, if not impossible, to evaluate the progress of the preload program if the markers are damaged or destroyed by construction equipment. As a result, it may be necessary to install new markers and extend the surcharging time period in order to ensure that settlements have ceased and building construction can begin.

4.4 Excavations

All excavations at the site associated with confined spaces, such as those for utility construction, must be completed in accordance with local, state, or federal requirements. Based on current Washington Industrial Safety and Health Act (WISHA) regulations, the lower medium dense sands and medium dense to dense gravels found on the project site would be classified as Type C soils. The upper, medium stiff to very stiff silts would be classified as Type B soil.

Accordingly, temporary excavations in Type C soils should have their slopes laid back at an inclination of 1.5:1 (Horizontal:Vertical) or flatter, from the toe to the crest of the slope. Side slopes in Type B soils can be laid back at a slope inclination of 1:1 or flatter. If there is insufficient space to complete the excavations in this manner, or if excavations greater than 20 feet in depth are planned, temporary shoring to support the excavations may be required. Properly designed and installed shoring trench boxes can be used to support utility trench excavations where required.

Based on our study, groundwater should be anticipated within excavations extending below depths of about 7 to 12 feet below native surface grades. Excavations extending below this depth may encounter groundwater with volumes and flow rates sufficient to require some level of dewatering. Shallow excavations that do not extend more than two to three feet below the groundwater table can likely be dewatered by conventional sump-pumping procedures along with a system of collection trenches. Deeper excavations will require dewatering by well points or isolated deep-pump wells. The utility subcontractor should be prepared to implement excavation dewatering by well point or deep-pump wells, as needed. This will be an especially critical consideration for any deep excavations such for lift stations and sanitary sewer tie-ins.

This information is provided solely for the benefit of the owner and other design consultants and should not be construed to imply that Terra Associates, Inc. assumes responsibility for job site safety. It is understood that job site safety is the sole responsibility of the project contractor.

4.5 Foundations

Following the completion of the preload program. The building may be supported on conventional spread footing foundations bearing on subgrade prepared as recommended in Section 4.2 of this report. Perimeter foundations exposed to the weather should bear at a minimum depth of 1.5 feet below final exterior grades for frost protection. Interior foundations can be constructed at any convenient depth below the floor slab.

Building foundations should bear on a minimum of two feet of structural fill that replaces the native silt soils.

We recommend designing foundations bearing on two feet of structural fill for a net allowable bearing capacity of 2,500 psf. For short-term loads, such as wind and seismic, a one-third increase in this allowable capacity can be used. Following successful completion of the preload/surcharge program, with structural loading as anticipated and this bearing stress applied, estimated total foundation settlements of about one-inch and differential settlement of ½-inch should be expected.

For designing foundations to resist lateral loads, a base friction coefficient of 0.35 can be used. Passive earth pressures acting on the sides of the footings can also be considered. We recommend calculating this lateral resistance using an equivalent fluid weight of 300 pounds per cubic foot (pcf). We recommend not including the upper 12 inches of soil in this computation because it can be affected by weather or disturbed by future grading activity. This value assumes the foundations will be backfilled with structural fill as described in Section 4.2 of this report. The values recommended include a safety factor of 1.5.

Ground Improvement

As an alternative to the surcharging the building foundations, the buildings can be supported on improved ground using vibrated stone columns. This method creates highly densified columns of graded aggregate that would extend through the upper medium stiff soils into the underlying medium dense to dense sands and gravels. Due to the methods used to construct the columns, some improvement of the adjacent soils is also realized. Moreover, these methods can provide liquefaction mitigation by providing drainage paths and reduced pore pressures during ground shaking, and by constructing stiff, non-liquefiable inclusions in the soils. Once constructed, conventional spread footing foundations can be designed to bear immediately above the stone columns.

These ground improvement techniques are typically completed on a design/build approach with both design and construction completed by a specialty contractor. We can assist in contracting and selecting the specialty contractor, if desired.

4.6 Floor Slabs

Slab-on-grade floors may be supported on subgrade prepared as recommended in Section 4.2 of this report. Immediately below the floor slabs, we recommend placing a four-inch-thick capillary break layer of clean, free-draining, coarse sand or fine gravel that has less than five percent passing the No. 200 sieve. This material will reduce the potential for upward capillary movement of water through the underlying soil and subsequent wetting of the floor slabs.

The capillary break layer will not prevent moisture intrusion through the slab caused by water vapor transmission. Where moisture by vapor transmission is undesirable, such as covered floor areas, a common practice is to place a durable plastic membrane on the capillary break layer, then cover the membrane with a layer of clean sand or fine gravel to protect it from damage during construction and aid in uniform curing of the concrete slab. It should be noted, if the sand or gravel layer overlying the membrane is saturated prior to pouring the slab, it will be ineffective in assisting in uniform curing of the slab and can actually serve as a water supply for moisture transmission through the slab and affecting floor coverings. Therefore, in our opinion, covering the membrane with a layer of sand or gravel should be avoided if floor slab construction occurs during the wet winter months and the layer cannot be effectively drained. We recommend floor designers and contractors refer to the current American Concrete Institute (ACI) Manual of Concrete Practice for further information regarding vapor barrier installation below slab-on-grade floors.

With the subgrade prepared as recommended, design of the floor slab for storage rack loading and lift truck vehicle traffic, a subgrade modulus of 100 pounds per square inch per inch of deflection (pci) can be used.

4.7 Stormwater Facilities

No stormwater plans were available at the time of this report.

Detention Vault

If onsite detention will be provided by a buried vault, we expect that the bottom of the excavation would likely expose native, medium dense sands with silt, medium dense to dense silty gravels with sand, stiff to very stiff silts, and/or hard, moderately weathered Columbia River Basalt. Vault foundations supported by these native soils may be designed for an allowable bearing capacity of 4,000 psf provided that the foundation subgrade is at least 8 feet below current site grades. For short-term loads, such as seismic, a one-third increase in this allowable capacity can be used. Wet subgrade conditions that are easily disturbed by construction traffic will be exposed at the bottom of the vault excavation. To maintain a stable foundation subgrade, the native soils should be overexcavated a minimum depth of 12 inches below foundation grade and restored with clean 1 ¼-inch to 2-inch crushed rock.

Vault walls should be designed as below-grade retaining walls. The magnitude of earth pressure development on engineered retaining walls will partly depend on the quality of the wall backfill. We recommend placing and compacting wall backfill as structural fill as described in Section 4.2 of this report. To prevent overstressing the walls during backfilling, heavy construction machinery should not be operated within 5 feet of the wall. Wall backfill in this zone should be compacted with hand-operated equipment. To prevent hydrostatic pressure development, wall drainage must also be installed. A typical wall drainage detail is shown on Figure 4.

With the recommended wall backfill and drainage, we recommend designing the vault walls for an earth pressure imposed by an equivalent fluid weighing 50 pcf. Any portion of the wall for which drainage cannot be provided should be designed for an earth pressure equivalent to a fluid weighing 85 pcf. For evaluating walls under seismic loading, an additional uniform earth pressure equivalent to 8H psf, where H is the height of the below-grade wall in feet, can be used. These values assume a horizontal backfill condition. Where applicable, a uniform horizontal traffic value of 75 psf should be included in design of vault walls.

The detention vault will be subject to uplift pressures if drainage is not provided for the detention vault walls. For design, uplift forces should be based on a groundwater elevation equal to the current ground surface. The weight of the structure and the weight of the soil above its foundation will provide resistance to uplift. A soil unit weight of 120 pcf can be used in designing the structure to resist uplift forces.

Detention Pond

If fill berms will be constructed, the berm locations should be stripped of topsoil, duff, and soils containing organic material prior to the placement of fill. The fill berms should be constructed by placing structural fill in accordance with recommendations outlined in Section 4.2 of this report. Material used to construct pond berms should consist of predominately granular soils with a maximum size of 3 inches and a minimum of 20 percent fines.

Terra Associates, Inc. should examine and test all onsite or imported materials proposed for use as berm fill prior to their use.

It is possible that pockets of sandy or gravelly soils may be exposed within the pond area. Therefore, it may be necessary to line the dead storage portion of the pond for water quality purposes depending on the final grades and exposed soils.

Due to the exposure to fluctuating stored water levels and wave action, soils exposed on the interior side slopes of the ponds may be subject to some risk of periodic shallow instability or sloughing. Establishing interior slopes at a 3:1 gradient will significantly reduce or eliminate this potential. Exterior berm slopes and interior slopes above the maximum water surface should be graded to a finished inclination no steeper than 2:1. Finished slope faces should be thoroughly compacted and vegetated to guard against erosion.

We should review the stormwater plans when they are completed and revise our recommendations, if required.

4.8 Infiltration Feasibility

Based on our study, subsurface conditions are generally not favorable for infiltration of site stormwater. The surficial silt soils and relatively shallow silty sand soils observed at the site contain a high percentage of soil fines that would impede any downward migration of site stormwater. Additionally, the relatively shallow bedrock observed in the north and north-central portions of the site likely underlies the rest of the site and would not be a suitable receptor of site stormwater. Even low impact development (LID) techniques would likely fill up and overtop during rain events and cause minor local flooding. While zones of sands with silt and gravels were observed below the upper silts in the southwest and north portions of the site, there is an insufficient volume of material to support infiltration and many of these soils contained observable groundwater seepage which indicates site stormwater could not properly infiltrate into these deposits. Based on these soil conditions, infiltration at the site is not feasible and the stormwater should be managed using a conventional system.

4.9 Drainage

Surface

Final exterior grades should promote free and positive drainage away from the site at all times. Water must not be allowed to pond or collect adjacent to foundations or within the immediate building areas. We recommend providing a positive drainage gradient away from the building perimeters. If this gradient cannot be provided, surface water should be collected adjacent to the structures and directed to appropriate storm facilities.

Subsurface

In our opinion, with floor slabs at or elevated above the adjacent exterior grade, and positive drainage away from the structure maintained, installation of conventional perimeter foundation drains would not be necessary for the industrial grade building.

If positive drainage away from the building perimeters is not provided, or where landscaping is completed adjacent to the buildings, we recommend installing a continuous drain along the outside lower edge of the perimeter building foundations. The drains can be laid to grade at an invert elevation equivalent to the bottom of footing grade. The drains can consist of four-inch diameter perforated PVC pipe that is enveloped in washed half- to three-quarter-inch gravel-sized drainage aggregate. The aggregate should extend six inches above and to the sides of the pipe. The foundation drains and roof downspouts should be tightlined separately to an approved point of controlled discharge. All drains should be provided with cleanouts at easily accessible locations and should be serviced at least once each year.

4.10 Utilities

Utility pipes should be bedded and backfilled in accordance with American Public Works Association (APWA), or City of Camas specifications. As a minimum, trench backfill should be placed and compacted as structural fill, as described in Section 4.2 of this report. As noted, the native soils are moisture sensitive and close moisture control will be required to facilitate proper compaction. If utility construction takes place during the wet winter months, it will likely be necessary to import suitable wet weather fill for utility trench backfilling.

The utility contractor should also be prepared for encountering unstable soft alluvial soils below the pipe invert elevations. If not removed from below the pipe and replaced with crushed rock or additional bedding material, pipe deflections may occur as a result of the soil yielding and compressing in response to loading imposed during trench backfilling. The need to overexcavate and stabilize the pipe foundation before backfilling should be evaluated by observation and testing during construction. We recommend utilizing pipe connections that can accommodate the anticipated settlements discussed above.

4.11 Pavements

Pavement subgrades should be prepared as described in Section 4.2 of this report. Regardless of the degree of relative compaction achieved, the subgrade must be firm and relatively unyielding before paving. The subgrade should be proofrolled with heavy rubber-tired construction equipment such as a loaded 10-yard dump truck to verify this condition.

The pavement design section is dependent upon the supporting capability of the subgrade soils and the traffic conditions to which it will be subjected. We expect traffic at the facility will consist of cars and light trucks, along with heavy traffic in the form of tractor-trailer rigs. For design considerations, we have assumed traffic in parking and in car/light truck access pavement areas can be represented by an 18-kip Equivalent Single Axle Loading (ESAL) of 50,000 over a 20-year design life. For heavy traffic pavement areas, we have assumed an ESAL of 300,000 would be representative of the expected loading. These ESALs represent loading approximately equivalent to 3 and 18, loaded (80,000-pound GVW) RV rigs traversing the pavement daily in each area, respectively.

With a stable subgrade prepared as recommended, we recommend the following options for pavement sections:

Light Traffic and Parking:

- Two inches of hot mix asphalt (HMA) over six inches of crushed rock base (CRB)
- Full depth HMA – 4 inches

Heavy Traffic:

- Three inches of HMA over 8 inches of CRB
- Full depth HMA – 5.5 inches

For exterior Portland cement concrete (PCC) pavement, we recommend the following:

- 6 inches of PCC over two inches of CRB
    - 28-day compressive strength – 4,000 psi
    - Control joints spaced at a maximum of 15 feet.

Soil cement stabilization or constructing a soil cement base for support of the pavement section can also be considered as an alternative to the above conventional pavement sections. Assuming a properly constructed soil cement base having a minimum thickness of 12 inches and a minimum 7-day compressive strength of 100 pounds per square inch (psi), a minimum HMA pavement thickness of 3 inches would be required for the heavy traffic areas. The design of the soil cement base should be completed using samples of the subgrade exposed at the time of construction.

The paving materials used should conform to the Washington State Department of Transportation (WSDOT) specifications for half-inch class HMA, PCC, and CRB.

Long-term pavement performance will depend on surface drainage. A poorly drained pavement section will be subject to premature failure resulting from surface water infiltrating the subgrade soils and reducing their supporting capability. For optimum performance, we recommend surface drainage gradients of at least two percent. Some degree of longitudinal and transverse cracking of the pavement surface should be expected over time. Regular maintenance should be planned to seal cracks as they occur.

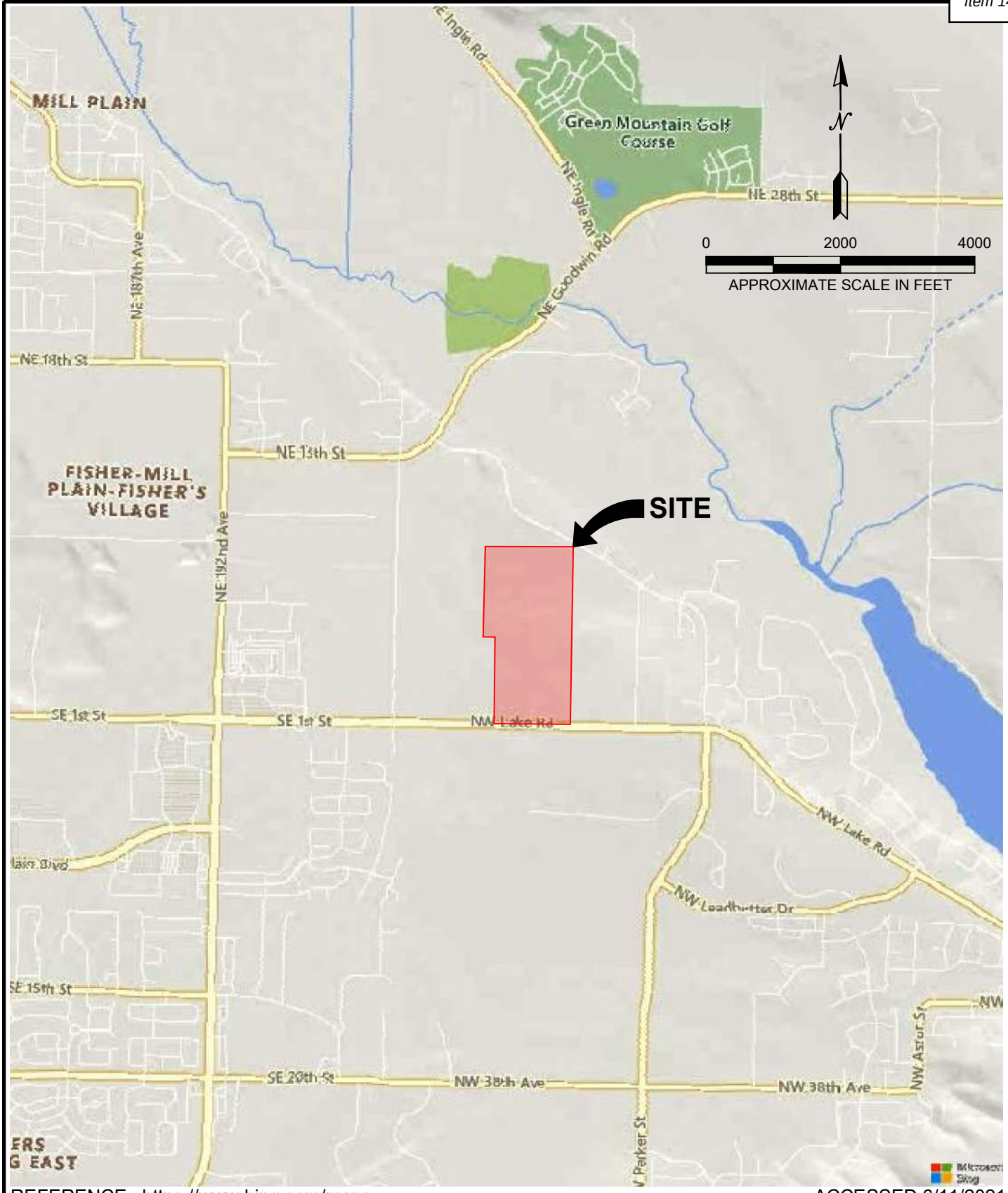
5.0 ADDITIONAL SERVICES

Terra Associates, Inc. should review project designs and specifications to verify that earthwork and foundation recommendations have been properly interpreted and incorporated into project design. We should also provide geotechnical services during construction to observe compliance with our design concepts, specifications, and recommendations. This will allow for expedient design changes if subsurface conditions differ from those anticipated prior to the start of construction.

6.0 LIMITATIONS

We prepared this report in accordance with generally accepted geotechnical engineering practices. No other warranty, expressed or implied, is made. This report is the copyrighted property of Terra Associates, Inc. and is intended for specific application to the Camas Business Center in Camas, Washington. This report is for the exclusive use of Panattoni Development Company and their authorized representatives.

The analyses and recommendations presented in this report are based on data obtained from the subsurface explorations completed onsite. Variations in soil conditions can occur, the nature and extent of which may not become evident until construction. If variations appear evident, Terra Associates, Inc. should be requested to reevaluate the recommendations in this report prior to proceeding with construction.



REFERENCE: https://www.bing.com/maps ACCESSED 6/11/2021

Terra Associates, Inc.
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Geology and
Environmental Earth Sciences

VICINITY MAP
CAMAS BUSINESS CENTER
VANCOUVER, WASHINGTON

Proj.No. T-8553	Date:JUNE 2021	Figure 1

NOTE:

THIS SITE PLAN IS SCHEMATIC. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE. IT IS INTENDED FOR REFERENCE ONLY AND SHOULD NOT BE USED FOR DESIGN OR CONSTRUCTION PURPOSES.

REFERENCE: SITE PLAN PROVIDED BY PANATTONI.

LEGEND:

APPROXIMATE TEST PIT LOCATION

0 200 400

APPROXIMATE SCALE IN FEET

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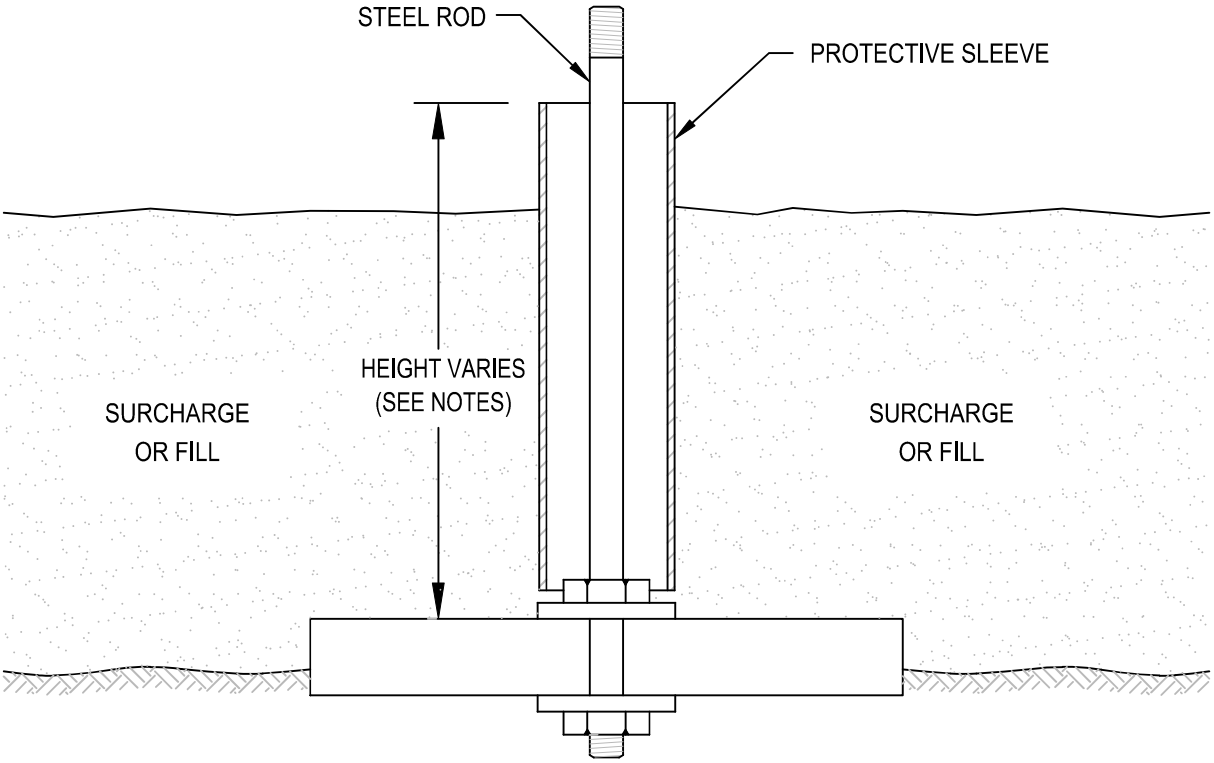
EXPLORATION LOCATION PLAN
CAMAS BUSINESS CENTER
VANCOUVER, WASHINGTON

Proj.No. T-8553 | Date:JUNE 2021 | Figure 2



NOT TO SCALE

NOTES:

1. BASE CONSISTS OF 3/4" THICK, 2'x2' PLYWOOD WITH CENTER DRILLED 5/8" DIAMETER HOLE.
2. BEDDING MATERIAL, IF REQUIRED, SHOULD CONSIST OF CLEAN COARSE SAND.
3. MARKER ROD IS 1/2" DIAMETER STEEL ROD THREADED AT BOTH ENDS.
4. MARKER ROD IS ATTACHED TO BASE BY NUT AND WASHER ON EACH SIDE OF BASE.
5. PROTECTIVE SLEEVE SURROUNDING MARKER ROD SHOULD CONSIST OF 2" DIAMETER PLASTIC TUBING. SLEEVE IS NOT ATTACHED TO ROD OR BASE.
6. ADDITIONAL SECTIONS OF STEEL ROD CAN BE CONNECTED WITH THREADED COUPLINGS.
7. ADDITIONAL SECTIONS OF PLASTIC PROTECTIVE SLEEVE CAN BE CONNECTED WITH PRESS-FIT PLASTIC COUPLINGS.
8. STEEL MARKER ROD SHOULD EXTEND AT LEAST 6" ABOVE TOP OF PLASTIC PROTECTIVE SLEEVE.
9. PLASTIC PROTECTIVE SLEEVE SHOULD EXTEND AT LEAST 1" ABOVE TOP OF FILL SURFACE.

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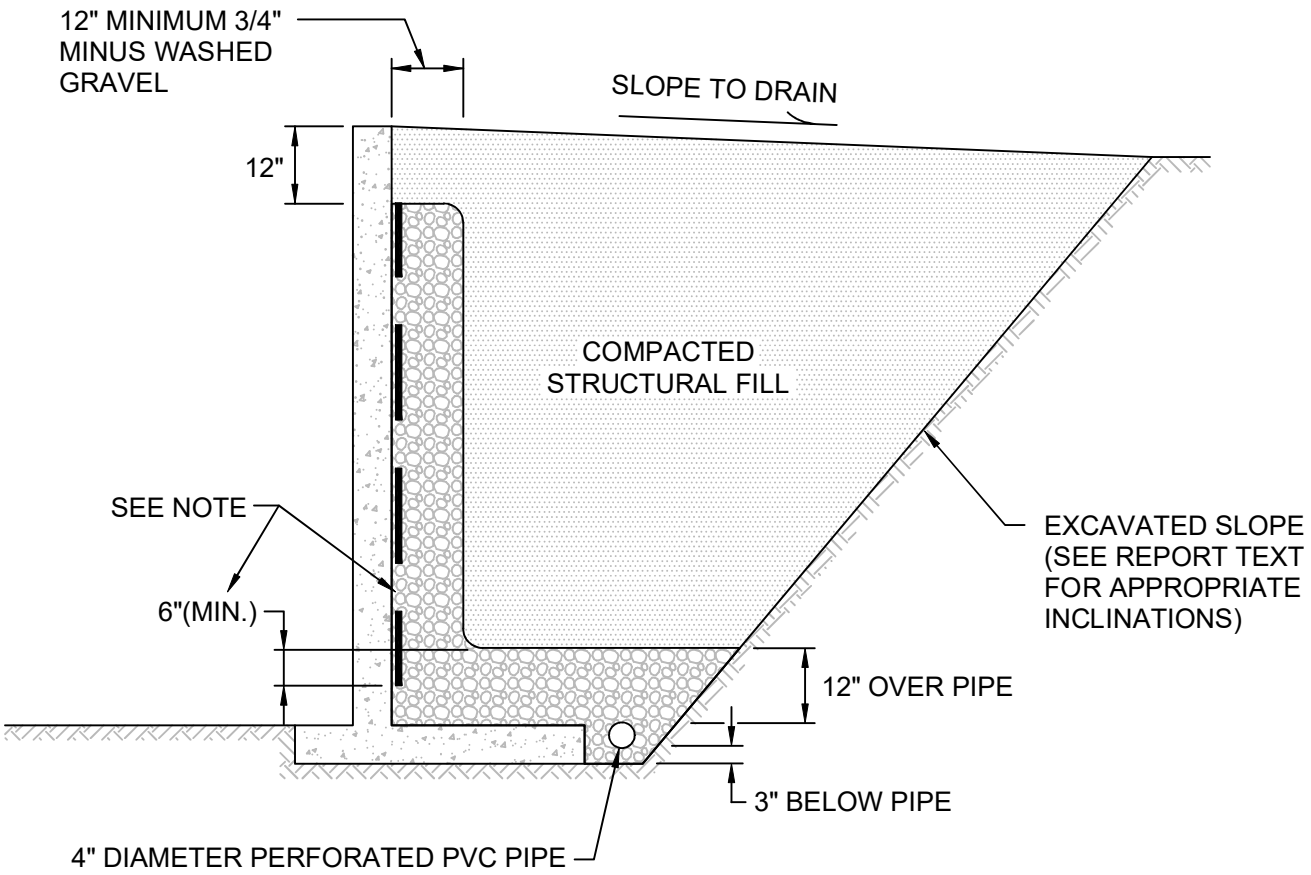
Environmental Earth Sciences

SETTLEMENT MARKER DETAIL
CAMAS BUSINESS CENTER
VANCOUVER, WASHINGTON

Proj.No. T-8553	Date:JUNE 2021	Figure 3



NOT TO SCALE

NOTE:

MIRADRAIN G100N PREFABRICATED DRAINAGE PANELS OR SIMILAR PRODUCT CAN BE SUBSTITUTED FOR THE 12-INCH WIDE GRAVEL DRAIN BEHIND WALL. DRAINAGE PANELS SHOULD EXTEND A MINIMUM OF SIX INCHES INTO 12-INCH THICK DRAINAGE GRAVEL LAYER OVER PERFORATED DRAIN PIPE.

APPENDIX A
FIELD EXPLORATION AND LABORATORY TESTING

Camas Business Center
Camas, Washington

On May 24, 2021, through May 26, 2021, we completed our site exploration by observing soil conditions at 80 test pits. The test pits were excavated using a track-mounted excavator to maximum depths of approximately 6 to 12 feet below existing site grades. Test pit locations were determined in the field by measuring from existing site features. The approximate location of the test pits is shown on the attached Exploration Location Plan, Figure 2. Test Pit Logs are presented on Figures A-2 through A-81.

A geotechnical engineer from our office conducted the field exploration. Our representative classified the soil conditions encountered, maintained a log of each test pit, obtained representative soil samples, and recorded water levels observed during excavation. All soil samples were visually classified in accordance with the Unified Soil Classification System (USCS) described on Figure A-1.

Representative soil samples obtained from the test pits were placed in sealed plastic bags and taken to our laboratory for further examination and testing. The moisture content of selected samples was measured and is reported on the corresponding Test Pit Logs. Grain size analyses were also performed on select samples. The results are shown on Figures A-82 and A-83.

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTION
COARSE GRAINED SOILS More than 50% material larger than No. 200 sieve size	**GRAVELS** More than 50% of coarse fraction is larger than No. 4 sieve	Clean Gravels (less than 5% fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines.
		Gravels with fines	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines.
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines.
	SANDS More than 50% of coarse fraction is smaller than No. 4 sieve	Clean Sands (less than 5% fines)	SW	Well-graded sands, sands with gravel, little or no fines.
			SP	Poorly-graded sands, sands with gravel, little or no fines.
		Sands with fines	SM	Silty sands, sand-silt mixtures, non-plastic fines.
			SC	Clayey sands, sand-clay mixtures, plastic fines.
FINE GRAINED SOILS More than 50% material smaller than No. 200 sieve size	**SILTS AND CLAYS** Liquid Limit is less than 50%		ML	Inorganic silts, rock flour, clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity. (Lean clay)
			OL	Organic silts and organic clays of low plasticity.
	SILTS AND CLAYS Liquid Limit is greater than 50%		MH	Inorganic silts, elastic.
			CH	Inorganic clays of high plasticity. (Fat clay)
			OH	Organic clays of high plasticity.
HIGHLY ORGANIC SOILS			PT	Peat.

DEFINITION OF TERMS AND SYMBOLS

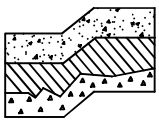
COHESIONLESS

Density	Standard Penetration Resistance in Blows/Foot
Very Loose	0-4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	>50

COHESIVE

Consistancy	Standard Penetration Resistance in Blows/Foot
Very Soft	0-2
Soft	2-4
Medium Stiff	4-8
Stiff	8-16
Very Stiff	16-32
Hard	>32

I	2" OUTSIDE DIAMETER SPILT SPOON SAMPLER
II	2.4" INSIDE DIAMETER RING SAMPLER OR SHELBY TUBE SAMPLER
▼	WATER LEVEL (Date)
Tr	TORVANE READINGS, tsf
Pp	PENETROMETER READING, tsf
DD	DRY DENSITY, pounds per cubic foot
LL	LIQUID LIMIT, percent
PI	PLASTIC INDEX
N	STANDARD PENETRATION, blows per foot



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UNIFIED SOIL CLASSIFICATION SYSTEM
CAMAS BUSINESS CENTER
VANCOUVER, WASHINGTON

Proj.No. T-8553 | Date:JUNE 2021 | Figure A-1

LOG OF TEST PIT NO. TP-1

FIGURE A

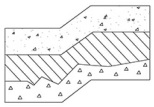
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
1		Brown SILT, moist, scattered rootlets, occasional cobble, weak cementation. (ML)		24.6
2				
3		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)	medium stiff	34.1
4				
5				
6				
7		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		60.0
8				
9		Test Pit terminated at approximately 9 feet. No groundwater seepage observed. No caving observed.		61.2
10				
11				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-2

FIGURE A

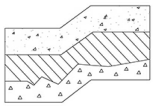
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
		Brown SILT, moist, trace rootlets, weak cementation. (ML)		
1				28.4
2				
3		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)	medium stiff	51.5
4				
5				
6		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		58.2
7				
8		Test Pit terminated at approximately 8 feet. No groundwater seepage observed. No caving observed.		52.5
9				
10				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-3

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Blackberries **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(9-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		29.0
2		Brown SILT with sand to sandy SILT, fine to coarse sand, moist, mottled below 8 feet, moderate cementation. (ML)		
3			medium stiff	35.0
4				
5				
6				35.8
7				
8			very stiff	
9				
10				35.9
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-4

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Blackberries **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 9 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(8-inches organic TOPSOIL)		
1		Brown SILT with sand, fine sand, moist, scattered rootlets, weak cementation. (ML)		
2				29.9
3			medium stiff	
4		Brown sandy SILT, fine to coarse sand, moist to wet, weak to moderate cementation. (ML)		
5				29.0
6				
7				
8			stiff	30.6
9				
10				41.1
11		Test Pit terminated at approximately 10 feet. Minor groundwater seepage observed at approximately 9 feet. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-5

FIGURE A

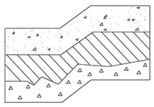
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Blackberries **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		20.3
2				
3		Brown SILT with sand, fine to coarse sand, moist, moderate cementation. (ML)	medium stiff	
4				34.5
5				
6				
7				34.4
8			stiff	
9		Brownish-gray sandy SILT, fine to coarse sand, moist, weak cementation. (ML)		
10				26.3
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-6

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 10 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(8-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, trace rootlets, weak cementation. (ML)		13.8
2				
3			medium stiff	
4		Brown sandy SILT, moist, fine to coarse sand, moist to wet, weak to moderate cementation. (ML)		24.9
5				
6				
7				
8			stiff	30.7
9				
10				35.1
11		Test Pit terminated at approximately 11 feet. Minor groundwater seepage observed at approximately 10 feet. No caving observed.		
12				
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-7

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 10 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(8-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		13.8
2				
3		Brown SILT with sand, fine to coarse sand, moist. (ML)	medium stiff	
4				31.4
5		Brown sandy SILT, fine to coarse sand, moist, weak to moderate cementation. (ML)		
6				
7				27.2
8			stiff	
9				
10		Brownish-gray sandy SILT, fine to medium sand, moist to wet, weak cementation. (ML)		36.9
11		Test Pit terminated at approximately 11 feet. Minor groundwater seepage observed at approximately 10 feet. No caving observed.		
12				
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-8

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 9 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(10-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, trace rootlets, weak cementation. (ML)		13.8
2				
3		Brown SILT with sand, fine sand, moist, occasional rootlet. (ML)	medium stiff	23.1
4				
5				26.7
6		Brown sandy SILT, fine to coarse sand, moist, weak cementation. (ML)		
7			stiff	
8				
9				37.1
		Brownish-gray silty SAND, fine to medium sand, wet. (SM)	medium dense	
10				
		Test Pit terminated at approximately 10 feet. Minor groundwater seepage observed at approximately 9 feet. No caving observed.		
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-9

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 10 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(9-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)	medium stiff	15.0
2				
3		Brown SILT with sand to sandy SILT, fine to coarse sand, moist to wet, weak cementation. (ML)		31.1
4				
5			stiff to very stiff	
6				
7		Brownish-gray sandy SILT, fine sand, moist to wet, weak cementation, interbedded silty SAND seams. (ML)		42.0
8				
9			stiff	34.7
10				
11		Test Pit terminated at approximately 11 feet. Minor groundwater seepage observed at approximately 10 feet. No caving observed.		37.7
12				
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

LOG OF TEST PIT NO. TP-10

FIGURE A

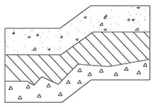
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 7 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(10-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		19.7
2				
3		Brown to brownish-gray SILT with sand, fine to coarse sand, moist to wet, weak cementation. (ML)	medium stiff	
4				34.2
5				
6				
7				
8			stiff	35.6
9				
10				38.3
11		Test Pit terminated at approximately 10 feet. Minor groundwater seepage observed at approximately 7 feet. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-11

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 11 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(11-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, trace rootlets, occasional cobble, weak cementation. (ML)		14.4
2				
3			medium stiff	22.0
		Brown SILT with sand, fine to medium sand, moist. (ML)		
4				
5				
6				39.4
		Gray sandy SILT, fine sand, moist to wet, mottled, alternating layers of brown silty SAND. (ML)		
7				
8				33.4
9			stiff	
10				
11				
12				42.2
		Test Pit terminated at approximately 12 feet. Moderate groundwater seepage observed at approximately 11 feet. No caving observed.		
13				
14				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-12

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 9 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(8-inches organic TOPSOIL)		
1		Gray SILT with sand, fine sand, moist, mottled, occasional rootlet. (ML)		
2			medium stiff	21.9
3				
4				
5				38.2
6		Brownish-gray sandy SILT, fine to coarse sand, moist to wet, mottled. (ML)		
7			stiff	
8				
9				58.2
10		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		
11		Test Pit terminated at approximately 10 feet. Minor groundwater seepage observed at approximately 9 feet. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-13

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass/shrubs **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 10 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(11-inches organic TOPSOIL)		
1		Brownish-gray SILT with sand, fine sand, moist, mottled, occasional rootlet. (ML)		
2				19.6
3			medium stiff	
4				
5				36.6
6		Brownish-gray sandy SILT, fine to coarse sand, moist to wet, mottled, weak cementation. (ML)		
7				36.8
8			stiff	
9				
10				37.3
11		Test Pit terminated at approximately 10 feet. Minor groundwater seepage observed at approximately 10 feet. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-14

FIGURE A

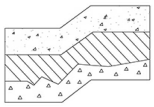
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Blackberries **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 9 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(10-inches organic TOPSOIL)		
1		Gray SILT, moist, trace rootlets, occasional gravel, weak cementation. (ML)	medium stiff	22.2
2				
3				28.1
4		Brownish-gray to gray SILT with sand, moist, mottled, occasional rootlet. (ML)		
5			stiff	
6				
7				
8				
9		Brownish-gray SAND with silt, fine to coarse sand, moist to wet, interbededd mottled sandy SILT seams. (SP-SM)	medium dense	
10				41.4
11		Test Pit terminated at approximately 10 feet. Minor groundwater seepage observed at approximately 9 feet. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-15

FIGURE A

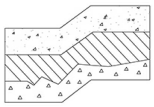
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass/shrubs **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 10 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(9-inches organic TOPSOIL)		
1		Gray SILT with sand, fine sand, moist, mottled. (ML)		26.3
2			medium stiff	
3				
4				
5				34.7
6		Brownish-gray sandy SILT, fine to coarse sand, moist to wet, mottled, weak cementation. (ML)		
7				
8			stiff	
9				
10				47.8
11				
12		Test Pit terminated at approximately 11 feet. Minor groundwater seepage observed at approximately 10 feet. No caving observed.		
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-16

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Blackberries **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 7 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(10-inches organic TOPSOIL)		
1		Gray SILT, dry to moist, trace rootlets, occasional gravel, weak cementation. (ML)	medium stiff	24.9
2				
3		Brownish-gray to gray SILT with sand, fine sand, moist, mottled. (ML)		25.2
4				
5				33.2
6		Brownish-gray to gray sandy SILT, fine to coarse sand, moist to wet, interbedded SAND with silt seams below 7 feet. (ML)		
7			stiff	38.5
8				
9				
10				
11				
12				34.1
13		Test Pit terminated at approximately 12 feet. Minor groundwater seepage observed at approximately 7 feet. No caving observed.		
14				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-17

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass/shrubs **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 8 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(8-inches organic TOPSOIL)		
1		Dark gray SILT, moist, trace rootlets, weak cementation. (ML)	medium stiff	21.4
2				28.9
3		Gray SILT with sand, fine sand, moist, mottled, occasional rootlet, occasional gravel. (ML)		
4				
5			stiff	37.3
6				
7				
8				33.7
9		Gray SAND with silt, fine to coarse sand, wet, interbedded SILT seams. (SP-SM)	medium dense	
10		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		34.2
11		Test Pit terminated at approximately 10 feet. Minor groundwater seepage observed at approximately 8 feet. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

LOG OF TEST PIT NO. TP-18

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass/shrubs **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 9 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(9-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlet, weak cementation. (ML)		22.6
2				
3		Brownish-gray sandy SILT, fine to medium sand, moist, mottled, occasional gravel. (ML)	medium stiff	
4				28.9
5				
6				40.0
7		Brown to brownish-gray sandy SILT, fine to coarse sand, moist, weak cementation. (ML)	stiff	
8				
9				
10		Brown SAND with silt, fine to coarse sand, wet, interbedded SILT seams. (SP-SM)	medium dense	37.4
11				
12		Test Pit terminated at approximately 11 feet. Minor seepage observed at approximately 9 feet. No caving observed.		
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

LOG OF TEST PIT NO. TP-19

FIGURE A

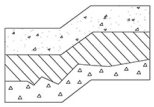
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass/shrubs **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(8-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, occasional gravel, weak cementation. (ML)		21.8
2				
3		Brown SILT with sand, fine sand, moist, occasional rootlet. (ML)	medium stiff	24.0
4				
5		Brownish-gray sandy SILT, fine to coarse sand, moist, mottled. (ML)		40.1
6				
7		Brownish-gray SILT with sand, fine sand, moist, mottled. (ML)		36.5
8			stiff	
9		Brownish-gray sandy SILT, fine to coarse sand, moist, mottled. (ML)		44.5
10				
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-20

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(4-inches organic TOPSOIL)		
		Brown SILT, dry, trace rootlets. (ML)		
1				14.4
2		Brown SILT with sand, fine to coarse sand, moist, trace gravel. (ML)		
3			medium stiff	37.5
4				
5				
6				53.2
		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		
7				
8				
9				54.7
		Test Pit terminated at approximately 9 feet. No groundwater seepage observed. No caving observed.		
10				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-21

FIGURE A

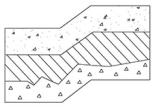
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
		Brown SILT, dry, occasional rootlet, weak cementation. (ML)		
1			medium stiff	22.7
2				
3				23.7
		Reddish-brown SILT, moist, trace sand, occasional cobble, weak cementation. (ML)		
4			stiff	
5				
6				51.9
		Brown silty GRAVEL with sand, fine to coarse sand, fine to coarse gravel, moist, scattered cobbles. (GM)	dense	
7		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		
8				55.3
		Test Pit terminated at approximately 8 feet. No groundwater seepage observed. No caving observed.		
9				
10				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-22

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** 2.5 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(10-inches organic TOPSOIL)		
		Brown SILT, moist, occasional rootlet, weak cementation. (ML)	medium stiff	33.2
3		Light brown SILT with sand and gravel, fine to coarse sand, fine to coarse gravel, moist, weak cementation. (ML)	stiff	65.8
5		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		
6				56.6
		Test Pit terminated at approximately 6 feet. Minor groundwater seepage observed at approximately 2.5 feet. No caving observed.		
8				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-23

FIGURE A

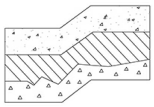
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(4-inches organic TOPSOIL)		
		Brown SILT, dry, scattered rootlets, moderate cementation. (ML)		
1				
				14.8
2				
3				41.4
		Brown SILT with sand, fine to coarse sand, moist. (ML)	medium stiff	
4				
5				
6				
7				51.6
		BbEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		
8				
		Test Pit terminated at approximately 8 feet. No groundwater seepage observed. No caving observed.		
9				
10				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-24

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT with sand, fine to coarse sand, dry to moist, trace gravel. (ML)		11.6
2				
3			medium stiff	53.5
4				
5				
6				57.0
7				59.9
8		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		
9				54.9
10		Test Pit terminated at approximately 9 feet. No groundwater seepage observed. No caving observed.		
11				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-25

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, trace rootlets, weak cementation. (ML)		19.7
2				
3		Brown SILT with sand, fine to coarse sand, moist, slightly mottled. (ML)	medium stiff	
4				35.4
5				
6				
7				
8		Brownish-gray to gray sandy SILT, fine to medium sand, moist, mottled. (ML)	stiff	38.6
9				
10				32.9
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-26

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
		Brown SILT with sand, fine to coarse sand, moist, mottled, occasional gravel. (ML)	medium stiff	24.3
3				29.9
		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		
6				29.5
		Test Pit terminated at approximately 6 feet. No groundwater seepage observed. No caving observed.		
8				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-27

FIGURE A

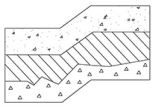
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(11-inches organic TOPSOIL)		
1		Brown SILT, dry, scattered rootlets, moderate cementation. (ML)		18.4
2				
3		Brown SILT with sand, fine to coarse sand, moist. (ML)	medium stiff	47.4
4				
5				
6				
7		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		
8				53.6
9		Test Pit terminated at approximately 9 feet. No groundwater seepage observed. No caving observed.		
10				
11				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-28

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(5-inches organic TOPSOIL)		
		Brown SILT, dry to moist, trace rootlets, weak cementation. (ML)	medium stiff	16.7
3				37.0
		Brownish-gray sandy SILT, fine sand, moist, moderate cementation. (ML)	medium stiff to stiff	
6				
		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		54.0
8		Test Pit terminated at approximately 8 feet. No groundwater seepage observed. No caving observed.		
10				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-29

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** 9 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(4-inches organic TOPSOIL)		
1		Reddish-brown SILT, moist, trace rootlets. (ML)		26.9
2				
3		Brown SILT with sand, fine to coarse sand, moist, some mottling. (ML)		35.0
4			medium stiff	
5				
6				39.0
7				
8				
9		Dark gray silty SAND, fine to coarse sand, wet. (SM)		
10			medium dense	53.9
11		Test Pit terminated at approximately 11 feet. No groundwater seepage observed. No caving observed.		
12				
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-30

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Blackberries **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(11-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets. (ML)		29.9
2				
3			medium stiff	
4		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)		34.9
5				
6				
7		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		33.4
8				
9				
10		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		56.2
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-31

FIGURE A

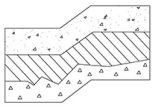
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Blackberries **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** 8 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(10-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets. (ML)		24.6
2				
3			medium stiff	32.5
		Brown SILT with sand, fine to coarse sand, moist. (ML)		
4				
5				
6				37.9
		Gray SILT with sand, fine to coarse sand, moist, mottled. (ML)		
7			stiff	
8				58.7
		Dark gray silty SAND, fine to coarse sand, wet, occasional gravel, occasional SILT seam. (SM)		
9				
10			medium dense	
11				
12				54.4
		Test Pit terminated at approximately 12 feet. Minor groundwater seepage observed at approximately 8 feet. No caving observed.		
13				
14				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-32

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Blackberries **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** 3 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(10-inches organic TOPSOIL)		
1		Dark brown SILT, moist, trace sand, trace rootlets. (ML)	medium stiff	27.0
2				
3				33.7
4		Reddish-brown SILT, moist. (ML)	stiff	
5				
6				39.2
7			very stiff	
8				48.1
9		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		
10				
11		Test Pit terminated at approximately 10 feet. Minor groundwater seepage observed at approximately 3 feet. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-33

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Blackberries **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(9-inches organic TOPSOIL)		
		Reddish-brown SILT, moist, trace rootlets. (ML)		21.7
1				
2			medium stiff	
3		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)		40.3
4				
5		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		24.6
6				
7				22.9
8		Test Pit terminated at approximately 8 feet. No groundwater seepage observed. No caving observed.		24.7
9				
10				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-34

FIGURE A

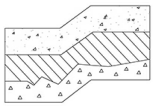
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Blackberries **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(10-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, occasional organic. (ML)		24.9
2			medium stiff	
3		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)		30.8
4				
5				23.0
6		Gray SILT, moist, mottled, interbedded SAND seams. (ML)		
7				
8			stiff	
9				
10				
11				41.8
12		Test PIt terminated at approximately 11 feet. No groundwater observed. No caving observed.		
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-35

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Blackberries **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(9-inches organic TOPSOIL)		
1		Dark brown to brown SILT, moist, trace rootlets. (ML)		34.0
2				
3			medium stiff	
4				36.4
5		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)		
6				23.3
7		Brown silty GRAVEL with sand, fine to coarse sand, fine to coarse gravel, moist, mottled, scattered cobbles. (GM)	dense	
8				31.9
9		Brown to gray SILT, moist, mottled, interbedded SAND with silt seams. (ML)		
10			stiff	
11				31.4
12		Test Pit terminated at approximately 11 feet. No groundwater seepage observed. No caving observed.		
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-36

FIGURE A

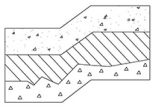
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass/shrubs **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** 9 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(4-inches organic TOPSOIL)		
1		Brown SILT, dry, trace rootlets, occasional gravel, weak cementation. (ML)		14.8
2				
3		Brown to gray SILT with sand, fine to coarse sand, moist, mottled. (ML)	medium stiff	
4				36.4
5				
6				
7				35.1
8		Reddish-brown SILT, moist to wet, trace sand. (ML)	stiff	
9				
10		Gray clayey SILT, moist. (ML)	very stiff	32.9
11				
12		Test Pit terminated at approximately 11 feet. Moderate groundwater seepage observed at approximately 9 feet. No caving observed.		
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-37

FIGURE A

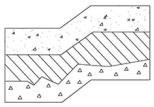
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass/shrubs **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(2-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		24.2
2				
3			medium stiff	
4		Brown SILT with sand, fine to coarse sand, moist, mottled, occasional gravel. (ML)		33.4
5				
6				
7		Reddish-brown SILT, moist. (ML)		30.2
8			stiff	
9				
10				29.5
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-38

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass/shrubs **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(5-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		22.4
2				
3			medium stiff	
4		Brown to gray SILT with sand, fine to coarse sand, moist, mottled. (ML)		32.8
5				
6				
7				36.0
8			stiff	
9				
10				33.3
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-39

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** 10 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(5-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		20.8
2				
3			medium stiff	
4		Brownish-gray to gray sandy SILT, fine to coarse sand, moist, mottled. (ML)		
5				38.5
6				
7				
8			stiff	
9				
10		Blueish-gray silty SAND with gravel, fine to coarse sand, fine to coarse gravel, wet. (SM)		68.3
11			medium dense	
12		Test Pit terminated at approximately 12 feet. Moderate groundwater seepage observed at approximately 10 feet. No caving observed.		
13				
14				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

LOG OF TEST PIT NO. TP-40

FIGURE A

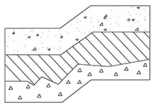
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, trace rootlets, weak cementation. (ML)		14.5
2				
3				
			medium stiff	
4		Brown SILT with sand to clayey SILT with sand, fine to coarse sand, moist, slightly mottled. (ML)		35.2
5				
6				
7				
8			stiff	
9		Brownish-gray to gray sandy SILT, fine to coarse sand, moist, mottled. (ML)		
10				35.8
		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-41

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, trace rootlets, weak cementation. (ML)		14.9
2				
3			medium stiff	
4		Brown SILT with sand to clayey SILT with sand, fine to coarse sand, moist, slightly mottled. (ML)		
5				35.1
6				
7		Brownish-gray to gray sandy SILT, fine to coarse sand, moist, mottled, occasional gravel. (ML)		33.3
8			stiff	
9				
10				35.1
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-42

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, scattered rootlets, weak cementation. (ML)		17.8
2				
3			medium stiff	
4		Brown SILT with sand, fine to coarse sand, moist, slightly mottled. (ML)		36.4
5				
6				
7		Gray sandy SILT, fine sand, moist, mottled. (ML)		36.8
8			stiff	
9				
10				36.5
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-43

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		18.0
2				
3			medium stiff	
4				
5				31.7
6		Brown SILT with sand to clayey SILT with sand, fine to medium sand, moist, slightly mottled. (ML)		
7				
8			stiff	
9				
10				38.4
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-44

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		27.3
2				
3			medium stiff	
4		Brown SILT with sand, fine to coarse sand, moist, slightly mottled. (ML)		38.0
5				
6				
7		Brownish-gray to gray sandy SILT, fine sand, moist, mottled. (ML)		38.0
8			stiff	
9				
10		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		35.8
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-45

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		20.8
2				
3			medium stiff	
4		Brown SILT with sand to clayey SILT with sand, fine to medium sand, moist, slightly mottled. (ML)		36.3
5				
6				
7				
8			stiff	
9		Gray silty SAND, fine to coarse sand, moist, mottled, occasional gravel. (SM)	medium dense	
10		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		37.9
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-46

FIGURE A

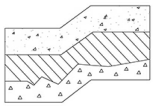
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Red SILT, moist, scattered rootlets, weak cementation. (ML)		17.6
2			medium stiff	
3				
4		Gray clayey SILT, moist, mottled, trace sand. (ML)		34.0
5				
6				
7				
8			stiff	
9				
10		Blueish-gray clayey SILT, moist, mottled, trace sand. (ML)		
11				52.4
12		Test Pit terminated at approximately 12 feet. No groundwater seepage observed. No caving observed.		
13				
14				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-47

FIGURE A

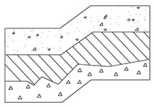
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(9-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		19.4
2			medium stiff	
3				
4		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)		29.3
5		Gray sandy SILT, fine sand, moist, mottled. (ML)		
6			stiff	39.8
7				
8		Blueish-gray silty SAND, fine to coarse sand, moist, trace organics, interbedded SILT seams. (SM)		
9			medium dense	52.7
10		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-48

FIGURE A

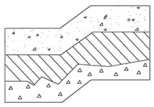
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, trace rootlets, weak cementation. (ML)		15.7
2				
3				
4		Brown SKT with sand, fine to coarse sand, moist, mottled. (ML)	medium stiff	36.0
5				
6				
7				
8		Blueish-gray silty SAND, fine to coarse sand, wet, interbedded SILT seams. (SM)		
9			medium dense	40.8
10		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-49

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
1		Brown SILT, moist, scattered rootlets, weak cementation. (ML)		18.6
2				
3			medium stiff	31.5
4		Brown SILT with sand, fine to coarse sand, moist, mottled, occasional gravel. (ML)		
5				
6				
7		Gray sandy SILT, fine sand, moist, mottled. (ML)	stiff	42.1
8				
9		Blueish-gray silty SAND, fine to medium sand, moist, interbedded SILT seams. (SM)	medium dense	
10				71.2
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-50

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Red SILT, moist, scattered rootlets, weak cementation. (ML)		18.6
2				
3			medium stiff	
4		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)		40.8
5				
6				37.7
7		Gray sandy SILT, fine to meduim sand, moist, mottled. (ML)	stiff	
8				
9		Blueish-gray silty SAND, fine to coarse sand, moist to wet, interbbed SILT layers. (SM)	medium dense	
10				60.4
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

LOG OF TEST PIT NO. TP-51

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** 12 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(10-inches organic TOPSOIL)		
1		Brown SILT, moist, scattered rootlets, weak cementation. (ML)		21.3
2				
3			medium stiff	
4		Grayish-brown SILT with sand to sandy SILT, fine to medium sand, moist, mottled. (ML)		40.1
5				
6				
7		Blueish-gray silty SAND, fine to coarse sand, moist to wet, interbedded SILT layers. (SM)		
8				69.6
9			medium dense	
10				
11				
12				31.9
13		Test Pit terminated at approximately 12 feet. Minor groundwater seepage observed at approximately 12 feet. No caving observed.		
14				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

LOG OF TEST PIT NO. TP-52

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, trace rootlets, weak cementation. (ML)		14.6
2				
3			medium stiff	
4				
5				34.6
6		Brown SILT with sand to clayey SILT with sand, fine to coarse sand, moist, slightly mottled. (ML)		
7				
8			stiff	
9				
10				39.5
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-53

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(5-inches organic TOPSOIL)		
1		Brown SILT, moist, scattered rootlets, weak cementation. (ML)		17.8
2				
3			medium stiff	
4				
5				
6				38.2
7		Brown SILT with sand to clayey SILT with sand, fine to coarse sand, moist, slightly mottled. (ML)		
8			stiff	
9				
10				38.2
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-54

FIGURE A

PROJECT NAME: Camas Buisness Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(5-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, scattered rootlets, weak cementation, occasional clayey SILT seam. (ML)		15.6
2				
3				
4			medium stiff	
5				36.1
6				
7				
8				
9		Brown SILT with sand, fine to coarse sand, moist, occasional gravel. (ML)	medium stiff to stiff	
10		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		33.6
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-55

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(4-inches organic TOPSOIL)		
1		Brown SILT, moist, slightly mottled, trace rootlets, weak cementation. (ML)		16.9
2				
3				31.7
4			medium stiff	
5				
6				
7				
8		Brown silty SAND, fine to coarse sand, moist, trace gravel. (SM)		
9			medium dense	
10				30.1
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-56

FIGURE A

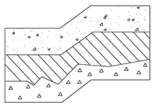
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, scattered rootlets, weak cementation. (ML)		13.6
2			medium stiff	
3				
4				48.0
5		Brownish-gray to gray SILT with sand, fine to medium sand, moist, mottled. (ML)		
6				
7			stiff	47.8
8		Blueish-gray sandy SILT, fine to coarse sand, moist to wet, trace organics. (ML)		
9				55.4
10				
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-57

FIGURE A

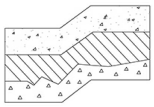
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** 10 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		17.5
2				
3			medium stiff	
4				
5				34.7
6		Brown to gray SILT with sand, fine to coarse sand, moist to wet, mottled. (ML)		
7				
8			stiff	35.1
9				
10				34.6
11		Test Pit terminated at approximately 10 feet. Minor groundwater seepage observed at approximately 10 feet. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-58

FIGURE A

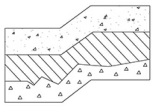
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(8-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, scattered rootlets, weak cementation. (ML)		16.9
2			medium stiff	
3				
4				35.1
5		Brown to gray SILT with sand, fine to coarse sand, moist, mottled. (ML)		
6				
7			stiff	35.8
8				
9				
10				34.9
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-59

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		25.8
2				
3			medium stiff	
4		Brown to gray SILT with sand, fine to coarse sand, moist, mottled. (ML)		35.1
5				
6				
7				38.9
8			stiff	
9				
10				38.4
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-60

FIGURE A

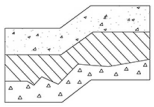
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** 8 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(8-inches organic TOPSOIL)		
1		Red SILT, moist, trace rootlets, weak cementation. (ML)		22.5
2				
3			medium stiff	
4				37.0
5		Brownish-gray to gray clayey SILT with sand, fine to coarse sand, moist, mottled, trace gravel. (ML)		
6				34.2
7			stiff	
8		Blueish-gray silty SAND with gravel, fine to coarse sand, fine to coarse gravel, wet. (SM)		
9			medium dense	30.1
10		Test Pit terminated at approximately 10 feet. Minor groundwater seepage observed at approximately 8 feet. No caving observed.		
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-61

FIGURE A

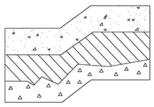
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Duff/understory **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(5-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		19.6
2				
3		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)	medium stiff	
4				36.2
5				
6		Gray SILT with sand and gravel, fine to coarse sand, fine to coarse gravel, moist, mottled. (ML)		
7				40.1
8			stiff	
9		Blueish-gray to dark gray SILT to SILT with sand, fine to coarse sand, moist, trace gravel. (ML)		49.1
10			very stiff	41.7
11		Test Pit terminated at approximately 11 feet. No groundwater seepage observed. No caving observed.		
12				
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-62

FIGURE A

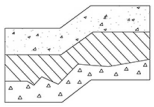
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Duff/understory **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, moist, numerous roots, scattered rootlets. (ML)		18.7
2				
3		Brown SILT with sand, fine to coarse sand, moist, mottled, occasional organic. (ML)	medium stiff	30.4
4				
5				
6				
7		Brown to gray GRAVEL with silt and sand, fine to coarse sand, fine to coarse gravel, moist, mottled, trace cobbles. (GP-GM)		41.4
8				
9			medium dense	
10				
11		Test Pit terminated at approximately 11 feet. No groundwater seepage observed. No caving observed.		36.3
12				
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-63

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** 7 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
1		Dark brown SILT, moist, mottled, occasional rootlet. (ML)	medium stiff	18.0
2				
3		Gray SILT with sand, fine to coarse sand, moist, mottled. (ML)	stiff	35.0
4		Gray SILT, moist, mottled. (ML)		
5				38.9
6		Brown to gray GRAVEL with silt and sand, fine to coarse sand, fine to coarse gravel, moist to wet, mottled, scattered cobbles. (GP-GM)	medium dense	
7				58.0
8				
9				
10				
11				50.4
12		Test Pit terminated at approximately 11 feet. Moderate groundwater seepage observed at approximately 7 feet. No caving observed.		
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

LOG OF TEST PIT NO. TP-64

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, moist, numerous rootlets, weak cementation. (ML)	medium stiff	19.7
2		Gray to dark gray SILT, moist, mottled, occasional rootlet. (ML)		22.1
5				37.4
6			stiff	
7				41.0
11				54.0
12		Test Pit terminated at approximately 11 feet. No groundwater seepage observed. No caving observed.		
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-65

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(4-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)	medium stiff	15.0
2		Gray to dark gray SILT, moist, mottled, occasional rootlet. (ML)		33.6
3			stiff	
4				
5				25.4
6		Brown to gray GRAVEL with silt and sand, fine to coarse sand, fine to coarse gravel, moist, mottled, scattered cobbles. (GP-GM)		
7				
8			medium dense	
9				
10				36.0
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-66

FIGURE A

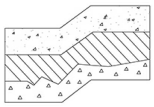
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		16.6
2				
3		Brown to gray SILT with sand, fine to medium sand, moist, mottled. (ML)	medium stiff	30.4
4				
5				
6				
7		Brown to gray silty GRAVEL with sand, fine to coarse sand, fine to coarse gravel, moist, mottled. (GM)	medium dense	47.8
8				
9				
10		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		48.0
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-67

FIGURE A

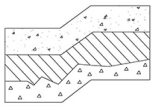
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		21.1
2				
3			medium stiff	
		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)		
4				33.5
5				
6				38.9
		Gray SILT with sand, fine to medium sand, moist, mottled. (ML)		
7			stiff	
8				
9				
		Brown to gray SILT, moist, mottled. (ML)	very stiff	
10				31.5
		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-68

FIGURE A

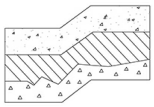
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(5-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		20.1
2				
3		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)	medium stiff	43.8
4				
5				
6				
7		Gray SILT with sand to sandy SILT, fine sand, moist. (ML)		39.6
8				
9		Blueish-gray SILT to SILT with sand, fine sand, moist. (ML)	stiff	44.6
10				
11		Test Pit terminated at approximately 11 feet. No groundwater seepage observed. No caving observed.		32.3
12				
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-69

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, occasional organic, weak cementation. (ML)		21.0
2				
3		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)	medium stiff	
4				35.7
5				
6				
7				25.4
8		Brown to gray SILT with gravel, fine to coarse gravel, moist, mottled, scattered cobbles. (ML)		
9			stiff	56.3
10		Brown to gray SILT with sand and gravel, fine to coarse sand, fine to coarse gravel, moist, mottled, trace cobbles. (ML)		
11				57.2
12		Test Pit terminated at approximately 11 feet. No groundwater seepage observed. No caving observed.		
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-70

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** 9 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, trace rootlets, weak cementation. (ML)		13.8
2				
3			medium stiff	
4		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)		33.6
5				
6				
7		Brown GRAVEL with silt and sand, fine to coarse sand, fine to coarse gravel, moist, mottled, trace cobbles. (GP-GM)		39.9
8				
9			medium dense	
10				
11		Test Pit terminated at approximately 11 feet. Minor groundwater seepage observed at approximately 9 feet. No caving observed.		26.3
12				
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

LOG OF TEST PIT NO. TP-71

FIGURE A

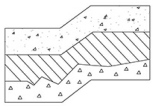
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** 9 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		17.2
2				
3			medium stiff	
4		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)		
5				37.7
6				
7				17.8
8		Brown GRAVEL with silt and sand, fine to coarse sand, fine to coarse gravel, moist to wet, mottled, trace cobbles, occasional boulder. (GP-GM)		
9				
10			medium dense	
11				
12				39.8
13		Test Pit terminated at approximately 12 feet. Moderate groundwater seepage observed at approximately 9 feet. No caving observed.		
14				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



LOG OF TEST PIT NO. TP-72

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** 10 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		20.5
2				
3			medium stiff	
4		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)		35.3
5				
6				
7		Gray sandy SILT, fine sand, moist, slighlty mottled. (ML)		36.0
8			stiff	
9				
10		Brown to gray GRAVEL with silt and sand, fine to coarse sand, fine to coarse gravel, moist to wet, mottled. (GP-GM)	medium dense	40.1
11		Test Pit terminated at approximately 11 feet. Minor groundwater seepage observed at approximately 10 feet. No caving observed.		
12				
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-73

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, occasional cobble, occasional organic, weak cementation. (ML)		20.8
2				
3			medium stiff	
4		Brown to gray SILT with sand, fine to medium sand, moist, mottled. (ML)		34.5
5				
6				35.1
7				
8		Blueish-gray SILT with sand to sandy SILT, fine to medium sand, moist. (ML)	stiff	
9				31.7
10				
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

Terra Associates, Inc.
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Geology and
Environmental Earth Sciences

LOG OF TEST PIT NO. TP-74

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, trace rootlets, weak cementation. (ML)		16.6
2				
3				
4		Brown to gray SILT with sand, fine to coarse sand, moist, mottled. (ML)	medium stiff	42.6
5				
6				
7				
8		Brown silty GRAVEL with sand, fine to coarse sand, fine to coarse gravel, moist, scattered cobbles. (GM)	medium dense	30.2
9				
10		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

Terra Associates, Inc.
Consultants in Geotechnical Engineering
Geology and
Environmental Earth Sciences

LOG OF TEST PIT NO. TP-75

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(8-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		19.5
2				
3			medium stiff	
4				
5		Brown to gray SILT with sand, fine to coarse sand, moist, mottled. (ML)		40.9
6				
7				35.3
8			stiff	
9				
10				39.1
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

Terra Associates, Inc.
Consultants in Geotechnical Engineering
Geology and
Environmental Earth Sciences

LOG OF TEST PIT NO. TP-76

FIGURE A

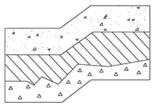
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** 7 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(9-inches organic TOPSOIL)		
1		Brown SILT with gravel, dry to moist, fine to coarse gravel, trace rootlets, weak cementation. (ML)		17.3
2				
3			medium stiff	
4				
5				36.9
6		Brown to gray SILT with sand, fine to coarse sand, moist, mottled, occasional gravel. (ML)		
7				37.7
8		Brown SAND with silt, fine to medium sand, moist to wet, interbedded silt seams. (SP-SM)	medium dense	
9				49.6
10		Gray SILT, moist. (ML)	stiff	
11		Test Pit terminated at approximatley 10 feet. Moderate groundwater seepage observed at approximately 7 feet. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-77

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** 11 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(11-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		19.2
2				
3				
4		Brown SILT with sand, fine to coarse sand, moist, mottled, occasional gravel. (ML)		41.5
5			medium stiff	
6				
7				
8				
9				
10				
11				48.8
		Brown silty SAND with gravel, fine to coarse sand, fine to coarse gravel, wet, occasional cobble. (SM)	medium dense	
12		Test Pit terminated at approximately 12 feet. Minor groundwater seepage observed at approximately 11 feet. No caving observed.		
13				
14				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

Terra Associates, Inc.
Consultants in Geotechnical Engineering
Geology and
Environmental Earth Sciences

LOG OF TEST PIT NO. TP-78

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(11-inches organic TOPSOIL)		
1		FILL: Brown SILT, moist, trace rootlets, occasional organic, occasional metal debris, occasional plastic debris. (ML)		22.9
2				
3		Brown to gray SILT with sand, fine to coarse sand, moist, mottled. (ML)	medium stiff	33.7
4				
5				
6				39.5
7			stiff	
8		Gray SILT, moist, mottled. (ML)		
9			very stiff	
10				27.5
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

Terra Associates, Inc.
Consultants in Geotechnical Engineering
Geology and
Environmental Earth Sciences

LOG OF TEST PIT NO. TP-79

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, scattered rootlets, weak cementation. (ML)		18.0
2				
3		Brown SILT with sand to clayey SILT with sand, fine to coarse sand, moist, slightly mottled. (ML)	medium stiff	
4				34.4
5				
6				
7				
8		Brownish-gray sandy SILT, fine to coarse sand, moist, mottled. (ML)	stiff	
9				46.0
10		Gray SILT with sand, fine to coarse sand, moist to wet, mottled, alternating layers of blueish-gray SILT with sand. (ML)	medium stiff to stiff	
11				50.6
12		Test Pit terminated at approximately 12 feet. No groundwater seepage observed. No caving observed.		
13				
14				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

LOG OF TEST PIT NO. TP-80

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

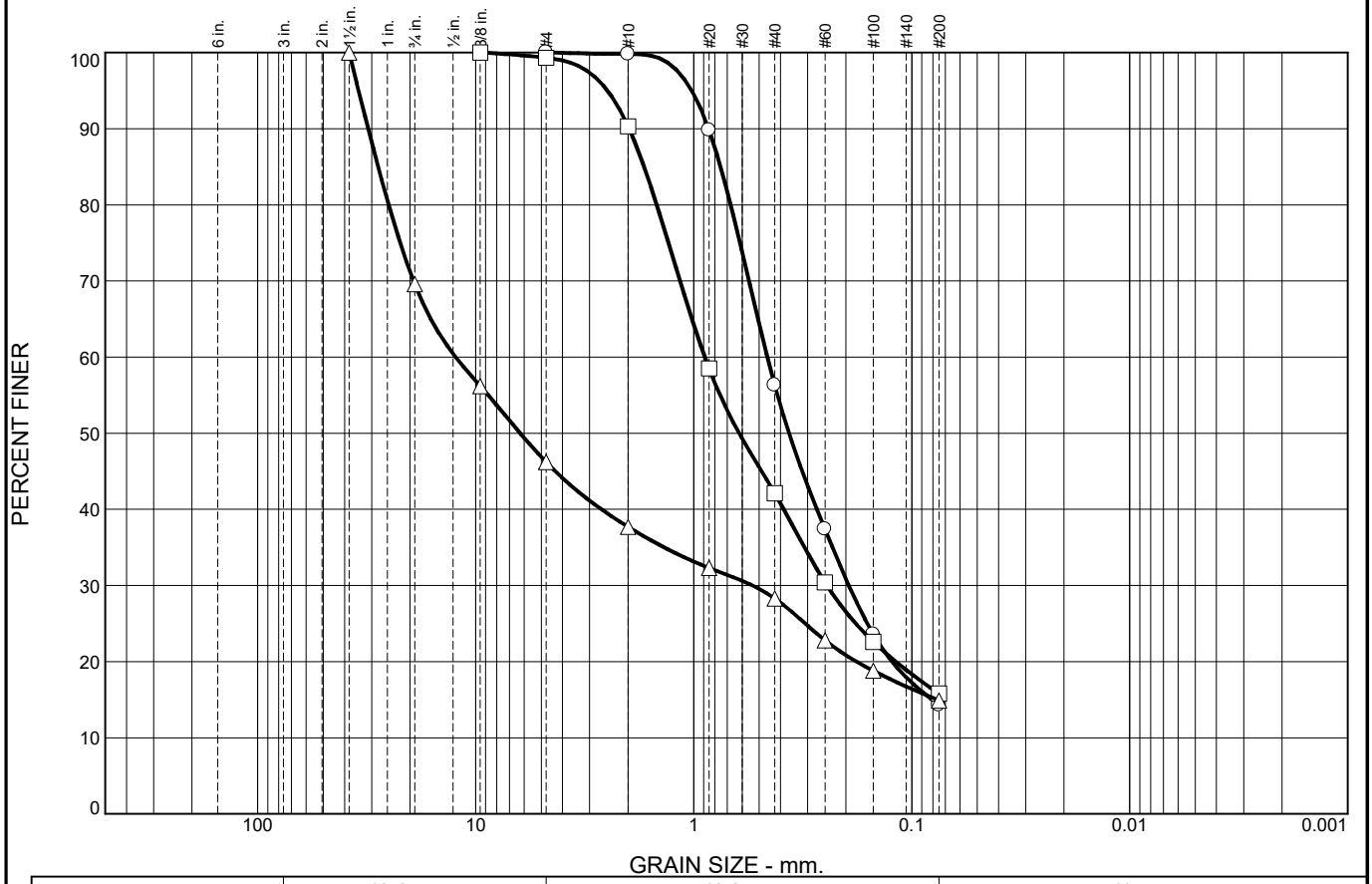
DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		25.2
2				
3		Brown SILT with sand to clayey SILT with sand, fine to coarse sand, moist, slightly mottled. (ML)	medium stiff	
4				33.7
5				
6				
7				
8			stiff	
9		Brownish-gray sandy SILT, fine to coarse sand, moist, mottled. (ML)		
10				35.7
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.2	43.5	42.0	14.3	
□	0.0	0.0	0.7	9.0	48.2	26.3	15.8	
△	0.0	30.4	23.4	8.5	9.4	13.4	14.9	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.7536	0.4595	0.3654	0.1943	0.0807			
□			1.6902	0.8889	0.6189	0.2449				
△			28.0367	12.3693	6.2492	0.5373	0.0764			

	Material Description	USCS	AASHTO
○	silty SAND	SM	
□	silty SAND	SM	
△	silty GRAVEL with sand	GM	

Project No. T-8553 **Client:** Panattoni Development Company

Project: East Vancouver E-Commerce Center

○ **Location:** Test Pit TP-11 **Depth:** 8 ft **Sample Number:** 4

□ **Location:** Test Pit TP-31 **Depth:** 8 ft **Sample Number:** 4

△ **Location:** Test Pit TP-35 **Depth:** 6 ft **Sample Number:** 3

Terra Associates, Inc.

Kirkland, WA

Remarks:

○Tested on June 8, 2021

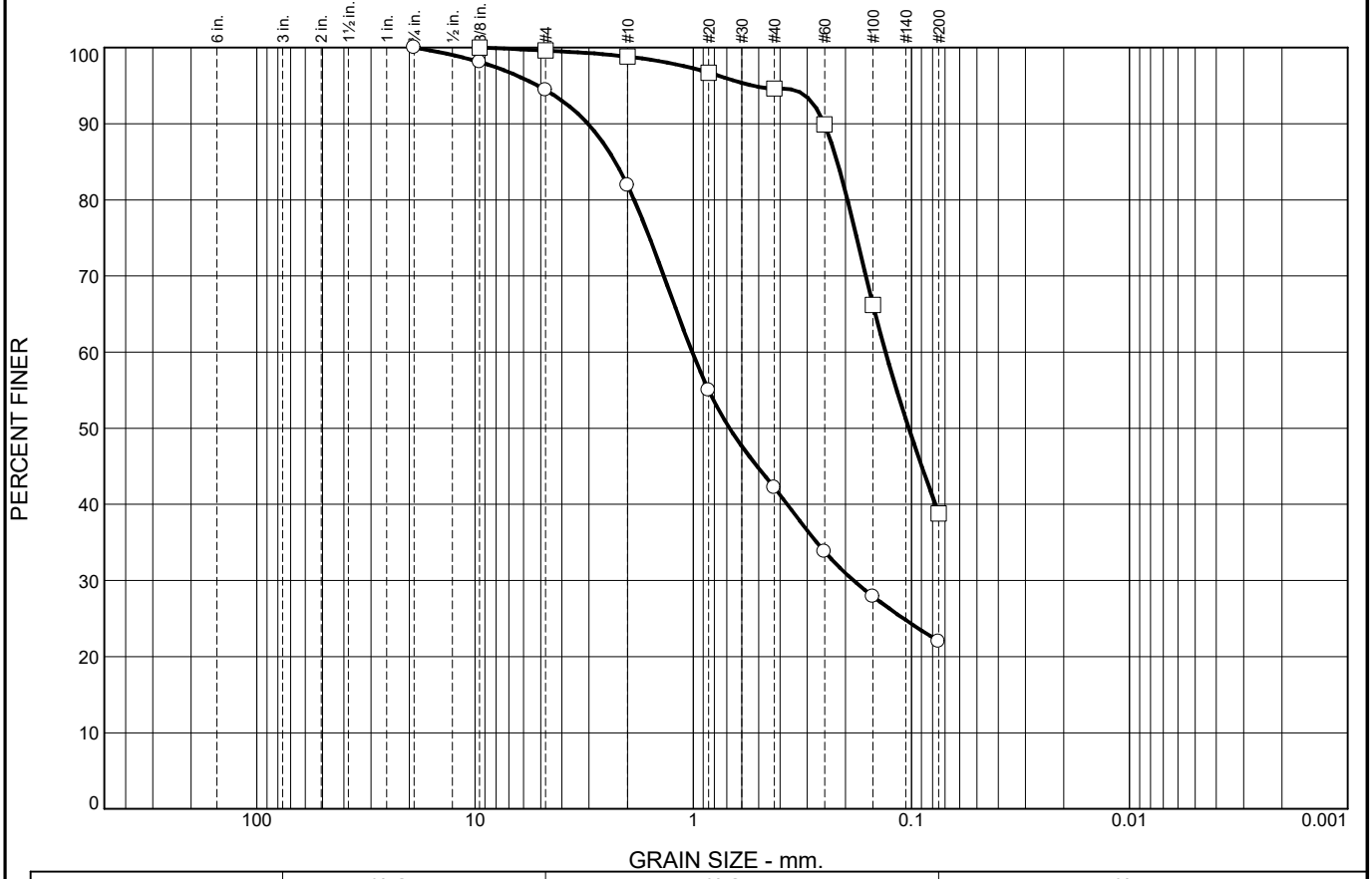
□Tested on June 8, 2021

△Tested on June 8, 2021

Figure A-82

Tested By: FQ

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	5.6	12.5	39.7	20.2	22.0	
□	0.0	0.0	0.4	0.8	4.2	55.8	38.8	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			2.2786	1.0101	0.6816	0.1842				
□			0.2186	0.1314	0.1027					

	Material Description	USCS	AASHTO
○	silty SAND with gravel	SM	
□	silty SAND	SM	

Project No. T-8553 **Client:** Panattoni Development Company

Project: East Vancouver E-Commerce Center

○ **Location:** Test Pit TP-39 **Depth:** 10 ft **Sample Number:** 3

□ **Location:** Test Pit TP-45 **Depth:** 10 ft **Sample Number:** 3

Terra Associates, Inc.

Kirkland, WA

Remarks:

○Tested on June 8, 2021

□Tested on June 8, 2021

Figure A-83

Tested By: FQ

Preliminary
Storm Drainage Report

PREPARED FOR:

Panattoni Development Company, Inc.
1821 Dock Street, Suite 100
Tacoma, WA 98402

PROJECT:

Camas Business Center
4723 NW Lake Road
Camas, WA 98607
2200867.10

PREPARED BY:

Matt Whittlesey, EIT
Project Engineer

REVIEWED BY:

Bart Brynestad, PE
Project Manager

J. Matthew Weber, PE
Principal

DATE:

October 2021

Preliminary
Storm Drainage Report

PREPARED FOR:

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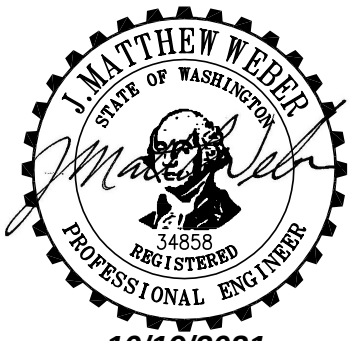
October 2021



10/19/2021

I hereby state that this Preliminary Storm Drainage Report for the Camas Business Center project has been prepared by me or under my supervision, and meets the standard of care and expertise that is usual and customary in this community for professional engineers. I understand that City of Camas does not and will not assume liability for the sufficiency, suitability, or performance of drainage facilities prepared by me.

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Appendix A

Exhibits

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Calculations

B-1..... Predeveloped Basin Map
B-2..... Developed Basin Map
B-3..... Flow Control Calculations
B-4..... Water Quality Calculations
B-5..... Wetland Protection Calculations
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Appendix C

Draft Geotechnical Report
Terra Associates, Inc.
July 12, 2021

Wetland and Fish and Wildlife Habitat Assessment Report
Soundview Consultants
October 2021

SECTION A — Project Overview

This Preliminary Storm Drainage Report accompanies the civil engineering plans submitted for the Site Plan Review process for the proposed Camas Business Center project.

The Camas Business Center project proposes to develop approximately 74.5 acres located in an LI/BP (Light Industrial/Business Park) zoning district with three warehouse/distribution facilities, totaling approximately 970,000 square feet. Site improvements include approximately 1,300 combined parking spaces for passenger vehicles and semi-trailers, maneuvering areas, concrete aprons, wet and dry utilities, stormwater facilities, and landscaping. Improvements also include the construction of a north-south public road and an east-west public road on the project site. The project is proposed to be completed in three phases. The first phase will consist of Building A, all onsite roads, and the site stormwater facilities. The second and third phases will consist of Building B and Building C, respectively.

This report demonstrates that the stormwater design for this project meets the requirements of the 2019 Department of Ecology (Ecology) *Stormwater Management Manual for Western Washington (SWMMWW),* as supplemented by the *Camas Stormwater Design Standards Manual* (*CSDSM)*.

Site Information

The site is located in a portion of the Southeast Quarter of Section 29, Township 02 North, Range 03 East, in the city of Camas, Clark County, Washington. The site consists of Parcel Nos. 176170000 and 176155000. The site is bounded by industrial development to the north, golf courses and industrial/commercial development to the east and west, and NW Lake Road to the south. The site is currently minimally developed, with a single-family residence and multiple barns and outbuildings on the southern portion of the site. Groundcover of the southern half of the site is predominately grass and the apparent use is livestock pasture. The northern half of the site contains scattered stands of fir, ash, and oak trees, as well as large thickets of blackberries. Four distinct wetland areas have been identified on the site. One is located on the east-central portion of the site and the remaining three are located in the northern portion of the site. Refer to Appendix C for the *Wetland and Fish and Wildlife Habitat Assessment Report* (Critical Areas Report) by Soundview Consultants dated October 2021. Topography slopes from east to west and south to north, with approximately 60 feet of relief across the site. Slopes are generally moderate in the southern and northern portions, with a steep south-north slope along the central portion of the site.

Proposed stormwater facilities include a closed conveyance system and a large combined wetpond/detention facility. Stormwater will be discharged at the site's natural outfall located in a wetland buffer in the northwest portion of the site.

SECTION B — Minimum Requirements

Determination of Applicable Minimum Requirements

Based on the information in the table below, the proposed project is subject to Minimum Requirements 1 through 9. Refer to Appendix A for the New Development Minimum Requirements Flow Chart.

Development Impact Areas (Preliminary)	
Existing Hard Surface Area	0.3 ac
New Hard Surface Area	48.0 ac

Development Impact Areas (Preliminary)	
Replaced Hard Surface Area	0.3 ac
Amount of Native Vegetation Converted to Lawn or Landscape	17.8 ac
Amount of Native Vegetation Converted to Pasture	0.00 ac
Total Amount of Land Disturbing Activity	66.4 ac

SECTION C — Soils Evaluation

The soils onsite are mapped by the Natural Resources Conservation Service (NRCS) as primarily Hesson clay loam (HcB & HcD), as well as Powell silt loam (PoB), with the wetland areas mapped as Cove silty clay loam (CwA). HcB and HcD soils are defined by NRCS as Hydrologic Soil Group C. CwA and PoB soils are defined by NRCS as Hydrologic Soil Group D. Refer to the NRCS Soils Map in Appendix A.

A field investigation performed by Terra Associates, Inc. revealed the site soils generally consist of 3 to 12 feet of medium stiff to very stiff silt, with varying amounts of sand and gravel. In some test pits in the north and north-central portions of the site, Columbia River Basalt (bedrock) was observed within the upper 3 to 9 feet. Groundwater was observed in 8 of 80 test pits between 2.5 and 12 feet below grade. Refer to Appendix C for the Draft Geotechnical Report.

For stormwater modeling, Clark County classifies soils into Soil Groups (SG) 1 through 5. Per the *CSDSM*, it is appropriate to use the Clark County Soil Group definitions within the Western Washington Hydrology Model (WWHM) for storm facility sizing. The onsite soils are defined by the *Clark County Stormwater Manua*l as SG3 and SG4. However, the project geotechnical report indicates that infiltration is not feasible in the onsite soils due to soil gradation, high groundwater concerns, and shallow depth to bedrock. Therefore, the onsite soils most closely match SG4, which is defined as “poorly drained soils (slowly infiltrating C soils, as well as D soils).” For stormwater facility sizing, the onsite soils have been modeled as SG4 in the WWHM program. This is consistent with the development of the project immediately to the west, Dwyer Creek Business Center, which contains similar soil conditions.

SECTION D — Source Control

The proposed project is required to provide source control of pollution. The following are proposed measures to be implemented as part of the civil plans.

- All pollutants, including waste materials and demolition debris created onsite during construction, shall be handled and disposed of in a manner that does not cause contamination of surface water.
- Cover, containment, and protection from vandalism shall be provided for all chemicals, liquid products, petroleum products, and non-inert wastes present on the site (see Chapter 173-304 WAC for the definition of inert waste).
- Maintenance and repair of heavy equipment and vehicles that may result in discharge or spillage of pollutants to the ground or into surface water runoff must be conducted using spill prevention measures such as drip pans.
- Concrete Handling (BMP C151) and Sawcutting and Surface Pollution Prevention (BMP C152) shall be used to prevent or treat contamination of surface water runoff by pH modifying sources.
- Landscaping and Lawn/Vegetation Management (BMP S411) shall be used to control fertilizer and pesticide applications, soil erosion, and site debris to prevent contamination of stormwater.

SECTION E — Onsite Stormwater Management BMPs

To satisfy this requirement, the project will implement List 2 Best Management Practices (BMPs) to the maximum extent feasible. Because of the nature of the site's soils and relatively high groundwater, infiltration is not feasible for the site. Refer to Appendix C for the Draft Geotechnical Report and additional information on site soils.

Lawn and Landscaped Areas

Post Construction Soil Quality and Depth will be implemented in accordance with BMP T5.13.

Roofs

Dispersion is not feasible because there is no vegetated flow path available for dispersion. Additionally, infiltration is not feasible due to the soils onsite. Lastly, perforated stub-out connections would likely conflict with the shallow groundwater. Roof runoff will be tight lined to the proposed detention system.

Other Hard Surfaces (Roads, Sidewalks, Driveways)

Runoff from all other hard surfaces such as driveways, sidewalks, roadways, and access aisles will be directed to the combination wetpond and detention pond.

Full dispersion is not feasible because there is not an adequate vegetated flow path available. Permeable pavement is not feasible because infiltration is not feasible on the site and because of high groundwater levels. Bioretention BMPs are not feasible because infiltration is not feasible on the site and because of high groundwater levels. Lastly, sheet flow dispersion is not feasible because there is not an adequate vegetated flow path available.

SECTION F — Runoff Treatment Analysis and Design

Because the project is located in the Lacamas watershed and above the dam at the south end of Round Lake, phosphorus treatment is required per the *CSDSM*. Basic and phosphorus treatment will be provided for all applicable surfaces by a combined wetpond/detention pond. The wetpond consists of dead storage located directly beneath the live storage portion of the pond. To comply with *SWMMWW* requirements for phosphorus treatment, the wetpond has been designed as a Large Wetpond. This necessitates increasing the calculated treatment volume by a factor of 1.5. The combined wetpond/detention pond has been preliminarily sized as part of this submittal. WWHM was used to determine the required treatment volume. Preliminary calculations are included in Appendix B.

It is anticipated that some areas of the project site will not be able to be conveyed to the main stormwater facility. Basic and phosphorus treatment for these surfaces will be provided by proprietary filter units that have Ecology General Use Level Designation (GULD) approval for basic and phosphorus treatment. Sizing calculations for these units will be included in the final engineering submittal.

SECTION G — Flow Control Analysis and Design

The proposed project is required to provide flow control for all applicable surfaces. Flow control will be provided by the combined wetpond/detention pond. The detention portion of the pond consists of the live storage volume, which is located on top of the dead storage, or treatment volume. The combined facility will discharge into the buffer of onsite Wetland B, which is the

natural discharge location of the predeveloped site. The combined wetpond/detention pond has been preliminarily sized as part of this submittal. WWHM was used to determine the required detention volume. As discussed in Section C, onsite soils were modeled as Clark County SG4. To comply with wetlands protection requirements, a portion of the site consisting of the Building C roof will discharge to a flow splitter and then to Wetland A. The flow splitter will be designed to convey flows under 0.4 CFS to the wetland and flows over 0.4 CFS to the detention pond. Per the *SWMMWW*, areas requiring flow control can bypass the facility if the 100-year peak discharge from the bypass area is less than 0.4 CFS. The detention facility has been sized to accommodate the bypass area, which is modeled as discharging straight to the point of compliance and bypassing the detention facility. Preliminary calculations are included in Appendix B.

SECTION H — Wetlands Protection

Four wetlands are identified onsite. Wetland C will be filled and Wetlands A, B, and D will remain. Refer to Appendix C for the Critical Areas Report, which contains a detailed breakdown of the existing wetlands and relevant project conditions.

Per the Critical Areas Report, Wetlands A and D require compliance with *SWMMWW* Minimum Requirement 8 – Wetlands Protection. The project will comply with this requirement to the maximum extent feasible by attempting to maintain the existing hydroperiods of the wetlands. This project will use Method 2, which uses the WWHM model to compare predeveloped and developed discharges to the wetland for the following criteria:

Criteria 1. Mean Daily Total Discharge Volumes from the Site

Total volume of water into a wetland on daily basis should not be more than 20% higher or lower than the pre-project volumes.

- Calculate the average of the total discharge volumes from the site for each day over the period of precipitation record in the approved model for pre- and post-project scenarios. There will be 365 (366 for a leap year) average daily values for the pre-project scenario and 365 (366 for a leap year) for the post-project. No day can exceed 20% change in volume.

Criteria 2. Mean Monthly Total Discharge Volumes from the Site

Total volume of water into a wetland on a monthly basis should not be more than 15% higher or lower than the pre-project volumes.

- Calculate the average of the monthly total discharge volumes from the site for each calendar month over the period of precipitation record in the approved model for pre- and post-project scenarios. No month can exceed 15% change in volume.

The criteria will be met for Wetland D because its tributary basin consists only of its buffer area, which will remain undisturbed in the developed condition. The criteria will be met to the maximum extent feasible for Wetland A. The offsite portion of Wetland A's tributary basin will be conveyed to the wetland by a ditch or culvert in the developed condition. To match the existing hydroperiod as closely as possible, runoff from the Building C roof will be conveyed directly to the wetland. A flow splitter will send low flows to the wetland, while any flows exceeding the bypass allowance of the flow control facility will be conveyed to the detention pond. Preliminary wetland hydroperiod calculations are included in Appendix B.

SECTION I — Other Permits

- Department of Ecology National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit

SECTION J — Conveyance Analysis and Design

A full analysis of the conveyance capacity of the onsite stormwater pipe network will be provided with the final engineering submittal.

SECTION K — Offsite Analysis

The site has been evaluated for offsite runon from upland parcels, and the downstream flow path has been evaluated to ensure that the developed discharge location is consistent with the existing discharge location. A formal offsite analysis is not applicable for this project because it is not anticipated to have a significant adverse impact on the downstream or upstream drainage systems, per *CSDSM* Section 9.02. The combined wetpond/detention pond has been designed in accordance with *SWMMWW* requirements to maintain existing flow rates leaving the site and to remove phosphorus and other contaminants, as required. Additionally, the project has accommodated runon from upland parcels by conveying drainage either around the project site or into onsite wetlands, as appropriate.

SECTION L — Approval Conditions Summary

There are no conditions of approval related to stormwater in the provided City of Camas Pre-Application Meeting Notes dated December 3, 2020.

SECTION M — Special Reports and Studies

Included in the appendices are the following reports:

- Draft Geotechnical Report by Terra Associates, Inc., dated July 12, 2021
- Wetland and Fish and Wildlife Habitat Assessment Report by Soundview Consultants, dated October 2021

SECTION N — Maintenance and Operation Manual

The stormwater facilities will be privately owned and maintained. A Maintenance and Operation manual will be included with the final engineering submittal.

CONCLUSION

The proposed Camas Business Center project proposes to construct 970,000 square feet of single-story warehouse/distribution facilities on 74.5 acres. Site improvements include approximately 1,300 combined parking spaces for passenger vehicles and semi-trailers, maneuvering areas, concrete aprons, wet and dry utilities, stormwater facilities, landscaping, and construction of two public roads within the site. If constructed per plan, the stormwater system will manage anticipated runoff volumes based on the design criteria of the 2019 Ecology *Stormwater Management Manual for Western Washington (SWMMWW)*. This report and associated plans were prepared within the guidelines established by City of Camas.

This analysis is based on data and records either supplied to or obtained by AHBL. These documents are referenced within the text of the analysis. The analysis has been prepared using procedures and practices within the standard accepted practices of the industry.

AHBL, Inc.

Matt Whittlesey, EIT
Project Engineer

MKW/lsk

October 2021

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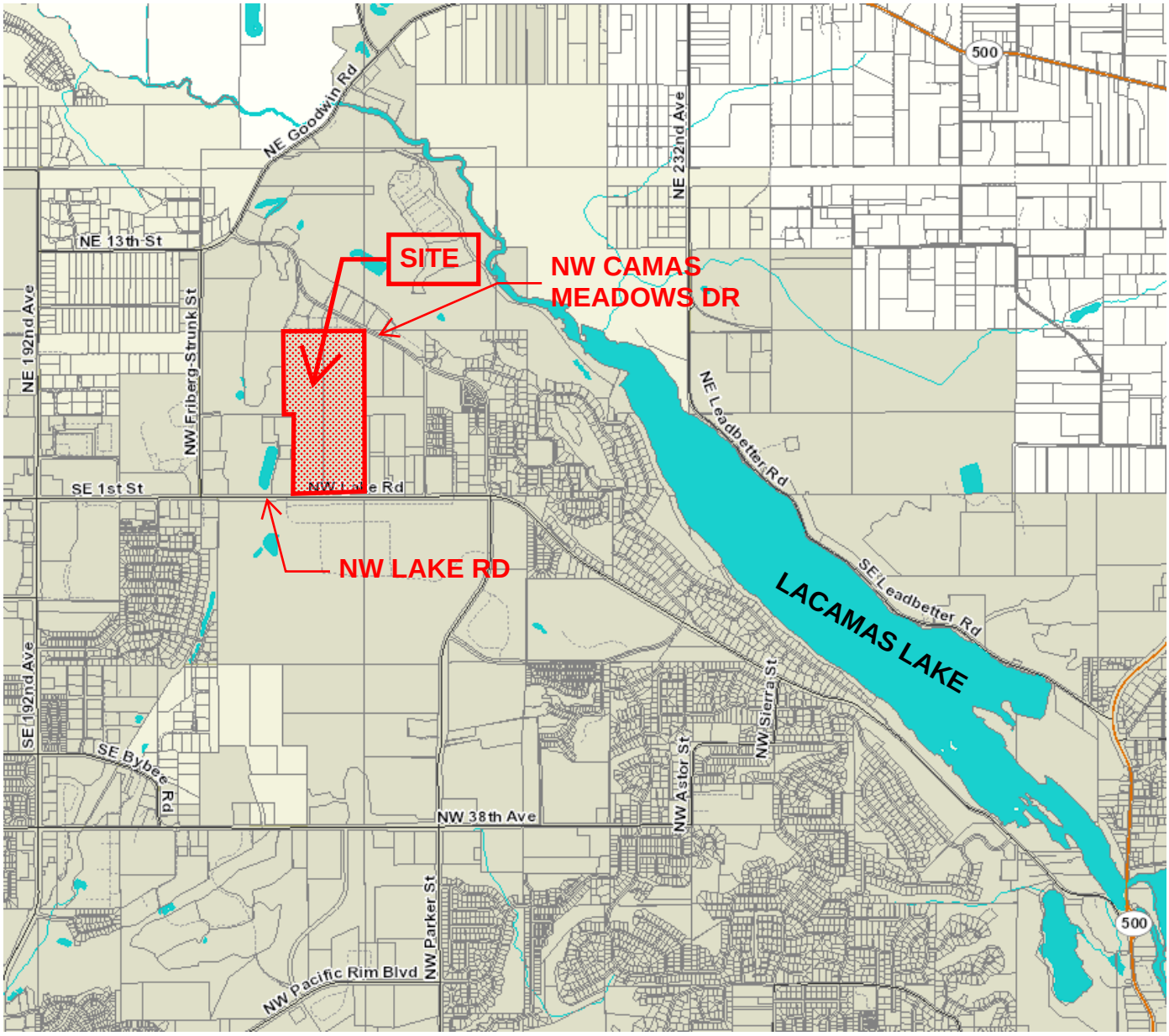
Appendix A

Exhibits

A-1.....Vicinity Map
A-2.....New Development Minimum Requirements Flow Chart
A-3.....Existing Conditions Map
A-4.....Developed Conditions Map
A-5.....Environmental Constraints Map
A-6.....FEMA Map
A-7.....NRCS Soils Map



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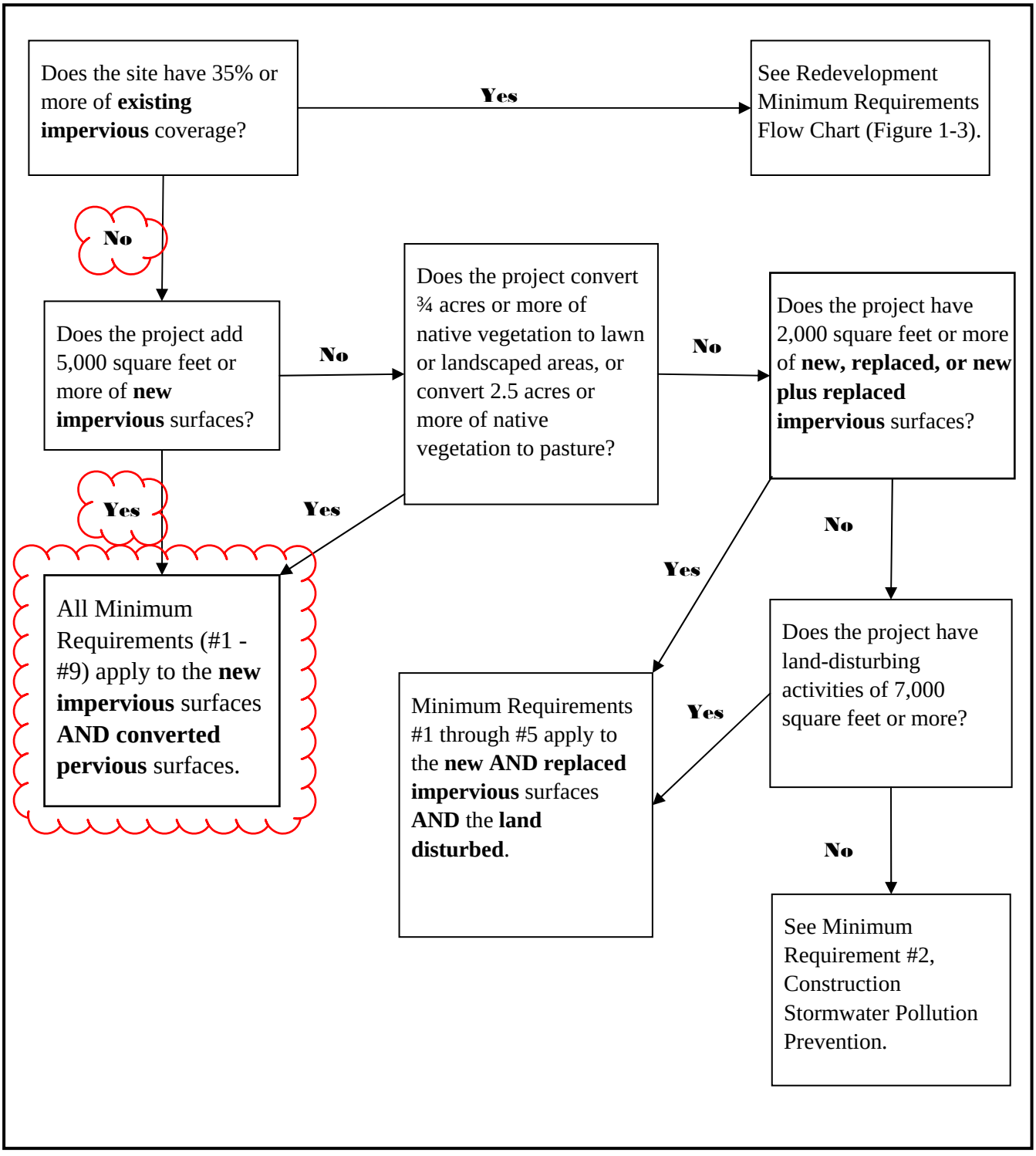
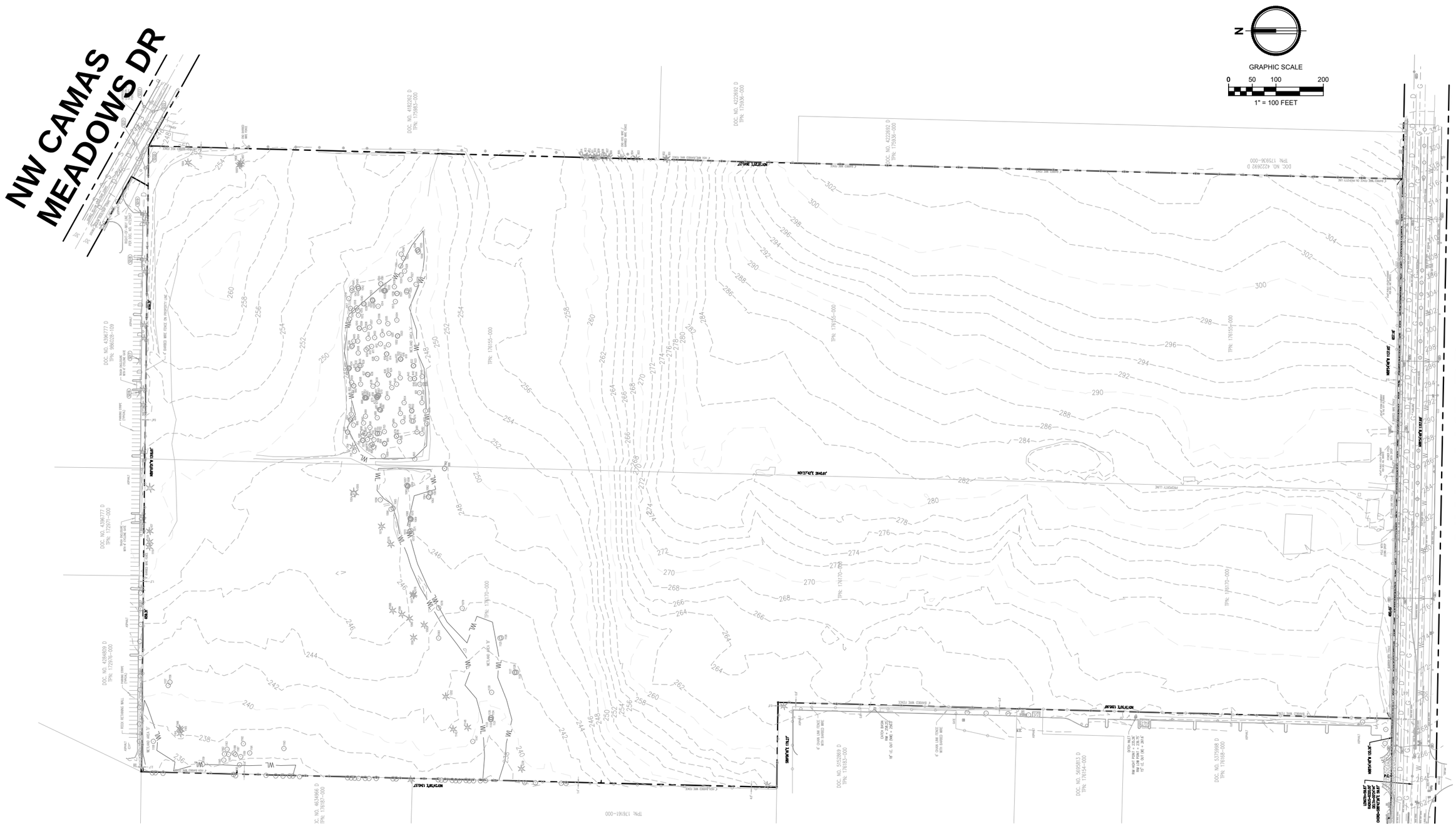
VICINITY MAP

EXHIBIT A-1

Figure 1.2: New Development Minimum Requirements Flow Chart





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CAMAS BUSINESS CENTER

EXISTING CONDITIONS MAP

JOB NO. 2200867.10

DATE: OCT 2021

A-3

CAMAS BUSINESS CENTER

LOCATED IN THE SE 1/4 OF SECTION 29, TOWNSHIP 2 NORTH, RANGE 3 EAST, W.M., CITY OF CAMAS, CLARK COUNTY, WASHINGTON

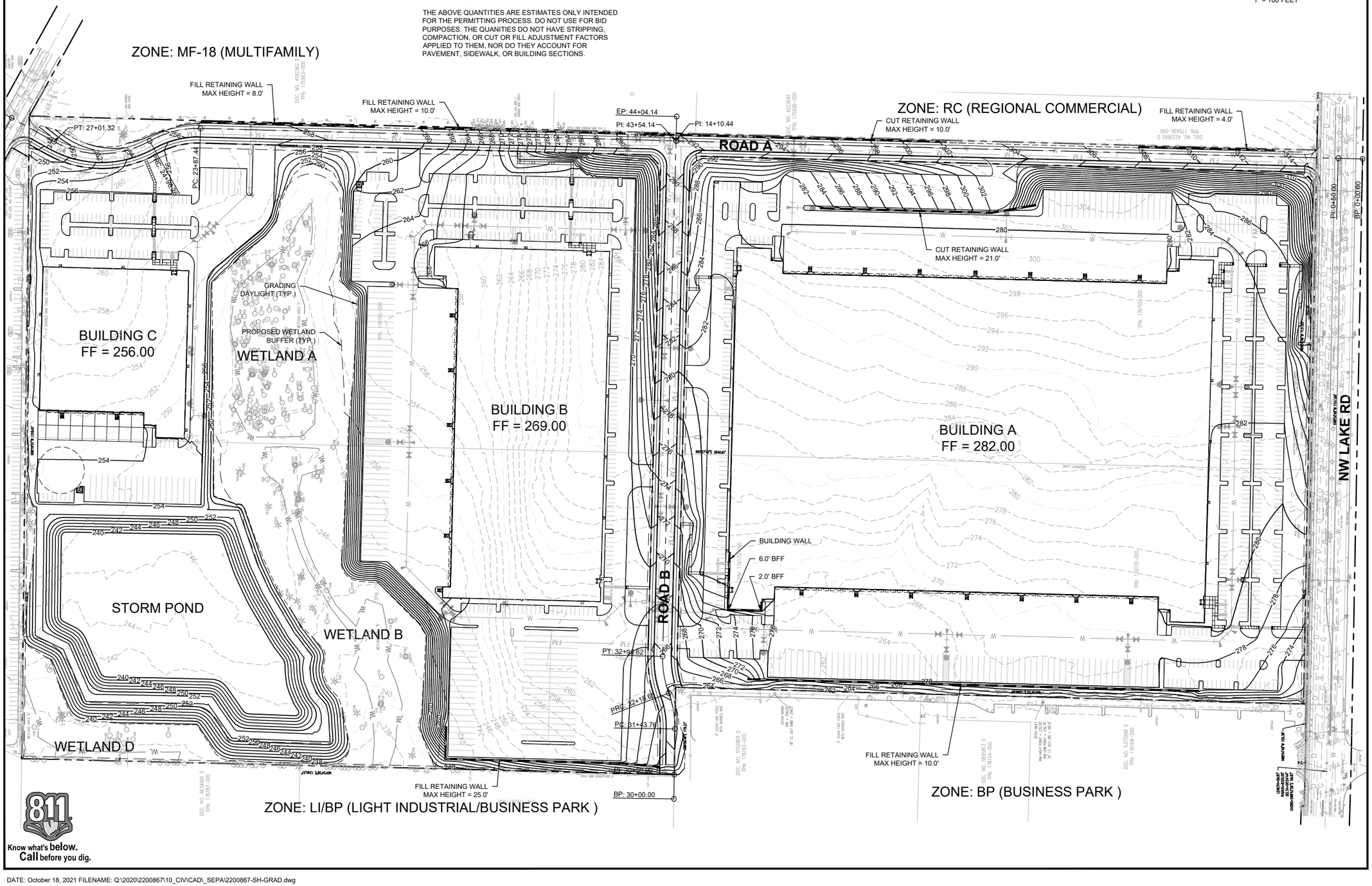
EARTHWORK QUANTITIES

CUT: 425,500 CY (EXPORT)
FILL: 432,000 CY (IMPORT)
NET: 6,500 CY (IMPORT)

THE ABOVE QUANTITIES ARE ESTIMATES ONLY INTENDED FOR THE PERMITTING PROCESS. DO NOT USE FOR BID PURPOSES. THE QUANITIES DO NOT HAVE STRIPPING, COMPACTION, OR CUT OR FILL ADJUSTMENT FACTORS APPLIED TO THEM, NOR DO THEY ACCOUNT FOR PAVEMENT, SIDEWALK, OR BUILDING SECTIONS.

N

GRAPHIC SCALE
0 50 100 200
1" = 100 FEET



811 Know what's below. Call before you dig.

DATE: October 18, 2021 FILENAME: Q:\2020\2200867\10_CIV\CAD_SEPA\2200867-SH-GRAD.dwg

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Project Title:
CAMAS BUSINESS CENTER

Client:
PANATTONI DEVELOPMENT COMPANY, LLC
1821 DOCK STREET, SUITE 100
TACOMA, WA 98402

Project No.
2200867.10

Issue Set & Date:
SEPA AND SITE PLAN REVIEW
10/07/2021

J. MATTHEW WEBER — STATE OF WASHINGTON — 24859 — REGISTERED PROFESSIONAL ENGINEER

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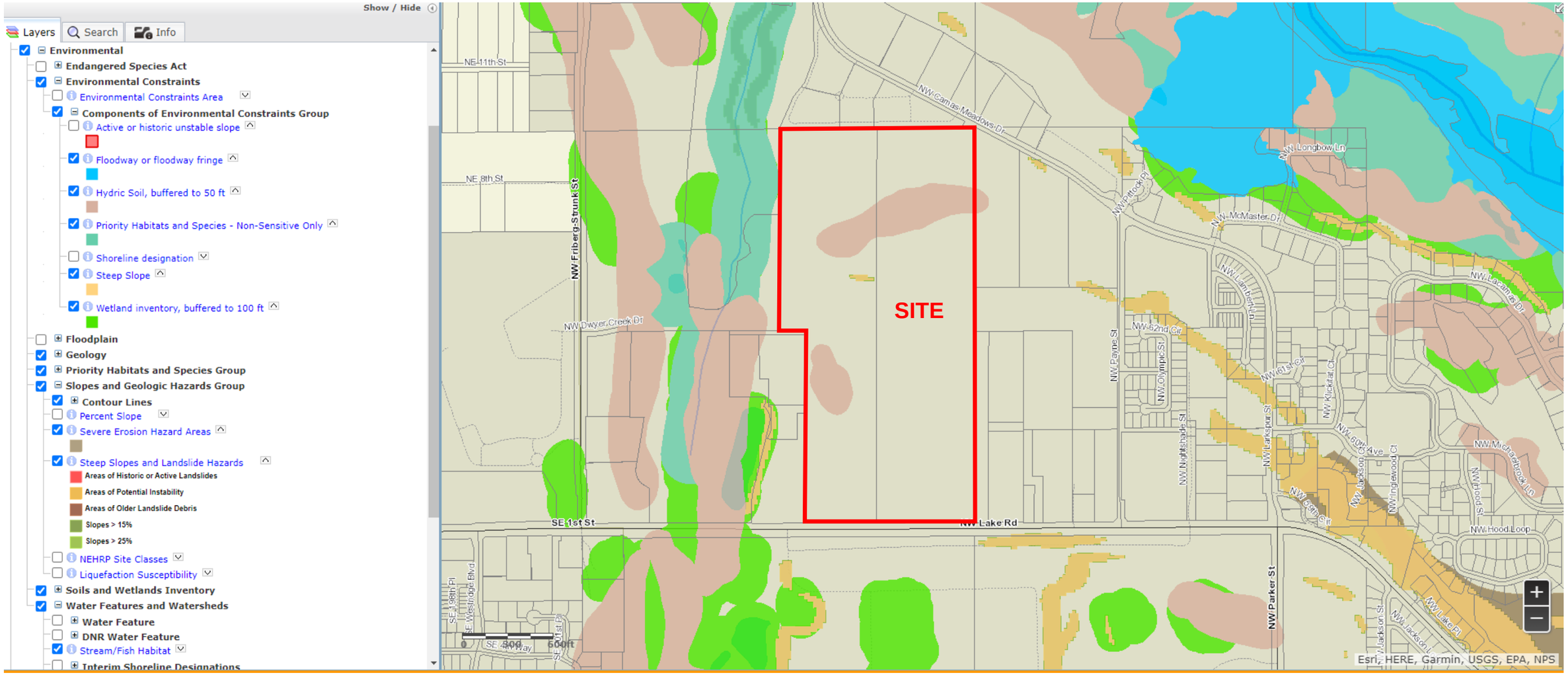
Revisions:
1
2
3
4

Sheet Title:
PRELIMINARY GRADING AND DRAINAGE PLAN

Designed by:	Drawn by:	Checked by:
TDW/MW/GG	TDS	BEB

Sheet No.
SPR2
2 of XX Sheets



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ENVIRONMENTAL CONSTRAINTS MAP

EXHIBIT A-5

National Flood Hazard Layer FIRMette

122°27'47"W 45°37'37"N

122°27'10"W 45°37'12"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR UT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

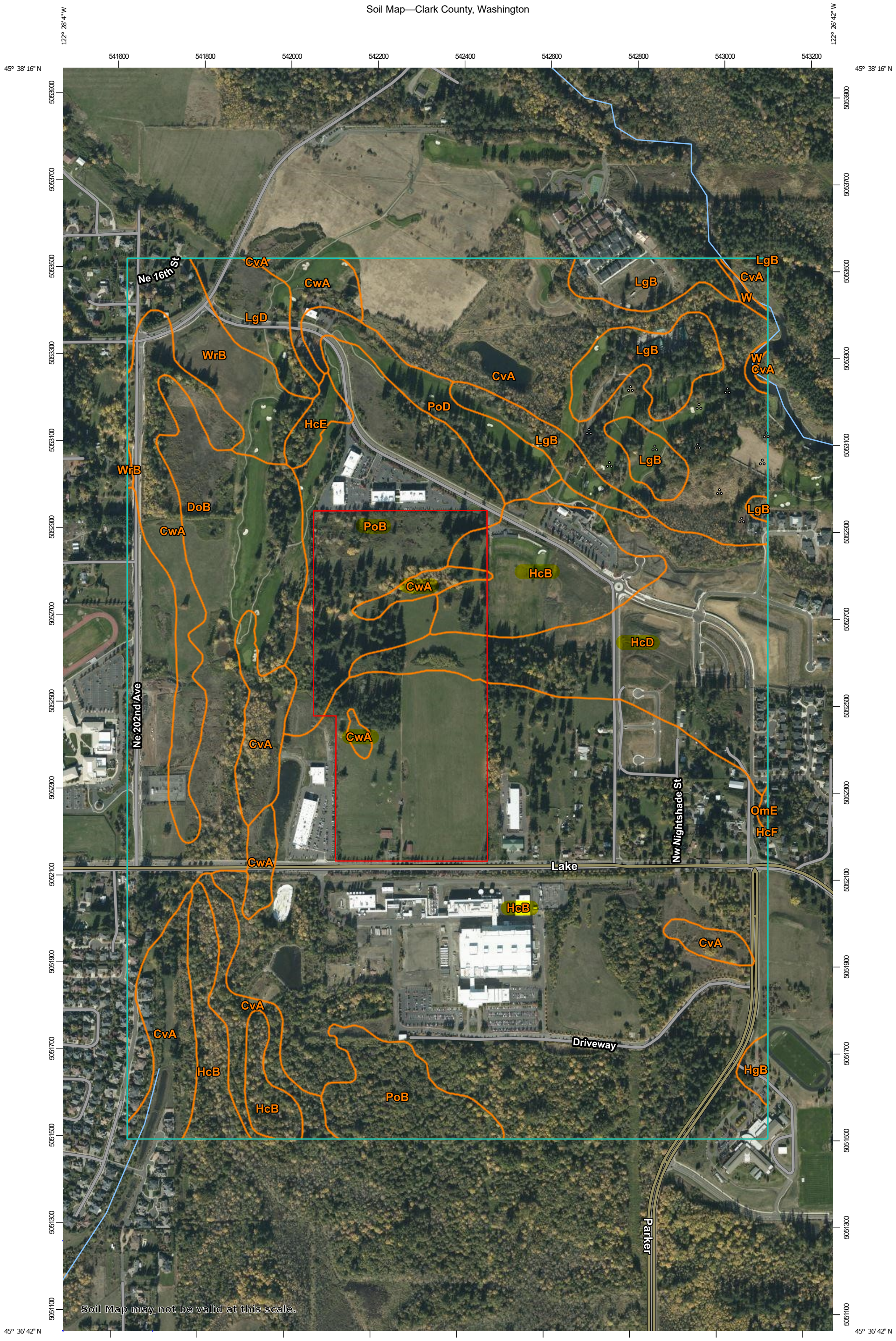
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/19/2021 at 4:00 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community id FIRM panel number, and FIRM effective date. Map i unmapped and unmodernized areas cannot be use regulatory purposes.

Soil Map—Clark County, Washington



Map Scale: 1:8,130 if printed on B portrait (11" x 17") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 350 700 1400 2100

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Clark County, Washington
Survey Area Data: Version 18, Jun 4, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 15, 2018—Oct 18, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CvA	Cove silty clay loam, 0 to 3 percent slopes	109.8	14.8%
CwA Wetlands Soil Group: D	Cove silty clay loam, thin solum, 0 to 3 percent slopes	38.9	5.2%
DoB	Dollar loam, 0 to 5 percent slopes	75.5	10.2%
HcB NE+S Soil Group: C	Hesson clay loam, 0 to 8 percent slopes	303.5	40.8%
HcD Central+E Soil Group: C	Hesson clay loam, 8 to 20 percent slopes	57.8	7.8%
HcE	Hesson clay loam, 20 to 30 percent slopes	3.5	0.5%
HcF	Hesson clay loam, 30 to 55 percent slopes	0.0	0.0%
HgB	Hesson gravelly clay loam, 0 to 8 percent slopes	1.9	0.3%
LgB	Lauren gravelly loam, 0 to 8 percent slopes	34.3	4.6%
LgD	Lauren gravelly loam, 8 to 20 percent slopes	10.6	1.4%
OmE	Olympic stony clay loam, 3 to 30 percent slopes	0.4	0.1%
PoB N/NW Soil Group: D	Powell silt loam, 0 to 8 percent slopes	72.4	9.7%
PoD	Powell silt loam, 8 to 20 percent slopes	14.2	1.9%
W	Water	1.6	0.2%
WrB	Wind River gravelly loam, 0 to 8 percent slopes	19.3	2.6%
Totals for Area of Interest		**743.8**	**100.0%**

Appendix B

Calculations

B-1.....Predeveloped Basin Map
B-2.....Developed Basin Map
B-3.....Flow Control Calculations
B-4.....Water Quality Calculations
B-5.....Wetland Protection Calculations
B-6.....WWHM Report

NOTE:
FOR THE PRELIMINARY ENGINEERING SUBMITTAL, THE STORMWATER FACILITY WAS SIZED TO ACCOMODATE THE ENTIRE PROJECT SITE

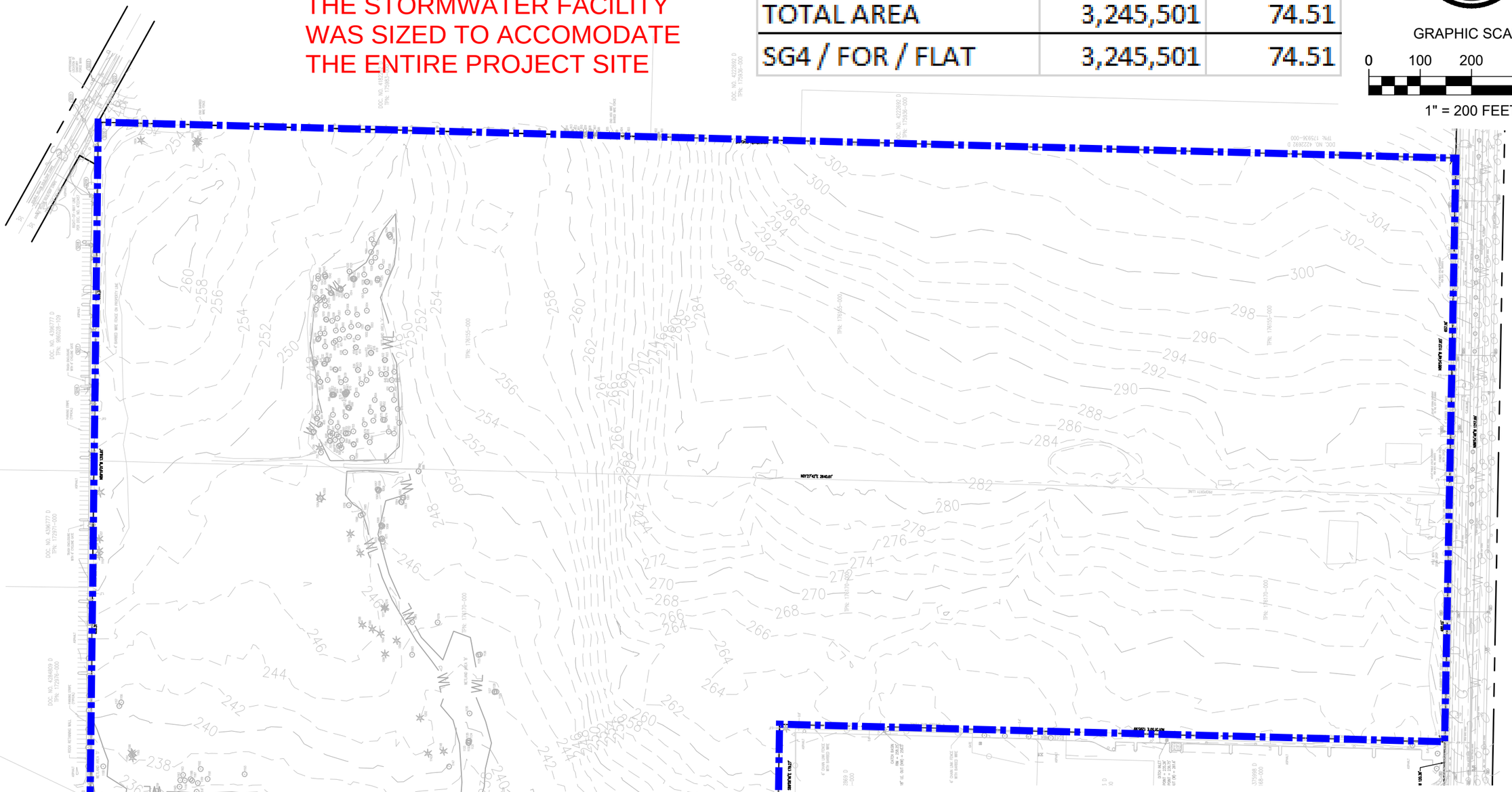
PREDEVELOPED		
	SF	AC
TOTAL AREA	3,245,501	74.51
SG4 / FOR / FLAT	3,245,501	74.51

N

GRAPHIC SCALE

0 100 200 400

1" = 200 FEET



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Structural Engineers
Landscape Architects
Community Planners
Land Surveyors
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PREDEVELOPED BASIN MAP

B-1

NOTE:
FOR THE PRELIMINARY ENGINEERING SUBMITTAL, THE STORMWATER FACILITY WAS SIZED TO ACCOMODATE THE ENTIRE PROJECT SITE

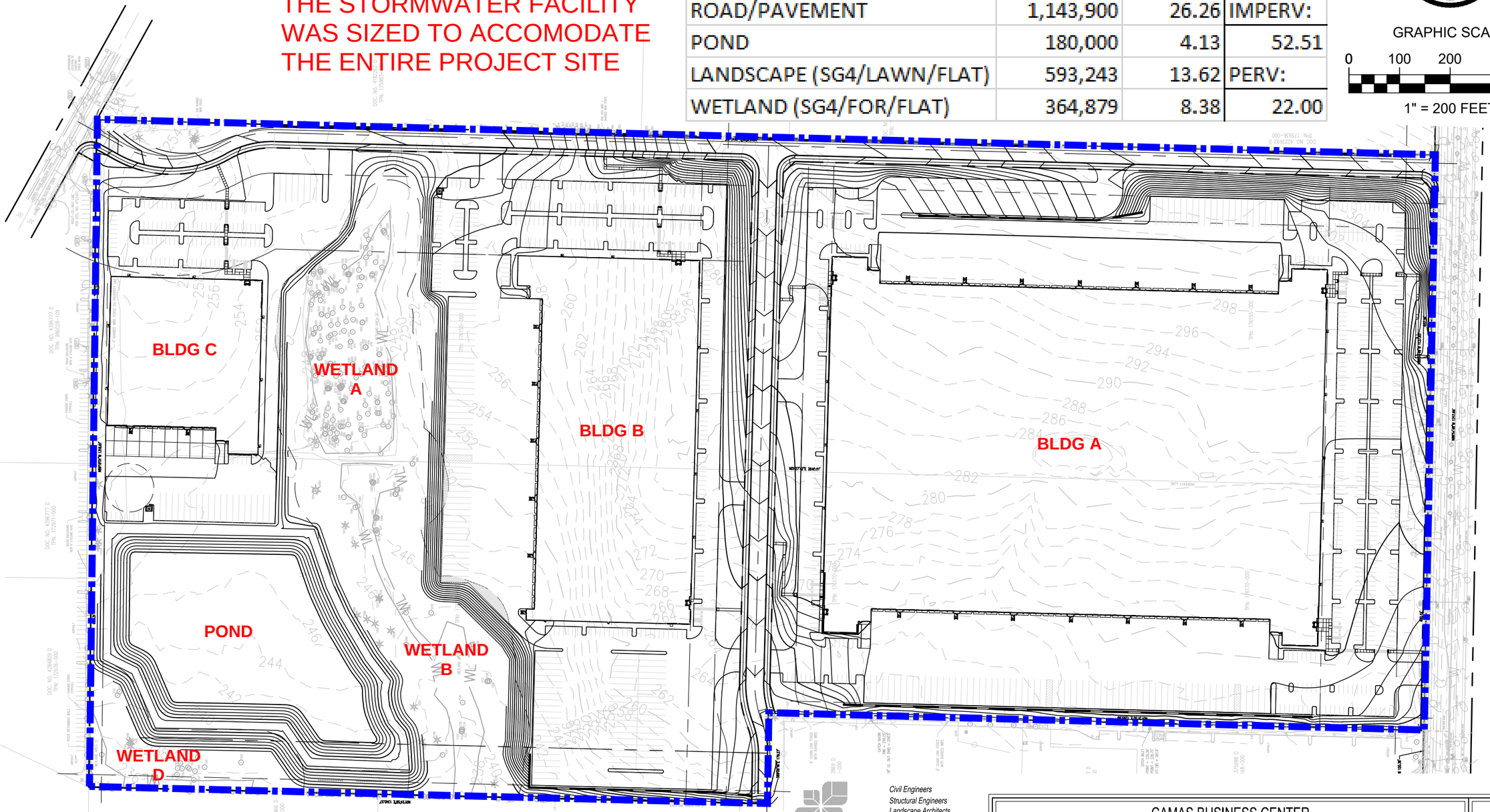
DEVELOPED	SF	AC	
TOTAL AREA	3,245,501	74.51	
BUILDING ROOFS	963,479	22.12	
ROAD/PAVEMENT	1,143,900	26.26	IMPERV:
POND	180,000	4.13	52.51
LANDSCAPE (SG4/LAWN/FLAT)	593,243	13.62	PERV:
WETLAND (SG4/FOR/FLAT)	364,879	8.38	22.00

N

GRAPHIC SCALE

0 100 200 400

1" = 200 FEET



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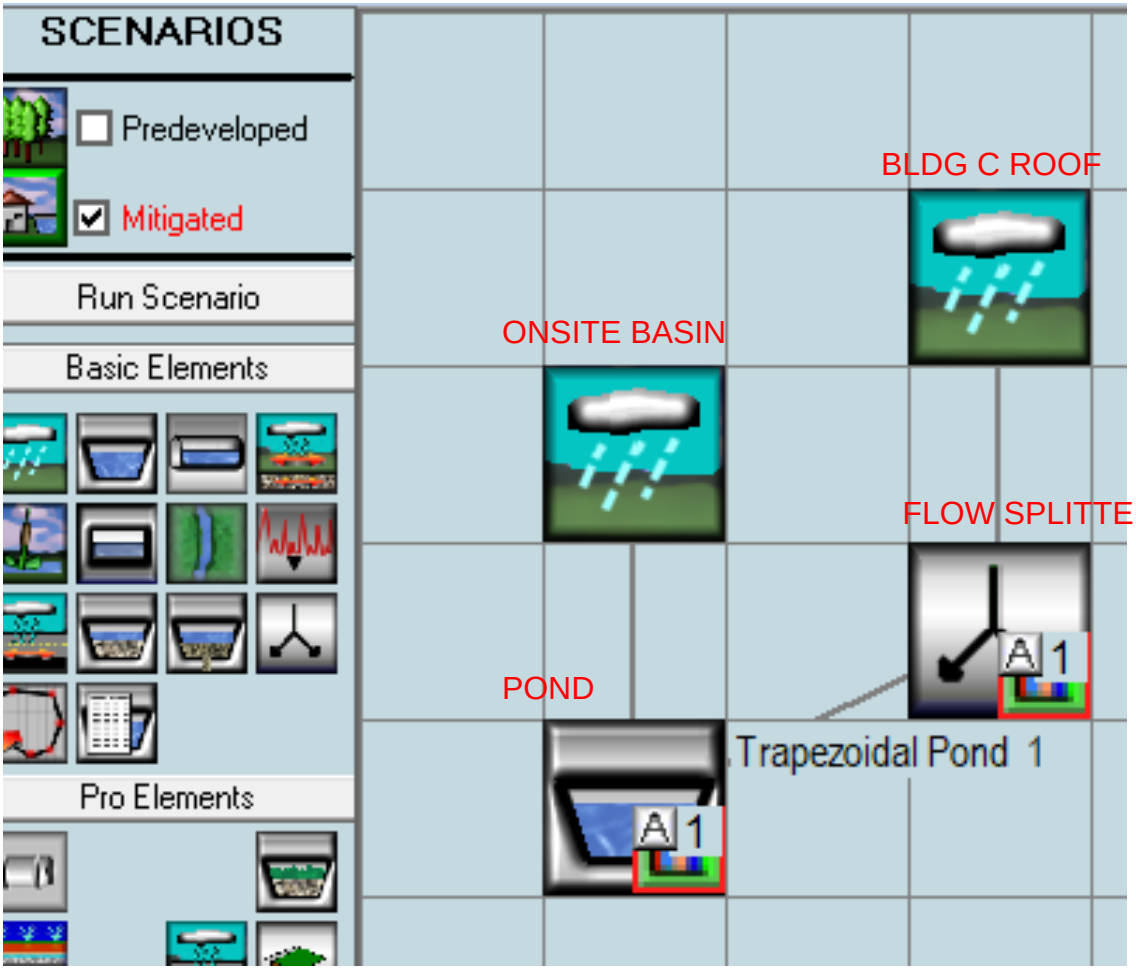
DEVELOPED BASIN MAP

B-2

NOTE:
FOR THE PRELIMINARY ENGINEERING SUBMITTAL, THE STORMWATER FACILITY WAS SIZED TO ACCOMODATE THE ENTIRE PROJECT SITE



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FLOW CONTROL CALCULATIONS

EXHIBIT B-3

PREDEVELOPED:

ONSITE BASIN

Available Pervious	Acres	Available Impervious	Acres
☑ SG4, Forest, Flat	74.46		

Pervious Total	74.46	Acres
Impervious Total	0	Acres
Basin Total	74.46	Acres

DEVELOPED:

ONSITE BASIN

Available Pervious	Acres	Available Impervious	Acres
☑ SG4, Forest, Flat	8.38	☑ ROADS/FLAT	26.3
☑ SG4, Lawn, Flat	13.6	☑ ROOF TOPS/FLAT	20
		☑ POND	4.13

Pervious Total	21.98	Acres
Impervious Total	50.43	Acres
Basin Total	72.41	Acres

BLDG C ROOF

Available Pervious	Acres	Available Impervious	Acres
		☑ ROOF TOPS/FLAT	2.1

Pervious Total	0	Acres
Impervious Total	2.1	Acres
Basin Total	2.1	Acres

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DEVELOPED:

FLOW SPLITTER

Facility Name	Flow Splitter 1
Downstream Connection	
Both Exits	
Primary Exit(1)	Secondary Exit(2)
0	Trapezoidal Pond 1
Upstream Storage Area Length (ft)	10
Maximum Depth of Ponding (ft)	10
Primary Exit(1) Structure	**Secondary Exit(2) Structure**
Flow Threshold	
Flow Threshold (cfs)	0.4

FLOWS UNDER 0.4 CFS GO DIRECTLY TO THE POINT OF COMPLIANCE. IN REALITY, THESE FLOWS ARE DIRECTED TO WETLAND A BUFFER. FLOWS ABOVE 0.4 CFS GO TO POND.

DETENTION POND

Facility Dimensions

Facility Bottom Elevation (ft)	0
Bottom Length (ft)	314.0134738
Bottom Width (ft)	104.6711579
Effective Depth (ft)	6
Left Side Slope (H/V)	3
Bottom Side Slope (H/V)	3
Right Side Slope (H/V)	3
Top Side Slope (H/V)	3
Infiltration	NO

Outlet Structure Data

Riser Height (ft)	5
Riser Diameter (in)	54
Riser Type	Notched
Notch Type	Rectangular
Notch Height (ft)	0.8597
Notch Width (ft)	4.4752

Orifice Number	Diameter (in)	Height (ft)
1	12.996	0
2	0	0
3	0	0

Pond Volume at Riser Head (ac-ft) 4.528

USE 5.0 AC-FT FOR PRELIMINARY

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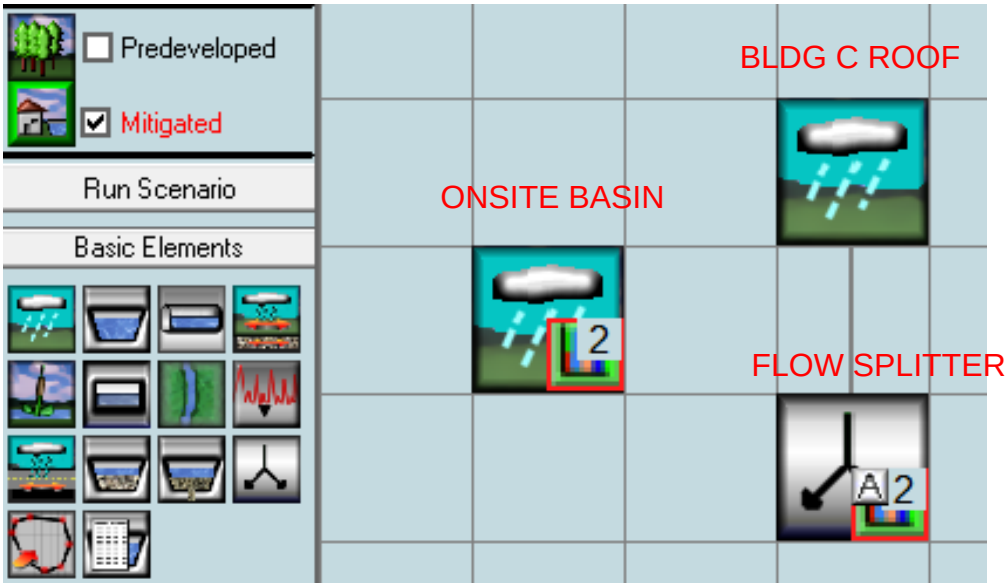
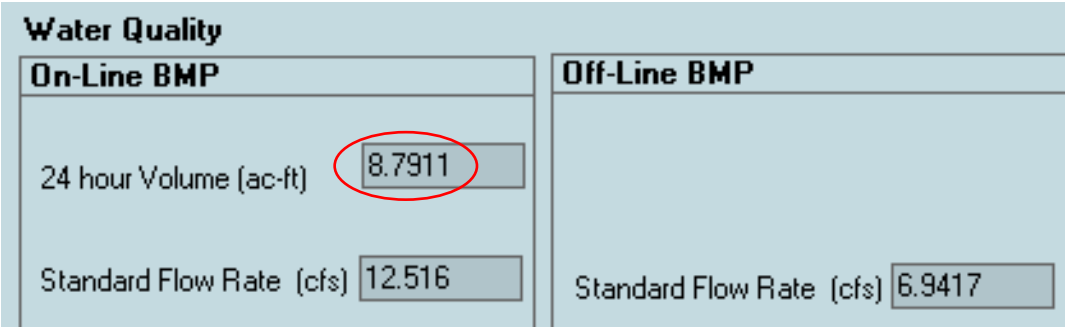


THE FLOW SPLITTER SENDS FLOWS ABOVE 0.4 CFS FROM THE BUILDING C ROOF AREA TO THE POND (TREATMENT REQUIRED).



TO PROVIDE PHOSPHORUS TREATMENT, THE FACILITY IS SIZED AS A "LARGE WETPOND". A FACTOR OF 1.5 IS ADDED TO THE REQUIRED DEAD STORAGE VOLUME.

8.79 * 1.5 = 13.19 AC-FT

Per the Critical Areas Report by Soundview Consultants, Wetland Hydroperiod Protection is applicable to Wetland A and Wetland D on the project site. See the next page for the flowchart determination of wetland protection. The project will provide hydroperiod protection to the maximum extent feasible. Method 2 will be used to analyze wetland hydroperiod impacts. Criteria for Method 2 are listed below:

Method 2: Site Discharge Modeling

An alternative way to predict the risk to the wetland hydroperiod from stormwater discharges is to assess the changes in total volume of flows into a wetland that result from the development project. The size of the wetland and its capacity are not known or needed to utilize Method 2. The risk to wetland functions will be assumed to increase as the total discharge volumes from the site into the wetland diverge from the pre-project conditions. The risk will be decreased if the divergence is smaller.

As stormwater generated at the project site passes through the wetland buffer, total discharge volumes from the site to the wetland are to be calculated at the outflow of the wetland buffer. The existing or required length and area of wetland buffer per local and/or state regulations around the wetland should be included as an element in the model under both pre-project (existing) and post-project scenarios.

Criteria for Method 2

The project proponent must ensure they are meeting both of the following Method 2 criteria in order to comply with Wetland Hydroperiod Protection.

Criteria 1. Mean Daily Total Discharge Volumes from the Site

Total volume of water into a wetland on daily basis should not be more than 20% higher or lower than the pre-project volumes.

- Calculate the average of the total discharge volumes from the site for each day over the period of precipitation record in the approved model for pre- and post-project scenarios. There will be 365 (366 for a leap year) average daily values for the pre-project scenario and 365 (366 for a leap year) for the post-project. No day can exceed 20% change in volume.

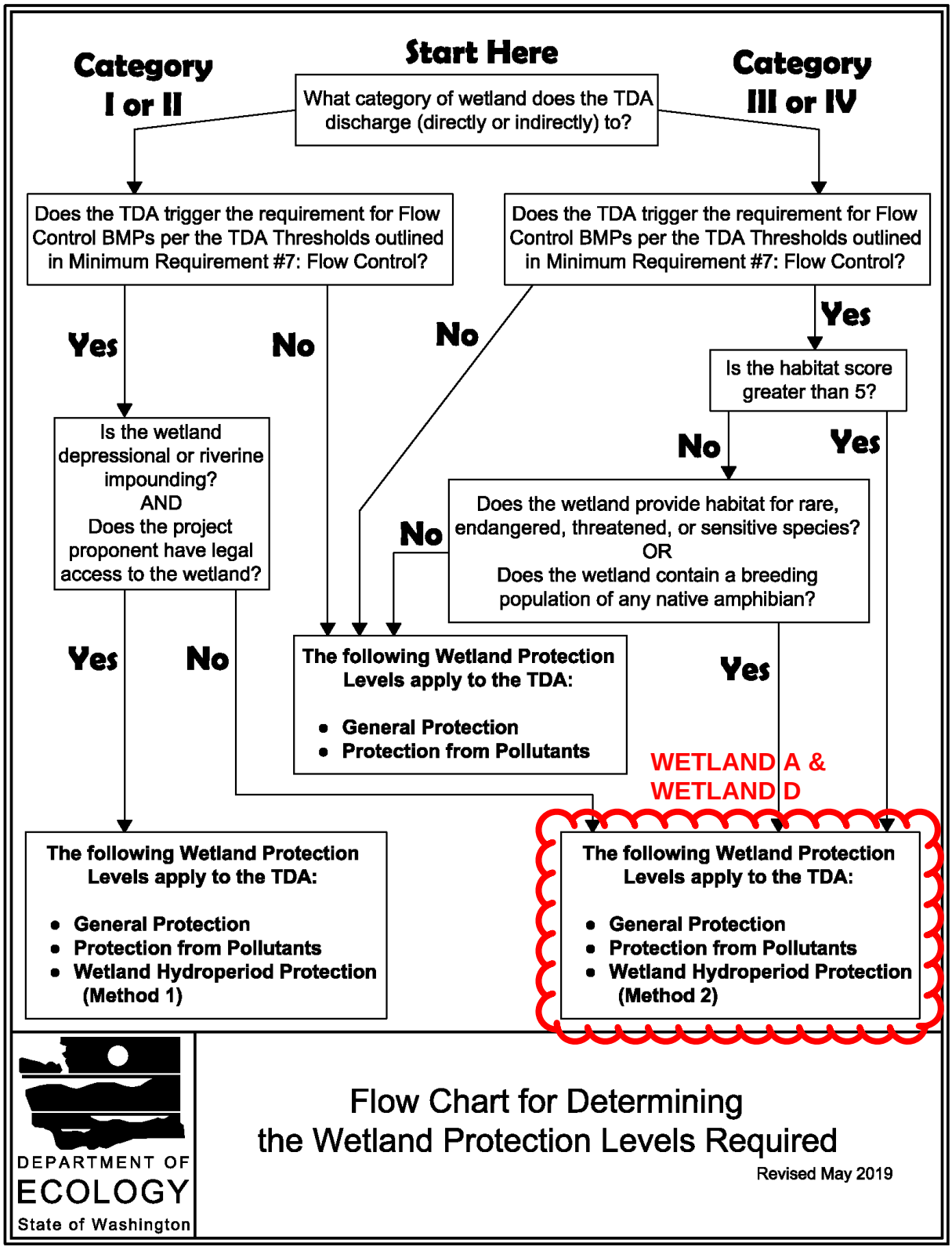
Criteria 2. Mean Monthly Total Discharge Volumes from the Site

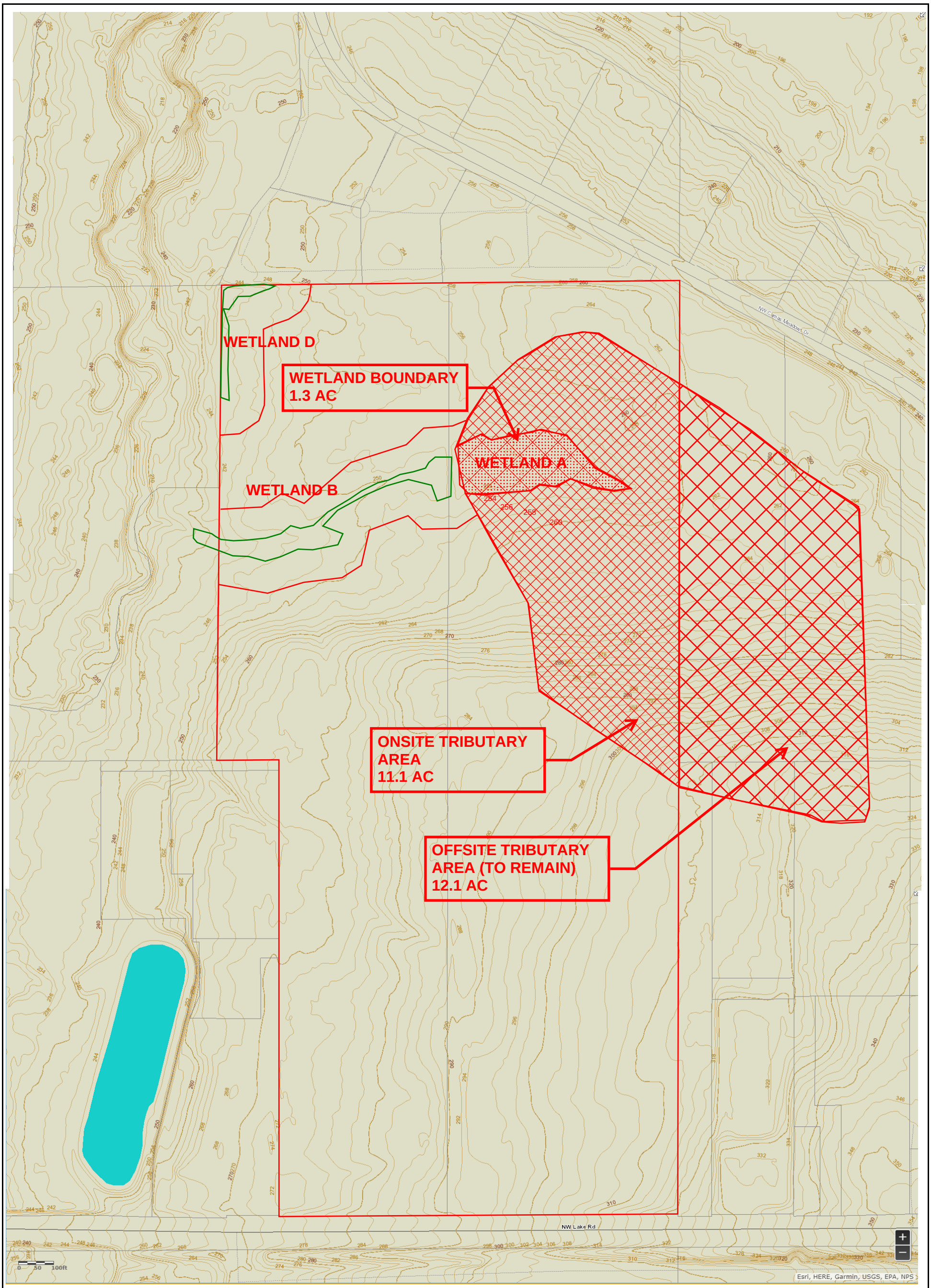
Total volume of water into a wetland on a monthly basis should not be more than 15% higher or lower than the pre-project volumes.

- Calculate the average of the monthly total discharge volumes from the site for each calendar month over the period of precipitation record in the approved model for pre- and post-project scenarios. No month can exceed 15% change in volume.

The guidance for implementing Method 2 and assessing the criteria above in the respective model is provided in section I-C.5 Wetland Hydroperiod Data Collection and Evaluation Procedures.

Figure I-3.5: Flow Chart for Determining Wetland Protection Level Requirements





WETLAND TRIBUTARY AREAS MAP

GRAPHIC SCALE

0 100 200 400

AHBL
2215 North 30th Street
Suite 300
Tacoma, WA 98403
253.383.2422 TEL
253.383.2572 FAX

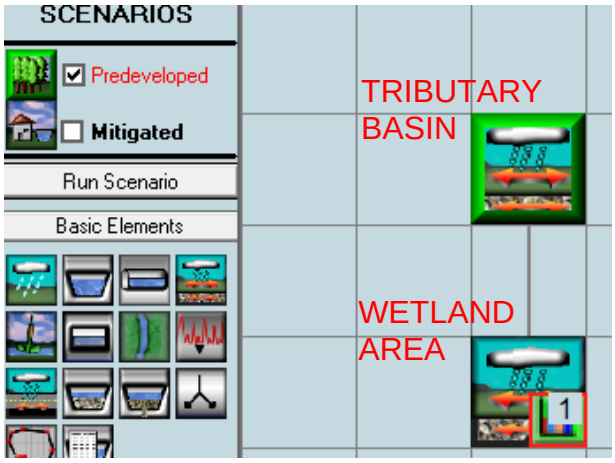
CAMAS BUSINESS CENTER
2200867.10

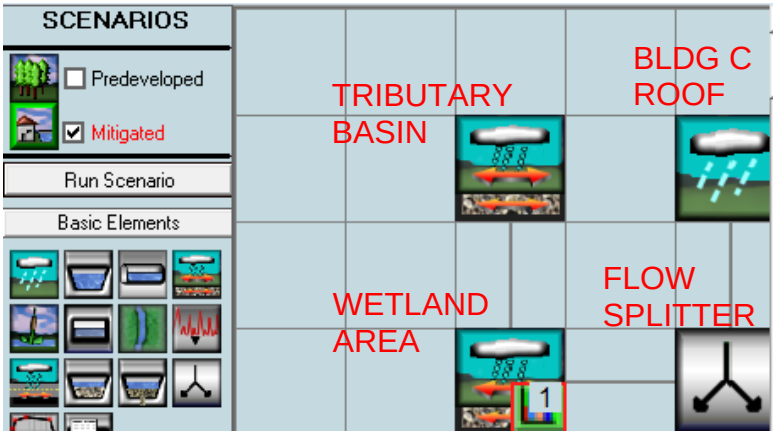
WETLAND PROTECTION CALCULATIONS

EXHIBIT B-5

It is assumed that the tributary area for Wetland D consists primarily of its wetland buffer as delineated by Soundview Consultants. Since the buffer will either be untouched or mitigated in the developed condition, it is assumed that there is no impact to the hydroperiod for this wetland.

WWHM was used to model the predeveloped and developed flows discharging to Wetland A, in accordance with the SWMMWW. The wetland has a large tributary area located outside the project boundary to the east. In the developed condition, this area will be connected to the Wetland A buffer with a ditch or culvert, so the flows will be maintained. The onsite portion of the wetland's tributary basin will be developed, and will not discharge to the wetland. In an attempt to match existing flows as much as possible, runoff from the 2.1-acre Building C roof will discharge directly to the Wetland A buffer. The maximum 100-year flow that is allowed to bypass the project flow control facility is 0.4 CFS. A flow splitter will direct flows less than 0.4 CFS to the wetland buffer. Flows greater than 0.4 CFS will be directed to the detention pond. Because of existing site conditions, it does not appear possible to meet all monthly and daily flow criteria for Method 2. The months of October and November usually receive too high of flows before other months reach the lower flow matching threshold. Sending clean roof runoff from Building C to the wetland after the flow splitter is intended as a maximum feasible effort to match the predeveloped wetland hydroperiod while also meeting flow control standards for the developed site. The WWHM calculations are summarized as follows:





PREDEVELOPED

Element Name	TRIBUTARY BASIN		
Runoff Type	Surface	Interflow	Groundwater
Downstream Connection	Lateral Basin 2	Lateral Basin 2	Lateral Basin 2
Element Type	Lateral Pervious Flow Basin		
Soil (PERLND) Type	SG4, Forest, Mod	Change	
Lateral Area (ac)	23.2		

Element Name	WETLAND BOUNDARY		
Runoff Type	Surface	Interflow	Groundwater
Downstream Connection	0	0	0
Element Type	Lateral Pervious Flow Basin		
Soil (PERLND) Type	SG4, Forest, Flat	Chang	
Lateral Area (ac)	1.3		

DEVELOPED

Element Name	TRIBUTARY BASIN		Designate as B
Runoff Type	Surface	Interflow	Groundwater
Downstream Connection	Lateral Basin 2	Lateral Basin 2	Lateral Basin 2
Element Type	Lateral Pervious Flow Basin		
Soil (PERLND) Type	SG4, Forest, Mod	Change	
Lateral Area (ac)	12.1		

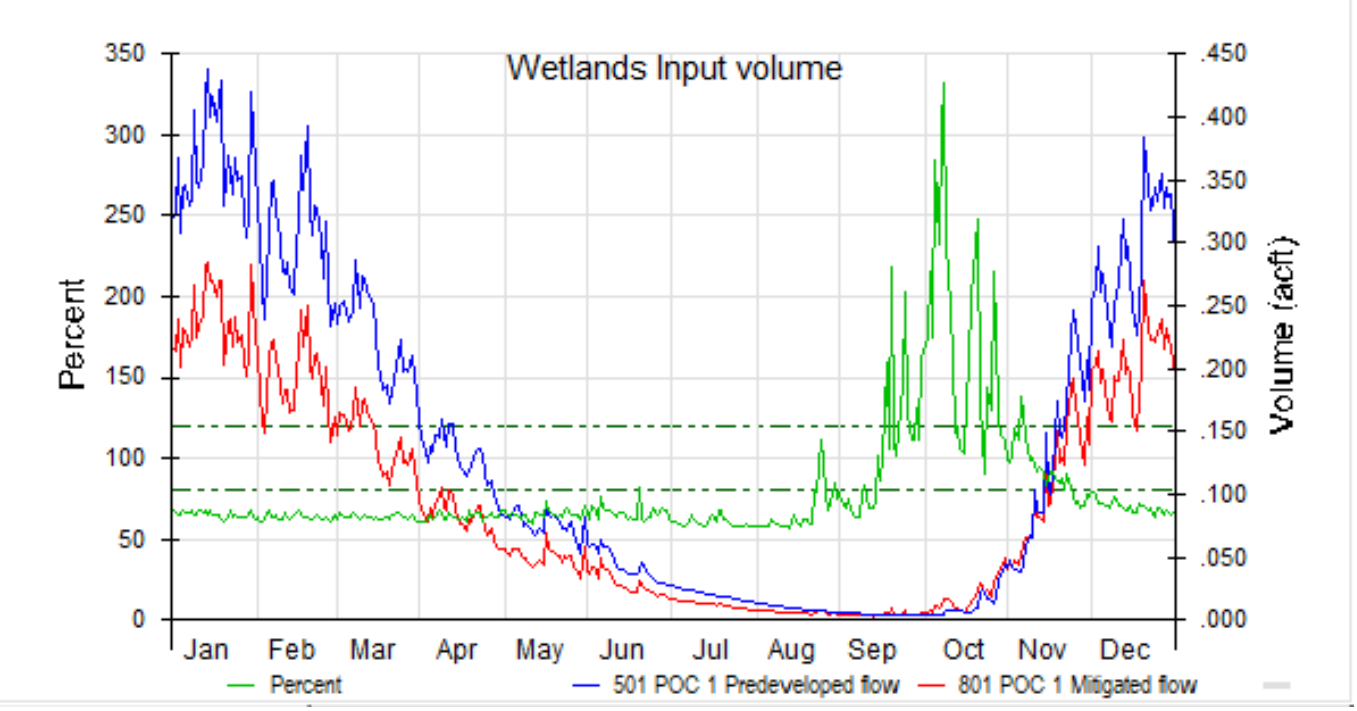
Element Name	WETLAND BOUNDARY		Designate
Runoff Type	Surface	Interflow	Groundwater
Downstream Connection	0	0	0
Element Type	Lateral Pervious Flow Basin		
Soil (PERLND) Type	SG4, Forest, Flat	Char	
Lateral Area (ac)	1.3		

Subbasin Name:	BLDG C ROOF	Designate as Bypass for POC:	
	Surface	Interflow	Groundwater
Flows To :	Flow Splitter 1	Flow Splitter 1	

Area in Basin — Show Only Selected

Available Pervious	Acres	Available Impervious	Acres
		ROADS/FLAT	2.1

AHBL
2215 North 30th Street
Suite 300
Tacoma, WA 98403
253.383.2422 TEL
253.383.2572 FAX



Wetlands Input Volume
Average Annual Volume (acft)
Series 1: 501 POC 1 Predeveloped flow
Series 2: 801 POC 1 Mitigated flow

Month	Series 1	Series 2	Percent	Pass/Fail
Jan	11.1561	7.3026	65.5	Fail
Feb	8.7303	5.5606	63.7	Fail
Mar	6.9579	4.4421	63.8	Fail
Apr	3.8972	2.4826	63.7	Fail
May	2.3682	1.5538	65.6	Fail
Jun	1.3142	0.8758	66.6	Fail
Jul	0.6352	0.3857	60.7	Fail
Aug	0.2929	0.1880	64.2	Fail
Sep	0.1330	0.1303	97.9	Pass
Oct	0.3629	0.5376	148.2	Fail
Nov	3.6264	3.1054	85.6	Pass
Dec	8.9691	6.2563	69.8	Fail

WWHM2012

PROJECT REPORT

General Model Information

Project Name: 20211013_CLARK SG_Detention w flow splitter
Site Name:
Site Address:
City:
Report Date: 10/19/2021
Gage: Lacamas
Data Start: 1948/10/01
Data End: 2008/09/30
Timestep: 15 Minute
Precip Scale: 0.000 (adjusted)
Version Date: 2019/09/13
Version: 4.2.17

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

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
SG4, Forest, Flat	74.46
Pervious Total	74.46
Impervious Land Use	acre
Impervious Total	0
Basin Total	74.46

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

Basin 1

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Forest, Flat	8.38
SG4, Lawn, Flat	13.6
Pervious Total	21.98

Impervious Land Use	acre
ROADS FLAT	26.3
ROOF TOPS FLAT	20
POND	4.13
Impervious Total	50.43
Basin Total	72.41

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 1	Trapezoidal Pond 1	

Basin 2

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
ROOF TOPS FLAT	2.1
Impervious Total	2.1
Basin Total	2.1

Element Flows To:

Surface	Interflow	Groundwater
Flow Splitter 1	Flow Splitter 1	

Routing Elements
Predeveloped Routing

Mitigated Routing

Trapezoidal Pond 1

Bottom Length: 314.01 ft.
Bottom Width: 104.67 ft.
Depth: 6 ft.
Volume at riser head: 4.5281 acre-feet.
Side slope 1: 3 To 1
Side slope 2: 3 To 1
Side slope 3: 3 To 1
Side slope 4: 3 To 1
Discharge Structure
Riser Height: 5 ft.
Riser Diameter: 54 in.
Notch Type: Rectangular
Notch Width: 4.475 ft.
Notch Height: 0.860 ft.
Orifice 1 Diameter: 12.996 inElevation:0 ft.
Element Flows To:
Outlet 1 Outlet 2

Pond Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.754	0.000	0.000	0.000
0.0667	0.758	0.050	1.183	0.000
0.1333	0.762	0.101	1.673	0.000
0.2000	0.766	0.152	2.049	0.000
0.2667	0.770	0.203	2.366	0.000
0.3333	0.773	0.254	2.646	0.000
0.4000	0.777	0.306	2.898	0.000
0.4667	0.781	0.358	3.131	0.000
0.5333	0.785	0.410	3.347	0.000
0.6000	0.789	0.463	3.550	0.000
0.6667	0.793	0.515	3.742	0.000
0.7333	0.797	0.569	3.924	0.000
0.8000	0.801	0.622	4.099	0.000
0.8667	0.805	0.675	4.266	0.000
0.9333	0.809	0.729	4.427	0.000
1.0000	0.813	0.783	4.583	0.000
1.0667	0.817	0.838	4.733	0.000
1.1333	0.821	0.892	4.879	0.000
1.2000	0.824	0.947	5.020	0.000
1.2667	0.828	1.002	5.158	0.000
1.3333	0.832	1.058	5.292	0.000
1.4000	0.836	1.113	5.423	0.000
1.4667	0.840	1.169	5.550	0.000
1.5333	0.844	1.225	5.675	0.000
1.6000	0.848	1.282	5.797	0.000
1.6667	0.853	1.339	5.917	0.000
1.7333	0.857	1.396	6.034	0.000
1.8000	0.861	1.453	6.149	0.000
1.8667	0.865	1.510	6.262	0.000
1.9333	0.869	1.568	6.372	0.000
2.0000	0.873	1.626	6.481	0.000
2.0667	0.877	1.685	6.588	0.000

2.1333	0.881	1.743	6.694	0.000
2.2000	0.885	1.802	6.798	0.000
2.2667	0.889	1.861	6.900	0.000
2.3333	0.893	1.921	7.001	0.000
2.4000	0.897	1.980	7.100	0.000
2.4667	0.901	2.040	7.198	0.000
2.5333	0.906	2.101	7.295	0.000
2.6000	0.910	2.161	7.390	0.000
2.6667	0.914	2.222	7.484	0.000
2.7333	0.918	2.283	7.577	0.000
2.8000	0.922	2.344	7.669	0.000
2.8667	0.926	2.406	7.760	0.000
2.9333	0.930	2.468	7.849	0.000
3.0000	0.935	2.530	7.938	0.000
3.0667	0.939	2.593	8.026	0.000
3.1333	0.943	2.655	8.113	0.000
3.2000	0.947	2.718	8.198	0.000
3.2667	0.951	2.782	8.283	0.000
3.3333	0.956	2.845	8.367	0.000
3.4000	0.960	2.909	8.451	0.000
3.4667	0.964	2.973	8.533	0.000
3.5333	0.968	3.038	8.615	0.000
3.6000	0.972	3.102	8.696	0.000
3.6667	0.977	3.167	8.776	0.000
3.7333	0.981	3.233	8.855	0.000
3.8000	0.985	3.298	8.934	0.000
3.8667	0.989	3.364	9.012	0.000
3.9333	0.994	3.430	9.089	0.000
4.0000	0.998	3.497	9.166	0.000
4.0667	1.002	3.563	9.242	0.000
4.1333	1.007	3.630	9.318	0.000
4.2000	1.011	3.698	9.610	0.000
4.2667	1.015	3.765	10.13	0.000
4.3333	1.020	3.833	10.80	0.000
4.4000	1.024	3.901	11.58	0.000
4.4667	1.028	3.970	12.46	0.000
4.5333	1.033	4.038	13.43	0.000
4.6000	1.037	4.107	14.47	0.000
4.6667	1.041	4.177	15.59	0.000
4.7333	1.046	4.246	16.77	0.000
4.8000	1.050	4.316	18.02	0.000
4.8667	1.054	4.386	19.33	0.000
4.9333	1.059	4.457	20.70	0.000
5.0000	1.063	4.528	22.12	0.000
5.0667	1.068	4.599	23.01	0.000
5.1333	1.072	4.670	24.58	0.000
5.2000	1.076	4.742	26.59	0.000
5.2667	1.081	4.814	28.96	0.000
5.3333	1.085	4.886	31.62	0.000
5.4000	1.090	4.958	34.55	0.000
5.4667	1.094	5.031	37.71	0.000
5.5333	1.099	5.104	41.08	0.000
5.6000	1.103	5.178	44.62	0.000
5.6667	1.107	5.251	48.30	0.000
5.7333	1.112	5.325	52.11	0.000
5.8000	1.116	5.400	56.02	0.000
5.8667	1.121	5.474	60.00	0.000
5.9333	1.125	5.549	64.01	0.000

6.0000	1.130	5.624	68.04	0.000
6.0667	1.134	5.700	72.05	0.000

Flow Splitter 1

Bottom Length: 10.00 ft.
Bottom Length: 10.00 ft.
Depth: 10 ft.
Side slope 1: 0 To 1
Side slope 2: 0 To 1
Side slope 3: 0 To 1
Side slope 4: 0 To 1

Threshold Splitter Hydraulic Table

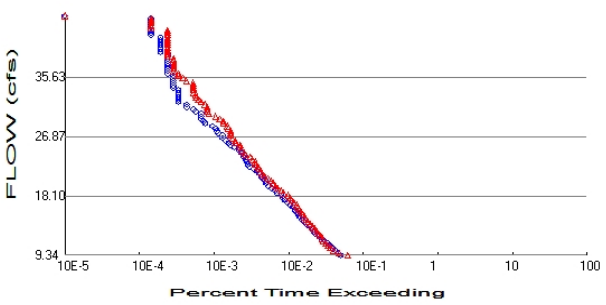
Stage(feet)	Area(ac.)	Volume(ac-ft.)	Primary(cfs)	Secondary(cfs)
0.000	0.002	0.000	0.400	0.000
0.111	0.002	0.000	0.400	0.000
0.222	0.002	0.000	0.400	0.000
0.333	0.002	0.000	0.400	0.000
0.444	0.002	0.001	0.400	0.000
0.555	0.002	0.001	0.400	0.000
0.666	0.002	0.001	0.400	0.000
0.777	0.002	0.001	0.400	0.000
0.888	0.002	0.002	0.400	0.000
1.000	0.002	0.002	0.400	0.000
1.111	0.002	0.002	0.400	0.000
1.222	0.002	0.002	0.400	0.000
1.333	0.002	0.003	0.400	0.000
1.444	0.002	0.003	0.400	0.000
1.555	0.002	0.003	0.400	0.000
1.666	0.002	0.003	0.400	0.000
1.777	0.002	0.004	0.400	0.000
1.888	0.002	0.004	0.400	0.000
2.000	0.002	0.004	0.400	0.000
2.111	0.002	0.004	0.400	0.000
2.222	0.002	0.005	0.400	0.000
2.333	0.002	0.005	0.400	0.000
2.444	0.002	0.005	0.400	0.000
2.555	0.002	0.005	0.400	0.000
2.666	0.002	0.006	0.400	0.000
2.777	0.002	0.006	0.400	0.000
2.888	0.002	0.006	0.400	1000
3.000	0.002	0.006	0.400	1000
3.111	0.002	0.007	0.400	1000
3.222	0.002	0.007	0.400	1000
3.333	0.002	0.007	0.400	1000
3.444	0.002	0.007	0.400	1000
3.555	0.002	0.008	0.400	1000
3.666	0.002	0.008	0.400	1000
3.777	0.002	0.008	0.400	1000
3.888	0.002	0.008	0.400	1000
4.000	0.002	0.009	0.400	1000
4.111	0.002	0.009	0.400	1000
4.222	0.002	0.009	0.400	1000
4.333	0.002	0.009	0.400	1000
4.444	0.002	0.010	0.400	1000
4.555	0.002	0.010	0.400	1000
4.666	0.002	0.010	0.400	1000
4.777	0.002	0.011	0.400	1000
4.888	0.002	0.011	0.400	1000
5.000	0.002	0.011	0.400	1000
5.111	0.002	0.011	0.400	1000

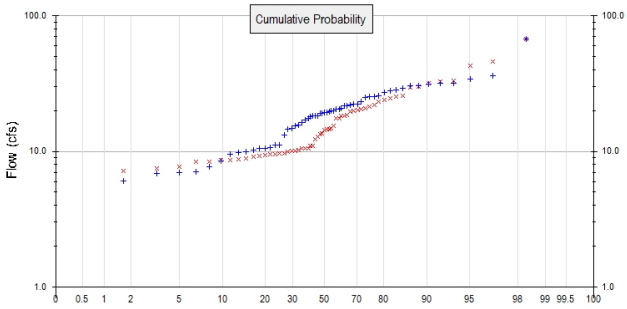
5.222	0.002	0.012	0.400	1000
5.333	0.002	0.012	0.400	1000
5.444	0.002	0.012	0.400	1000
5.555	0.002	0.012	0.400	1000
5.666	0.002	0.013	0.400	1000
5.777	0.002	0.013	0.400	1000
5.888	0.002	0.013	0.400	1000
6.000	0.002	0.013	0.400	1000
6.111	0.002	0.014	0.400	1000
6.222	0.002	0.014	0.400	1000
6.333	0.002	0.014	0.400	1000
6.444	0.002	0.014	0.400	1000
6.555	0.002	0.015	0.400	1000
6.666	0.002	0.015	0.400	1000
6.777	0.002	0.015	0.400	1000
6.888	0.002	0.015	0.400	1000
7.000	0.002	0.016	0.400	1000
7.111	0.002	0.016	0.400	1000
7.222	0.002	0.016	0.400	1000
7.333	0.002	0.016	0.400	1000
7.444	0.002	0.017	0.400	1000
7.555	0.002	0.017	0.400	1000
7.666	0.002	0.017	0.400	1000
7.777	0.002	0.017	0.400	1000
7.888	0.002	0.018	0.400	1000
8.000	0.002	0.018	0.400	1000
8.111	0.002	0.018	0.400	1000
8.222	0.002	0.018	0.400	1000
8.333	0.002	0.019	0.400	1000
8.444	0.002	0.019	0.400	1000
8.555	0.002	0.019	0.400	1000
8.666	0.002	0.019	0.400	1000
8.777	0.002	0.020	0.400	1000
8.888	0.002	0.020	0.400	1000
9.000	0.002	0.020	0.400	1000
9.111	0.002	0.020	0.400	1000
9.222	0.002	0.021	0.400	1000
9.333	0.002	0.021	0.400	1000
9.444	0.002	0.021	0.400	1000
9.555	0.002	0.021	0.400	1000
9.666	0.002	0.022	0.400	1000
9.777	0.002	0.022	0.400	1000
9.888	0.002	0.022	0.400	1000
10.00	0.002	0.023	0.400	1000
10.11	0.002	0.023	0.400	1000

Discharge Structure
Riser Height: 0 ft.
Riser Diameter: 0 in.
Element Flows To:
Outlet 1 Outlet 2
Trapezoidal Pond 1

Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 74.46
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1
Total Pervious Area: 21.98
Total Impervious Area: 52.53

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	**Flow(cfs)**
2 year	18.681146
5 year	29.245431
10 year	35.00982
25 year	40.890677
50 year	44.391847
100 year	47.273752

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	14.261005
5 year	22.742621
10 year	29.778976
25 year	40.497423
50 year	49.949516
100 year	60.782942

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	**Predeveloped**	**Mitigated**
1949	14.587	14.398
1950	19.127	13.294
1951	25.266	10.530
1952	14.811	20.294
1953	19.981	9.566
1954	27.846	10.976
1955	15.503	9.116
1956	30.402	32.492
1957	23.122	14.867
1958	17.153	30.030

1959	9.971	7.692
1960	9.849	12.218
1961	27.379	18.311
1962	18.371	10.959
1963	20.414	10.220
1964	19.483	10.149
1965	17.467	18.536
1966	22.323	14.592
1967	19.451	10.088
1968	25.433	17.504
1969	20.723	42.731
1970	67.738	67.365
1971	10.713	8.350
1972	18.216	9.684
1973	18.142	19.588
1974	28.569	33.387
1975	15.568	9.500
1976	22.378	17.462
1977	0.609	7.503
1978	31.898	25.805
1979	21.590	23.156
1980	13.203	8.684
1981	30.324	24.051
1982	20.408	25.176
1983	33.951	21.279
1984	11.077	8.674
1985	8.538	13.624
1986	10.547	10.493
1987	18.406	15.342
1988	7.107	8.616
1989	7.722	9.314
1990	7.005	8.319
1991	19.868	9.652
1992	21.857	8.896
1993	25.691	29.572
1994	19.642	20.630
1995	16.298	24.733
1996	31.169	45.778
1997	36.096	31.706
1998	29.181	14.547
1999	21.808	19.897
2000	10.560	6.863
2001	6.086	7.190
2002	31.850	12.914
2003	25.039	20.677
2004	6.872	9.975
2005	10.272	9.421
2006	19.216	10.447
2007	9.513	22.046
2008	11.164	18.186

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	67.7383	67.3645
2	36.0959	45.7783
3	33.9509	42.7307
4	31.8977	33.3871

5	31.8498	32.4920
6	31.1687	31.7056
7	30.4023	30.0302
8	30.3236	29.5716
9	29.1813	25.8046
10	28.5688	25.1764
11	27.8457	24.7327
12	27.3787	24.0511
13	25.6912	23.1563
14	25.4326	22.0462
15	25.2658	21.2794
16	25.0390	20.6766
17	23.1223	20.6297
18	22.3775	20.2943
19	22.3230	19.8966
20	21.8566	19.5880
21	21.8081	18.5356
22	21.5896	18.3113
23	20.7233	18.1856
24	20.4139	17.5035
25	20.4083	17.4616
26	19.9811	15.3420
27	19.8677	14.8665
28	19.6419	14.5921
29	19.4826	14.5468
30	19.4513	14.3979
31	19.2158	13.6239
32	19.1265	13.2944
33	18.4055	12.9135
34	18.3714	12.2182
35	18.2164	10.9756
36	18.1421	10.9587
37	17.4672	10.5302
38	17.1525	10.4931
39	16.2977	10.4474
40	15.5683	10.2196
41	15.5034	10.1485
42	14.8106	10.0883
43	14.5874	9.9749
44	13.2028	9.6841
45	11.1635	9.6523
46	11.0769	9.5660
47	10.7132	9.5002
48	10.5601	9.4207
49	10.5471	9.3136
50	10.2721	9.1155
51	9.9713	8.8955
52	9.8491	8.6837
53	9.5129	8.6737
54	8.5385	8.6157
55	7.7218	8.3505
56	7.1068	8.3193
57	7.0050	7.6917
58	6.8720	7.5030
59	6.0857	7.1900
60	0.6093	6.8626

Duration Flows

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
9.3406	1041	1298	124	Fail
9.6946	959	994	103	Fail
10.0487	894	852	95	Pass
10.4027	811	763	94	Pass
10.7568	746	711	95	Pass
11.1108	693	658	94	Pass
11.4649	632	621	98	Pass
11.8189	583	597	102	Fail
12.1730	536	561	104	Fail
12.5271	484	527	108	Fail
12.8811	456	498	109	Fail
13.2352	425	463	108	Fail
13.5892	403	438	108	Fail
13.9433	367	405	110	Fail
14.2973	336	379	112	Fail
14.6514	314	358	114	Fail
15.0054	298	343	115	Fail
15.3595	281	326	116	Fail
15.7135	265	309	116	Fail
16.0676	253	290	114	Fail
16.4216	238	278	116	Fail
16.7757	221	267	120	Fail
17.1297	201	246	122	Fail
17.4838	186	231	124	Fail
17.8379	175	219	125	Fail
18.1919	167	207	123	Fail
18.5460	145	180	124	Fail
18.9000	139	166	119	Fail
19.2541	126	149	118	Fail
19.6081	113	139	123	Fail
19.9622	104	131	125	Fail
20.3162	101	121	119	Fail
20.6703	95	110	115	Fail
21.0243	90	101	112	Fail
21.3784	85	94	110	Pass
21.7324	80	89	111	Fail
22.0865	71	83	116	Fail
22.4405	62	81	130	Fail
22.7946	59	75	127	Fail
23.1487	57	75	131	Fail
23.5027	56	69	123	Fail
23.8568	53	64	120	Fail
24.2108	52	56	107	Pass
24.5649	48	53	110	Pass
24.9189	45	49	108	Pass
25.2730	39	47	120	Fail
25.6270	35	47	134	Fail
25.9811	33	41	124	Fail
26.3351	30	40	133	Fail
26.6892	27	37	137	Fail
27.0432	27	35	129	Fail
27.3973	24	35	145	Fail
27.7513	23	35	152	Fail
28.1054	22	33	150	Fail

28.4594	20	32	160	Fail
28.8135	16	28	175	Fail
29.1676	15	28	186	Fail
29.5216	14	25	178	Fail
29.8757	14	22	157	Fail
30.2297	14	18	128	Fail
30.5838	12	17	141	Fail
30.9378	11	17	154	Fail
31.2919	9	17	188	Fail
31.6459	9	16	177	Fail
32.0000	7	14	200	Fail
32.3540	7	13	185	Fail
32.7081	7	12	171	Fail
33.0621	7	12	171	Fail
33.4162	7	11	157	Fail
33.7702	7	11	157	Fail
34.1243	6	11	183	Fail
34.4784	6	11	183	Fail
34.8324	6	11	183	Fail
35.1865	6	9	150	Fail
35.5405	6	8	133	Fail
35.8946	6	7	116	Fail
36.2486	5	7	140	Fail
36.6027	5	6	120	Fail
36.9567	5	6	120	Fail
37.3108	5	6	120	Fail
37.6648	5	6	120	Fail
38.0189	5	6	120	Fail
38.3729	5	6	120	Fail
38.7270	5	5	100	Pass
39.0810	5	5	100	Pass
39.4351	4	5	125	Fail
39.7892	4	5	125	Fail
40.1432	4	5	125	Fail
40.4973	4	5	125	Fail
40.8513	4	5	125	Fail
41.2054	4	5	125	Fail
41.5594	4	5	125	Fail
41.9135	3	5	166	Fail
42.2675	3	5	166	Fail
42.6216	3	5	166	Fail
42.9756	3	3	100	Pass
43.3297	3	3	100	Pass
43.6837	3	3	100	Pass
44.0378	3	3	100	Pass
44.3918	3	3	100	Pass

The development has an increase in flow durations from 1/2 Predeveloped 2 year flow to the 2 year flow or more than a 10% increase from the 2 year to the 50 year flow.
The development has an increase in flow durations for more than 50% of the flows for the range of the duration analysis.

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
Flow Splitter 1 POC	☐	377.97			☐	3.52			
Flow Splitter 1 POC	☐	377.97			☐	3.52			
Total Volume Infiltrated		755.93	0.00	0.00		3.52	0.00	0%	No Treat. Credit
Compliance with LID Standard 8% of 2-yr to 50% of 2-yr									Duration Analysis Result = Failed

POC 2

POC #2 was not reported because POC must exist in both scenarios and both scenarios must have been run.

Model Default Modifications

Total of 0 changes have been made.

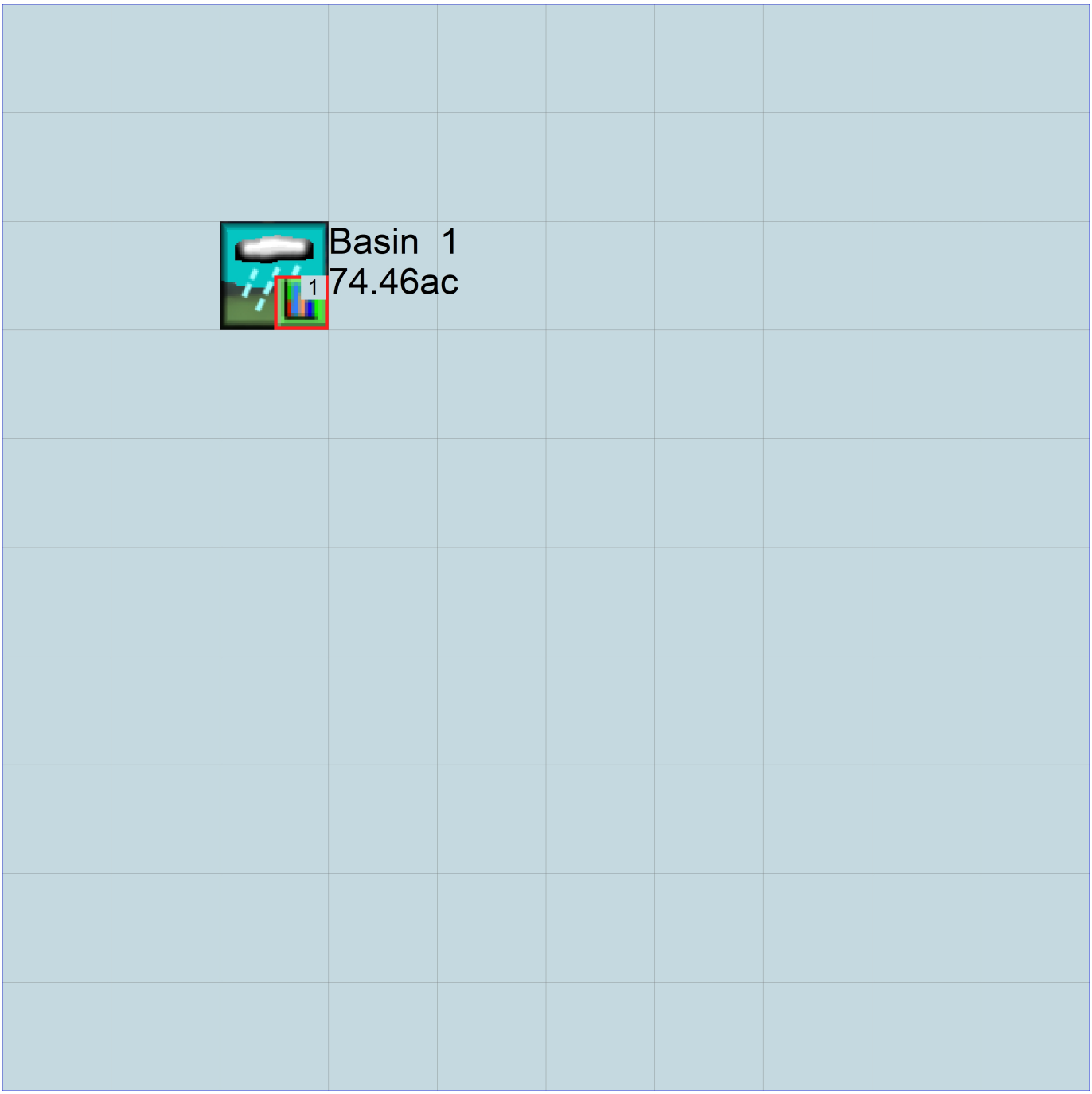
PERLND Changes

No PERLND changes have been made.

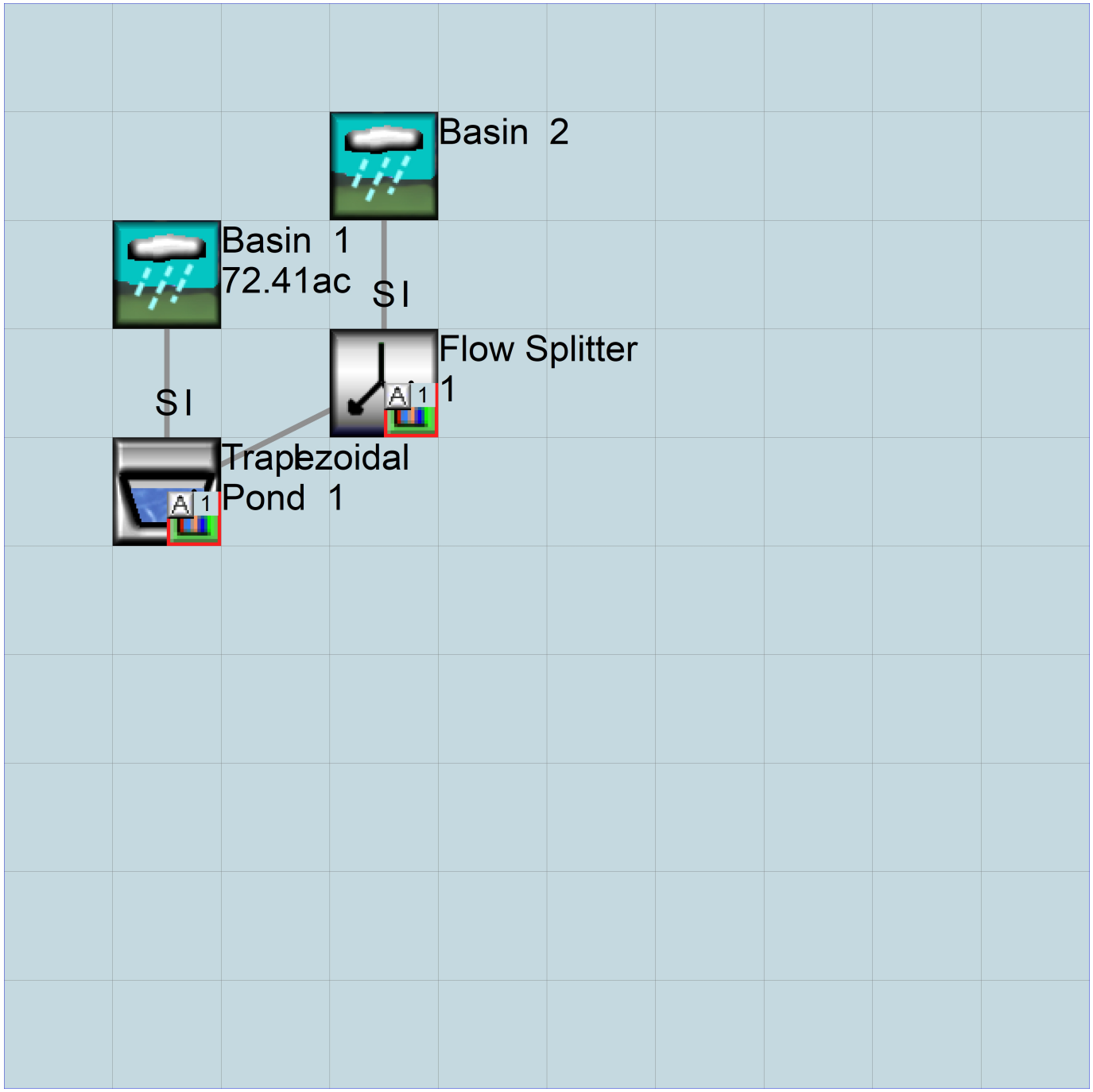
IMPLND Changes

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   20211013_CLARK SG_Detention w flow splitter.wdm
MESSU       25   Pre20211013_CLARK SG_Detention w flow splitter.MES
            27   Pre20211013_CLARK SG_Detention w flow splitter.L61
            28   Pre20211013_CLARK SG_Detention w flow splitter.L62
            30   POC20211013_CLARK SG_Detention w flow splitter1.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        Basin  1                   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#   ***
Basin  1***
PERLND  28                       74.46     COPY   501     12
PERLND  28                       74.46     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   20211013_CLARK SG_Detention w flow splitter.wdm
MESSU       25   Mit20211013_CLARK SG_Detention w flow splitter.MES
            27   Mit20211013_CLARK SG_Detention w flow splitter.L61
            28   Mit20211013_CLARK SG_Detention w flow splitter.L62
            31   POC20211013_CLARK SG_Detention w flow splitter2.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:15
      PERLND      34
      IMPLND       1
      IMPLND       4
      IMPLND      14
      RCHRES       1
      COPY         2
      COPY       502
      COPY       602
      DISPLY       2
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    2        Flow Splitter  1            MAX                    1    2   31    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
    2         1    1
  502         1    1
  602         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
   14      POND                   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
   14         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
   14         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
   14         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
   14            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
   14              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
    4              0         0
   14              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                 <--Area-->     <-Target->   MBLK   ***
<Name>   #                 <-factor->     <Name>   #   Tbl#   ***
Basin  2***
IMPLND   4                        2.1     RCHRES   1      5
Basin  1***
PERLND  34                       13.6     COPY   502     12
PERLND  34                       13.6     COPY   602     12
PERLND  34                       13.6     COPY   502     13
PERLND  34                       13.6     COPY   602     13
IMPLND   1                       26.3     COPY   502     15
IMPLND   1                       26.3     COPY   602     15
IMPLND   4                         20     COPY   502     15
IMPLND   4                         20     COPY   602     15
IMPLND  14                       4.13     COPY   502     15
IMPLND  14                       4.13     COPY   602     15

******Routing******
IMPLND   4                        2.1     COPY   502     15
IMPLND   4                        2.1     COPY   602     15
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   502 OUTPUT MEAN   1 1   48.4        DISPLY   2     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     Flow Splitter  1-007    2    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  5  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      0.01       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
   90    5
     Depth      Area    Volume  Outflow1  Outflow2  Velocity  Travel Time***
      (ft)   (acres) (acre-ft)   (cfs)     (cfs)   (ft/sec)    (Minutes)***
  0.000000  0.002296  0.000000  0.400000  0.000000
  0.111111  0.002296  0.000255  0.400000  0.000000
  0.222222  0.002296  0.000510  0.400000  0.000000
  0.333333  0.002296  0.000765  0.400000  0.000000
  0.444444  0.002296  0.001020  0.400000  0.000000
  0.555556  0.002296  0.001275  0.400000  0.000000
  0.666667  0.002296  0.001530  0.400000  11.00000
  0.777778  0.002296  0.001786  0.400000  21.00000
  0.888889  0.002296  0.002041  0.400000  31.00000
  1.000000  0.002296  0.002296  0.400000  41.00000
  1.111111  0.002296  0.002551  0.400000  51.00000
  1.222222  0.002296  0.002806  0.400000  61.00000
  1.333333  0.002296  0.003061  0.400000  71.00000
  1.444444  0.002296  0.003316  0.400000  81.00000
  1.555556  0.002296  0.003571  0.400000  91.00000
  1.666667  0.002296  0.003826  0.400000  101.0000
  1.777778  0.002296  0.004081  0.400000  111.0000
  1.888889  0.002296  0.004336  0.400000  121.0000
  2.000000  0.002296  0.004591  0.400000  131.0000
  2.111111  0.002296  0.004846  0.400000  141.0000
  2.222222  0.002296  0.005102  0.400000  151.0000
  2.333333  0.002296  0.005357  0.400000  161.0000
  2.444444  0.002296  0.005612  0.400000  171.0000
  2.555556  0.002296  0.005867  0.400000  181.0000
  2.666667  0.002296  0.006122  0.400000  191.0000
  2.777778  0.002296  0.006377  0.400000  201.0000
```

```
  2.888889  0.002296  0.006632  0.400000  211.0000
  3.000000  0.002296  0.006887  0.400000  221.0000
  3.111111  0.002296  0.007142  0.400000  231.0000
  3.222222  0.002296  0.007397  0.400000  241.0000
  3.333333  0.002296  0.007652  0.400000  251.0000
  3.444444  0.002296  0.007907  0.400000  261.0000
  3.555556  0.002296  0.008162  0.400000  271.0000
  3.666667  0.002296  0.008418  0.400000  281.0000
  3.777778  0.002296  0.008673  0.400000  291.0000
  3.888889  0.002296  0.008928  0.400000  301.0000
  4.000000  0.002296  0.009183  0.400000  311.0000
  4.111111  0.002296  0.009438  0.400000  321.0000
  4.222222  0.002296  0.009693  0.400000  331.0000
  4.333333  0.002296  0.009948  0.400000  341.0000
  4.444444  0.002296  0.010203  0.400000  351.0000
  4.555556  0.002296  0.010458  0.400000  361.0000
  4.666667  0.002296  0.010713  0.400000  371.0000
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  4.888889  0.002296  0.011223  0.400000  391.0000
  5.000000  0.002296  0.011478  0.400000  401.0000
  5.111111  0.002296  0.011733  0.400000  411.0000
  5.222222  0.002296  0.011989  0.400000  421.0000
  5.333333  0.002296  0.012244  0.400000  431.0000
  5.444444  0.002296  0.012499  0.400000  441.0000
  5.555556  0.002296  0.012754  0.400000  451.0000
  5.666667  0.002296  0.013009  0.400000  461.0000
  5.777778  0.002296  0.013264  0.400000  471.0000
  5.888889  0.002296  0.013519  0.400000  481.0000
  6.000000  0.002296  0.013774  0.400000  491.0000
  6.111111  0.002296  0.014029  0.400000  501.0000
  6.222222  0.002296  0.014284  0.400000  511.0000
  6.333333  0.002296  0.014539  0.400000  521.0000
  6.444444  0.002296  0.014794  0.400000  531.0000
  6.555556  0.002296  0.015049  0.400000  541.0000
  6.666667  0.002296  0.015305  0.400000  551.0000
  6.777778  0.002296  0.015560  0.400000  561.0000
  6.888889  0.002296  0.015815  0.400000  571.0000
  7.000000  0.002296  0.016070  0.400000  581.0000
  7.111111  0.002296  0.016325  0.400000  591.0000
  7.222222  0.002296  0.016580  0.400000  601.0000
  7.333333  0.002296  0.016835  0.400000  611.0000
  7.444444  0.002296  0.017090  0.400000  621.0000
  7.555556  0.002296  0.017345  0.400000  631.0000
  7.666667  0.002296  0.017600  0.400000  641.0000
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  7.888889  0.002296  0.018110  0.400000  661.0000
  8.000000  0.002296  0.018365  0.400000  671.0000
  8.111111  0.002296  0.018621  0.400000  681.0000
  8.222222  0.002296  0.018876  0.400000  691.0000
  8.333333  0.002296  0.019131  0.400000  701.0000
  8.444444  0.002296  0.019386  0.400000  711.0000
  8.555556  0.002296  0.019641  0.400000  721.0000
  8.666667  0.002296  0.019896  0.400000  731.0000
  8.777778  0.002296  0.020151  0.400000  741.0000
  8.888889  0.002296  0.020406  0.400000  751.0000
  9.000000  0.002296  0.020661  0.400000  761.0000
  9.111111  0.002296  0.020916  0.400000  771.0000
  9.222222  0.002296  0.021171  0.400000  781.0000
  9.333333  0.002296  0.021426  0.400000  791.0000
  9.444444  0.002296  0.021681  0.400000  801.0000
  9.555556  0.002296  0.021937  0.400000  811.0000
  9.666667  0.002296  0.022192  0.400000  821.0000
  9.777778  0.002296  0.022447  0.400000  831.0000
  9.888889  0.002296  0.022702  0.400000  841.0000
  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***
COPY     2 OUTPUT MEAN   1 1     48.4      WDM    702 FLOW     ENGL      REPL
COPY   502 OUTPUT MEAN   1 1     48.4      WDM    802 FLOW     ENGL      REPL
COPY   602 OUTPUT MEAN   1 1     48.4      WDM    902 FLOW     ENGL      REPL
RCHRES   1 HYDR   RO     1 1        1      WDM   1002 FLOW     ENGL      REPL
RCHRES   1 HYDR   O      1 1        1      WDM   1003 FLOW     ENGL      REPL
RCHRES   1 HYDR   O      2 1        1      WDM   1004 FLOW     ENGL      REPL
RCHRES   1 HYDR   STAGE  1 1        1      WDM   1005 STAG     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>             <Name> # #<-factor->     <Name>                <Name> # #***
  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


END MASS-LINK

END RUN
```

Mitigated HSPF Message File

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Clear Creek Solutions, Inc.
6200 Capitol Blvd. Ste F
Olympia, WA. 98501
Toll Free 1(866)943-0304
Local (360)943-0304

www.clearcreeksolutions.com

Appendix C

Draft Geotechnical Report
Terra Associates, Inc.
July 12, 2021

Wetland and Fish and Wildlife Habitat Assessment Report
Soundview Consultants
October 2021

DRAFT

GEOTECHNICAL REPORT

Camas Business Center
4707 and 4723 – Northwest Lake Road
Camas, Washington

Project No. T-8553

Terra Associates, Inc.

Prepared for:

Panattoni Development Company
Tacoma, Washington

July 12, 2021

TERRA ASSOCIATES, Inc.
Consultants in Geotechnical Engineering, Geology
and
Environmental Earth Sciences

July 12, 2021
Project No. T-8553

Mr. Bjorn Brynestad
Panattoni Development Company
1821 Dock Street, Suite 100
Tacoma, Washington 98402

DRAFT

Subject: Geotechnical Report
Camas Business Center
4707 and 4723 – Northwest Lake Road
Camas, Washington

Dear Mr. Brynestad:

As requested, we have conducted a geotechnical engineering study for the subject project. The attached report presents our findings and recommendations for the geotechnical aspects of project design and construction.

Our field exploration indicates the site is generally underlain by 1 to 11 inches of organic topsoil overlying medium stiff to very stiff silts with varying amounts of sand and gravel to the termination of the test pits. Test pits in the central and south-central portions of the site terminated in deposits of medium dense sands with varying silt and gravel contents. Additionally, Columbia River Basalt was encountered in the north and north-central portions of the site within the upper three to nine feet. Groundwater was observed in 28 of the 80 test pits at depths of 2.5 to 12 feet.

In our opinion, soil and groundwater conditions at the site will be suitable for support of the development as planned, provided recommendations contained herein are incorporated into project design and construction specifications.

We trust the information provided in the attached report is sufficient for your current needs. If you have any questions or need additional information, please call.

Sincerely yours,
TERRA ASSOCIATES, INC.

Michael J. Xenos, E.I.T.
Staff Engineer

DRAFT

Carolyn S. Decker, P.E.
Project Engineer

12220 113th Avenue NE, Ste. 130, Kirkland, Washington 98034
Phone (425) 821-7777 • Fax (425) 821-4334

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Geotechnical Report
Camas Business Center
4707 and 4723 – Northwest Lake Road
Camas, Washington

1.0 PROJECT DESCRIPTION

The project consists of developing the site with six industrial buildings with dock-high loading, along with a stormwater pond, associated access, parking, and utility improvements. Based on preliminary site plans prepared by Synthesis PLLC dated February 23, 2021, final floor areas are expected to range from approximately 35,775 square feet to 301,500 square feet. The preliminary site plans also show a stormwater pond in the northwestern portion of the site. Grading plans were not available at the time of this report. Based on the existing site topography we expect cuts and fills of up to approximately 10 feet will be required to achieve final pad elevations across the building area.

We anticipate the building will be constructed using precast reinforced concrete tilt-up perimeter wall panels with interior isolated columns supporting a steel or wood-truss roof system. We expect structural loads will be light, about 100 to 150 kips for isolated columns and 4 to 6 kips per foot for continuous perimeter bearing walls. Maximum product loading on the floors is not expected to exceed 350 pounds per square foot (psf).

The recommendations contained in the following sections of this report are based on the above design features. If actual features vary or changes are made, we should review them in order to modify our recommendations, as required. We should review the final design drawings and specifications to verify our recommendations have been properly interpreted and incorporated into project design and construction.

2.0 SCOPE OF WORK

Our work was completed in accordance with our authorized proposal dated January 21, 2021. Accordingly, on May 24, 2021, through May 26, 2021, we observed soil and groundwater conditions at 80 test pits excavated to maximum depths of 6 to 12 feet below current site grades. Using the information obtained from this subsurface exploration, we performed analyses to develop geotechnical recommendations for development at the site.

Specifically, this report addresses the following:

- Soil and groundwater conditions.
- Seismic design parameters per the current International Building Code (IBC).
- Geologic Hazards per the City of Camas Municipal Code.
- Site preparation and grading.
- Building preload/surcharge program.
- Excavations.

- Foundations including foundation alternatives.
- Slab-on-grade floors.
- Stormwater facilities.
- Infiltration feasibility.
- Drainage.
- Utilities.
- Pavements.

Recommendations outlined in this report regarding drainage are associated with soil strength, design earth pressures, erosion, and stability. Design and performance issues with respect to moisture as it relates to the structure environment are beyond Terra Associates, Inc.'s purview. A building envelope specialist or contractor should be consulted to address these issues, as needed.

3.0 SITE CONDITIONS

3.1 Surface

The site consists of 2 tax parcels totaling approximately 74 acres located at 4707 and 4723 NW Lake Road in Camas, Washington. The approximate site location is shown on Figure 1.

The site is currently occupied by 3 structures in the south-central portion of the site along with associated access and landscaping. The remainder of the site is vacant and predominately covered with brush and weeds, with the exception of the northwestern portion, which is covered with mature trees. Site topography in the southern portion of the site generally consists of a slope that descends from the east to the west with an overall relief of approximately 42 feet. At the approximate midpoint of the site from north to south, there is a moderate-to-steep slope that descends from the south to the north with an overall relief of approximately 48 feet. The grade then transitions to a slight slope, that continues to descend to the north with an overall relief of approximately 20 feet.

3.2 Soils

In general, the soil conditions at the site consist of approximately 1 to 11 inches of organic topsoil overlying 3 to 12 feet of medium stiff to very stiff silt with varying amounts of sand and gravel to the termination of the test pits. There were instances, most notably in the central and south-central portions of the site, where the test pits terminated in deposits of medium dense sand with silt and silty sand (with varying gravel contents), and similar deposits were occasionally exposed in the very north and southwest portions of the site. Additionally, Columbia River Basalt was encountered in the north and north-central portions of the site within the upper 3 to 9 feet. Test Pits TP-21 and TP-35, as well as several test pits located in the southwest of the site, also contained one to 6 feet of gravel with silt and sand to silty gravel with sand material underlying the upper silts. We observed, approximately 3 feet of fill material in Test Pit TP-78 with occasional organic and construction debris.

The *Geologic Map of the Camas Quadrangle, Clark County, Washington*, by R.C. Evarts and J.E. O'Connor (2008) maps the site as Quarternary-tertiary Sedimentary Conglomerate (Qt_c). This map unit is consistent with the underlying basalt bedrock observed in our field explorations. However, the upper silts, sands, and gravels observed in the test pits are more consistent with Sand and Silt Facies (Qf_s), and Gravel Facies (Qfg), which are mapped roughly 1,000 feet to the southwest and 2,000 feet to the northeast, respectively.

The preceding discussion is intended to be a brief review of the soil conditions observed at the site. More detailed descriptions are presented on the Test Pit Logs attached in Appendix A. The approximate location of the test pits is shown on attached Figure 2.

3.3 Groundwater

We observed minor to moderate groundwater seepage in 8 of the 80 test pits excavated. Groundwater was primarily observed in the test pits north of the wetland area, as well as in test pits located in the central, south-central, and southwest portions of the site at depths ranging from approximately 2.5 to 12 feet below existing grades. The observed seepage was typically observed within sandy or gravelly deposits, or perched within sandy seams or around pockets of gravel contained within the silt deposits.

Our observations in the test pits indicate observed groundwater levels correspond with the local groundwater table associated with Lacamas Creek located approximately 2,400 feet to the northeast. Groundwater seepage depth observations were made during the late spring, so groundwater is expected to be between seasonal high and seasonal low levels.

Mottled soils were observed throughout many of the test pits which indicated the presence of perched groundwater throughout much of the site. The occurrence of shallow perched groundwater is typical for sites underlain by fine-grained soils or relatively shallow bedrock. Fluctuations in the static groundwater level will occur seasonally. Typically, groundwater will reach maximum levels during the wet winter months. Based on our experience with groundwater conditions in the area, we would expect the seasonal high groundwater level to reach up to existing site grades.

3.4 Geologic Hazards

Chapter 16.59.010 of the City of Camas Municipal Code (CMC) defines geologic hazards as "…areas susceptible to erosion hazard, landslide hazard, seismic hazard, mine hazard, and other geologic events." We have evaluated the site for these hazards in the following sections below.

3.4.1 Erosion Hazard Areas

Chapter 16.59.020.A of the CMC defines erosion hazard areas as "…areas where there is not a mapped or designated landslide hazard, but where there are steep slopes equal to or greater than forty percent slope. Steep slopes which are less than ten feet in vertical height and not part of a larger steep slope system, and steep slopes created through previous legal grading activity are not regulated steep slope hazard areas."

The majority of the soils observed on the site are classified as Hesson clay loam, 0 to 8 percent slopes, in the south and northeast, and Powel silt loam, 0 to 8 percent slopes in the north by the United States Department of Agriculture Natural Resources Conservation Service (NRCS). Additionally, pockets of soils classified as Cove silty clay loam, thin solum, 0 to 3 percent slopes are located throughout the site. Over the site with existing slope gradients, these soils will have a slight to moderate potential for erosion when exposed.

The soils classified as Hesson clay loam, 8 to 20 percent slopes located at the approximate north-south midpoint along the moderate-to-steep slope will have a severe potential for erosion when exposed. Therefore, it is our opinion that an erosion hazard exists along the moderate-to-steep slope in the approximate center of the site.

Implementation of temporary and permanent Best Management Practices (BMPs) for preventing and controlling erosion will be required and will mitigate the erosion hazard. At a minimum, we recommend implementing the following erosion and sediment control BMPs prior to, during, and immediately following construction activities at the site.

Prevention

- Limit site clearing and grading activities to the relatively dry months (typically May through September).
- Limit disturbance to areas where construction is imminent.
- Locate temporary stockpiles of excavated soils no closer than ten feet from the crest of the slope.
- Provide temporary cover for cut slopes and soil stockpiles during periods of inactivity. Temporary cover may consist of durable plastic sheeting is securely anchored to the ground surface or straw mulch.
- Establish permanent cover by seeding, in conjunction with a mulch cover or appropriate hydroseeding, over exposed areas that will not be disturbed for a period of 30 days or more.

Containment

- Install a silt fence along site margins and downslope of areas that will be disturbed. The silt fence should be in place before clearing and grading is initiated.
- Intercept surface water flow and route the flow away from the slope to a stabilized discharge point. Surface water must not discharge at the top or onto the face of the steep slope.
- Provide onsite sediment retention for collected runoff.

The contractor should perform a daily review and maintenance of all erosion and sedimentation control measures at the site.

3.4.2 Landslide Hazard Areas

Chapter 16.59.020.B of the CMC defines landslide hazard areas as "…areas potentially subject to landslides based on a combination of geologic, topographic, and hydrologic factors. They include areas susceptible because of any combination of bedrock, soil, slope (gradient), slope aspect, structure, hydrology, or other factors. Examples of these may include, but are not limited to the following:

1. Areas of pervious slope failures including areas of unstable old or recent landslides;
2. Areas with all three of the following characteristics:
    a. Slopes steeper than 15 percent,
    b. Hillsides intersecting geologic contacts with permeable sediments overlying a low permeability sediment or bedrock, and
    c. Any springs or ground water seepage;
3. Slopes that are parallel or sub-parallel to planes of weakness, such as bedding planes, joint systems and fault planes in subsurface materials;
4. Areas mapped by:
    a. Washington Department of Natural Resources Open File Report: Slope Stability of Clark County, 1975, as having potential instability, historical or active landslides, or as older landslide debris, and
    b. The Washington Department of Natural Resources Open File Report: Geologic Map of the Vancouver Quadrangle, Washington and Oregon, 1987, as landslides;
5. Slopes greater than eighty percent, subject to rock fall during earthquake shaking;
6. Areas potentially unstable as a result of rapid stream incision, stream bank erosion, and stream undercutting the toe of the slope;
7. Areas located in a canyon or on an active alluvial fan, presently or potentially subject to inundation by debris flows, debris torrents, or catastrophic flooding."

The onsite slopes do not match any of the above descriptions nor is the site located on the Washington Department of Natural Resources' Geologic Landslide Hazard Map. Therefore, in our opinion, the site does not present a landslide hazard as defined by the CMC in our opinion.

3.4.3 Seismic Hazard Areas

Chapter 16.59.020.C of the CMC defines seismic hazard areas as "… areas that are subject to severe risk of damage as a result of earthquake-induced soil liquefaction, ground shaking amplification, slope failure, settlement, or surface faulting. Relative seismic hazard is mapped on the NEHRP site class map of Clark County, published by the Washington Department of Natural Resources."

Liquefaction is a phenomenon where there is a reduction or complete loss of soil strength due to an increase in water pressure induced by vibrations. Liquefaction mainly affects geologically recent deposits of fine-grained sands underlying the groundwater table. Soils of this nature derive their strength from intergranular friction. The generated water pressure or pore pressure essentially separates the soil grains and eliminates this intergranular friction; thus, eliminating the soil's strength.

The NEHRP Site Class Map of Clark County, published by the Washington State DNR and dated September 2004, classifies the site as Seismic Site Class B to C, which typically present negligible risk for soil liquefaction. Additionally, based on the soil and groundwater conditions we observed, the risk for soil liquefaction occurring at the site is negligible due to the relative density of the soils and amount of cohesive material that would be sufficient to resist the cyclical loading of a seismic event. Columbia River Basalt likely underlies most of the site as evidenced by the north and north-central test pits. Therefore, in our opinion, the site would not be considered a seismic hazard area as defined by the CMC.

3.5 Seismic Site Class

Based on soil conditions observed in the test pits and our knowledge of the area geology, per Chapter 16 of the 2018 International Building Code (IBC), Site Class "C" should be used in structural design.

4.0 DISCUSSION AND RECOMMENDATIONS

4.1 General

Based on our study, development of the site as proposed is feasible from a geotechnical engineering standpoint. The primary geotechnical concern at the site is the presence of soil strata susceptible to consolidation under the planned building loads. The compressible soils consist of layers of medium stiff to very stiff silts that vary in thickness across the site. These soils are compressible and, if not mitigated, will likely experience unacceptable levels of differential settlement under proposed project loads.

Given the depth to the compressible silt layers, in our opinion, the potential post-construction building settlements can be mitigated by implementing a preload/surcharge program. This would entail raising site grades to finish floor elevation for a period of time to induce settlements prior to application of building loads. Building construction can begin after completion of the preload/surcharge program. The building can be supported on conventional spread footings bearing on the preload structural fill. Floor slabs can be similarly supported on the preload structural fill and pavements can be supported on structural fill or compacted native soils.

If building schedules do not allow for a surcharge program to take place, the building can be supported on ground improved by installing vibrated stone columns, which would preclude the need for a fill surcharge program.

The upper silt soils and lower silty sand to silty gravel soils observed at the site contain a significant amount of fines and will be difficult to compact as structural fill when too wet. The ability to use native soil soils from site excavations as structural fill will depend on its moisture content and the prevailing weather conditions at the time of construction. If grading activities will take place during winter, the owner should be prepared to import clean granular material for use as structural fill and backfill. Alternatively, stabilizing the moisture in the native and existing fill soils with cement or lime can be considered.

Detailed recommendations regarding these issues and other geotechnical design considerations are provided in the following sections. These recommendations should be incorporated into the final design drawings and construction specifications.

4.2 Site Preparation and Grading

To prepare the site for construction, all vegetation, organic surface soils, and other deleterious material should be stripped and removed from the site. Surface stripping depths of 1 to 11 inches should be expected to remove the organic surface soils and vegetation. In the developed portions of the site, demolition of existing structures should include removal of existing foundations and buried asphalt, and abandonment of underground septic systems and other buried utilities. Abandoned utility pipes that fall outside of new building areas can be left in place, provided they are sealed to prevent intrusion of groundwater seepage and soil. Organic topsoil will not be suitable for use as structural fill, but may be used for limited depths in nonstructural areas.

Once clearing and stripping operations are complete, cut and fill operations can be initiated to establish desired building grades. Prior to placing fill, all exposed bearing surfaces should be observed by a representative of Terra Associates, Inc. to verify soil conditions are as expected and suitable for support of new fill or building elements. Our representative may request a proofroll using heavy rubber-tired equipment to determine if any isolated soft and yielding areas are present. If excessively yielding areas are observed and they cannot be stabilized in place by compaction, the affected soils should be excavated and removed to firm bearing and grade restored with new structural fill. If the depth of excavation to remove unstable soils is excessive, the use of geotextile fabrics such as Mirafi 500X or an equivalent fabric can be used in conjunction with clean granular structural fill. Our experience has shown, in general, a minimum of 18 inches of a clean, granular structural fill place and compacted over the geotextile fabric should establish a stable bearing surface.

Our study indicates a majority of the native soils contain a sufficient percentage of fines (silt- and clay-sized particles) that will make them difficult to compact as structural fill if they are too wet or too dry. Accordingly, the ability to use these upper native soils from site excavations as structural fill will depend on their moisture content and the prevailing weather conditions when site grading activities take place. Soils that are too wet to properly compact could be dried by aeration during dry weather conditions or mixed with an additive such as cement or lime to stabilize the soil and facilitate compaction. If an additive is used, additional Best Management Practices (BMPs) for its use will need to be incorporated into the Temporary Erosion and Sedimentation Control plan (TESC) for the project.

Additionally, the bedrock soils will be difficult to reuse as structural fill. If bedrock is used, it will need to be crushed into pieces that are smaller than 6 inches in diameter and then compacted in 6 inch lifts.

If grading activities are planned during the wet winter months, or if they are initiated during the summer and extend into fall and winter, the contractor should be prepared to import wet-weather structural fill. For this purpose, we recommend importing a granular soil that meets the following grading requirements:

U.S. Sieve Size	Percent Passing
6 inches	100
No. 4	75 maximum
No. 200	5 maximum*

*Based on the 3/4-inch fraction.

Prior to use, Terra Associates, Inc. should examine and test all materials to be imported to the site for use as structural fill.

Structural fill should be placed in uniform loose layers not exceeding 6 or 12 inches and compacted to a minimum of 95 percent of the soil's maximum dry density, as determined by American Society for Testing and Materials (ASTM) Test Designation D-698 (Standard Proctor). The moisture content of the soil at the time of compaction should be within two percent of its optimum, as determined by this ASTM standard. In nonstructural areas, the degree of compaction can be reduced to 90 percent.

4.3 Preload/Surcharge

We recommend preloading the building area to limit building and floor slab settlements to tolerable levels. For this procedure, we recommend placing structural fill in the building areas to the design floor elevation, and delaying building construction until settlement under this fill load has occurred. The preload fill should extend a minimum of two feet beyond the building perimeter. A minimum fill depth of five feet is recommended.

Total settlement under the preload/surcharge fill is estimated in the range of 8 to 13 inches. These settlements are expected to occur in about 4 to 6 weeks following full application of the building fill.

To verify the amount of settlement and the time rate of movement, the preload program should be monitored by installing settlement markers. The settlement markers should be installed on the existing grade prior to placing any building or preload fills. Once installed, elevations of both the fill height and marker should be taken daily until the full height of the preload is in place. Once fully preloaded, readings should continue weekly until the anticipated settlements have occurred. A typical settlement marker detail is provided as Figure 3.

It is critical that the grading contractor recognize the importance of the settlement marker installations. All efforts must be made to protect the markers from damage during fill placement. It is difficult, if not impossible, to evaluate the progress of the preload program if the markers are damaged or destroyed by construction equipment. As a result, it may be necessary to install new markers and extend the surcharging time period in order to ensure that settlements have ceased and building construction can begin.

4.4 Excavations

All excavations at the site associated with confined spaces, such as those for utility construction, must be completed in accordance with local, state, or federal requirements. Based on current Washington Industrial Safety and Health Act (WISHA) regulations, the lower medium dense sands and medium dense to dense gravels found on the project site would be classified as Type C soils. The upper, medium stiff to very stiff silts would be classified as Type B soil.

Accordingly, temporary excavations in Type C soils should have their slopes laid back at an inclination of 1.5:1 (Horizontal:Vertical) or flatter, from the toe to the crest of the slope. Side slopes in Type B soils can be laid back at a slope inclination of 1:1 or flatter. If there is insufficient space to complete the excavations in this manner, or if excavations greater than 20 feet in depth are planned, temporary shoring to support the excavations may be required. Properly designed and installed shoring trench boxes can be used to support utility trench excavations where required.

Based on our study, groundwater should be anticipated within excavations extending below depths of about 7 to 12 feet below native surface grades. Excavations extending below this depth may encounter groundwater with volumes and flow rates sufficient to require some level of dewatering. Shallow excavations that do not extend more than two to three feet below the groundwater table can likely be dewatered by conventional sump-pumping procedures along with a system of collection trenches. Deeper excavations will require dewatering by well points or isolated deep-pump wells. The utility subcontractor should be prepared to implement excavation dewatering by well point or deep-pump wells, as needed. This will be an especially critical consideration for any deep excavations such for lift stations and sanitary sewer tie-ins.

This information is provided solely for the benefit of the owner and other design consultants and should not be construed to imply that Terra Associates, Inc. assumes responsibility for job site safety. It is understood that job site safety is the sole responsibility of the project contractor.

4.5 Foundations

Following the completion of the preload program. The building may be supported on conventional spread footing foundations bearing on subgrade prepared as recommended in Section 4.2 of this report. Perimeter foundations exposed to the weather should bear at a minimum depth of 1.5 feet below final exterior grades for frost protection. Interior foundations can be constructed at any convenient depth below the floor slab.

Building foundations should bear on a minimum of two feet of structural fill that replaces the native silt soils.

We recommend designing foundations bearing on two feet of structural fill for a net allowable bearing capacity of 2,500 psf. For short-term loads, such as wind and seismic, a one-third increase in this allowable capacity can be used. Following successful completion of the preload/surcharge program, with structural loading as anticipated and this bearing stress applied, estimated total foundation settlements of about one-inch and differential settlement of ½-inch should be expected.

For designing foundations to resist lateral loads, a base friction coefficient of 0.35 can be used. Passive earth pressures acting on the sides of the footings can also be considered. We recommend calculating this lateral resistance using an equivalent fluid weight of 300 pounds per cubic foot (pcf). We recommend not including the upper 12 inches of soil in this computation because it can be affected by weather or disturbed by future grading activity. This value assumes the foundations will be backfilled with structural fill as described in Section 4.2 of this report. The values recommended include a safety factor of 1.5.

Ground Improvement

As an alternative to the surcharging the building foundations, the buildings can be supported on improved ground using vibrated stone columns. This method creates highly densified columns of graded aggregate that would extend through the upper medium stiff soils into the underlying medium dense to dense sands and gravels. Due to the methods used to construct the columns, some improvement of the adjacent soils is also realized. Moreover, these methods can provide liquefaction mitigation by providing drainage paths and reduced pore pressures during ground shaking, and by constructing stiff, non-liquefiable inclusions in the soils. Once constructed, conventional spread footing foundations can be designed to bear immediately above the stone columns.

These ground improvement techniques are typically completed on a design/build approach with both design and construction completed by a specialty contractor. We can assist in contracting and selecting the specialty contractor, if desired.

4.6 Floor Slabs

Slab-on-grade floors may be supported on subgrade prepared as recommended in Section 4.2 of this report. Immediately below the floor slabs, we recommend placing a four-inch-thick capillary break layer of clean, free-draining, coarse sand or fine gravel that has less than five percent passing the No. 200 sieve. This material will reduce the potential for upward capillary movement of water through the underlying soil and subsequent wetting of the floor slabs.

The capillary break layer will not prevent moisture intrusion through the slab caused by water vapor transmission. Where moisture by vapor transmission is undesirable, such as covered floor areas, a common practice is to place a durable plastic membrane on the capillary break layer, then cover the membrane with a layer of clean sand or fine gravel to protect it from damage during construction and aid in uniform curing of the concrete slab. It should be noted, if the sand or gravel layer overlying the membrane is saturated prior to pouring the slab, it will be ineffective in assisting in uniform curing of the slab and can actually serve as a water supply for moisture transmission through the slab and affecting floor coverings. Therefore, in our opinion, covering the membrane with a layer of sand or gravel should be avoided if floor slab construction occurs during the wet winter months and the layer cannot be effectively drained. We recommend floor designers and contractors refer to the current American Concrete Institute (ACI) Manual of Concrete Practice for further information regarding vapor barrier installation below slab-on-grade floors.

With the subgrade prepared as recommended, design of the floor slab for storage rack loading and lift truck vehicle traffic, a subgrade modulus of 100 pounds per square inch per inch of deflection (pci) can be used.

4.7 Stormwater Facilities

No stormwater plans were available at the time of this report.

Detention Vault

If onsite detention will be provided by a buried vault, we expect that the bottom of the excavation would likely expose native, medium dense sands with silt, medium dense to dense silty gravels with sand, stiff to very stiff silts, and/or hard, moderately weathered Columbia River Basalt. Vault foundations supported by these native soils may be designed for an allowable bearing capacity of 4,000 psf provided that the foundation subgrade is at least 8 feet below current site grades. For short-term loads, such as seismic, a one-third increase in this allowable capacity can be used. Wet subgrade conditions that are easily disturbed by construction traffic will be exposed at the bottom of the vault excavation. To maintain a stable foundation subgrade, the native soils should be overexcavated a minimum depth of 12 inches below foundation grade and restored with clean 1 ¼-inch to 2-inch crushed rock.

Vault walls should be designed as below-grade retaining walls. The magnitude of earth pressure development on engineered retaining walls will partly depend on the quality of the wall backfill. We recommend placing and compacting wall backfill as structural fill as described in Section 4.2 of this report. To prevent overstressing the walls during backfilling, heavy construction machinery should not be operated within 5 feet of the wall. Wall backfill in this zone should be compacted with hand-operated equipment. To prevent hydrostatic pressure development, wall drainage must also be installed. A typical wall drainage detail is shown on Figure 4.

With the recommended wall backfill and drainage, we recommend designing the vault walls for an earth pressure imposed by an equivalent fluid weighing 50 pcf. Any portion of the wall for which drainage cannot be provided should be designed for an earth pressure equivalent to a fluid weighing 85 pcf. For evaluating walls under seismic loading, an additional uniform earth pressure equivalent to 8H psf, where H is the height of the below-grade wall in feet, can be used. These values assume a horizontal backfill condition. Where applicable, a uniform horizontal traffic value of 75 psf should be included in design of vault walls.

The detention vault will be subject to uplift pressures if drainage is not provided for the detention vault walls. For design, uplift forces should be based on a groundwater elevation equal to the current ground surface. The weight of the structure and the weight of the soil above its foundation will provide resistance to uplift. A soil unit weight of 120 pcf can be used in designing the structure to resist uplift forces.

Detention Pond

If fill berms will be constructed, the berm locations should be stripped of topsoil, duff, and soils containing organic material prior to the placement of fill. The fill berms should be constructed by placing structural fill in accordance with recommendations outlined in Section 4.2 of this report. Material used to construct pond berms should consist of predominately granular soils with a maximum size of 3 inches and a minimum of 20 percent fines.

Terra Associates, Inc. should examine and test all onsite or imported materials proposed for use as berm fill prior to their use.

It is possible that pockets of sandy or gravelly soils may be exposed within the pond area. Therefore, it may be necessary to line the dead storage portion of the pond for water quality purposes depending on the final grades and exposed soils.

Due to the exposure to fluctuating stored water levels and wave action, soils exposed on the interior side slopes of the ponds may be subject to some risk of periodic shallow instability or sloughing. Establishing interior slopes at a 3:1 gradient will significantly reduce or eliminate this potential. Exterior berm slopes and interior slopes above the maximum water surface should be graded to a finished inclination no steeper than 2:1. Finished slope faces should be thoroughly compacted and vegetated to guard against erosion.

We should review the stormwater plans when they are completed and revise our recommendations, if required.

4.8 Infiltration Feasibility

Based on our study, subsurface conditions are generally not favorable for infiltration of site stormwater. The surficial silt soils and relatively shallow silty sand soils observed at the site contain a high percentage of soil fines that would impede any downward migration of site stormwater. Additionally, the relatively shallow bedrock observed in the north and north-central portions of the site likely underlies the rest of the site and would not be a suitable receptor of site stormwater. Even low impact development (LID) techniques would likely fill up and overtop during rain events and cause minor local flooding. While zones of sands with silt and gravels were observed below the upper silts in the southwest and north portions of the site, there is an insufficient volume of material to support infiltration and many of these soils contained observable groundwater seepage which indicates site stormwater could not properly infiltrate into these deposits. Based on these soil conditions, infiltration at the site is not feasible and the stormwater should be managed using a conventional system.

4.9 Drainage

Surface

Final exterior grades should promote free and positive drainage away from the site at all times. Water must not be allowed to pond or collect adjacent to foundations or within the immediate building areas. We recommend providing a positive drainage gradient away from the building perimeters. If this gradient cannot be provided, surface water should be collected adjacent to the structures and directed to appropriate storm facilities.

Subsurface

In our opinion, with floor slabs at or elevated above the adjacent exterior grade, and positive drainage away from the structure maintained, installation of conventional perimeter foundation drains would not be necessary for the industrial grade building.

If positive drainage away from the building perimeters is not provided, or where landscaping is completed adjacent to the buildings, we recommend installing a continuous drain along the outside lower edge of the perimeter building foundations. The drains can be laid to grade at an invert elevation equivalent to the bottom of footing grade. The drains can consist of four-inch diameter perforated PVC pipe that is enveloped in washed half- to three-quarter-inch gravel-sized drainage aggregate. The aggregate should extend six inches above and to the sides of the pipe. The foundation drains and roof downspouts should be tightlined separately to an approved point of controlled discharge. All drains should be provided with cleanouts at easily accessible locations and should be serviced at least once each year.

4.10 Utilities

Utility pipes should be bedded and backfilled in accordance with American Public Works Association (APWA), or City of Camas specifications. As a minimum, trench backfill should be placed and compacted as structural fill, as described in Section 4.2 of this report. As noted, the native soils are moisture sensitive and close moisture control will be required to facilitate proper compaction. If utility construction takes place during the wet winter months, it will likely be necessary to import suitable wet weather fill for utility trench backfilling.

The utility contractor should also be prepared for encountering unstable soft alluvial soils below the pipe invert elevations. If not removed from below the pipe and replaced with crushed rock or additional bedding material, pipe deflections may occur as a result of the soil yielding and compressing in response to loading imposed during trench backfilling. The need to overexcavate and stabilize the pipe foundation before backfilling should be evaluated by observation and testing during construction. We recommend utilizing pipe connections that can accommodate the anticipated settlements discussed above.

4.11 Pavements

Pavement subgrades should be prepared as described in Section 4.2 of this report. Regardless of the degree of relative compaction achieved, the subgrade must be firm and relatively unyielding before paving. The subgrade should be proofrolled with heavy rubber-tired construction equipment such as a loaded 10-yard dump truck to verify this condition.

The pavement design section is dependent upon the supporting capability of the subgrade soils and the traffic conditions to which it will be subjected. We expect traffic at the facility will consist of cars and light trucks, along with heavy traffic in the form of tractor-trailer rigs. For design considerations, we have assumed traffic in parking and in car/light truck access pavement areas can be represented by an 18-kip Equivalent Single Axle Loading (ESAL) of 50,000 over a 20-year design life. For heavy traffic pavement areas, we have assumed an ESAL of 300,000 would be representative of the expected loading. These ESALs represent loading approximately equivalent to 3 and 18, loaded (80,000-pound GVW) RV rigs traversing the pavement daily in each area, respectively.

With a stable subgrade prepared as recommended, we recommend the following options for pavement sections:

Light Traffic and Parking:

- Two inches of hot mix asphalt (HMA) over six inches of crushed rock base (CRB)
- Full depth HMA – 4 inches

Heavy Traffic:

- Three inches of HMA over 8 inches of CRB
- Full depth HMA – 5.5 inches

For exterior Portland cement concrete (PCC) pavement, we recommend the following:

- 6 inches of PCC over two inches of CRB
    - 28-day compressive strength – 4,000 psi
    - Control joints spaced at a maximum of 15 feet.

Soil cement stabilization or constructing a soil cement base for support of the pavement section can also be considered as an alternative to the above conventional pavement sections. Assuming a properly constructed soil cement base having a minimum thickness of 12 inches and a minimum 7-day compressive strength of 100 pounds per square inch (psi), a minimum HMA pavement thickness of 3 inches would be required for the heavy traffic areas. The design of the soil cement base should be completed using samples of the subgrade exposed at the time of construction.

The paving materials used should conform to the Washington State Department of Transportation (WSDOT) specifications for half-inch class HMA, PCC, and CRB.

Long-term pavement performance will depend on surface drainage. A poorly drained pavement section will be subject to premature failure resulting from surface water infiltrating the subgrade soils and reducing their supporting capability. For optimum performance, we recommend surface drainage gradients of at least two percent. Some degree of longitudinal and transverse cracking of the pavement surface should be expected over time. Regular maintenance should be planned to seal cracks as they occur.

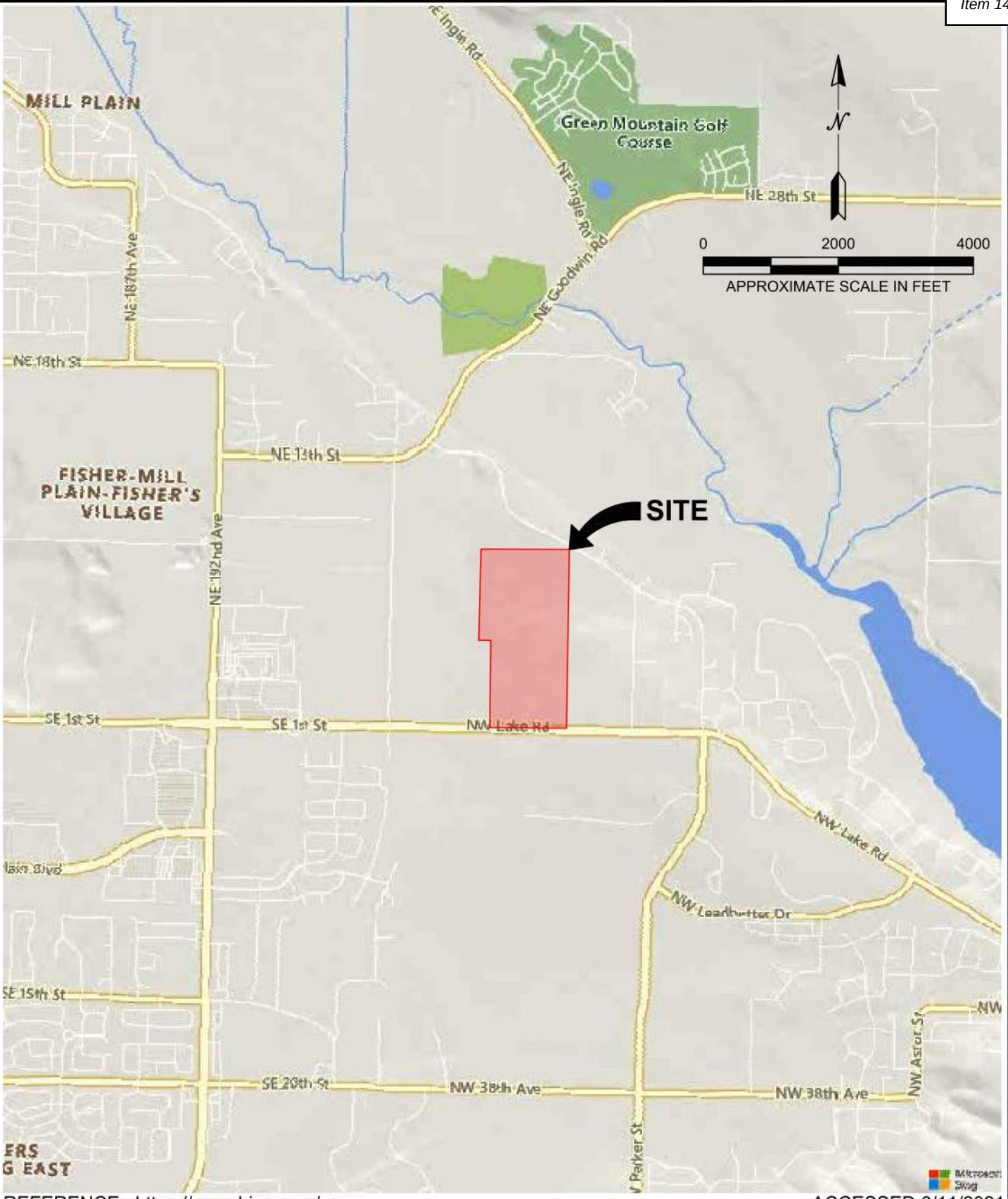
5.0 ADDITIONAL SERVICES

Terra Associates, Inc. should review project designs and specifications to verify that earthwork and foundation recommendations have been properly interpreted and incorporated into project design. We should also provide geotechnical services during construction to observe compliance with our design concepts, specifications, and recommendations. This will allow for expedient design changes if subsurface conditions differ from those anticipated prior to the start of construction.

6.0 LIMITATIONS

We prepared this report in accordance with generally accepted geotechnical engineering practices. No other warranty, expressed or implied, is made. This report is the copyrighted property of Terra Associates, Inc. and is intended for specific application to the Camas Business Center in Camas, Washington. This report is for the exclusive use of Panattoni Development Company and their authorized representatives.

The analyses and recommendations presented in this report are based on data obtained from the subsurface explorations completed onsite. Variations in soil conditions can occur, the nature and extent of which may not become evident until construction. If variations appear evident, Terra Associates, Inc. should be requested to reevaluate the recommendations in this report prior to proceeding with construction.

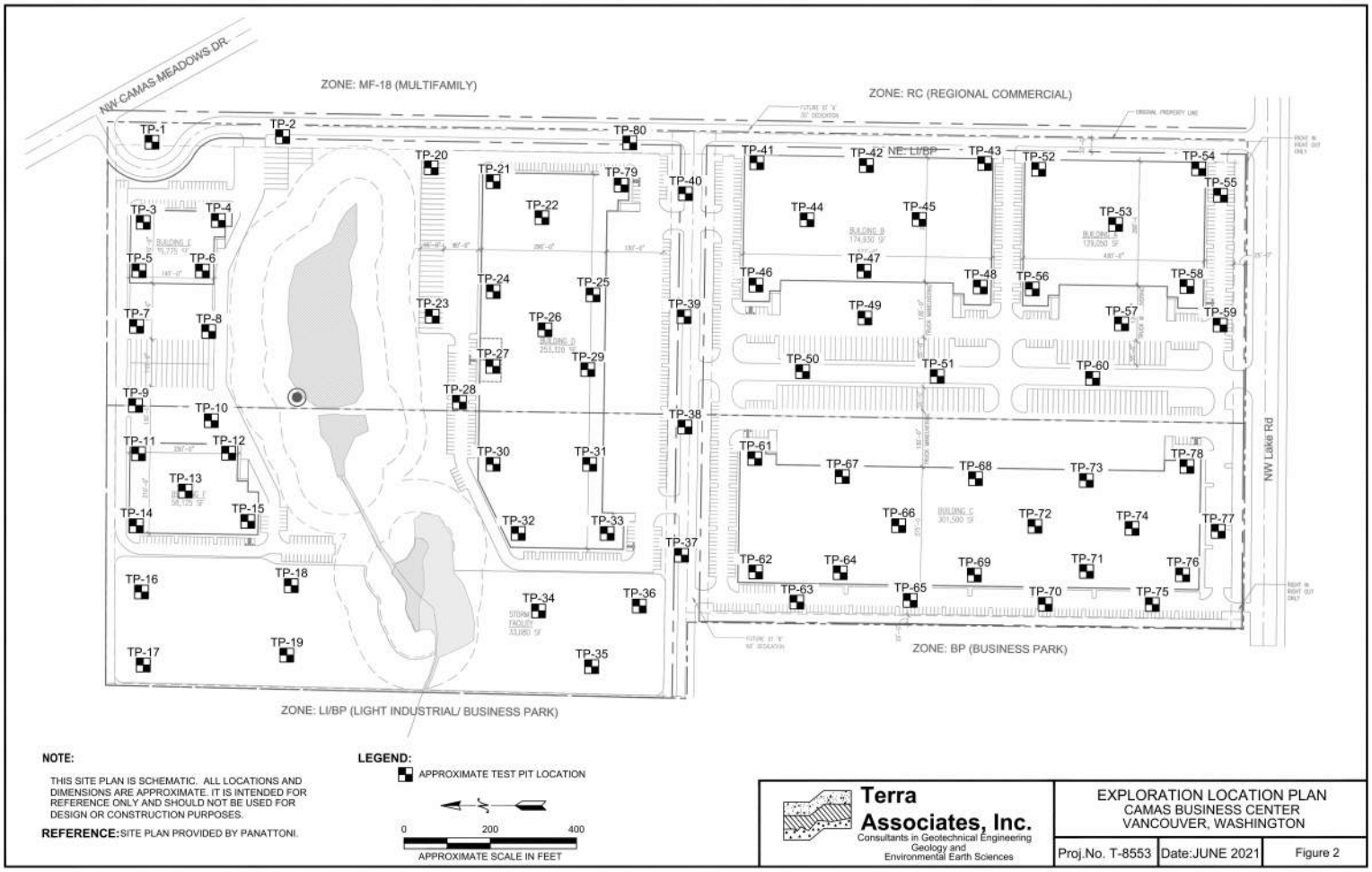


REFERENCE: https://www.bing.com/maps ACCESSED 6/11/2021

Terra Associates, Inc.
Consultants in Geotechnical Engineering
Geology and
Environmental Earth Sciences

VICINITY MAP
CAMAS BUSINESS CENTER
VANCOUVER, WASHINGTON

Proj.No. T-8553	Date:JUNE 2021	Figure 1



NOTE:

THIS SITE PLAN IS SCHEMATIC. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE. IT IS INTENDED FOR REFERENCE ONLY AND SHOULD NOT BE USED FOR DESIGN OR CONSTRUCTION PURPOSES.

REFERENCE: SITE PLAN PROVIDED BY PANATTONI.

LEGEND:

APPROXIMATE TEST PIT LOCATION

0 200 400

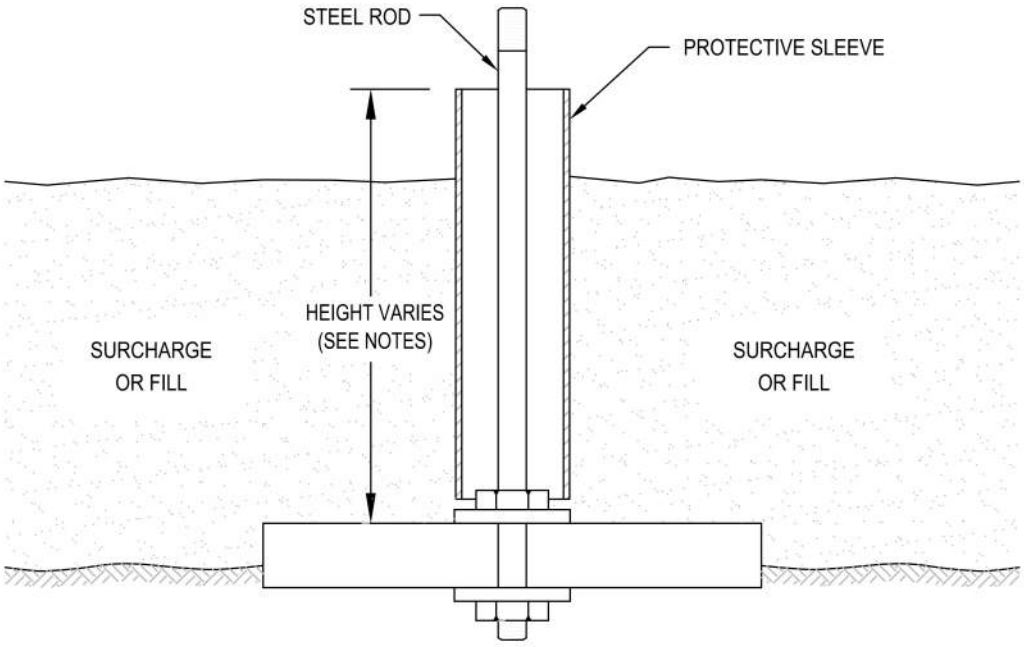
APPROXIMATE SCALE IN FEET

Terra Associates, Inc.

Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

EXPLORATION LOCATION PLAN
CAMAS BUSINESS CENTER
VANCOUVER, WASHINGTON

Proj.No. T-8553 | Date:JUNE 2021 | Figure 2



NOT TO SCALE

NOTES:

1. BASE CONSISTS OF 3/4" THICK, 2'x2' PLYWOOD WITH CENTER DRILLED 5/8" DIAMETER HOLE.
2. BEDDING MATERIAL, IF REQUIRED, SHOULD CONSIST OF CLEAN COARSE SAND.
3. MARKER ROD IS 1/2" DIAMETER STEEL ROD THREADED AT BOTH ENDS.
4. MARKER ROD IS ATTACHED TO BASE BY NUT AND WASHER ON EACH SIDE OF BASE.
5. PROTECTIVE SLEEVE SURROUNDING MARKER ROD SHOULD CONSIST OF 2" DIAMETER PLASTIC TUBING. SLEEVE IS NOT ATTACHED TO ROD OR BASE.
6. ADDITIONAL SECTIONS OF STEEL ROD CAN BE CONNECTED WITH THREADED COUPLINGS.
7. ADDITIONAL SECTIONS OF PLASTIC PROTECTIVE SLEEVE CAN BE CONNECTED WITH PRESS-FIT PLASTIC COUPLINGS.
8. STEEL MARKER ROD SHOULD EXTEND AT LEAST 6" ABOVE TOP OF PLASTIC PROTECTIVE SLEEVE.
9. PLASTIC PROTECTIVE SLEEVE SHOULD EXTEND AT LEAST 1" ABOVE TOP OF FILL SURFACE.

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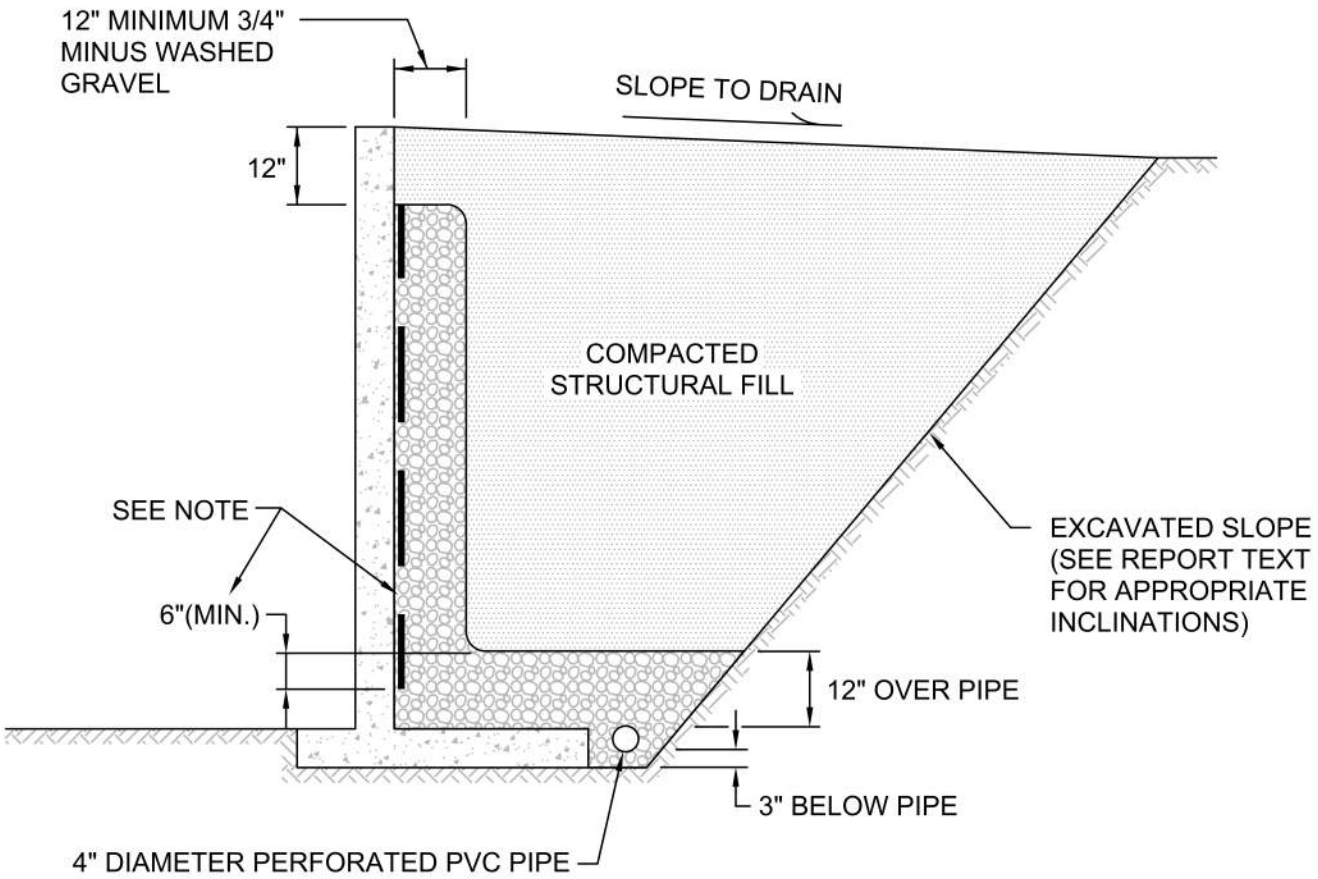
Environmental Earth Sciences

SETTLEMENT MARKER DETAIL
CAMAS BUSINESS CENTER
VANCOUVER, WASHINGTON

Proj.No. T-8553	Date:JUNE 2021	Figure 3



NOT TO SCALE

NOTE:

MIRADRAIN G100N PREFABRICATED DRAINAGE PANELS OR SIMILAR PRODUCT CAN BE SUBSTITUTED FOR THE 12-INCH WIDE GRAVEL DRAIN BEHIND WALL. DRAINAGE PANELS SHOULD EXTEND A MINIMUM OF SIX INCHES INTO 12-INCH THICK DRAINAGE GRAVEL LAYER OVER PERFORATED DRAIN PIPE.

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TYPICAL WALL DRAINAGE DETAIL
CAMAS BUSINESS CENTER
VANCOUVER, WASHINGTON

Proj.No. T-8553	Date:JUNE 2021	Figure 4

APPENDIX A
FIELD EXPLORATION AND LABORATORY TESTING

Camas Business Center
Camas, Washington

On May 24, 2021, through May 26, 2021, we completed our site exploration by observing soil conditions at 80 test pits. The test pits were excavated using a track-mounted excavator to maximum depths of approximately 6 to 12 feet below existing site grades. Test pit locations were determined in the field by measuring from existing site features. The approximate location of the test pits is shown on the attached Exploration Location Plan, Figure 2. Test Pit Logs are presented on Figures A-2 through A-81.

A geotechnical engineer from our office conducted the field exploration. Our representative classified the soil conditions encountered, maintained a log of each test pit, obtained representative soil samples, and recorded water levels observed during excavation. All soil samples were visually classified in accordance with the Unified Soil Classification System (USCS) described on Figure A-1.

Representative soil samples obtained from the test pits were placed in sealed plastic bags and taken to our laboratory for further examination and testing. The moisture content of selected samples was measured and is reported on the corresponding Test Pit Logs. Grain size analyses were also performed on select samples. The results are shown on Figures A-82 and A-83.

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTION
COARSE GRAINED SOILS (More than 50% material larger than No. 200 sieve size)	**GRAVELS** More than 50% of coarse fraction is larger than No. 4 sieve	Clean Gravels (less than 5% fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines.
		Gravels with fines	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines.
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines.
	SANDS More than 50% of coarse fraction is smaller than No. 4 sieve	Clean Sands (less than 5% fines)	SW	Well-graded sands, sands with gravel, little or no fines.
			SP	Poorly-graded sands, sands with gravel, little or no fines.
		Sands with fines	SM	Silty sands, sand-silt mixtures, non-plastic fines.
			SC	Clayey sands, sand-clay mixtures, plastic fines.
FINE GRAINED SOILS (More than 50% material smaller than No. 200 sieve size)	**SILTS AND CLAYS** Liquid Limit is less than 50%		ML	Inorganic silts, rock flour, clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity. (Lean clay)
			OL	Organic silts and organic clays of low plasticity.
	SILTS AND CLAYS Liquid Limit is greater than 50%		MH	Inorganic silts, elastic.
			CH	Inorganic clays of high plasticity. (Fat clay)
			OH	Organic clays of high plasticity.
HIGHLY ORGANIC SOILS			PT	Peat.

DEFINITION OF TERMS AND SYMBOLS

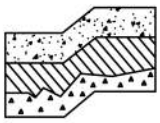
COHESIONLESS

Density	Standard Penetration Resistance in Blows/Foot
Very Loose	0-4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	>50

COHESIVE

Consistancy	Standard Penetration Resistance in Blows/Foot
Very Soft	0-2
Soft	2-4
Medium Stiff	4-8
Stiff	8-16
Very Stiff	16-32
Hard	>32

I	2" OUTSIDE DIAMETER SPILT SPOON SAMPLER
II	2.4" INSIDE DIAMETER RING SAMPLER OR SHELBY TUBE SAMPLER
▼	WATER LEVEL (Date)
Tr	TORVANE READINGS, tsf
Pp	PENETROMETER READING, tsf
DD	DRY DENSITY, pounds per cubic foot
LL	LIQUID LIMIT, percent
PI	PLASTIC INDEX
N	STANDARD PENETRATION, blows per foot



Terra Associates, Inc.
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Environmental Earth Sciences

UNIFIED SOIL CLASSIFICATION SYSTEM
CAMAS BUSINESS CENTER
VANCOUVER, WASHINGTON

Proj.No. T-8553	Date:JUNE 2021	Figure A-1

LOG OF TEST PIT NO. TP-1

FIGURE A

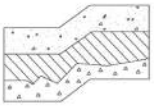
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
1		Brown SILT, moist, scattered rootlets, occasional cobble, weak cementation. (ML)		24.6
2				
3		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)	medium stiff	34.1
4				
5				
6				
7		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		60.0
8				
9		Test Pit terminated at approximately 9 feet. No groundwater seepage observed. No caving observed.		61.2
10				
11				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-2

FIGURE A

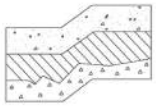
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
		Brown SILT, moist, trace rootlets, weak cementation. (ML)		28.4
3		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)	medium stiff	51.5
6		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		58.2
8		Test Pit terminated at approximately 8 feet. No groundwater seepage observed. No caving observed.		52.5
10				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-3

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Blackberries **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(9-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		29.0
2		Brown SILT with sand to sandy SILT, fine to coarse sand, moist, mottled below 8 feet, moderate cementation. (ML)		
3			medium stiff	35.0
4				
5				
6				35.8
7				
8			very stiff	
9				
10				35.9
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-4

FIGURE A

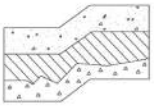
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Blackberries **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 9 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(8-inches organic TOPSOIL)		
1		Brown SILT with sand, fine sand, moist, scattered rootlets, weak cementation. (ML)		
2				29.9
3			medium stiff	
4		Brown sandy SILT, fine to coarse sand, moist to wet, weak to moderate cementation. (ML)		
5				29.0
6				
7				
8			stiff	30.6
9				
10				41.1
11		Test Pit terminated at approximately 10 feet. Minor groundwater seepage observed at approximately 9 feet. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-5

FIGURE A

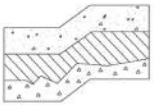
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Blackberries **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		20.3
2				
3		Brown SILT with sand, fine to coarse sand, moist, moderate cementation. (ML)	medium stiff	
4				34.5
5				
6				
7				34.4
8			stiff	
9		Brownish-gray sandy SILT, fine to coarse sand, moist, weak cementation. (ML)		
10				26.3
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-6

FIGURE A

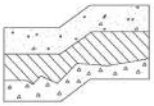
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 10 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(8-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, trace rootlets, weak cementation. (ML)		13.8
2				
3			medium stiff	
4		Brown sandy SILT, moist, fine to coarse sand, moist to wet, weak to moderate cementation. (ML)		24.9
5				
6				
7				
8			stiff	30.7
9				
10				35.1
11		Test Pit terminated at approximately 11 feet. Minor groundwater seepage observed at approximately 10 feet. No caving observed.		
12				
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-7

FIGURE A

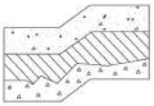
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 10 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(8-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		13.8
2				
3		Brown SILT with sand, fine to coarse sand, moist. (ML)	medium stiff	
4				31.4
5		Brown sandy SILT, fine to coarse sand, moist, weak to moderate cementation. (ML)		
6				
7				27.2
8			stiff	
9				
10		Brownish-gray sandy SILT, fine to medium sand, moist to wet, weak cementation. (ML)		36.9
11		Test Pit terminated at approximately 11 feet. Minor groundwater seepage observed at approximately 10 feet. No caving observed.		
12				
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-8

FIGURE A

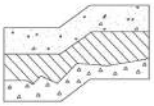
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 9 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(10-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, trace rootlets, weak cementation. (ML)		13.8
2				
3		Brown SILT with sand, fine sand, moist, occasional rootlet. (ML)	medium stiff	23.1
4				
5				26.7
6		Brown sandy SILT, fine to coarse sand, moist, weak cementation. (ML)		
7			stiff	
8				
9				37.1
10		Brownish-gray silty SAND, fine to medium sand, wet. (SM)	medium dense	
11		Test Pit terminated at approximately 10 feet. Minor groundwater seepage observed at approximately 9 feet. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-9

FIGURE A

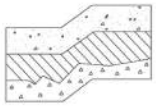
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 10 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(9-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)	medium stiff	15.0
2				
3		Brown SILT with sand to sandy SILT, fine to coarse sand, moist to wet, weak cementation. (ML)		
4				31.1
5			stiff to very stiff	
6				
7		Brownish-gray sandy SILT, fine sand, moist to wet, weak cementation, interbedded silty SAND seams. (ML)		42.0
8				
9			stiff	34.7
10				
11		Test Pit terminated at approximately 11 feet. Minor groundwater seepage observed at approximately 10 feet. No caving observed.		37.7
12				
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-10

FIGURE A

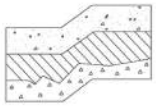
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 7 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(10-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		19.7
2				
3		Brown to brownish-gray SILT with sand, fine to coarse sand, moist to wet, weak cementation. (ML)	medium stiff	
4				34.2
5				
6				
7				
8			stiff	35.6
9				
10				38.3
11		Test Pit terminated at approximately 10 feet. Minor groundwater seepage observed at approximately 7 feet. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-11

FIGURE A

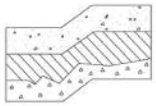
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 11 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(11-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, trace rootlets, occasional cobble, weak cementation. (ML)		14.4
2				
3			medium stiff	22.0
4		Brown SILT with sand, fine to medium sand, moist. (ML)		
5				
6				39.4
7		Gray sandy SILT, fine sand, moist to wet, mottled, alternating layers of brown silty SAND. (ML)		
8				33.4
9			stiff	
10				
11				
12				42.2
13		Test Pit terminated at approximately 12 feet. Moderate groundwater seepage observed at approximately 11 feet. No caving observed.		
14				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-12

FIGURE A

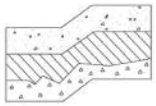
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 9 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(8-inches organic TOPSOIL)		
1		Gray SILT with sand, fine sand, moist, mottled, occasional rootlet. (ML)		
2			medium stiff	21.9
3				
4				
5		Brownish-gray sandy SILT, fine to coarse sand, moist to wet, mottled. (ML)		38.2
6				
7			stiff	
8				
9		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		58.2
10		Test Pit terminated at approximately 10 feet. Minor groundwater seepage observed at approximately 9 feet. No caving observed.		
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-13

FIGURE A

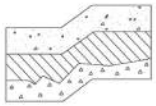
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass/shrubs **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 10 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(11-inches organic TOPSOIL)		
1		Brownish-gray SILT with sand, fine sand, moist, mottled, occasional rootlet. (ML)		
2				19.6
3			medium stiff	
4				
5				36.6
6		Brownish-gray sandy SILT, fine to coarse sand, moist to wet, mottled, weak cementation. (ML)		
7				36.8
8			stiff	
9				
10				37.3
11		Test Pit terminated at approximately 10 feet. Minor groundwater seepage observed at approximately 10 feet. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-14

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Blackberries **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 9 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(10-inches organic TOPSOIL)		
1		Gray SILT, moist, trace rootlets, occasional gravel, weak cementation. (ML)	medium stiff	22.2
2				
3				28.1
4		Brownish-gray to gray SILT with sand, moist, mottled, occasional rootlet. (ML)		
5			stiff	
6				
7				
8				
9		Brownish-gray SAND with silt, fine to coarse sand, moist to wet, interbededd mottled sandy SILT seams. (SP-SM)	medium dense	
10				41.4
11		Test Pit terminated at approximately 10 feet. Minor groundwater seepage observed at approximately 9 feet. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-15

FIGURE A

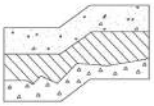
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass/shrubs **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 10 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(9-inches organic TOPSOIL)		
1		Gray SILT with sand, fine sand, moist, mottled. (ML)		26.3
2			medium stiff	
3				
4				
5				34.7
6		Brownish-gray sandy SILT, fine to coarse sand, moist to wet, mottled, weak cementation. (ML)		
7				
8			stiff	
9				
10				47.8
11				
12		Test Pit terminated at approximately 11 feet. Minor groundwater seepage observed at approximately 10 feet. No caving observed.		
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-16

FIGURE A

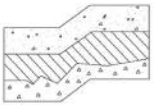
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Blackberries **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 7 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(10-inches organic TOPSOIL)		
1		Gray SILT, dry to moist, trace rootlets, occasional gravel, weak cementation. (ML)	medium stiff	24.9
2				
3		Brownish-gray to gray SILT with sand, fine sand, moist, mottled. (ML)		25.2
4				
5				33.2
6		Brownish-gray to gray sandy SILT, fine to coarse sand, moist to wet, interbedded SAND with silt seams below 7 feet. (ML)		
7			stiff	38.5
8				
9				
10				
11				
12				34.1
13		Test Pit terminated at approximately 12 feet. Minor groundwater seepage observed at approximately 7 feet. No caving observed.		
14				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-17

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass/shrubs **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 8 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(8-inches organic TOPSOIL)		
1		Dark gray SILT, moist, trace rootlets, weak cementation. (ML)	medium stiff	21.4
2				28.9
3		Gray SILT with sand, fine sand, moist, mottled, occasional rootlet, occasional gravel. (ML)		
4				
5			stiff	37.3
6				
7				
8				33.7
9		Gray SAND with silt, fine to coarse sand, wet, interbedded SILT seams. (SP-SM)	medium dense	
10		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		34.2
11		Test Pit terminated at approximately 10 feet. Minor groundwater seepage observed at approximately 8 feet. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-18

FIGURE A

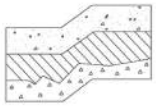
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass/shrubs **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** 9 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(9-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlet, weak cementation. (ML)		22.6
2				
3		Brownish-gray sandy SILT, fine to medium sand, moist, mottled, occasional gravel. (ML)	medium stiff	
4				28.9
5				
6				40.0
7		Brown to brownish-gray sandy SILT, fine to coarse sand, moist, weak cementation. (ML)	stiff	
8				
9				
10		Brown SAND with silt, fine to coarse sand, wet, interbedded SILT seams. (SP-SM)	medium dense	37.4
11				
12		Test Pit terminated at approximately 11 feet. Minor seepage observed at approximately 9 feet. No caving observed.		
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-19

FIGURE A

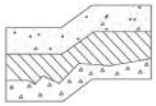
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass/shrubs **APPROX. ELEV:** NA

DATE LOGGED: May 26, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(8-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, occasional gravel, weak cementation. (ML)		21.8
2				
3		Brown SILT with sand, fine sand, moist, occasional rootlet. (ML)	medium stiff	24.0
4				
5		Brownish-gray sandy SILT, fine to coarse sand, moist, mottled. (ML)		40.1
6				
7		Brownish-gray SILT with sand, fine sand, moist, mottled. (ML)		36.5
8			stiff	
9		Brownish-gray sandy SILT, fine to coarse sand, moist, mottled. (ML)		44.5
10				
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-20

FIGURE A

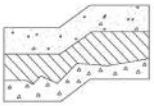
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(4-inches organic TOPSOIL)		
		Brown SILT, dry, trace rootlets. (ML)		
1				14.4
2		Brown SILT with sand, fine to coarse sand, moist, trace gravel. (ML)		
3			medium stiff	37.5
4				
5				
6				53.2
		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		
7				
8				
9				54.7
		Test Pit terminated at approximately 9 feet. No groundwater seepage observed. No caving observed.		
10				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-21

FIGURE A

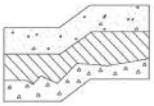
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
		Brown SILT, dry, occasional rootlet, weak cementation. (ML)		
1				22.7
			medium stiff	
2				
3				23.7
		Reddish-brown SILT, moist, trace sand, occasional cobble, weak cementation. (ML)		
4				
			stiff	
5				
6				51.9
		Brown silty GRAVEL with sand, fine to coarse sand, fine to coarse gravel, moist, scattered cobbles. (GM)	dense	
7				
		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		
8				55.3
		Test Pit terminated at approximately 8 feet. No groundwater seepage observed. No caving observed.		
9				
10				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-22

FIGURE A

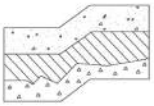
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** 2.5 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(10-inches organic TOPSOIL)		
		Brown SILT, moist, occasional rootlet, weak cementation. (ML)	medium stiff	33.2
3		Light brown SILT with sand and gravel, fine to coarse sand, fine to coarse gravel, moist, weak cementation. (ML)	stiff	65.8
5		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		
6				56.6
		Test Pit terminated at approximately 6 feet. Minor groundwater seepage observed at approximately 2.5 feet. No caving observed.		
8				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-23

FIGURE A

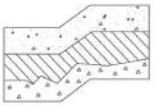
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(4-inches organic TOPSOIL)		
		Brown SILT, dry, scattered rootlets, moderate cementation. (ML)		
1				
				14.8
2				
3		Brown SILT with sand, fine to coarse sand, moist. (ML)		41.4
			medium stiff	
4				
5				
6				
7				51.6
		BbEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		
8				
		Test Pit terminated at approximately 8 feet. No groundwater seepage observed. No caving observed.		
9				
10				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-24

FIGURE A

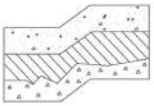
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT with sand, fine to coarse sand, dry to moist, trace gravel. (ML)		11.6
2				
3				53.5
4			medium stiff	
5				
6				57.0
7				59.9
8		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		
9				54.9
10		Test Pit terminated at approximately 9 feet. No groundwater seepage observed. No caving observed.		
11				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-25

FIGURE A

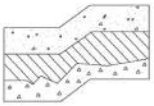
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, trace rootlets, weak cementation. (ML)		19.7
2				
3		Brown SILT with sand, fine to coarse sand, moist, slightly mottled. (ML)	medium stiff	
4				35.4
5				
6				
7				
8		Brownish-gray to gray sandy SILT, fine to medium sand, moist, mottled. (ML)	stiff	38.6
9				
10				32.9
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-26

FIGURE A

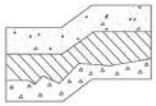
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
		Brown SILT with sand, fine to coarse sand, moist, mottled, occasional gravel. (ML)	medium stiff	24.3
3				29.9
		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		
6				29.5
		Test Pit terminated at approximately 6 feet. No groundwater seepage observed. No caving observed.		
8				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-27

FIGURE A

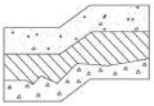
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(11-inches organic TOPSOIL)		
1		Brown SILT, dry, scattered rootlets, moderate cementation. (ML)		18.4
2				
3				47.4
		Brown SILT with sand, fine to coarse sand, moist. (ML)	medium stiff	
4				
5				
6				
7				
		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		
8				53.6
9				
		Test Pit terminated at approximately 9 feet. No groundwater seepage observed. No caving observed.		
10				
11				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-28

FIGURE A

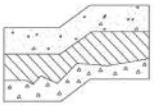
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(5-inches organic TOPSOIL)		
		Brown SILT, dry to moist, trace rootlets, weak cementation. (ML)	medium stiff	16.7
3				37.0
		Brownish-gray sandy SILT, fine sand, moist, moderate cementation. (ML)	medium stiff to stiff	
6				
		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		54.0
8				
		Test Pit terminated at approximately 8 feet. No groundwater seepage observed. No caving observed.		
10				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-29

FIGURE A

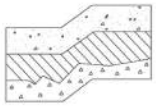
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** 9 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(4-inches organic TOPSOIL)		
1		Reddish-brown SILT, moist, trace rootlets. (ML)		26.9
2				
3		Brown SILT with sand, fine to coarse sand, moist, some mottling. (ML)		35.0
4			medium stiff	
5				
6				39.0
7				
8				
9		Dark gray silty SAND, fine to coarse sand, wet. (SM)		
10			medium dense	53.9
11		Test Pit terminated at approximately 11 feet. No groundwater seepage observed. No caving observed.		
12				
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-30

FIGURE A

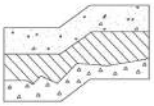
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Blackberries **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(11-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets. (ML)		29.9
2				
3			medium stiff	
4		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)		34.9
5				
6				
7		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		33.4
8				
9				
10		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		56.2
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-31

FIGURE A

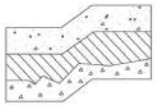
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Blackberries **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** 8 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(10-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets. (ML)		24.6
2				
3			medium stiff	32.5
		Brown SILT with sand, fine to coarse sand, moist. (ML)		
4				
5				
6				37.9
		Gray SILT with sand, fine to coarse sand, moist, mottled. (ML)		
7			stiff	
8				58.7
		Dark gray silty SAND, fine to coarse sand, wet, occasional gravel, occasional SILT seam. (SM)		
9				
10			medium dense	
11				
12				54.4
		Test Pit terminated at approximately 12 feet. Minor groundwater seepage observed at approximately 8 feet. No caving observed.		
13				
14				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-32

FIGURE A

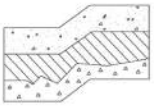
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Blackberries **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** 3 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(10-inches organic TOPSOIL)		
1		Dark brown SILT, moist, trace sand, trace rootlets. (ML)	medium stiff	27.0
2				
3				33.7
4		Reddish-brown SILT, moist. (ML)	stiff	
5				
6				39.2
7			very stiff	
8				48.1
9		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		
10				
11		Test Pit terminated at approximately 10 feet. Minor groundwater seepage observed at approximately 3 feet. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-33

FIGURE A

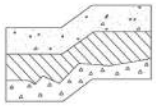
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Blackberries **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(9-inches organic TOPSOIL)		
		Reddish-brown SILT, moist, trace rootlets. (ML)		21.7
2			medium stiff	
3		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)		40.3
5		BEDROCK: Moderate strength, brown to gray, fine to coarse, moderately weathered. (Columbia River Basalt)		24.6
7				22.9
8		Test Pit terminated at approximately 8 feet. No groundwater seepage observed. No caving observed.		24.7
10				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-34

FIGURE A

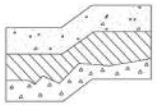
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Blackberries **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(10-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, occasional organic. (ML)		24.9
2			medium stiff	
3				30.8
4		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)		
5				23.0
6		Gray SILT, moist, mottled, interbedded SAND seams. (ML)		
7				
8			stiff	
9				
10				
11				41.8
12		Test PIt terminated at approximately 11 feet. No groundwater observed. No caving observed.		
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-35

FIGURE A

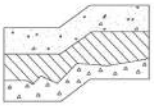
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Blackberries **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(9-inches organic TOPSOIL)		
1		Dark brown to brown SILT, moist, trace rootlets. (ML)		34.0
2				
3			medium stiff	
4				36.4
		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)		
5				
6				23.3
		Brown silty GRAVEL with sand, fine to coarse sand, fine to coarse gravel, moist, mottled, scattered cobbles. (GM)		
7			dense	
8				31.9
		Brown to gray SILT, moist, mottled, interbedded SAND with silt seams. (ML)		
9				
			stiff	
10				
11				31.4
		Test Pit terminated at approximately 11 feet. No groundwater seepage observed. No caving observed.		
12				
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-36

FIGURE A

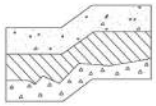
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass/shrubs **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** 9 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(4-inches organic TOPSOIL)		
1		Brown SILT, dry, trace rootlets, occasional gravel, weak cementation. (ML)		14.8
2				
3		Brown to gray SILT with sand, fine to coarse sand, moist, mottled. (ML)	medium stiff	
4				36.4
5				
6				
7		Reddish-brown SILT, moist to wet, trace sand. (ML)		35.1
8			stiff	
9		Gray clayey SILT, moist. (ML)		
10			very stiff	32.9
11		Test Pit terminated at approximately 11 feet. Moderate groundwater seepage observed at approximately 9 feet. No caving observed.		
12				
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-37

FIGURE A

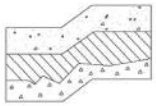
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass/shrubs **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(2-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		24.2
2				
3			medium stiff	
4		Brown SILT with sand, fine to coarse sand, moist, mottled, occasional gravel. (ML)		33.4
5				
6				
7		Reddish-brown SILT, moist. (ML)		30.2
8			stiff	
9				
10				29.5
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-38

FIGURE A

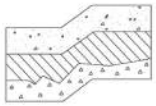
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass/shrubs **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(5-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		22.4
2				
3			medium stiff	
4		Brown to gray SILT with sand, fine to coarse sand, moist, mottled. (ML)		32.8
5				
6				
7				36.0
8			stiff	
9				
10				33.3
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-39

FIGURE A

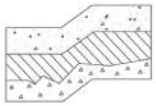
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** 10 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(5-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		20.8
2				
3			medium stiff	
4		Brownish-gray to gray sandy SILT, fine to coarse sand, moist, mottled. (ML)		
5				38.5
6				
7				
8			stiff	
9				
10		Blueish-gray silty SAND with gravel, fine to coarse sand, fine to coarse gravel, wet. (SM)		68.3
11			medium dense	
12		Test Pit terminated at approximately 12 feet. Moderate groundwater seepage observed at approximately 10 feet. No caving observed.		
13				
14				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-40

FIGURE A

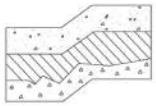
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, trace rootlets, weak cementation. (ML)		14.5
2				
3			medium stiff	
4		Brown SILT with sand to clayey SILT with sand, fine to coarse sand, moist, slightly mottled. (ML)		35.2
5				
6				
7				
8			stiff	
9		Brownish-gray to gray sandy SILT, fine to coarse sand, moist, mottled. (ML)		
10				35.8
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-41

FIGURE A

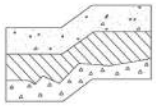
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, trace rootlets, weak cementation. (ML)		14.9
2				
3			medium stiff	
4		Brown SILT with sand to clayey SILT with sand, fine to coarse sand, moist, slightly mottled. (ML)		
5				35.1
6				
7		Brownish-gray to gray sandy SILT, fine to coarse sand, moist, mottled, occasional gravel. (ML)		33.3
8			stiff	
9				
10				35.1
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-42

FIGURE A

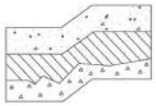
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, scattered rootlets, weak cementation. (ML)		17.8
2				
3			medium stiff	
4		Brown SILT with sand, fine to coarse sand, moist, slightly mottled. (ML)		36.4
5				
6				
7		Gray sandy SILT, fine sand, moist, mottled. (ML)		36.8
8			stiff	
9				
10				36.5
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-43

FIGURE A

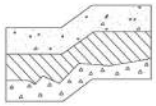
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		18.0
2				
3			medium stiff	
4				
5				31.7
6		Brown SILT with sand to clayey SILT with sand, fine to medium sand, moist, slightly mottled. (ML)		
7				
8			stiff	
9				
10				38.4
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-44

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		27.3
2				
3			medium stiff	
4		Brown SILT with sand, fine to coarse sand, moist, slightly mottled. (ML)		38.0
5				
6				
7		Brownish-gray to gray sandy SILT, fine sand, moist, mottled. (ML)		38.0
8			stiff	
9				
10		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		35.8
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-45

FIGURE A

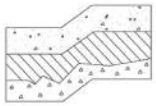
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		20.8
2				
3			medium stiff	
4		Brown SILT with sand to clayey SILT with sand, fine to medium sand, moist, slightly mottled. (ML)		36.3
5				
6				
7				
8			stiff	
9		Gray silty SAND, fine to coarse sand, moist, mottled, occasional gravel. (SM)	medium dense	
10		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		37.9
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-46

FIGURE A

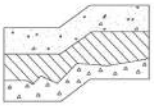
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Red SILT, moist, scattered rootlets, weak cementation. (ML)		17.6
2			medium stiff	
3				
4		Gray clayey SILT, moist, mottled, trace sand. (ML)		34.0
5				
6				
7				
8			stiff	
9				
10		Blueish-gray clayey SILT, moist, mottled, trace sand. (ML)		
11				52.4
12		Test Pit terminated at approximately 12 feet. No groundwater seepage observed. No caving observed.		
13				
14				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-47

FIGURE A

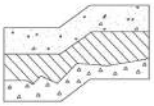
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(9-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		19.4
2			medium stiff	
3				
4		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)		29.3
5		Gray sandy SILT, fine sand, moist, mottled. (ML)		
6				39.8
7			stiff	
8		Blueish-gray silty SAND, fine to coarse sand, moist, trace organics, interbedded SILT seams. (SM)		
9			medium dense	52.7
10		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-48

FIGURE A

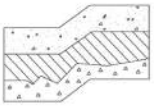
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, trace rootlets, weak cementation. (ML)		15.7
2				
3				
4		Brown SKT with sand, fine to coarse sand, moist, mottled. (ML)	medium stiff	36.0
5				
6				
7				
8		Blueish-gray silty SAND, fine to coarse sand, wet, interbedded SILT seams. (SM)		
9			medium dense	40.8
10		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-49

FIGURE A

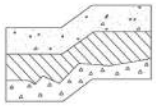
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
1		Brown SILT, moist, scattered rootlets, weak cementation. (ML)		18.6
2				
3			medium stiff	31.5
		Brown SILT with sand, fine to coarse sand, moist, mottled, occasional gravel. (ML)		
4				
5				
6				
		Gray sandy SILT, fine sand, moist, mottled. (ML)		
7			stiff	42.1
8				
		Blueish-gray silty SAND, fine to medium sand, moist, interbedded SILT seams. (SM)		
9			medium dense	
10				71.2
		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-50

FIGURE A

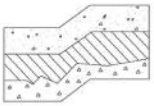
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Red SILT, moist, scattered rootlets, weak cementation. (ML)		18.6
2				
3		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)	medium stiff	
4				40.8
5				
6		Gray sandy SILT, fine to meduim sand, moist, mottled. (ML)		37.7
7			stiff	
8		Blueish-gray silty SAND, fine to coarse sand, moist to wet, interbbed SILT layers. (SM)		
9			medium dense	
10				60.4
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-51

FIGURE A

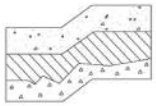
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** 12 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(10-inches organic TOPSOIL)		
1		Brown SILT, moist, scattered rootlets, weak cementation. (ML)		21.3
2				
3			medium stiff	
4		Grayish-brown SILT with sand to sandy SILT, fine to medium sand, moist, mottled. (ML)		40.1
5				
6				
7		Blueish-gray silty SAND, fine to coarse sand, moist to wet, interbedded SILT layers. (SM)		
8				69.6
9			medium dense	
10				
11				
12		Test Pit terminated at approximately 12 feet. Minor groundwater seepage observed at approximately 12 feet. No caving observed.		31.9
13				
14				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-52

FIGURE A

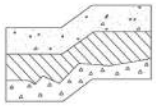
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, trace rootlets, weak cementation. (ML)		14.6
2				
3			medium stiff	
4				
5				34.6
6		Brown SILT with sand to clayey SILT with sand, fine to coarse sand, moist, slightly mottled. (ML)		
7				
8			stiff	
9				
10				39.5
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-53

FIGURE A

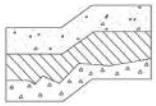
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(5-inches organic TOPSOIL)		
1		Brown SILT, moist, scattered rootlets, weak cementation. (ML)		17.8
2				
3			medium stiff	
4				
5				
6				38.2
7		Brown SILT with sand to clayey SILT with sand, fine to coarse sand, moist, slightly mottled. (ML)		
8			stiff	
9				
10				38.2
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-54

FIGURE A

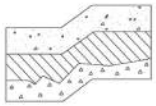
PROJECT NAME: Camas Buisness Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(5-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, scattered rootlets, weak cementation, occasional clayey SILT seam. (ML)		15.6
2				
3				
4			medium stiff	
5				36.1
6				
7				
8				
9		Brown SILT with sand, fine to coarse sand, moist, occasional gravel. (ML)	medium stiff to stiff	
10		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		33.6
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-55

FIGURE A

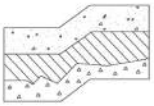
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(4-inches organic TOPSOIL)		
1		Brown SILT, moist, slightly mottled, trace rootlets, weak cementation. (ML)		16.9
2				
3				31.7
4			medium stiff	
5				
6				
7				
8		Brown silty SAND, fine to coarse sand, moist, trace gravel. (SM)		
9			medium dense	
10				30.1
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-56

FIGURE A

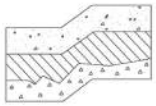
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, scattered rootlets, weak cementation. (ML)		13.6
2			medium stiff	
3				
4				48.0
5		Brownish-gray to gray SILT with sand, fine to medium sand, moist, mottled. (ML)		
6				
7			stiff	47.8
8		Blueish-gray sandy SILT, fine to coarse sand, moist to wet, trace organics. (ML)		
9				55.4
10				
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-57

FIGURE A

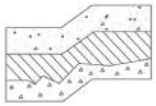
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** 10 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		17.5
2				
3			medium stiff	
4				
5				34.7
6		Brown to gray SILT with sand, fine to coarse sand, moist to wet, mottled. (ML)		
7				
8			stiff	35.1
9				
10				34.6
11		Test Pit terminated at approximately 10 feet. Minor groundwater seepage observed at approximately 10 feet. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-58

FIGURE A

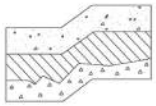
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(8-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, scattered rootlets, weak cementation. (ML)		16.9
2			medium stiff	
3				
4				35.1
5		Brown to gray SILT with sand, fine to coarse sand, moist, mottled. (ML)		
6				
7			stiff	35.8
8				
9				
10				34.9
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-59

FIGURE A

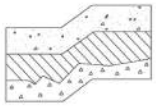
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		25.8
2				
3			medium stiff	
4		Brown to gray SILT with sand, fine to coarse sand, moist, mottled. (ML)		35.1
5				
6				
7				38.9
8			stiff	
9				
10				38.4
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-60

FIGURE A

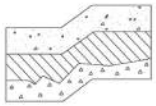
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** 8 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(8-inches organic TOPSOIL)		
1		Red SILT, moist, trace rootlets, weak cementation. (ML)		22.5
2				
3			medium stiff	
4		Brownish-gray to gray clayey SILT with sand, fine to coarse sand, moist, mottled, trace gravel. (ML)		37.0
5				
6				34.2
7			stiff	
8		Blueish-gray silty SAND with gravel, fine to coarse sand, fine to coarse gravel, wet. (SM)		
9			medium dense	30.1
10		Test Pit terminated at approximately 10 feet. Minor groundwater seepage observed at approximately 8 feet. No caving observed.		
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-61

FIGURE A

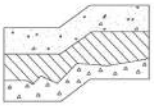
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Duff/understory **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(5-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		19.6
2				
3		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)	medium stiff	
4				36.2
5				
6		Gray SILT with sand and gravel, fine to coarse sand, fine to coarse gravel, moist, mottled. (ML)		
7				40.1
8			stiff	
9		Blueish-gray to dark gray SILT to SILT with sand, fine to coarse sand, moist, trace gravel. (ML)		49.1
10			very stiff	41.7
11		Test Pit terminated at approximately 11 feet. No groundwater seepage observed. No caving observed.		
12				
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-62

FIGURE A

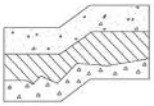
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Duff/understory **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, moist, numerous roots, scattered rootlets. (ML)		18.7
2				
3		Brown SILT with sand, fine to coarse sand, moist, mottled, occasional organic. (ML)	medium stiff	30.4
4				
5				
6				
7		Brown to gray GRAVEL with silt and sand, fine to coarse sand, fine to coarse gravel, moist, mottled, trace cobbles. (GP-GM)		41.4
8				
9			medium dense	
10				
11		Test Pit terminated at approximately 11 feet. No groundwater seepage observed. No caving observed.		36.3
12				
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-63

FIGURE A

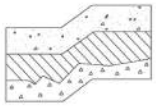
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** 7 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
1		Dark brown SILT, moist, mottled, occasional rootlet. (ML)	medium stiff	18.0
2				
3		Gray SILT with sand, fine to coarse sand, moist, mottled. (ML)	stiff	35.0
4		Gray SILT, moist, mottled. (ML)		
5				38.9
6		Brown to gray GRAVEL with silt and sand, fine to coarse sand, fine to coarse gravel, moist to wet, mottled, scattered cobbles. (GP-GM)		
7				58.0
8			medium dense	
9				
10				
11				50.4
12		Test Pit terminated at approximately 11 feet. Moderate groundwater seepage observed at approximately 7 feet. No caving observed.		
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-64

FIGURE A

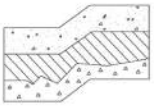
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, moist, numerous rootlets, weak cementation. (ML)	medium stiff	19.7
2		Gray to dark gray SILT, moist, mottled, occasional rootlet. (ML)		22.1
3				
4				
5				37.4
6			stiff	
7				41.0
8				
9				
10				
11				54.0
12		Test Pit terminated at approximately 11 feet. No groundwater seepage observed. No caving observed.		
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-65

FIGURE A

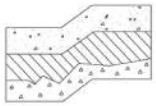
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(4-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)	medium stiff	15.0
2		Gray to dark gray SILT, moist, mottled, occasional rootlet. (ML)		33.6
3			stiff	
4				
5				25.4
6		Brown to gray GRAVEL with silt and sand, fine to coarse sand, fine to coarse gravel, moist, mottled, scattered cobbles. (GP-GM)		
7			medium dense	
8				
9				
10				36.0
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-66

FIGURE A

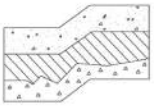
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		16.6
2				
3		Brown to gray SILT with sand, fine to medium sand, moist, mottled. (ML)	medium stiff	30.4
4				
5				
6				
7		Brown to gray silty GRAVEL with sand, fine to coarse sand, fine to coarse gravel, moist, mottled. (GM)		47.8
8			medium dense	
9				
10		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		48.0
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-67

FIGURE A

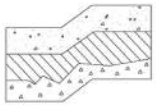
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		21.1
2				
3		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)	medium stiff	
4				33.5
5				
6		Gray SILT with sand, fine to medium sand, moist, mottled. (ML)		38.9
7			stiff	
8				
9		Brown to gray SILT, moist, mottled. (ML)	very stiff	
10		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		31.5
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-68

FIGURE A

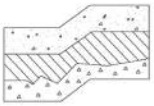
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(5-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		20.1
2				
3		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)	medium stiff	43.8
4				
5				
6				
7		Gray SILT with sand to sandy SILT, fine sand, moist. (ML)		39.6
8				
9		Blueish-gray SILT to SILT with sand, fine sand, moist. (ML)	stiff	44.6
10				
11		Test Pit terminated at approximately 11 feet. No groundwater seepage observed. No caving observed.		32.3
12				
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-69

FIGURE A

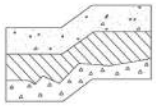
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, occasional organic, weak cementation. (ML)		21.0
2				
3		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)	medium stiff	
4				35.7
5				
6				
7		Brown to gray SILT with gravel, fine to coarse gravel, moist, mottled, scattered cobbles. (ML)		25.4
8				
9		Brown to gray SILT with sand and gravel, fine to coarse sand, fine to coarse gravel, moist, mottled, trace cobbles. (ML)	stiff	56.3
10				
11		Test Pit terminated at approximately 11 feet. No groundwater seepage observed. No caving observed.		57.2
12				
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-70

FIGURE A

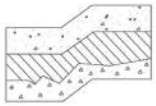
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** 9 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, trace rootlets, weak cementation. (ML)		13.8
2				
3			medium stiff	
4				33.6
		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)		
5				
6				
7				39.9
		Brown GRAVEL with silt and sand, fine to coarse sand, fine to coarse gravel, moist, mottled, trace cobbles. (GP-GM)		
8				
9			medium dense	
10				
11				26.3
		Test Pit terminated at approximately 11 feet. Minor groundwater seepage observed at approximately 9 feet. No caving observed.		
12				
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-71

FIGURE A

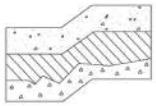
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** 9 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		17.2
2				
3			medium stiff	
4		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)		
5				37.7
6				
7				17.8
8		Brown GRAVEL with silt and sand, fine to coarse sand, fine to coarse gravel, moist to wet, mottled, trace cobbles, occasional boulder. (GP-GM)		
9				
10			medium dense	
11				
12				39.8
13		Test Pit terminated at approximately 12 feet. Moderate groundwater seepage observed at approximately 9 feet. No caving observed.		
14				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-72

FIGURE A

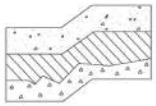
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 25, 2021 **DEPTH TO GROUNDWATER:** 10 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(7-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		20.5
2				
3			medium stiff	
4		Brown SILT with sand, fine to coarse sand, moist, mottled. (ML)		35.3
5				
6				
7		Gray sandy SILT, fine sand, moist, slighlty mottled. (ML)		36.0
8			stiff	
9				
10		Brown to gray GRAVEL with silt and sand, fine to coarse sand, fine to coarse gravel, moist to wet, mottled. (GP-GM)	medium dense	40.1
11		Test Pit terminated at approximately 11 feet. Minor groundwater seepage observed at approximately 10 feet. No caving observed.		
12				
13				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-73

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, occasional cobble, occasional organic, weak cementation. (ML)		20.8
2				
3			medium stiff	
4		Brown to gray SILT with sand, fine to medium sand, moist, mottled. (ML)		34.5
5				
6				35.1
7				
8		Blueish-gray SILT with sand to sandy SILT, fine to medium sand, moist. (ML)	stiff	
9				31.7
10				
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

Terra Associates, Inc.
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Environmental Earth Sciences

LOG OF TEST PIT NO. TP-74

FIGURE A

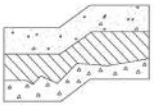
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, trace rootlets, weak cementation. (ML)		16.6
2				
3				
4		Brown to gray SILT with sand, fine to coarse sand, moist, mottled. (ML)	medium stiff	42.6
5				
6				
7				
8		Brown silty GRAVEL with sand, fine to coarse sand, fine to coarse gravel, moist, scattered cobbles. (GM)		30.2
9			medium dense	
10		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
11				
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-75

FIGURE A

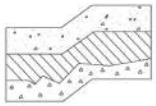
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(8-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		19.5
2				
3			medium stiff	
4				
5		Brown to gray SILT with sand, fine to coarse sand, moist, mottled. (ML)		40.9
6				
7				35.3
8			stiff	
9				
10				39.1
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-76

FIGURE A

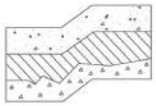
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** 7 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(9-inches organic TOPSOIL)		
1		Brown SILT with gravel, dry to moist, fine to coarse gravel, trace rootlets, weak cementation. (ML)		17.3
2				
3			medium stiff	
4				
5		Brown to gray SILT with sand, fine to coarse sand, moist, mottled, occasional gravel. (ML)		36.9
6				
7		Brown SAND with silt, fine to medium sand, moist to wet, interbedded silt seams. (SP-SM)		37.7
8			medium dense	
9		Gray SILT, moist. (ML)		49.6
10			stiff	
11		Test Pit terminated at approximatley 10 feet. Moderate groundwater seepage observed at approximately 7 feet. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-77

FIGURE A

PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** 11 ft **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(11-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		19.2
2				
3				
4		Brown SILT with sand, fine to coarse sand, moist, mottled, occasional gravel. (ML)		41.5
5			medium stiff	
6				
7				
8				
9				
10				
11				48.8
		Brown silty SAND with gravel, fine to coarse sand, fine to coarse gravel, wet, occasional cobble. (SM)	medium dense	
12		Test Pit terminated at approximately 12 feet. Minor groundwater seepage observed at approximately 11 feet. No caving observed.		
13				
14				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-78

FIGURE A

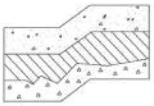
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(11-inches organic TOPSOIL)		
1		FILL: Brown SILT, moist, trace rootlets, occasional organic, occasional metal debris, occasional plastic debris. (ML)		22.9
2				
3		Brown to gray SILT with sand, fine to coarse sand, moist, mottled. (ML)	medium stiff	33.7
4				
5				
6				39.5
7			stiff	
8		Gray SILT, moist, mottled. (ML)		
9			very stiff	
10				27.5
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-79

FIGURE A

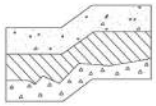
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, dry to moist, scattered rootlets, weak cementation. (ML)		18.0
2				
3		Brown SILT with sand to clayey SILT with sand, fine to coarse sand, moist, slightly mottled. (ML)	medium stiff	
4				34.4
5				
6				
7				
8		Brownish-gray sandy SILT, fine to coarse sand, moist, mottled. (ML)	stiff	
9				46.0
10		Gray SILT with sand, fine to coarse sand, moist to wet, mottled, alternating layers of blueish-gray SILT with sand. (ML)	medium stiff to stiff	
11				50.6
12		Test Pit terminated at approximately 12 feet. No groundwater seepage observed. No caving observed.		
13				
14				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
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LOG OF TEST PIT NO. TP-80

FIGURE A

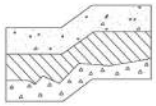
PROJECT NAME: Camas Business Center **PROJ. NO:** T-8553 **LOGGED BY:** MJX

LOCATION: Camas, Washington **SURFACE CONDITIONS:** Tall Grass **APPROX. ELEV:** NA

DATE LOGGED: May 24, 2021 **DEPTH TO GROUNDWATER:** NA **DEPTH TO CAVING:** NA

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6-inches organic TOPSOIL)		
1		Brown SILT, moist, trace rootlets, weak cementation. (ML)		25.2
2				
3		Brown SILT with sand to clayey SILT with sand, fine to coarse sand, moist, slightly mottled. (ML)	medium stiff	
4				33.7
5				
6				
7				
8			stiff	
9		Brownish-gray sandy SILT, fine to coarse sand, moist, mottled. (ML)		
10				35.7
11		Test Pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
12				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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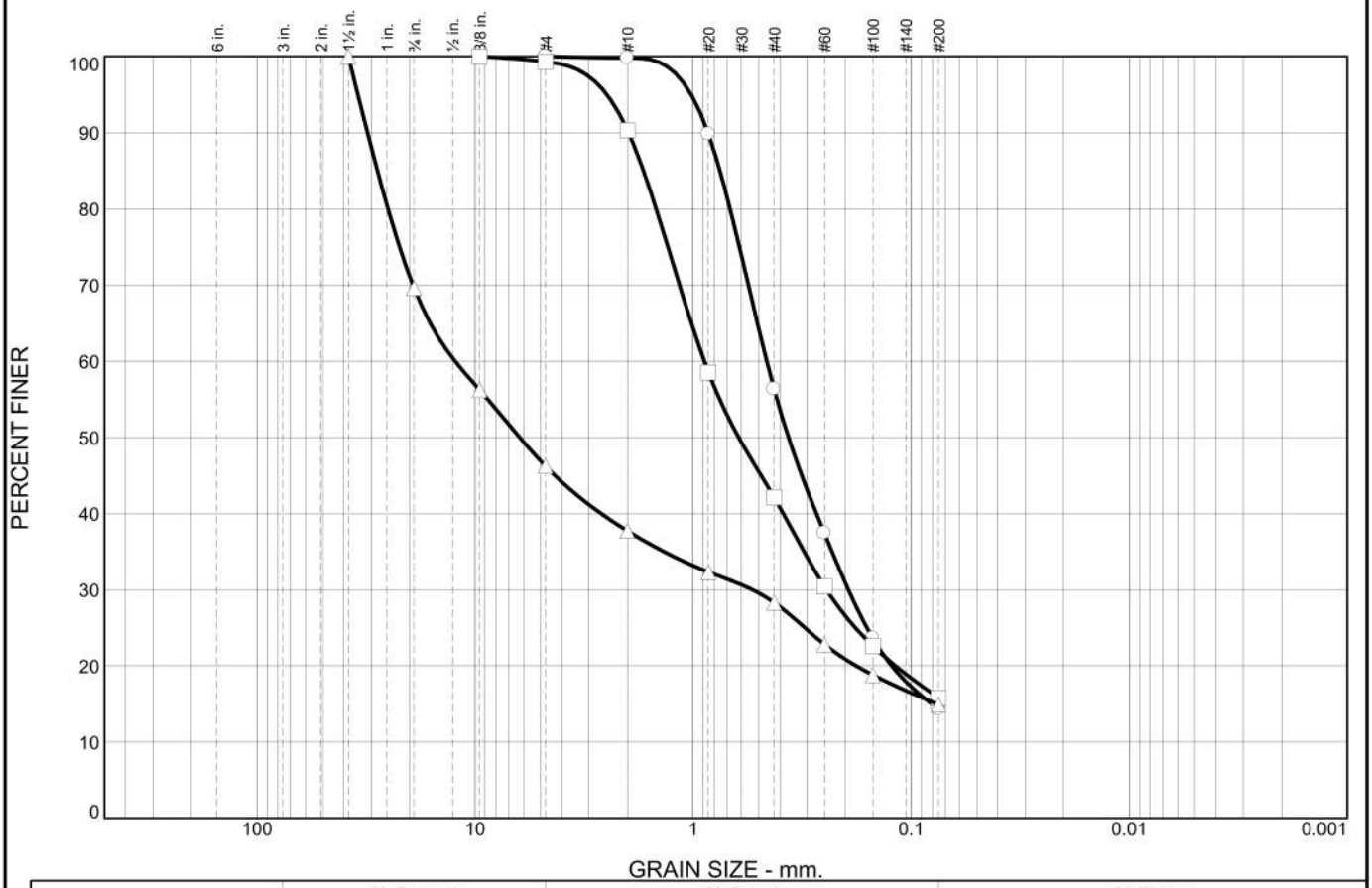
Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.2	43.5	42.0	14.3	
□	0.0	0.0	0.7	9.0	48.2	26.3	15.8	
△	0.0	30.4	23.4	8.5	9.4	13.4	14.9	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.7536	0.4595	0.3654	0.1943	0.0807			
□			1.6902	0.8889	0.6189	0.2449				
△			28.0367	12.3693	6.2492	0.5373	0.0764			

	Material Description	USCS	AASHTO
○	silty SAND	SM	
□	silty SAND	SM	
△	silty GRAVEL with sand	GM	

Project No. T-8553 **Client:** Panattoni Development Company

Project: East Vancouver E-Commerce Center

○ **Location:** Test Pit TP-11 **Depth:** 8 ft **Sample Number:** 4

□ **Location:** Test Pit TP-31 **Depth:** 8 ft **Sample Number:** 4

△ **Location:** Test Pit TP-35 **Depth:** 6 ft **Sample Number:** 3

Terra Associates, Inc.

Kirkland, WA

Remarks:

○ Tested on June 8, 2021

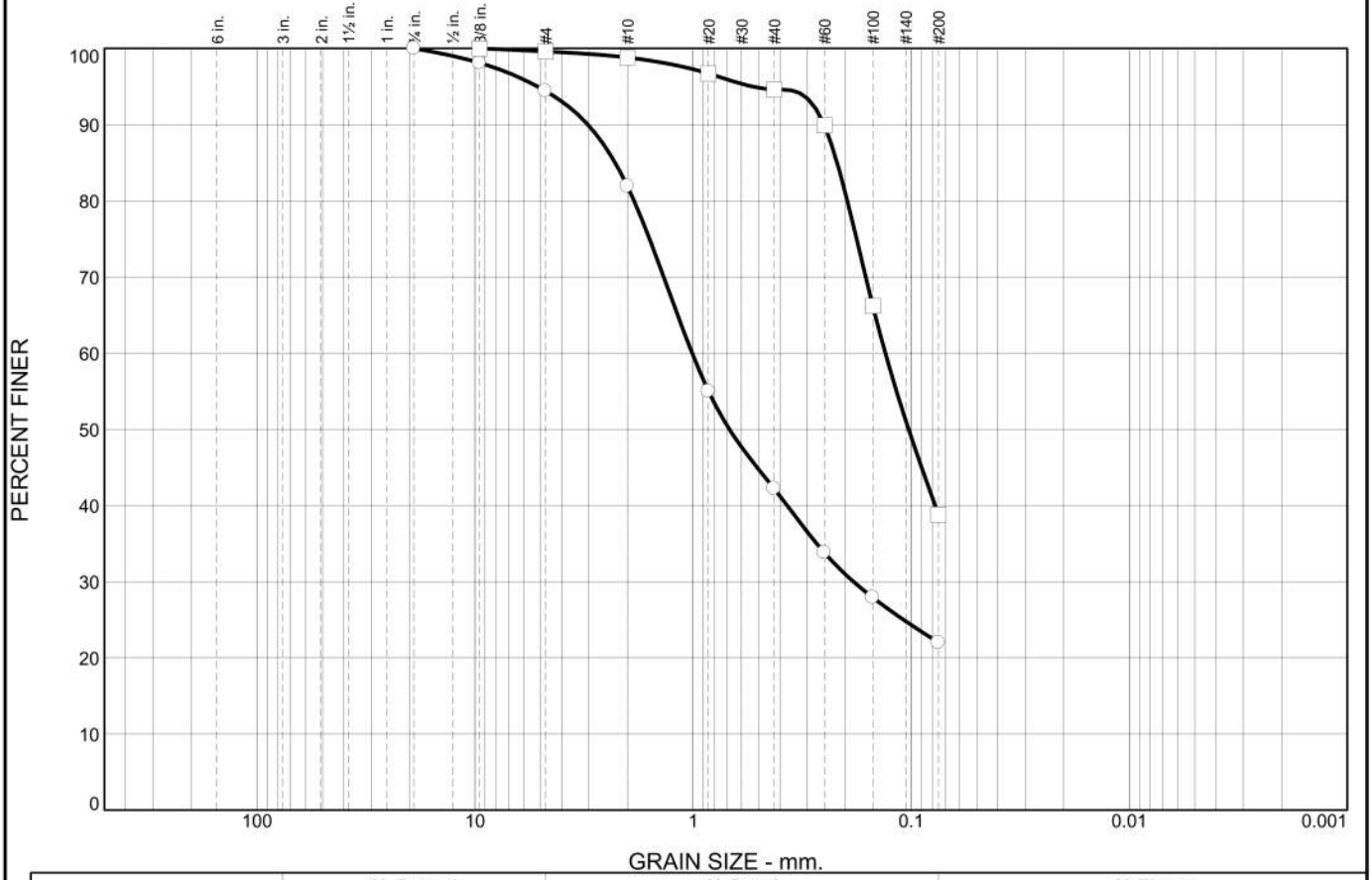
□ Tested on June 8, 2021

△ Tested on June 8, 2021

Figure A-82

Tested By: FQ

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	5.6	12.5	39.7	20.2	22.0	
□	0.0	0.0	0.4	0.8	4.2	55.8	38.8	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			2.2786	1.0101	0.6816	0.1842				
□			0.2186	0.1314	0.1027					

	Material Description	USCS	AASHTO
○	silty SAND with gravel	SM	
□	silty SAND	SM	

Project No. T-8553 **Client:** Panattoni Development Company

Project: East Vancouver E-Commerce Center

○ **Location:** Test Pit TP-39 **Depth:** 10 ft **Sample Number:** 3

□ **Location:** Test Pit TP-45 **Depth:** 10 ft **Sample Number:** 3

Remarks:

○ Tested on June 8, 2021

□ Tested on June 8, 2021

Terra Associates, Inc.

Kirkland, WA

Figure A-83

Tested By: FQ

WETLAND AND FISH AND WILDLIFE HABITAT ASSESSMENT REPORT

CAMAS BUSINESS CENTER

OCTOBER 2021

Soundview Consultants
Environmental Assessment
Planning + Land Use Solutions

WETLAND AND FISH AND WILDLIFE HABITAT ASSESSMENT REPORT

CAMAS BUSINESS CENTER

OCTOBER 8, 2021

PROJECT LOCATION

4707 & 4723 NORTHWEST LAKE ROAD
CAMAS, WASHINGTON 98607

PREPARED FOR

PANATTONI DEVELOPMENT COMPANY, INC.
1821 DOCK STREET, SUITE 100
TACOMA, WASHINGTON 98402

PREPARED BY

SOUNDVIEW CONSULTANTS LLC
2907 HARBORVIEW DRIVE
GIG HARBOR, WASHINGTON 98335
(253) 514-8952

Soundview Consultants
Environmental Assessment
Planning + Land Use Solutions

Executive Summary

Soundview Consultants LLC (SVC) has been assisting Panattoni Development Company Inc. (Applicant) with a wetland and fish and wildlife habitat assessment and environmental planning to support the proposed Camas Business Center industrial development on a 74.06-acre site located at 4707 & 4723 Northwest Lake Road in the City of Camas, Washington. The subject property consists of two tax parcels situated in the Southeast ¼ of Section 29, Township 02 North, Range 03 East, W.M (Clark County Tax Parcel Numbers 176155000, and 176170000).

SVC performed an investigation and assessment of potentially regulated wetlands, streams, and other fish and wildlife habitat conservation areas on the subject property and publicly accessible areas within 300 feet of the site in December 2020, with follow-up investigations in April 2021. Using current methodology, SVC identified four potentially regulated wetlands (Wetlands A - D) on the subject property, and one potentially regulated stream (Offsite Stream Z) offsite to the west of the subject property. Wetland A is classified as Category III wetland with 4 total habitat points, and subject to a standard 80-foot buffer based on proposed high intensity land use per Camas Municipal Code (CMC) 16.53.040.B.2 Table 16.53.040-1. Wetland B is classified as a Category III wetland with 5 total habitat points and subject to a standard 120-foot buffer per CMC 16.53.040.B.2 Table 16.53.040-3. Wetland C is classified as a Category IV wetland and is likely exempt from buffer regulations per Camas Municipal Code (CMC) 16.53.010.C.2.a due to its isolated location in the landscape and small size (less than 4,350 square feet). Wetland D is classified as a Category III wetland with 6 total habitat points and subject to a standard 135-foot buffer per CMC 16.53.040.B.2 Table 16.53.040-3. Offsite Stream Z is likely a Type F stream with no known salmonid presence in accordance with Washington Department of Fish and Wildlife (WDFW) SalmonScape data and subject to a standard 75-foot buffer per CMC 16.61.040.D. The stream buffer is not anticiapted to project onto the subject property. No other potentially regulated wetlands or fish and wildlife habitat conservation areas were identified within 300 feet of the subject property.

The Applicant proposes industrial development of the subject property to create a business center that includes three buildings, internal access roads, parking and loading areas, utilities, and stormwater facilities. Necessary critical area impacts and mitigation requirements are outlined in a wetland mitigation plan prepared under separate cover. The table below summarizes the identified wetlands and streams and summarizes the potential regulatory status by local, state, and federal agencies.

Feature Name	Size/Length Onsite	Category/ Type[1]	Regulated Under CMC 16.53 & 16.61	Regulated Under RCW 90.48	Regulated Under Clean Water Act
Wetland A	56,558 sf	III	Yes	Yes	Likely
Wetland B	32,343 sf	III	Yes	Yes	Likely
Wetland C	3,167 sf	IV	No - Exempt	Yes	Not Likely
Wetland D	9,074 sf	III	Yes	Yes	Assumed
Offsite Stream Z	N/A (Offsite)	F	Yes	Yes	Likely

1. Wetlands classified according to Washington State Department of Ecology (WSDOE) wetland rating system for western Washington (Hruby, 2014); streams classified according Washington Department of Natural Resources (DNR) Water Typing System and CMC 16.61.040.

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Appendix B — Background Information
Appendix C — Existing Conditions Map
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Appendix E — Wetland Rating Forms
Appendix F — Wetland Rating Maps
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Chapter 1. Introduction

Soundview Consultants LLC (SVC) has been assisting Panattoni Development Company Inc. (Applicant) with a wetland and fish and wildlife habitat assessment and environmental planning to support the proposed Camas Business Center industrial development on a 74.06-acre site located at 4707 & 4723 Northwest Lake Road in the City of Camas, Washington. The subject property consists of two tax parcels situated in the Southeast ¼ of Section 29, Township 02 North, Range 03 East, W.M (Clark County Tax Parcel Numbers 176155000, and 176170000).

The purpose of the wetland and fish and wildlife habitat assessment report is to identify the presence of potentially regulated wetlands and fish and wildlife habitat conservation areas that may be found on or near the subject property.

This report provides conclusions and recommendations regarding:

- Site description and area of assessment;
- Background research and identification of potential critical areas within the vicinity of the site;
- Identification and assessment of potentially regulated wetlands and streams;
- Existing site map detailing identified wetlands and offsite stream; and
- Supplemental information necessary for local, state, and federal regulatory review.

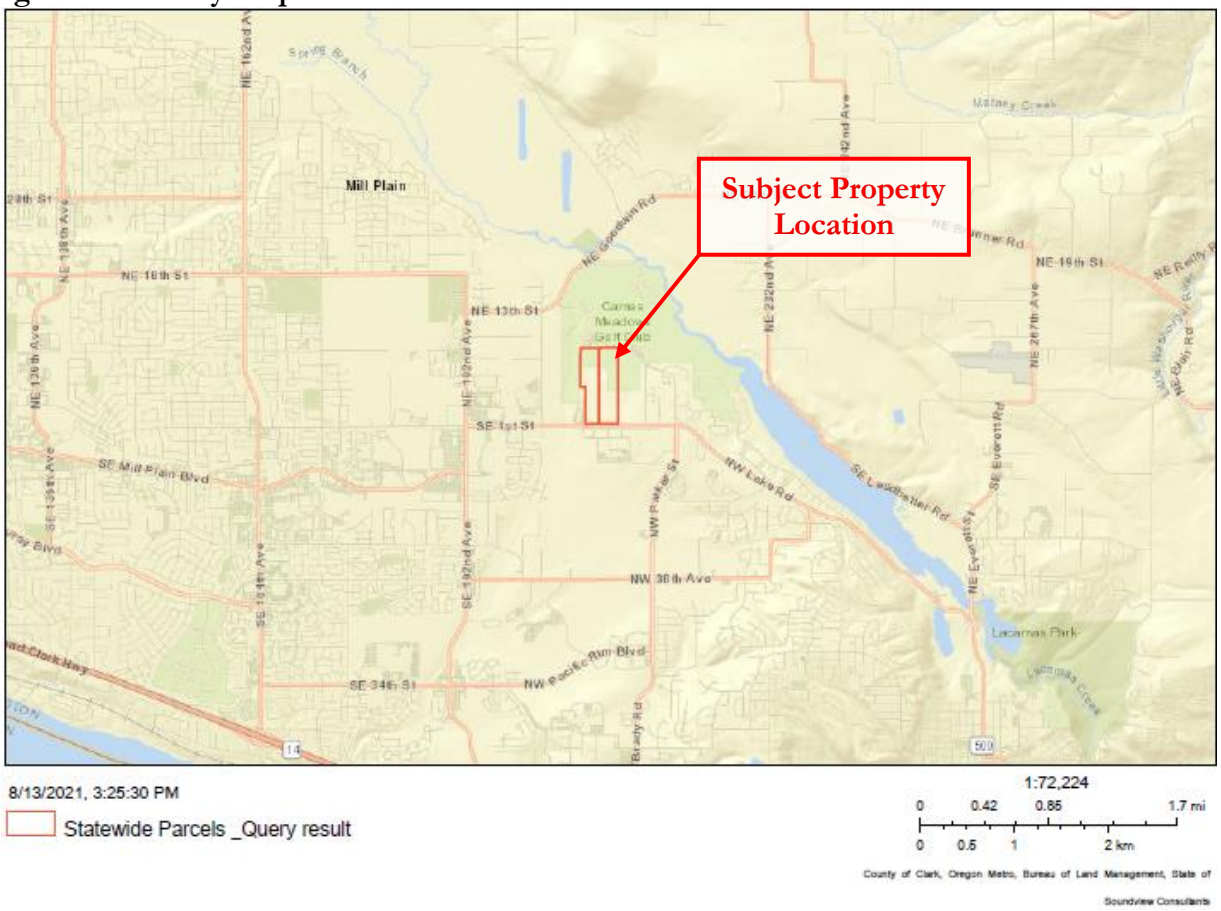
Chapter 2. Property Location

2.1 Proposed Location

The subject property is located at located at 4707 & 4723 Northwest Lake Road in the City of Camas, Washington. The subject property consists of two tax parcels situated in the Southeast ¼ of Section 29, Township 02 North, Range 03 East, W.M (Clark County Tax Parcel Numbers 176155000, and 176170000).

To access the subject property, heading southbound on Interstate-5 from the Ridgefield area, keep right at the fork to take the exit for Interstate 205 S toward Salem. After 10.1 miles, use the right two lanes to take exit 27 for Washington-14 East towards Camas. Continue for 4.3 miles, then take exit 10 for Southeast 192nd Avenue. Turn left on Southeast 192nd Avenue then right on Southeast Brady Road. At the traffic circle in 0.1 mile, take the first exit and stay on Southeast Brady Road. Follow Southeast Brady Road for 1.6 miles where it becomes Northwest Parker Street. Continue for 1.6 miles, and then turn left on Northwest Lake Road, where the property will be located on the right-hand side after 0.5 miles.

Figure 1. Vicinity Map.



2.2 Proposed Project

The Applicant proposes industrial development of the subject property to create a business center that includes three buildings, internal access roads, parking and loading areas, utilities, and stormwater facilities. Necessary critical area impacts and mitigation requirements are outlined in a wetland mitigation plan prepared under separate cover.

Chapter 3. Methods

SVC investigated, assessed, and/or delineated potentially regulated wetlands, streams and other fish and wildlife habitat on the subject property in December 2020 and April 2021. All determinations were made using observable vegetation, hydrology, and soils in conjunction with data from the U.S. Geological Survey (USGS) topographic maps, National Resource Conservation Service (NRCS) soil survey, U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI), Washington State Department of Natural Resources (DNR) water typing system, Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) and SalmonScape mapping tools, Clark County GIS, and various orthophotographic resources. Appendix A contains further details for the methods and tools used to prepare this report.

Wetland boundaries were determined using the routine approach described in the U.S. Army Corps of Engineers (USACE) *Wetlands Delineation Manual* (Environmental Laboratory, 1987) and modified according to the guidelines established in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0) (USACE, 2010) and *Field Indicators of Hydric Soils in the United States* (NRCS, 2018). Qualified wetland scientists marked boundaries of wetlands with orange surveyor's flagging labeled alpha-numerically and tied to 3-foot lath or vegetation along the wetland boundary. Pink surveyor's flagging was labeled alpha-numerically and tied to 3-foot lath or vegetation at formal sampling locations (DP-1 through DP-21) to mark the points where detailed data was collected. Additional tests pits were excavated at regular intervals inside and outside of the wetland boundaries to further confirm the delineation.

SVC classified all wetlands using both the hydrogeomorphic (Brinson, 1993) and Cowardin (Cowardin, 1979) classification systems. Following classification and assessment, WSDOE-trained scientists rated and categorized all wetlands using the *Washington State Wetlands Rating System for Western Washington* (Hruby, 2014) and the definitions established in Camas Municipal Code (CMC) 16.53.020.

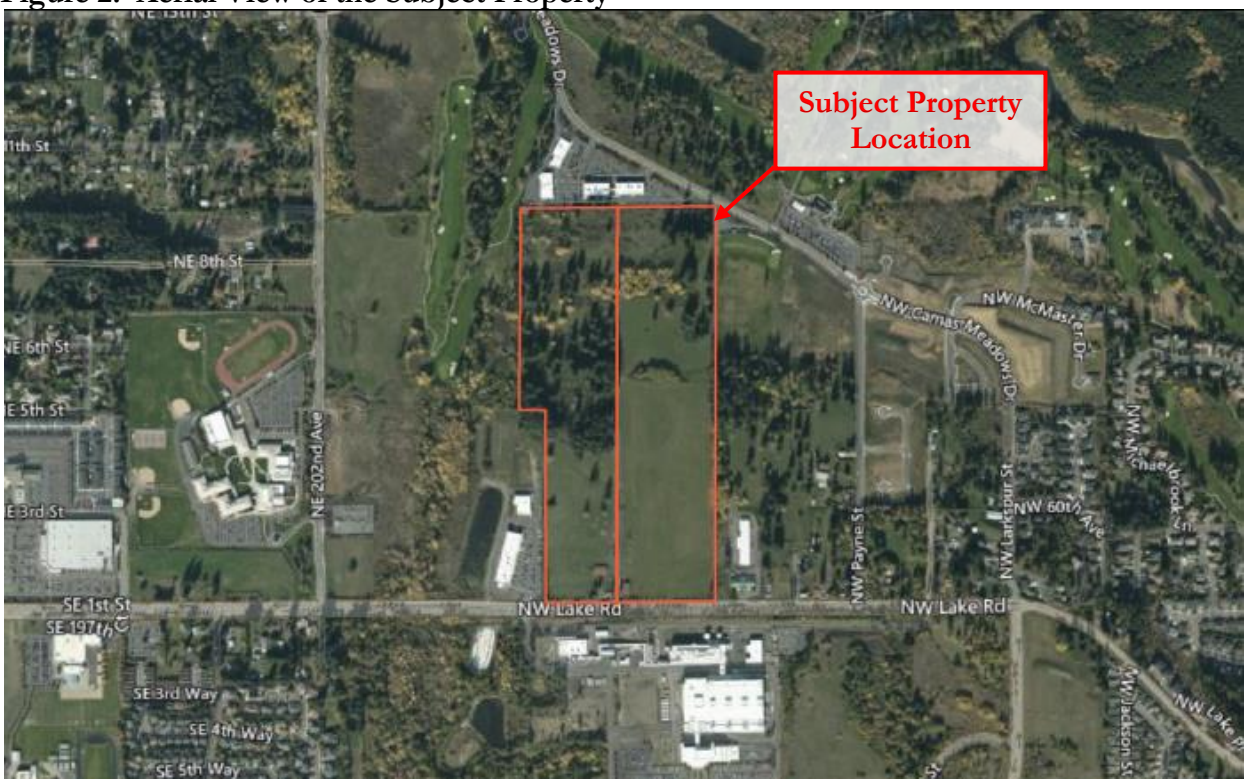
The fish and wildlife habitat assessment was conducted during the same site visit by qualified fish and wildlife biologists. The experienced biologists made visual observations using stationary and walking survey methods for both aquatic and upland habitats noting any special habitat features or signs of fish and wildlife activity.

Chapter 4. Existing Conditions

4.1 Landscape Setting

The subject property is located in a mixed light-commercial and industrial setting in the City of Camas. The parcels are undeveloped and sparsely forested, and currently used as grazing land for cattle (Figure 2). A single-family residence and associated infrastructure including a driveway, detached garage, and equipment storage shed/barn is located on the southern portion of the subject property. The site is bounded by commercial buildings to the north, undeveloped land and commercial buildings to the east, Northwest Lake Road to the south, and a golf course and commercial properties to the west. Topography onsite is generally flat with a slight downwards slope from to south to north. Elevation ranges from approximately 295 feet above mean sea level (amsl) on the southern portion of the site to approximately 244 feet amsl on the northern portion of the site. A topographic map is provided in Appendix B1. The subject property is located within Water Resource Inventory Area (WRIA) 28 – Salmon-Washougal.

Figure 2. Aerial View of the Subject Property



4.2 Soils

The NRCS Soil Survey of Clark County, Washington identifies four soil series on the subject property: Cove silty clay loam, thin solum, 0 to 3 percent (CwA), Hesson clay loam, 0 to 8 percent slopes (HcB), Hesson clay loam, 8 to 20 percent slopes (HcD), and Powell silt loam, 0 to 8 percent slopes (PoB). A soil map is provided in Appendix B2. Below is a detailed description of each soil series.

Cove silty clay loam, thin solum, 0 to 3 percent (CwA)
According to the survey, Cove silty clay loam, thin solum, 0 to 3 percent (CwA) is part of the Cove series of soils mapped by the NRCS in Clark County. The Cove series consists of deep, very poorly drained soils that were formed in water-laid deposits in old lakes and ponds. The CwA soils occur in low, wet basins and depressions on terraces in the central part of the county. A typical soil profile is a silty clay loam for the first 10 inches of depth and is a very dark grayish brown. From 10 to 14 inches, the soil is a dark-gray silty loam. Immediately below, is an extremely firm, black clay layer about 7 inches thick. The underlying material to a depth of about 60 inches is and olive-colored silt laom. Cove silty clay loam, thin solum, 0 to 3 percent slopes, is listed as hydric on the Clark County Hydric Soils List (NRCS, N.d.).

Hesson clay loam, 0 to 8 percent slopes (HcB)
According to the survey, Hesson clay loam, 0 to 8 percent slopes (HcB) is part of the Hesson series of soils mapped by the NRCS in Clark County. The Hesson series consists well-drained soils in mostly level to gently rolling terrain. Parent material is deeply weathered, old alluvium that consists of varying amounts of gravel. Annual precipitation typically varies between 50 and 60 inches. In a typical profile, the surface layer is a dark reddish-brown clay loam about 4 inches thick. Below this layer is a friable, dark reddish-brown clay loam about 10 inches thick. A reddish-brown clay to a depth of about 91 inches. The Hesson clay loam, 0 to 8 percent slopes (HcB) is listed as non-hydric on the Clark County Hydric Soils List (NRCS, N.d.).

Hesson clay loam, 8 to 20 percent slopes (HcD)
According to the survey, this soil is similar to the Hesson clay loam 0 to 8 percent except the surface layer is generally, 1 to 2 inches thinner, and up to 4 inches thinner where erosion has been active. The Hesson clay loam, 8 to 20 percent slopes (HcD) is listed as non-hydric on the Clark County Hydric Soils List (NRCS, N.d.).

Powell silt loam, 0 to 8 percent slopes (PoB)
According to the survey, the Powell series is a moderately, well-drained, medium textured soil found in rolling terrains. The annual precipitation is typically around 50 inches. Powell soils are used for row crops, hay production, pasture and timber. The Powell silt loam, 0 to 8 percent slopes (PoB) surface layer is dark brown silt loam to a depth of about 17 inches. Below the surface layer is a friable, mottled, grayish-brown silt loam about 6 inches thick. The following layer, to a depth of approximately 22 inches is a dark yellowish-brown silt loam that is firm, and mottled brown heavy silt loam in the lower part. Below this layer to a depth of approximately 63 inches is a firm, mottled, dark-brown heavy silt loam. The Powell silt loam, 0 to 8 percent slopes (PoW) is listed as non-hydric on the Clark County Hydric Soils List (NRCS, N.d.)

4.3 Vegetation

Vegetation on the subject property consists of an actively grazed pasture with partially forested areas on the west and northern portions of the property. The grazed areas on the property exhibited evidence of disturbance and heavily compacted soils from cattle activity. Vegetation in these areas consisted of common pasture grasses including tall fescue (*Schedonorus arundinaceus*), common velvetgrass (*Holcus lanatus*), orchard grass (*Dactylis glomerata*), Kentucky bluegrass (*Poa pratensis*), and soft rush (*Juncus effusus*). The forested portion of the site is generally dominated by a canopy of Oregon ash (*Fraxinus latifolia*), with smaller amounts of Douglas fir (*Psuedotsuga menziesii*), oneseed hawthorn (*Crataegus monogyna*), and hardhack (*Spiraea douglasii*). Non-native, invasive species were prevalent

throughout the site, including Himalayan blackberry (*Rubus armeniacus*) (particularly in the north and northwest portions of the property), reed canarygrass (*Phalaris arundinacea*), and bird's-foot trefoil (*Lotus corniculatus*).

4.4 Wetland and Stream Inventories and Priority Habitats and Species

The USFWS NWI map (Appendix B3), WDFW PHS Map (Appendix B4), and Clark County Stream and Wetland Inventory (Appendix B5) do not identify any potentially regulated wetlands, streams, or priority habitats or species on the subject property. The Clark County Stream and Wetland Inventory map and the USFWS NWI map identify potential wetlands offsite within 300 feet to the west of the subject property, associated with a potential offsite stream identified by Clark County and DNR (Appendix B6). DNR classifies the offsite stream as a Type F (fish-bearing) stream. The WDFW SalmonScape map (Appendix B7) does not identify potential salmonid presence within the offsite stream, or within 300 feet of the site. The WDFW PHS map identifies potential caves or cave-rich areas within the township, but not necessarily on the subject property. No other potential wetlands, streams, or other priority habitats or species are documented on or within 300 feet of the subject property.

4.6 Precipitation

Precipitation data was obtained from the National Oceanic and Atmospheric Administration (NOAA) weather station at Portland International Airport in order to obtain percent of normal precipitation during and preceding the investigation. A summary of data collected is provided in Table 1.

Table 1. Precipitation Summary[1].

Date	Day of	Day Before	1 Week Prior	2 Weeks Prior	30 Days Prior (Observed/Normal)	Year to Date (Observed/Normal)[2]	Percent of Normal (Year to Date[2])
12/21/2020	0.33	1.43	2.80	3.96	4.99/5.98	10.80/12.89	84
04/06/2021	0.00	0.00	0.00	0.33	1.37/3.82	24.19/27.99	86
04/07/2021	0.00	0.00	0.00	0.33	1.12/3.79	24.19/28.09	86

1. Precipitation levels provided in inches. Data obtained from NOAA (http://w2.weather.gov/climate/xmacis.php?wfo=pqr) for Sea-Tac airport.
2. Year-to-Date precipitation is for the water year from the preceding October 1st to the onsite date.

Precipitation data during the December 21, 2020 site investigation were within the statistical normal range for the prior 30 days and for the year-to-date (approximately 84 percent of normal). This investigation followed a heavy storm event where 1.43 inches of precipitation accumulation was reported the previous day, and 1.76 inches reported in the prior 24-48 hours. Precipitation data for the April 6 and 7, 2021 site visits were drier than normal for the prior 30 days though within the statistical normal range for the year-to-date (approximately 86 percent of normal). Precipitation data suggests that conditions were at the lower end of the normal range during the April 2021 delineation work, which was completed during the early growing season. Such conditions were considered in making professional wetland boundary determinations.

Chapter 5. Results

The site investigations on December 21, 2020, and April 6 and 7, 2021 identified and delineated four wetlands (Wetlands A - D) on the subject property and identified one stream (Offsite Stream Z) offsite to the west of the subject property. No other wetlands, streams, or other fish and wildlife habitat conservation areas were identified within 300 feet of the subject property during the site investigations.

5.1 Wetlands

SVC identified and delineated four wetlands (Wetlands A - D) on the subject property. The identified wetlands contained indicators of wetland hydrology, hydric soils, and a predominance of hydrophytic vegetation according to current wetland delineation methodology. The data forms (DP-1 through DP-21), wetland rating forms, and wetland rating maps are provided in Appendices D, E, and F, respectively. Table 2 summarizes the wetlands identified during the site investigations.

Table 2. Wetland Summary

Wetland	Predominant Wetland Classification / Rating				Wetland Size Onsite (sq ft)	Standard Buffer Width (feet)
	Cowardin[1]	HGM[2]	WSDOE[3]	City of Camas[4]		
A	PFOC	Depressional	III	III	56,558	80
B	PFO/EMBC	Slope	III	III	32,343	120
C	PEMB	Slope	IV	IV	3,167	N/A[5]
D	PFO/SS/EMBC	Depressional	III	III	9,074	135

Notes:
1. Cowardin et al. (1979); Federal Geographic Data Committee (2013); class based on vegetation: PFO = Palustrine Forested, PSS = Scrub-Shrub, PEM = Palustrine Emergent. Modifiers for Water Regime: B = Seasonally Saturated, C = Seasonally Flooded.
2. Brinson, M. M. (1993).
3. Current WSDOE rating (Hruby, 2014).
4. Current WSDOE rating system (Hruby, 2014) per CMC 16.53.020.B.
5. Exempt per CMC 16.53.010.C.2.a

5.1.1 Wetland A

Wetland A is 56,558 square feet (1.30 acres) in size and is located on the northern portion of the subject property. Hydrology for Wetland A is provided by direct precipitation, a seasonally high water table, and surface runoff from adjacent uplands. A culvert is located on the west end of the wetland and reduces the storage capacity of the wetland. Wetland vegetation is dominated by an overstory of Oregon ash, with an understory of oneseed hawthorn, hardhack, and shortawn foxtail (*Alopecurus aequalis*). Non-native, invasive species observed in Wetland A include Himalayan blackberry, reed canarygrass, meadow foxtail, and bird's-foot trefoil. Wetland A is a Palustrine Forested, Seasonally Flooded (PFOC) wetland. Wetland A is a Category III depressional wetland with a habitat score of 4 points under current WSDOE wetland rating methodology (Hruby, 2014). Table 3 provides a detailed summary of Wetland A.

5.1.2 Wetland B

Wetland B is 32,343 square feet (0.74 acre) in size and is located on the western portion of the subject property, extending offsite to the west. Hydrology for Wetland B is provided by direct precipitation, a seasonally high-water table, and surface runoff from adjacent uplands. A culvert provides hydraulic connectivity between Wetland A and Wetland B. Wetland vegetation is dominated by an overstory of Oregon ash, with an understory dominated by tall fescue and Kentucky bluegrass, and non-native, invasives Himalayan blackberry, reed canarygrass, and bird's-foot trefoil. Wetland B is a Palustrine Forested/Emergent, Seasonally Flooded/Seasonally Saturated (PFO/EMBC) wetland. Wetland B is a Category III slope wetland with a habitat score of 5 points under current WSDOE wetland rating methodology (Hruby, 2014). Table 4 provides a detailed summary of Wetland B.

5.1.2 Wetland C

Wetland C is 3,167 square feet (0.07 acre) in size and located on the eastern portion of the subject property. Hydrology for Wetland C is provided by direct precipitation, a seasonally high water table, and surface runoff from adjacent uplands. Wetland vegetation is dominated by soft rush, with smaller amounts of common velvetgrass, Kentucky bluegrass, and tall fescue. Wetland C is a Palustrine, Emergent, Seasonally Saturated (PEMB) wetland. Wetland C is a Category IV slope wetland under current WSDOE wetland rating methodology (Hruby, 2014). Table 4 provides a detailed summary of Wetland C.

5.1.2 Wetland D

Wetland D is 9,074 square feet (0.21 acre) in size and located in the northwestern corner of the subject property. Hydrology for Wetland B is provided by direct precipitation, a seasonally high water table, and surface runoff from adjacent uplands. Wetland vegetation is dominated by an overstory of Oregon ash with an understory consisting of hardhack, oneseed hawthorn, soft rush, and fringed willow herb (*Epilobium ciliatum*), as well non-native invasive species including Himalayan blackberry, rambler rose (*Rosa multiflora*), bull thistle (*Cirsium vulgare*), reed canarygrass, tall fescue, and bird's foot trefoil. Wetland D is a Palustrine Forested/Scrub-shrub/Emergent, Seasonally Flooded/Seasonally Saturated (PFO/SS/EMBC) wetland. Wetland D is a Category III depressional wetland with a habitat score of 6 points under current WSDOE wetland rating methodology (Hruby, 2014). Table 4 provides a detailed summary of Wetland D.

Table 3. Wetland A Summary

<table>
<tr><th colspan="3">WETLAND A – INFORMATION SUMMARY</th></tr>
<tr><td>Location:</td><td colspan="2">Located on the northern portion of the subject property, centrally located.</td></tr>
<tr><td colspan="2" rowspan="10"> </td><td>Local Jurisdiction</td><td>City of Camas</td></tr>
<tr><td>WRIA</td><td>28 – Salmon-Washougal</td></tr>
<tr><td>WSDOE Rating (Hruby, 2014)</td><td>III</td></tr>
<tr><td>City of Camas Rating</td><td>III</td></tr>
<tr><td>City of Camas Buffer Width</td><td>80</td></tr>
<tr><td>Wetland Size</td><td>56,558 SF</td></tr>
<tr><td>Cowardin Classification</td><td>PFOC</td></tr>
<tr><td>HGM Classification</td><td>Depressional</td></tr>
<tr><td>Wetland Data Sheet(s)</td><td>DP-3W</td></tr>
<tr><td>Upland Data Sheet(s)</td><td>DP-4U</td></tr>
<tr><td>Boundary Flag color</td><td>Orange</td></tr>
<tr><td>Dominant Vegetation</td><td colspan="2">Wetland vegetation is dominated by an overstory of Oregon ash., with an understory comprised of native and non-native shrubs and herbaceous plants including reed canary grass, Himalayan blackberry, shortawn foxtail, hardhack and tall fescue.</td></tr>
<tr><td>Soils</td><td colspan="2">Hydric soil indicator F3 (Depleted Matrix) was observed.</td></tr>
<tr><td>Hydrology</td><td colspan="2">Hydrology for Wetland A is provided by direct precipitation, a seasonally high water table, and surface runoff from adjacent wetlands.</td></tr>
<tr><td>Rationale for Delineation</td><td colspan="2">Wetland boundaries were determined by topographic drop and a transition to a hydrophytic plant community.</td></tr>
<tr><td>Rationale for Local Rating</td><td colspan="2">Wetland rating based on the current WSDOE wetland rating system for Western Washington (Hruby, 2014) per CMC 16.53.020.B.</td></tr>
<tr><th colspan="3">Wetland Functions Summary</th></tr>
<tr><td>Water Quality</td><td colspan="2">Wetland A has moderate potential to improve water quality due to the presence of an outlet, seasonal ponding in more than half the wetland unit, and being located in an area of land use that generates pollutants. However, these functions are limited by the small amount of persistent, ungrazed plants throughout the wetland unit and lack of stormwater entering the wetland. The value of any water quality improvement functions within the wetland is increased as the wetland is located in a sub-basin with 303(d) listed waters and an area identified as important for maintaining water quality. This wetland scores 7 out of 9 points for water quality functions.</td></tr>
<tr><td>Hydrologic</td><td colspan="2">This wetland has moderate potential to reduce flooding and erosion due to moderate storage potential during wet periods, the moderate contribution of storage within the watershed, and the presence of a constricted outlet (culvert) leading to a downgradient wetland. These functions are limited by less the 25% of the contributing basin being covered in intensive human land uses. This wetland scores 6 out of 9 points for hydrologic functions.</td></tr>
<tr><td>Habitat</td><td colspan="2">Wildlife habitat functions provided by the wetland are considered low and may include small mammal and bird forage and cover. Wetland A has only one Cowardin class and hydroperiod, and is relatively low in species diversity. However, Wetland A contains limited priority and special habitat features (snags and logs). The surrounding landscape has a limited potential to support habitat connectivity between the wetland and other potential habitat due to existing habitat fragmentation and surrounding land uses. Wetland A scores 4 out of 9 points for habitat function.</td></tr>
<tr><td>Buffer Condition</td><td colspan="2">The buffer for Wetland A is considered degraded as it contains extensive amounts of non-native invasive, Himalayan blackberry.</td></tr>
</table>

Table 4. Wetland B Summary

WETLAND B – INFORMATION SUMMARY			
Location:	Located on the western portion of the subject property, extending offsite to the west.		
		Local Jurisdiction	City of Camas
		WRIA	28 – Salmon-Washougal
		WSDOE Rating (Hruby, 2014)	III
		City of Camas Rating	III
		City of Camas Buffer Width	120
		Wetland Size	32,343 SF
		Cowardin Classification	PFO/EMBC
		HGM Classification	Slope
		Wetland Data Sheet(s)	DP-5W
		Upland Data Sheet(s)	DP-4U and DP-15U
		Boundary Flag color	Orange
Dominant Vegetation	Wetland vegetation is dominated by an overstory of Oregon ash, with an understory dominated by tall fescue and Kentucky bluegrass, and non-native, invasives Himalayan blackberry, reed canarygrass, and bird's-foot trefoil.		
Soils	Hydric soil indicator F3 (Depleted Matrix) was observed.		
Hydrology	Hydrology for Wetland B is provided by direct precipitation, a seasonally high water table, and surface runoff from adjacent wetlands.		
Rationale for Delineation	Wetland boundaries were determined by a transition to a hydrophytic plant community and hydric soils.		
Rationale for Local Rating	Wetland rating based on the current WSDOE wetland rating system for Western Washington (Hruby, 2014) per CMC 16.53.020.B.		
Wetland Functions Summary			
Water Quality	Wetland B has some potential to improve water quality due to relatively low slope grade of the wetland unit, surrounding land uses that generate pollutants and being located in a sub-basin with 303(d) listed waters and an area identified as important for maintaining water quality. However, the wetland lacks the appropriate types and coverage of plants needed to trap sediments and pollutants. This wetland scores 6 out of 9 points for water quality function.		
Hydrologic	This wetland has some potential to reduce flooding and erosion due to being located in an area that generates excess surface runoff and surface flooding problems down-gradient. However, these functions are limited by the lack of dense, uncut, rigid plants in the wetland unit required to reduce surface water velocities. This wetland scores 5 out of 9 points for hydrologic function.		
Habitat	Wildlife habitat functions provided by the wetland are considered low and may include small mammal and bird forage and cover. Wetland B contains some plant diversity with two Cowardin classes, two hydroperiods, and low interspersion of habitat. The surrounding landscape has a low potential to support habitat connectivity between the wetland and other potential habitat due to existing habitat fragmentation and surrounding high intensity land uses. Wetland B scores 5 out of 9 points for habitat function.		
Buffer Condition	The offsite buffer for Wetland A is considered degraded as it contains extensive amounts of non-native invasive, Himalayan blackberry.		

Table 5. Wetland C Summary

<table>
<tr><th colspan="3">WETLAND C – INFORMATION SUMMARY</th></tr>
<tr><td>Location:</td><td colspan="2">Located on the eastern boundary of the subject property.</td></tr>
<tr><td colspan="2" rowspan="10"> </td><td>Local Jurisdiction</td><td>City of Camas</td></tr>
<tr><td>WRIA</td><td>28 – Salmon-Washougal</td></tr>
<tr><td>WSDOE Rating (Hruby, 2014)</td><td>IV</td></tr>
<tr><td>Clark County Rating</td><td>IV</td></tr>
<tr><td>Clark County Buffer Width</td><td>N/A</td></tr>
<tr><td>Wetland Size</td><td>3,167 SF</td></tr>
<tr><td>Cowardin Classification</td><td>PEMB</td></tr>
<tr><td>HGM Classification</td><td>Slope</td></tr>
<tr><td>Wetland Data Sheet(s)</td><td>DP-10W</td></tr>
<tr><td>Upland Data Sheet(s)</td><td>DP-11U</td></tr>
<tr><td>Dominant Vegetation</td><td colspan="2">Wetland vegetation is dominated by soft rush, with smaller amounts of common velvetgrass, Kentucky bluegrass, and tall fescue.</td></tr>
<tr><td>Soils</td><td colspan="2">Hydric soil indicator F6 (Redox Dark Surface) was observed.</td></tr>
<tr><td>Hydrology</td><td colspan="2">Hydrology for Wetland C is provided by direct precipitation, a seasonally high water table, and surface runoff from adjacent wetlands.</td></tr>
<tr><td>Rationale for Delineation</td><td colspan="2">Wetland boundaries were determined by a transition to hydric soils and a hydrophytic plant community.</td></tr>
<tr><td>Rationale for Local Rating</td><td colspan="2">Wetland rating based on the current WSDOE wetland rating system for Western Washington (Hruby, 2014) per CMC 16.53.020.B.</td></tr>
<tr><th colspan="3">Wetland Functions Summary</th></tr>
<tr><td>Water Quality</td><td colspan="2">Wetland C has some potential to improve water quality due to the relatively low slope grade of the wetland and being located in an area with surrounding land uses that generate pollutants. However, the wetland lacks the appropriate types and coverage of plants needed to trap sediments and pollutants. The value of any water quality improvement functions within the wetland is increased as the wetland is located in a sub-basin with 303(d) listed waters and in area identified as important for maintaining water quality. This wetland scores 6 out of 9 points for water quality functions.</td></tr>
<tr><td>Hydrologic</td><td colspan="2">This wetland has some potential to reduce flooding and erosion due to potential excess surface runoff entering the wetland, however, these functions are limited due to the lack of dense, uncut, rigid vegetation required to reduce surface water velocities. This wetland scores 5 out of 9 points for hydrologic functions</td></tr>
<tr><td>Habitat</td><td colspan="2">Wildlife habitat functions provided by the wetland are low and may include small mammal and bird forage and cover. Wetland C contains very little plant diversity with one Cowardin class, one hydroperiod, and no interspersion of habitat. The surrounding landscape has a low potential to support habitat connectivity between the wetland and other potential habitat due to existing habitat fragmentation and surrounding high intensity land uses. Wetland C scores 4 out of 9 points for habitat function</td></tr>
<tr><td>Buffer Condition</td><td colspan="2">The area surrounding Wetland C is considered degraded due to being an actively grazed cattle pasture. Wetland C buffer is likely waived from buffer requirements per CMC 16.53.010.C.2.a.</td></tr>
</table>

Table 5. Wetland D Summary

WETLAND D – INFORMATION SUMMARY			
Location:	Located on the northwest corner of the subject property.		
		Local Jurisdiction	City of Camas
		WRIA	28 – Salmon-Washougal
		WSDOE Rating (Hruby, 2014)	III
		City of Camas Rating	III
		City of Camas Buffer Width	135
		Wetland Size	9,074 SF
		Cowardin Classification	PFO/SS/EMBC
		HGM Classification	Depressional
		Wetland Data Sheet(s)	DP-12W
		Upland Data Sheet(s)	DP-13U
		Boundary Flag color	Orange
Dominant Vegetation	Wetland vegetation is dominated by a canopy of Oregon ash with an understory consisting of hardhack, oneseed hawthorn, soft rush, and fringed willow herb, and non-native invasive species including Himalayan blackberry, rambler rose, bull thistle, reed canarygrass, tall fescue, and bird's foot trefoil.		
Soils	Hydric soil indicators A11 (Depleted Below Dark Surface) and F3 (Depleted Matrix) were observed.		
Hydrology	Hydrology for Wetland D is provided by direct precipitation, a seasonally high water table, and surface runoff from adjacent wetlands.		
Rationale for Delineation	Wetland boundaries were determined by topographic drop and a transition to a hydrophytic plant community.		
Rationale for Local Rating	Wetland rating based on the current WSDOE wetland rating system for Western Washington (Hruby, 2014) per CMC 16.53.020.B.		
Wetland Functions Summary			
Water Quality	Wetland D has moderate potential to improve water quality due to the lack of an outlet, persistent, ungrazed vegetation of more than 50 percent of the areas, and seasonal ponding in greater than half the unit. However, the land use in the area immediately surrounding the wetland does not generate pollutants and stormwater discharge, limiting potential for water quality improvement. The value of any water quality improvement functions within the wetland is increased as the wetland is located in a sub-basin with 303(d) listed waters and an area identified as important for maintain water quality. This wetland scores 7 out of 9 points for water quality functions.		
Hydrologic	This wetland has some potential to reduce flooding and erosion due to the lack of an outlet and moderate storage potential during wet periods. The small size of the wetland relative to the size of the watershed results in lower hydrologic benefit to the surrounding area. The immediate surrounding area generates excessive runoff, stormwater discharge, and intensive human land uses. The hydrologic functions provided onsite are valuable to society. This wetland scores 6 out of 9 points for hydrologic function		
Habitat	Wildlife habitat functions provided by the wetland is moderate and may include small mammal and bird forage and cover. Wetland D contains moderate diversity with three Cowardin classes, two hydroperiods, moderate interspersion of habitat and multiple priority and habitat features. The surrounding landscape has a low potential to support habitat connectivity between the wetland and other potential habitat due to existing habitat fragmentation and surrounding high intensity land uses. Wetland D scores 6 out of 9 points for habitat function.		
Buffer Condition	Wetland D buffer is in fair condition with dominant vegetation including Oregon ash, quaking aspen (*Populus tremuloides*), and Himalayan blackberry.		

5.2 Offsite Stream Z

One stream (Offsite Stream Z) was identified offsite to the west of the subject property. Offsite Stream Z is identified by the DNR water typing map as a Type F (fish habitat) stream. The WDFW SalmonScape inventory does not identify any potential salmonid presence within Offsite Stream Z. SVC was unable to access the offsite stream; however high-resolution LiDAR imagery, topographic maps, and aerial imagery suggest that Offsite Stream Z may be a tributary to Lacamas Creek. Based on the WDFW SalmonScape Inventory and DNR water typing map, Offsite Stream Z is a Type F stream that lacks documented or potential salmonid presence. As such, Offsite Stream Z is classified as a Type F stream (without anadromous salmonids).

5.3 Non-Regulated Farm Pond

An excavated farm pond was identified on the south-central portion of the subject property during the site investigations. The farm pond was located in the middle of an actively grazed cattle pasture and utilized by livestock. The farm pond exhibited sharp edges typical of artificially excavated features rather than natural wetland conditions. The farm pond is slightly elevated relative to the surrounding land suggesting the banks are occasionally built up and reinforced. Topography in this area of the site slopes downgradient from east to west. An elevated dirt road/trail bisects the property in a north south direction and acts as an impoundment of overland storm flows, creating surface water in the farm pond during the rainy season. Therefore, the farm pond was determined to be an artificially and intentionally created feature for use by cattle based on land use, the presence of a road, and geomorphic positioning. Per CMC 16.53.010.C.2.b, *wetlands created from nonwetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, stormwater facilities, farm ponds, and landscape amenities,* shall be exempt from wetland regulations. As such, the farm pond is likely considered a non-regulated feature by the City of Camas.

Chapter 6. Regulatory Considerations

The site investigations in December of 2020 and April of 2021 identified and delineated four wetlands (Wetlands A - D) on the subject property and one stream (Offsite Stream Z) offsite to the west of the subject property. No other wetlands, streams, or other fish and wildlife habitat conservation areas were identified within 300 feet of the subject property during the site investigations.

6.1 Local Critical Areas Buffer Requirements

CMC 16.53.020.B describes wetland categorizations with reference to the *Washington State Wetlands Rating System for Western Washington-Revised – Washington State Department of Ecology Publication No. 04-06-029, published August 2014* (Hruby, 2014). Category IV wetlands are typically more disturbed, smaller, and/or more isolated in the landscape than Category I, II, or III wetlands. Category IV wetlands provide low levels of functions and score less than 16 out of 27 points on the *Revised Washington State Wetland Rating System for Western Washington* (Hruby, 2014). Category III wetlands have generally been disturbed in some ways and are often less diverse or more isolated from other natural resources in the landscape than Category II wetlands. Category III provide moderate levels of functions and score between 16 to 19 points on the *Revised Washington State Wetland Rating System for Western Washington* (Hruby, 2014).

Wetland A is classified as Category III wetland with 4 total habitat points, and subject to a standard 80-foot buffer based on proposed high intensity land use per CMC 16.53.040 Table-3. Wetland B is classified as a Category III wetland with 5 total habitat points and subject to a standard 120-foot buffer based on the proposed high intensity land use. Wetland C is classified as a Category IV wetland and is likely exempt from buffer regulations per CMC 16.53.010.C.2.a. Wetland D is classified as a Category III wetland with 6 total habitat points and subject to a standard 135-foot buffer.

Offsite Stream Z is likely a Type F stream with no known salmonid presence in accordance with Washington Department of Fish and Wildlife (WDFW) SalmonScape data and subject to a standard 75-foot buffer per CMC 16.61.040.D. The stream buffer is not anticipated to project onto the subject property.

6.2 State and Federal Considerations

In a December 2, 2008 memorandum from the Environmental Protection Agency (EPA) and USACE, joint guidance is provided that describes waters that are to be regulated under section 404 of the CWA (USACE, 2008). This memorandum was amended on February 2, 2012 where the EPA and USACE issued a final guidance letter on waters protected by the CWA.

The 2012 guidance describes the following waters where jurisdiction would be asserted: 1) traditional navigable waters, 2) interstate waters, 3) wetlands adjacent to traditional navigable waters, 4) non-navigable tributaries of traditional navigable waters that are relatively permanent meaning they contain water at least seasonally (e.g. typically three months and does not include ephemeral waters), and 5) wetlands that directly abut permanent waters. The regulated waters are those associated with naturally occurring waters and water courses and not artificial waters (i.e. stormwater pond outfalls).

The 2012 memorandum further goes on to describe waters where jurisdiction would likely require further analysis: 1) Tributaries to traditional navigable waters or interstate waters, 2) Wetlands adjacent to jurisdictional tributaries to traditional navigable waters or interstate waters, and 3) Waters that fall under the "other waters" category of the regulations.

In addition, the 2012 guidance identifies thirteen waters or areas where jurisdiction will not be asserted: 1) Wet areas that are not tributaries or open waters and do not meet the agencies regulatory definition of "wetlands", 2) Waters excluded from coverage under the CWA by existing regulations, 3) Waters that lack a "significant nexus: where one is required for a water to be jurisdictional, 4) Artificially irrigated areas that would revert to upland if the irrigation ceased, 5) Artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing, 6) Artificial reflecting pools or swimming pools excavated in uplands, 7) Small ornamental waters created by excavating and/or diking dry land to retain water for primarily aesthetic reasons, and puddles, 8) Water-filled depressions created incidental to construction activity, 9) Groundwater, including groundwater drained through subsurface drainage systems, 10) Erosional features (gullies and rills), 11) Non-wetland swales, 12) Ditches that are excavated wholly in uplands, drain only uplands or non-jurisdictional waters, and have no more than ephemeral flow, and 13) Ditches that do not contribute flow, either directly or through other waterbodies, to a traditional navigable water, interstate water, or territorial sea.

As a tributary to a traditionally navigable water, Offsite Stream Z Creek is likely regulated by USACE as WOTUS. Wetlands A and B likely contribute surface waters to Offsite Stream Z and are likely regulated as an adjacent wetlands. Wetlands C and D are likely non-jurisdictional waters as they do not have surface water connections to Offsite Stream Z, they do not contain direct surface water connection to any traditional navigable water or a tributary to a traditional navigable water, and are also not considered "adjacent" wetlands. However, the project will assume jurisdiction of Wetland D to expedite the review process.

Future industrial development is anticipated to require complete fill of Wetland C. Once an approved jurisdictional determination is obtained from the USACE confirming the non-jurisdictional status of the identified wetland, an Administrative Order will be sought from WSDOE for the required wetland fill.

All identified wetlands (Wetlands A-D) and stream (Offsite Stream Z) are likely to be regulated as waters of the state by WSDOE under RCW 90.48.

Chapter 7. Closure

The findings and conclusions documented in this report have been prepared for specific application to this project. They have been developed in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in the area. Our work was also performed in accordance with the terms and conditions set forth in our proposal. The conclusions and recommendations presented in this report are professional opinions based on an interpretation of information currently available to us and are made within the operation scope, budget, and schedule of this project. No warranty, expressed or implied, is made. In addition, changes in government codes, regulations, or laws may occur. Due to such changes, our observations and conclusions applicable to this project may need to be revised wholly or in part.

All wetland boundaries delineated by SVC are based on conditions present at the time of the site inspection and considered preliminary until the flagged wetland boundaries are validated by the jurisdictional agencies. Validation of the wetland boundaries by the regulating agency provides a certification, usually written, that the wetland boundaries verified are the boundaries that will be regulated by the agencies until a specific date or until the regulations are modified. Only the regulating agencies can provide this certification.

As wetlands are dynamic communities affected by both natural and human activities, changes in wetland and waterbody boundaries may be expected; therefore, wetland delineations cannot remain valid for an indefinite period of time. Local agencies typically recognize the validity of wetland delineations for a period of five years after completion of a wetland delineation report. Development activities on a site five years after the completion of this wetland delineation report may require revision of the wetland delineation. In addition, changes in government codes, regulations, or laws may occur. Due to such changes, our observations and conclusions applicable to this site may need to be revised wholly or in part.

Chapter 8. References

Brinson, M. M. 1993. *A hydrogeomorphic classification for wetlands, Technical Report WRP-DE-4*. U.S. Army Engineer Waterways Experiment Station. Vicksburg, Mississippi.

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TR-10-3. Vicksburg, MS: U.S. Army Engineer Research and Development Center. Vicksburg, Mississippi.

USACE. 2018. *National Wetland Plant List, version 3.4*. http://wetland-plants.usace.army.mil/.

Appendix A — Methods and Tools

Table A1. Methods and tools used to prepare the report.

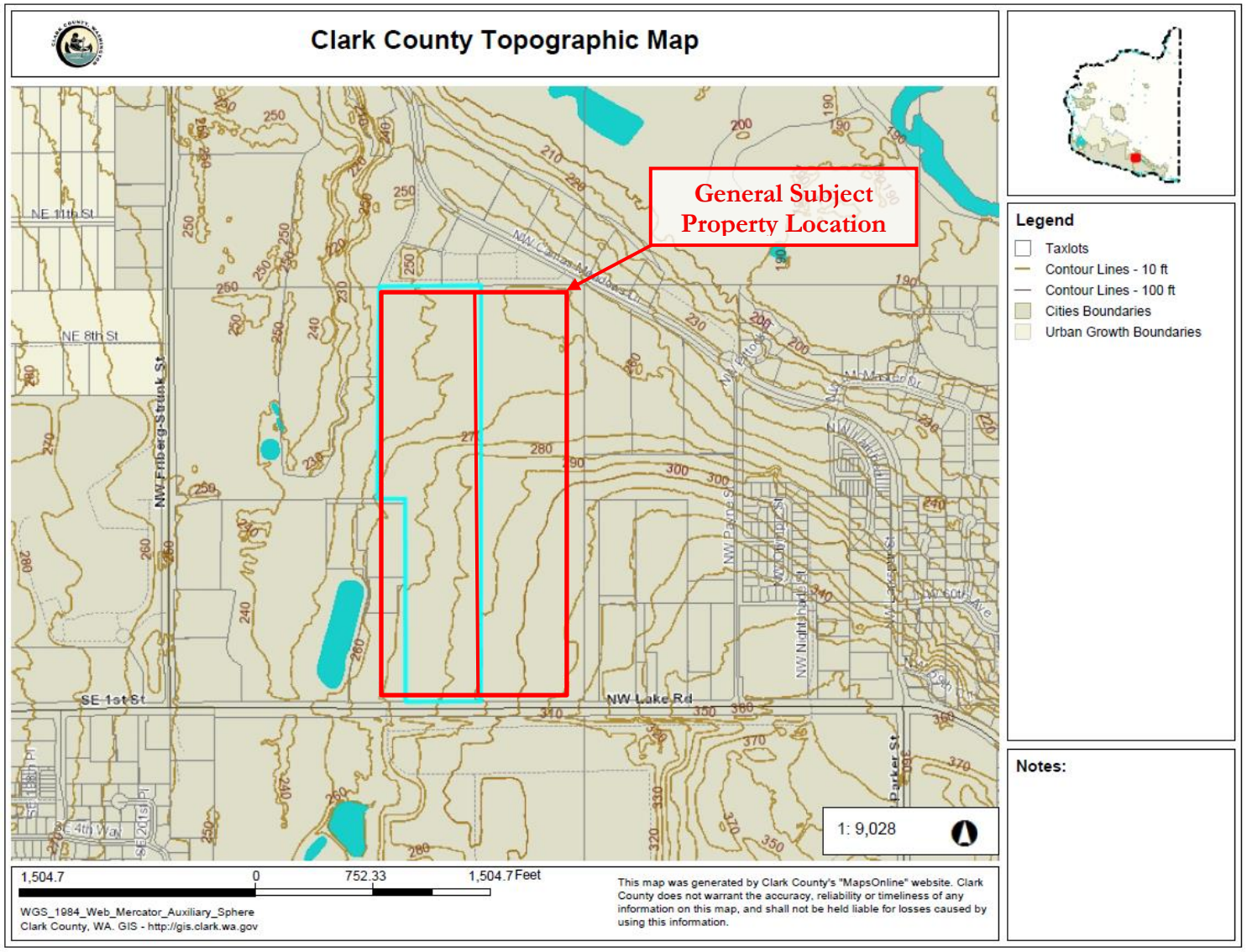
Parameter	Method or Tool	Website	Reference
Wetland Delineation	USACE 1987 Wetland Delineation Manual	http://el.erdc.usace.army.mil/elpubs/pdf/wlman87.pdf	**Environmental Laboratory.** 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, US Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.
	Western Mountains, Valleys, and Coast Region Regional Supplement	http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/west_mt_finalsupp.pdf	**U.S. Army Corps of Engineers.** 2010. *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-10-3. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
Wetland Classification	USFWS / Cowardin Classification System	http://www.fws.gov/wetlands/Documents/Classification-of-Wetlands-and-Deepwater-Habitats-of-the-United-States.pdf https://www.fgdc.gov/standards/projects/wetlands/nvcs-2013	**Cowardin**, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. Government Printing Office, Washington, D.C. **Federal Geographic Data Committee.** 2013. Classification of Wetlands and Deepwater Habitats of the United States. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC.
	Hydrogeomorphic Classification (HGM) System	http://el.erdc.usace.army.mil/wetlands/pdfs/wrpde4.pdf	**Brinson**, M. M. (1993). "A hydrogeomorphic classification for wetlands," Technical Report WRP-DE-4, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
Wetland Rating	2014 Washington State Wetland Rating System	http://www.ecy.wa.gov/biblio/0406025.html	**Hruby, T**. 2014. Washington State wetland rating system for western Washington –Revised. Publication # 04-06-025.
Wetland Indicator Status	2018 National Wetland Plant List	http://wetland-plants.usace.army.mil/	**U.S. Army Corps of Engineers.** 2018. National Wetland Plant List, version 3.4**.**
Plant Names	USDA Plant Database	http://plants.usda.gov/	Website.
Soils Data	NRCS Soil Survey	http://websoilsurvey.nrcs.usda.gov/app/	Website GIS data based upon: **McGee, Dale A.** 1972. Soil Survey of Clark County Area, Washington. Soil Conservation Service United States Department of Agriculture, Soil Conservation Service, in cooperation with the Washington Agricultural Experiment Station. Natural Resource Conservation Service.
	Clark County Hydric Soils List	http://www.wa.nrcs.usda.gov/technical/soils/hydric_lists/hydsoil-wa-653.pdf	**Natural Resources Conservation Service.** 2001. *Hydric Soils List: Clark County Area, Washington*. U.S. Department of Agriculture. Washington D.C.

Parameter	Method or Tool	Website	Reference
Threatened and Endangered Species	Washington Natural Heritage Program	http://data-wadnr.opendata.arcgis.com/datasets/wnhp-current-element-occurrences	**Washington Natural Heritage Program** (Data published 07/19/17). Endangered, threatened, and sensitive plants of Washington. Washington State Department of Natural Resources, Washington Natural Heritage Program, Olympia, WA
	Washington Priority Habitats and Species	http://wdfw.wa.gov/hab/phspage.htm	**Priority Habitats and Species (PHS) Program** Map of priority habitats and species in project vicinity. Washington Department of Fish and Wildlife.
Species of Local Importance	WDFW GIS Data	http://wdfw.wa.gov/mapping/salmonscape/	Website
Report Preparation	Camas Municipal Code (CMC)	https://library.municode.com/wa/camas/codes/code_of_ordinances?nodeId=TIT16EN_CRAR	CMC Title 16 – Environment – Critical Areas

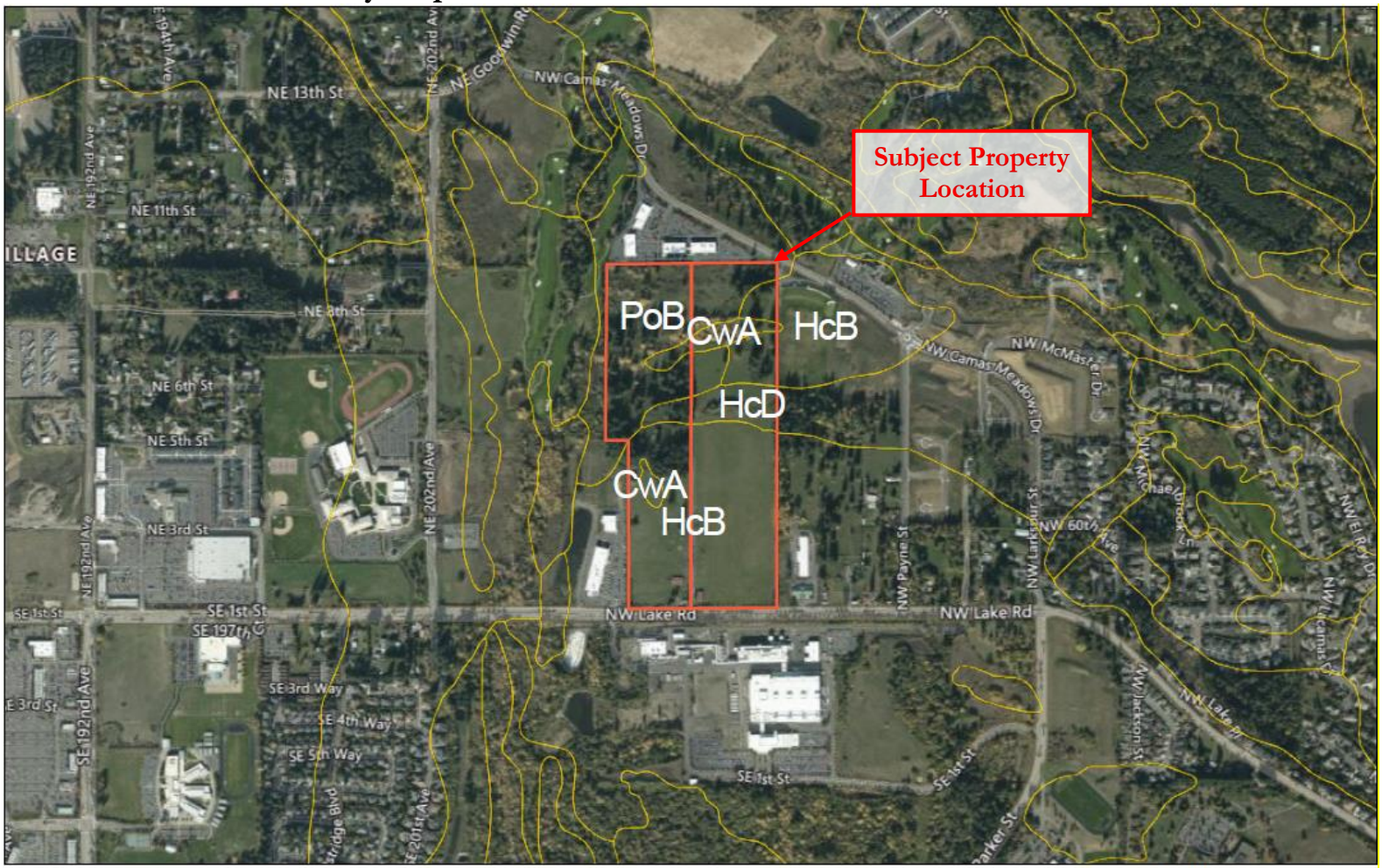
Appendix B — Background Information

This appendix includes a Clark County Topographic map (B1); NRCS Soil Survey map (B2); USFWS NWI map (B3); WDFW PHS map (B4); Clark County Stream and Wetland Inventory map (B5); DNR Stream Typing map (B6); and WDFW SalmonScape map (B7).

Appendix B1. Clark County Topographic Map

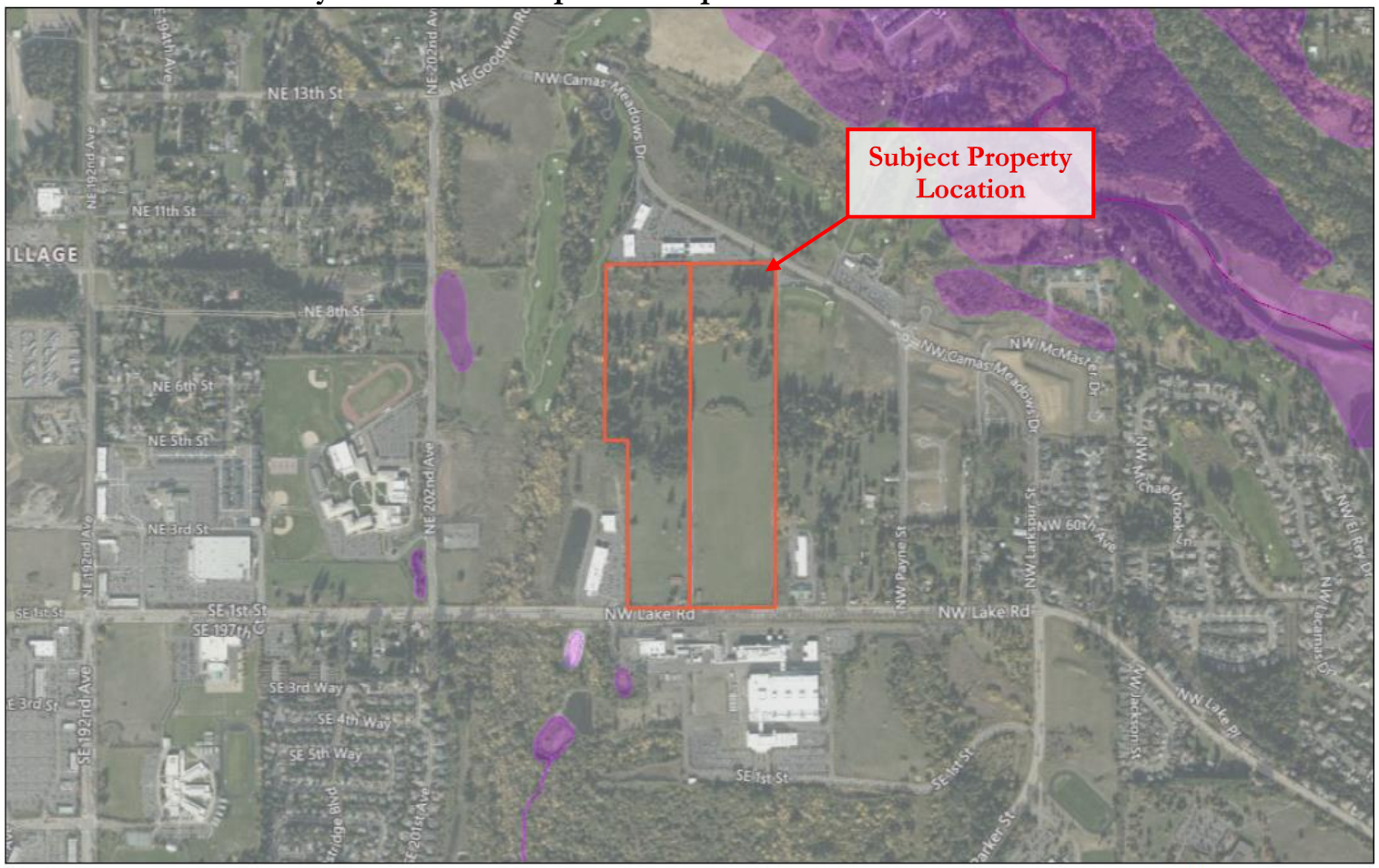


Appendix B2. NRCS Soil Survey Map



Appendix B3. USFWS National Wetland Inventory Map

Appendix B4. WDFW Priority Habitats and Species Map



PHS Species/Habitats Overview:

Occurence Name	Federal Status	State Status	Generalized Location
Freshwater Forested/Shrub Wetland	N/A	N/A	No
Caves Or Cave-rich Areas	N/A	N/A	Yes

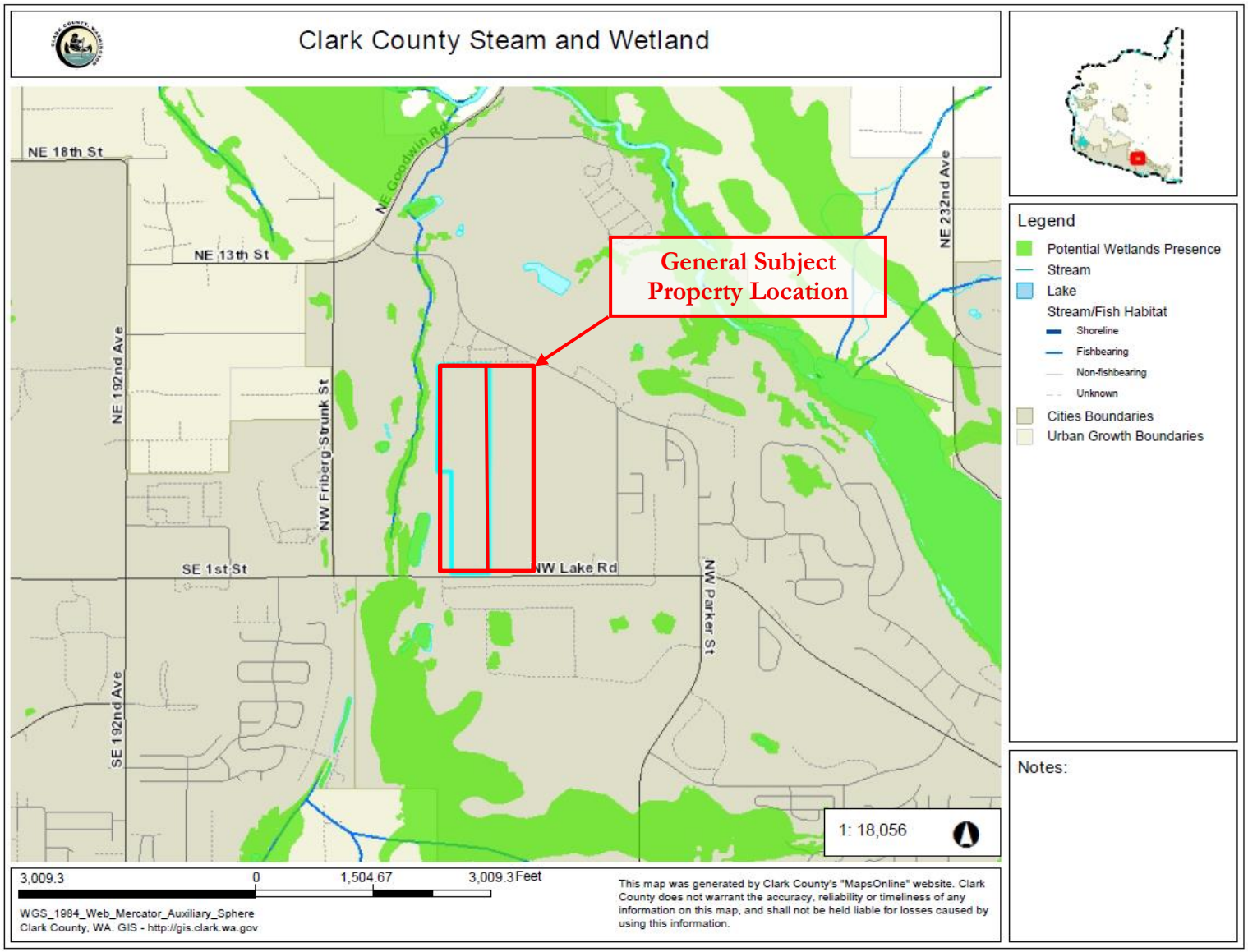
PHS Species/Habitats Details:

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PFOA
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

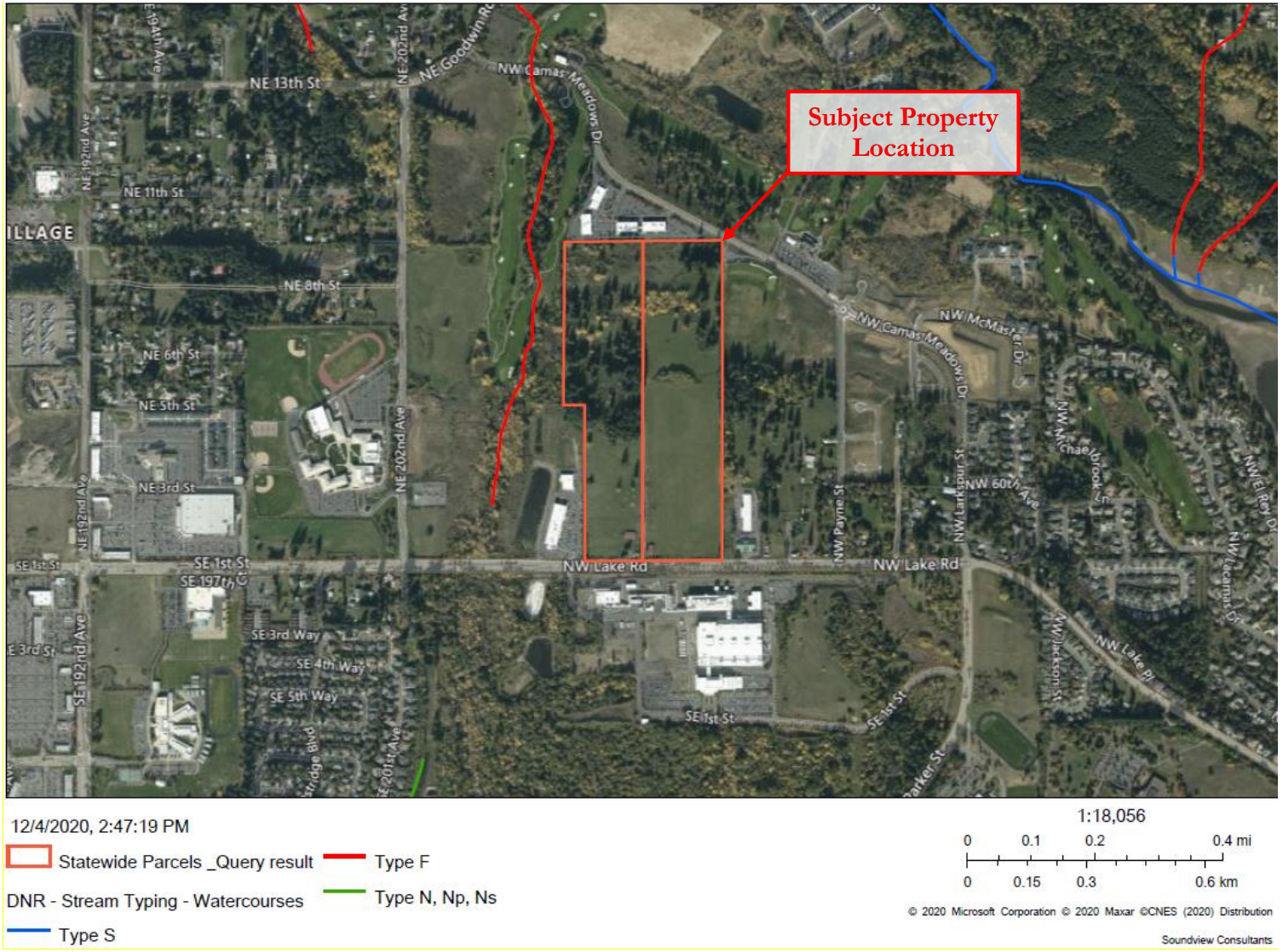
Caves Or Cave-rich Areas	
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release (360-902-2543) for obtaining information about masked sensitive species and habitats.
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
SGCN	N
Display Resolution	TOWNSHIP

DISCLAIMER. This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents the location of fish and wildlife resources to the best of our knowledge. It is not a complete inventory and it is important to note that fish and wildlife resources may occur in areas not currently known to WDFW biologists, or in areas for which comprehensive surveys have not been conducted. Site specific surveys are frequently necessary to rule out the presence of priority resources. Locations of fish and wildlife resources are subject to variation caused by disturbance, changes in season and weather, and other factors. WDFW does not recommend using reports more than six months old.

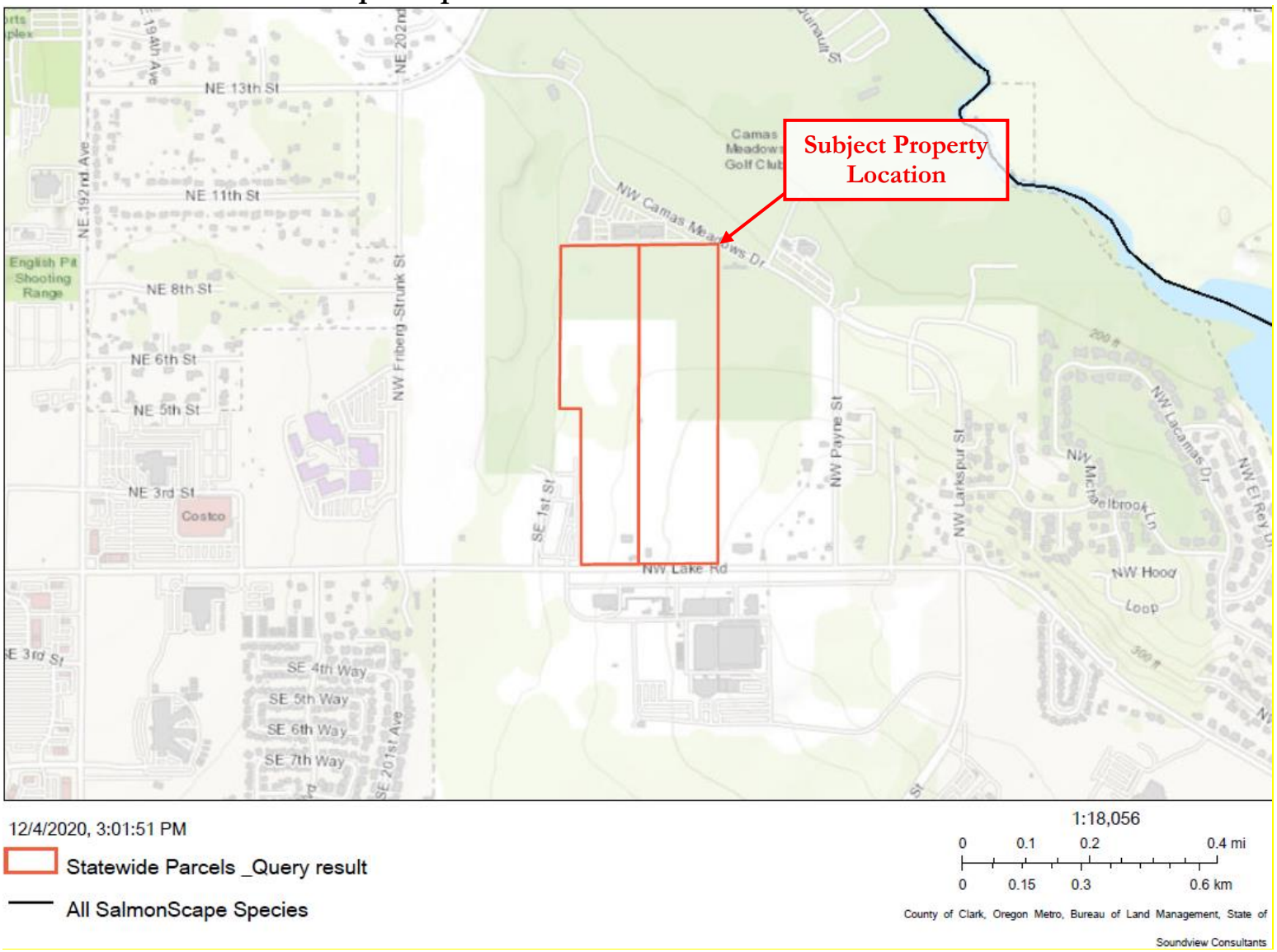
Appendix B5. Clark County Stream and Wetland Inventory Map



Appendix B6. DNR Stream Typing Map

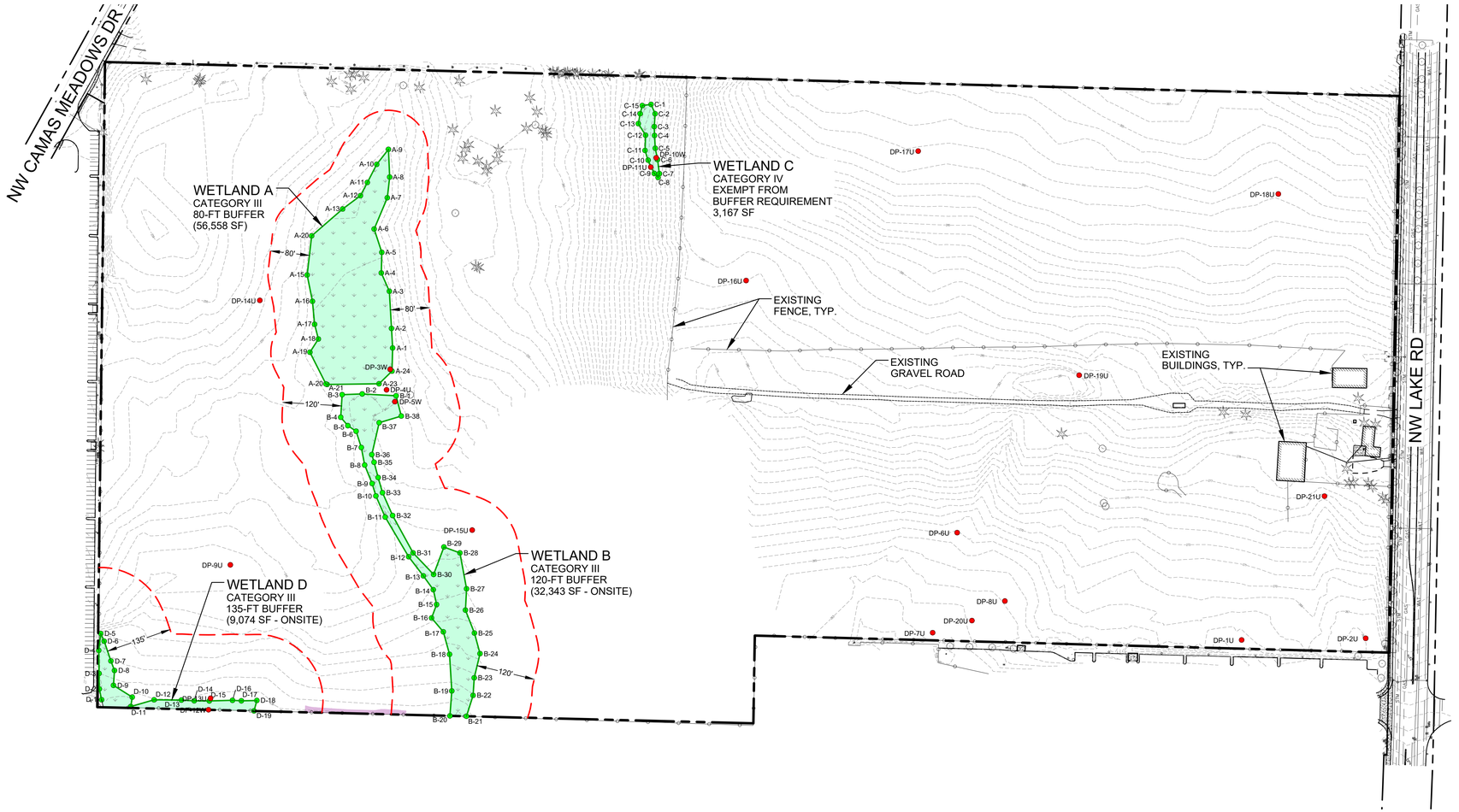


Appendix B7. WDFW SalmonScape Map



Appendix C — Existing Conditions Map

CAMAS - EXISTING CONDITIONS



0 125 250 500

GRAPHIC SCALE
1"= 125'

PLAN LEGEND

- PROPERTY LINE
- EXISTING WETLAND BOUNDARY
- APPROXIMATED WETLAND BOUNDARY (NOT SURVEYED)
- WETLAND BUFFER
- W-# WETLAND FLAG LOCATION
- DP-# DATA PLOT LOCATION
- EXISTING 1-FT CONTOURS

VICINITY MAP

SOURCE: CLARK COUNTY GIS
(ACCESSED 8/17/2021)

LOCATION

THE SE ¼ OF SECTION 29,

TOWNSHIP 02N, RANGE 03E, WM

APPLICANT/OWNER

PANATTONI DEVELOPMENT COMPANY, INC
1821 DOCK STREET, SUITE 100
TACOMA, WASHINGTON 98402
CONTACT: BJORN BRYNESTAD, DEVELOPMENT MGR.
PHONE: (206) 838-1730
PHONE: BJORN@PANATTONI.COM

ENVIRONMENTAL CONSULTANT

SOUNDVIEW CONSULTANTS LLC
2907 HARBORVIEW DRIVE, SUITE D
GIG HARBOR, WA 98355
(253) 514-8952

SHEET INDEX

SHEET NUMBER	SHEET TITLE
1	EXISTING CONDITIONS

SOURCES:

SYNTHESIS PLLC
THE FUSION OF ARCHITECTURE, DESIGN TECHNOLOGY & PEOPLE

Soundview Consultants LLC
Environmental Assessment • Planning • Land Use Solutions
2907 HARBORVIEW DRIVE, SUITE D
GIG HARBOR, WASHINGTON 98335
P. 253.514.8952
F. 253.514.8954
WWW.SOUNDVIEWCONSULTANTS.COM

CAMAS BUSINESS CENTER
4707 & 4723 NW LAKE ROAD
CAMAS, WASHINGTON 98607

CLARK COUNTY
PARCEL NUMBER(S):
176155000 & 176170000

DATE: 10/6/2021
JOB: 1144.0027
BY: MW
SCALE: AS SHOWN
SHEET: 1

Appendix D — Data Forms

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-1u

Investigator(s): Rachael Hyland Section, Township, Range: 29, 02N, 03E, SE

Landform (hillslope, terrace, etc.): Top of Slope Local relief (concave, convex, none): Concave Slope (%): 1%

Subregion (LRR): A2 Lat: 45.622295 Long: -122.45968640 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria met; only hydrophytic vegetation and hydric soils present. Data collected on the southwest corner of the property near the property line, approximately 300 feet north of NW Lake Road.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Rubus spectabilis	5	Yes	FAC
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Schedonorus arundinaceus	50	Yes	FAC
2. Poa pratensis	50	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-1u

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 2/2	95	5 YR 3/4	5	C	M	SiLo	Silt Loam
9-16	10 YR 4/3	83	7.5 YR 4/4	C	7	M	SiClLo	Silty Clay Loam
9-16	10YR 3/1	10	-	-	-	-	SiClLo	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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F6.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches. Data was collected early in the growing season when precipitation was within the normal range for the water year and the calendar year.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-2u

Investigator(s): Rachael Hyland Section, Township, Range: 29, 02N, 03E, SE

Landform (hillslope, terrace, etc.): Terrace; swale Local relief (concave, convex, none): Concave Slope (%): 0%

Subregion (LRR): A2 Lat: 45.621607 Long: -122.45965103 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☒ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria met; only hydric soils present. Data collected on the southwest portion of the property near the property line, approximately 70 feet north of NW Lake Road.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Rubus spectabilis	20	Yes	FAC
2. Symphoricarpos albus	5	Yes	FACU
3.			
4.			
5.			
	25	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Poa pratensis	70	Yes	FAC
2. Dactylis glomerata	20	Yes	FACU
3. Schedonorus arundinaceus	5	No	FAC
4. Jacobaea vulgaris	5	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= 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: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
No hydrophytic vegetation criteria met.
Prevalence Index not warranted due to combined back of hydric soils and wetland hydrology.

SOIL

Sampling Point: DP-2u

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 2/2	95	10YR 3/2	10	C	M	SiClLo	Silt Clay Loam
0-12	-	-	7.5 YR 3/4	10	C	M	SiClLo	Silty Clay Loam
12-16	10YR 3/1	60	7.5 YR 3/4	10	C	M	SiClLo	Mixed Matrix, Silty Clay Loam
12-16	10 YR 3/2	30	-	-	-	-	-	Mixed Matrix, 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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F6.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-3w

Investigator(s): Jacob Layman Section, Township, Range: 29, 02N, 03E, SE

Landform (hillslope, terrace, etc.): Valley bottom on terrace Local relief (concave, convex, none): Concave Slope (%): 2%

Subregion (LRR): A2 Lat: 45.627118 Long: -122.45771061 Datum: WGS 84

Soil Map Unit Name: Cove silty clay loam, thin solum, 0 to 3 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** Yes ☒ No ☐

Remarks:
All three wetland criteria met. Data collected on the north-central portion of the property in Wetland A.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus latifolia	15	Yes	FACW
2.			
3.			
4.			
	15	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Rubus spectabilis	10	Yes	FAC
2. Symphoricarpos albus	5	Yes	FACU
3. Fraxinus latifolia	5	Yes	FACW
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Alopecurus aequalis	25	Yes	OBL
2. Schedonorus arundinaceus	25	Yes	FAC
3. Juncus effusus	25	Yes	FACW
4. Poa pratensis	10	No	FAC
5. Ranunculus repens	5	No	FAC
6. Geum macrophyllum	1	No	FAC
7.			
8.			
9.			
10.			
11.			
	91	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 9

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 86% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-3W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5 YR 4/1	95	5YR 3/4	5	C	M, PL	SiClLo	Silt Clay Loam
6-16	10 YR 4/1	93	7.5 YR 4/6	7	C	M	SiClLo	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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F3.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☒ No ☐ Depth (inches): 10"

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): 7"

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Hydrologic criteria met through primary indicators A2 & A3.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-4U

Investigator(s): Rachael Hyland, Jacob Layman Section, Township, Range: 29,02N,03E,SE

Landform (hillslope, terrace, etc.): Berm Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): A2 Lat: 45.627137 Long: -122.45787799 Datum: WGS 84

Soil Map Unit Name: Cove silty clay loam, thin solum, 0 to 3 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☒ Hydric Soil Present? Yes ☐ No ☒ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
No wetland criteria met. Data collected on the north-central portion of the property in an upland area between Wetlands A and B.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Rubus aremniacus	60	Yes	FAC
2.			
3.			
4.			
5.			
	60	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Poa pratensis	30	Yes	FAC
2. Foeniculum vulgare	30	Yes	UPL
3. Carex hoodii	20	Yes	FACU
4. Leucanthemum vulgare	2	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	82	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 18

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
No hydrophytic vegetation criteria met.

SOIL

Sampling Point: DP-4U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5YR 2.5/2	100	-	-	-	-	SiLo	Silty Loam
12-16	7.5YR 2.5/2	98	7.5YR 3/3	2	C	M	SiClLo	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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil indicators met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-5w

Investigator(s): Jacob Layman Section, Township, Range: 29, 02N, 03E, SE

Landform (hillslope, terrace, etc.): Terrace; swale Local relief (concave, convex, none): Concave Slope (%): 0%

Subregion (LRR): A2 Lat: 45.627088 Long: -122.45797095 Datum: WGS 84

Soil Map Unit Name: Cove silty clay loam, thin solum, 0 to 3 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** Yes ☒ No ☐

Remarks:
All three wetland criteria met. Data collected on the north-central portion of the property, inside Wetland B.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Rubus spectabilis	30	Yes	FAC
2.			
3.			
4.			
5.			
	30 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Poa pratensis	50	Yes	FAC
2. Alopecurus pratensis	35	Yes	FAC
3. Holcus lanatus	10	No	FAC
4. Taraxacum officinale	2	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	97 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 3

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-5W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/1	95	2.5 YR 3/6	5	C	M, PL	SiClLo	Silt Clay Loam
6-16	7.5 YR 4/1	90	7.5 YR 4/6	10	C	M	SiClLo	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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F3.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☒ No ☐ Depth (inches): 12"

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): 9"

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Hydrologic criteria met through primary indicator A3.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-6U

Investigator(s): Rachael Hyland, Jacob Layman Section, Township, Range: 29,02N,03E,SE

Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): A2 Lat: 45.623905 Long: -122.45889649 Datum: WGS 84

Soil Map Unit Name: Cove silty clay loam, thin solum, 0 to 3 percent NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria met; only hydrophytic vegetation and hydric soils present. Data collected in an upland area on the western portion of the property.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Poa pratensis	50	Yes	FAC
2. Schedonorus arundinaceus	20	Yes	FAC
3. Dactylis glomerata	20	Yes	FACU
4. Alopecurus pratensis	10	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= 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: 67% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-6U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	82	7.5YR 2.5/2	10	C	M	SiLo	Silt Loam
0-4	-	-	5YR 3/4	8	C	M	SiLo	Silt loam
4-16	10YR 2/2	84	5YR 3/4	8	CM		SiLo	Silt Loam; 8% charcoal found in matrix

[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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F6.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches. Data was collected early in the growing season when precipitation was within the normal range for the water year and the calendar year. Additionally, no hydrology indicators were observed in the December 2020 reconnaissance investigation, immediately following a heavy rain event.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-7u

Investigator(s): Rachael Hyland, Jacob Layman Section, Township, Range: 29,02N,03E,SE

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): A2 Lat: 45.624025 Long: -122.45970392 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam, 8 to 20 percent NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria met; only hydrophytic vegetation and hydric soil present. Data collected in an upland area approximately 20 feet from the western property boundary.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Poa pratensis	40	Yes	FAC
2. Alopecurus pratensis	30	Yes	FAC
3. Dactylis glomerata	20	Yes	FACU
4. Schedonorus arundinaceus	5	No	FAC
5. Juncus effusus	5	No	FACW
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= 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: 67% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation met through dominance test

SOIL

Sampling Point: DP-7u

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5Y 3/1	90	7.5YR 2.5/3	10	C	M	SiLo	Silty Loam w/ manure
6-12	2.5Y 3/1	80	5YR 3/4	20	C	M	SiLo	Silty Loam
12-16	2.5Y 3/1	90	10YR 4/4	10	C	M	Cl	Clay

[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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soils met through indicator F6.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches. Data was collected early in the growing season when precipitation was within the normal range for the water year and the calendar year.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-8u

Investigator(s): Rachael Hyland, Jacob Layman Section, Township, Range: 29,02N,03E,SE

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): A2 Lat: 45.623624 Long: -122.45943141 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria met; only hydrophytic vegetation and hydric soils present. Data collected in an upland area approximately 80 feet east of the western property boundary.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Schedonorus arundinaceus	50	Yes	FAC
2. Poa pratensis	40	Yes	FAC
3. Alopecurus pratensis	10	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0 = 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: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation met through dominance test.

SOIL

Sampling Point: DP-6u

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/1	90	5YR 3/4	10	C	M	SiLo	Silty Loam
10-16	10YR 4/2	90	7.5YR 4/4	10	C	M	SiLo	Silty 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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F6.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches. Data was collected early in the growing season when precipitation was within the normal range for the water year and the calendar year.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-9u

Investigator(s): Rachael Hyland, Jacob Layman Section, Township, Range: 29,02N,03E,SE

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): A2 Lat: 45.627994 Long: -122.45925618 Datum: WGS 84

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria met; only hydrophytic vegetation and hydric soils present. Data collected in an upland area on the northwest portion of the property.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus latifolia	35	Yes	FACW
2.			
3.			
4.			
	35	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Rubus aremiacus	70	Yes	FAC
2. Lonicera involucrata	5	No	FAC
3. Symphoricarpos albus	5	No	FAC
4.			
5.			
	80	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Geum macrophyllum	40	Yes	FAC
2. Carex hoodii	5	No	FACU
3. Epilobium cilliatum	1	No	FACW
4. Urtica dioica	1	No	FAC
5. Lotus corniculatus	1	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	48	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 2

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation met through dominance test. Approximately 50% moss was observed in the herbaceous stratum.

SOIL

Sampling Point: DP-9u

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	100	-	-	-	-	SiLo	Silty Loam with roots
12-16	10YR 4/1	30	-	-	-	-	SiLo	Silty Loam
12-16	10YR 4/2	65	10YR 3/4	5	C	M	SiLo	Silty 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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator A11.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches. Data was collected early in the growing season when precipitation was within the normal range for the water year and the calendar year. Additionally, no hydrology indicators were observed in the December 2020 reconnaissance investigation, immediately following a heavy rain event.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-10w

Investigator(s): Jacob Layman Section, Township, Range: 29, 02N, 03E, SE

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 5%

Subregion (LRR): A2 Lat: 45.625686 Long: -122.45595449 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** Yes ☒ No ☐

Remarks:
All three wetland criteria met. Data collected on the eastern portion of the property, inside Wetland C.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Holcus lanatus	35	Yes	FAC
2. Juncus effusus	25	Yes	FACW
3. Poa pratensis	15	No	FAC
4. Alopecurus aequalis	10	No	OBL
5. Schedonorus arundinaceus	10	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-10W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	100	-	-	-	-	-	Silt Clay Loam
4-11	7.5 YR 3/2	93	2.5 YR 3/4	7	C	M	SiClLo	Clay Loam
11-16	7.5 YR 3/3	98	5 YR 4/4	2	C	C	GrSaClLo	Gravelly, Sandy, 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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F6.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☒ No ☐ Depth (inches): 5"

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): 2"

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Hydrologic criteria observed through primary indicators A2 and A3.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-11u

Investigator(s): Jacob Layman Section, Township, Range: 29, 02N, 03E, SE

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 5%

Subregion (LRR): A2 Lat: 45.625705 Long: -122.45602020 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☐ No ☒ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria not met; only hydrophytic vegetation present. Data collected on the eastern portion of the property outside Wetland C.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Holcus lanatus	40	Yes	FAC
2. Poa pratensis	30	Yes	FAC
3. Alopecurus pratensis	10	No	FAC
4. Juncus effusus	5	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	85	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 15

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-11d

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	7.5 YR 3/2	100	-	-	-	-	-	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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil indicators met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): 16"

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic criteria met.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/06/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-12w

Investigator(s): Rachel Hyland, Jacob Layman Section, Township, Range: 29, 02N, 03E, SE

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 1%

Subregion (LRR): A2 Lat: 45.628098 Long: -122.46040961 Datum: WGS 84

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** Yes ☒ No ☐

Remarks:
All three wetland criteria not met. Data collected on the northwest portion of the property, near the western property boundary, inside Wetland D.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus latifolia	30	Yes	FACW
2. Crataegus monogyna	10	Yes	FAC
3. Salix sp.*	10	Yes	FACW
4.			
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Fraxinus latifolia	20	Yes	FACW
2. Rubus armeniacus	15	Yes	FAC
3. Crataegus monogyna	2	No	FAC
4. Symphiocarpus alba	1	No	FACU
5.			
	38	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Poa pratensis	1	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	1	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 99

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.
*Salix species considered FACW for scoring purposes.

SOIL

Sampling Point: DP-12W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-11	10 YR 3/2	90	2.5 YR 3/6	10	C	M	SaClLo	Sandy Clay Loam
11-16	10 YR 4/2	94	7.5 YR 4/1	5	D	M	SaClLo	Sandy Clay Loam
11-16	-	-	2.5 YR 3/6	1	C	M	SaClLO	Sandy 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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☒ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria through indicators F6 and A11.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☒ No ☐ Depth (inches): 12"

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): 9"

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Hydrologic criteria observed through primary indicators A2 and A3.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/07/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-13U

Investigator(s): Rachael Hyland, Jacob Layman Section, Township, Range: 29,02N,03E,SE

Landform (hillslope, terrace, etc.): hillsope Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): A2 Lat: 45.628087 Long: -122.46031821 Datum: WGS 84

Soil Map Unit Name: Powell silt loam, 0 to 8 percent NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☐ No ☒ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria met, only hydrophytic vegetation present. Data collected on the northwest portion of the subject property, near the western property boundary, outside Wetland D.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus latifolia	20	Yes	FACW
2. Crataegus monogyna	15	Yes	FAC
3.			
4.			
	35	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Rubus armeniacus	30	Yes	FAC
2. Rubus laciniatus	10	Yes	FACU
3. Symphoricarpos albus	10	Yes	FACU
4.			
5.			
	50	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Geum macrophyllum	50	Yes	FAC
2. Geranium molle	3	No	UPL
3. Epilobium ciliatum	2	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	55	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 45

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test. Approximately 20% moss was observed in the herbaceous stratum.

SOIL

Sampling Point: DP-13C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	100	-	-	-	-	SiLo	Silt Loam
12-14	10YR 3/2	78	10YR 4/2	20	D	M	SiLo	Silt Loam
12-14	10YR 3/4	2	-	-	C	M	SiLo	Silt 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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil indicators met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology criteria met.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/07/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-14U

Investigator(s): Rachael Hyland, Jacob Layman Section, Township, Range: 29,02N,03E,SE

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 2

Subregion (LRR): A2 Lat: 45.627869 Long: -122.45716955 Datum: WGS 84

Soil Map Unit Name: Powell silt loam, 0 to 8 percent NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☐ No ☒ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria met; only hydrophytic vegetation present. Data collected in an upland area on the northeast portion of the property.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Poa pratensis	35	Yes	FAC
2. Schedonorus arundinaceus	20	Yes	FAC
3. Leucantheum vulgare	20	Yes	FACU
4. Lupinus sp.	15	No	FAC
5. Hypochaeris radicata	5	No	FACU
6. Trifolium repens	5	No	FAC
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= 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: 67% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.
Lupinus species considered facultative for scoring purposes.

SOIL

Sampling Point: DP-14C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100	-	-	-	-	Lo	Loam
4-8	10YR 3/2	98	2.5YR 5/8	2	C	M	Lo	Loam
8-16	7.5YR 3/3	98	5YR 4/6	2	C	M	SiClLo	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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil indicators met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/07/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-15U

Investigator(s): Rachael Hyland, Jacob Layman Section, Township, Range: 29,02N,03E,SE

Landform (hillslope, terrace, etc.): Toe of Slope Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): A2 Lat: 45.626657 Long: -122.45893760 Datum: WGS 84

Soil Map Unit Name: Cove silty clay loam, thin solum, 0 to 3 percent NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks: **Not all three wetland criteria met; only hydrophytic vegetation and hydric soils present. Data collected on the west-central portion of the property, outside Wetland B.**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Rubus armeniacus	5	Yes	FAC
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Agrostis capillaris	40	Yes	FAC
2. Hypochaeris radicata	20	Yes	FACU
3. Schedonorus arundinaceus	10	No	FAC
4. Trifolium repens	10	No	FAC
5. Leucanthemum vulgare	5	No	FACU
6. Holcus lanatus	5	No	FAC
7. Taraxacum officinale	3	No	FACU
8. Ranunculus repens	2	No	FAC
9.			
10.			
11.			
	95	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 5

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: 67% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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: Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-15U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 4/1	98	5YR 3/4	2	C	PL	SiClLo	Silty Clay Loam
6-11	5YR 4/1	2	-	-	-	-	SiClLo	Silty Clay Loam; Mixed Matrix
6-11	10YR 5/2	35	7.5YR 4/6	5	C	M/PL	SiClLo	Silty Clay Loam; Mixed Matrix
11-13	10YR 5/2	90	7.5YR 5/8	10	C	M	SiClLo	Silty Clay Loam
13-16	10YR 4/1	98	5YR 4/6	2	C	PL	SiClLo	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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F3.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches. Data was collected early in the growing season when precipitation was within the normal range for the water year and the calendar year. Additionally, no hydrology indicators were observed in the December 2020 reconnaissance investigation, immediately following a heavy rain event.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/07/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-16U

Investigator(s): Rachael Hyland, Jacob Layman Section, Township, Range: 29,02N,03E,SE

Landform (hillslope, terrace, etc.): rolling Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): A2 Lat: 45.625117 Long: -122.45694596 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☐ No ☒ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria met; only hydrophytic vegetation present. Data collected on the east-central portion of the property.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Trifolium repens	30	Yes	FAC
2. Poa pratensis	25	Yes	FAC
3. Alopecurus pratensis	20	Yes	FAC
4. Anthoxanthum odoratum	10	No	FACU
5. Schedonorus arundinaceus	10	No	FAC
6. Taraxacum officinale	5	No	FACU
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-16U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 2.5/3	100	-	-	-	-	Lo	Loam
4-8	7.5YR 2.5/3	60	-	-	-	-	Lo	Loam; mixed matrix
4-8	7.5YR 2.5/1	40					SiClLo	Silty Clay Loam; mixed matrix
8-10	7.5YR 2.5/1	100					SiClLo	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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil criteria met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/07/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-17u

Investigator(s): Rachel Hyland, Jacob Layman Section, Township, Range: 29, 02N, 03E, SE

Landform (hillslope, terrace, etc.): Terrace; Swale Local relief (concave, convex, none): Concave Slope (%): 2%

Subregion (LRR): A2 Lat: 45.624178 Long: -122.45586859 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☐ No ☒ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria met; only hydrophytic vegetation present. Data collected on the eastern portion of the subject property.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Poa pratensis	40	Yes	FAC
2. Trifolium repens	30	Yes	FAC
3. Hypochaeris radicata	20	Yes	FACU
4. Agrostis capillaris	10	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= 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: 67% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-17d

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-9	7.5 YR 3/2	100	-	-	-	-	MeLo	Medium Loam
9-15	7.5 YR 3/2	98	7.5 YR 3/4	2	C	M	MeLo	Medium 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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☒ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil criteria met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/07/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-18u

Investigator(s): Jacob Layman Section, Township, Range: 29, 02N, 03E, SE

Landform (hillslope, terrace, etc.): Terrace; Swale Local relief (concave, convex, none): Concave Slope (%): 2%

Subregion (LRR): A2 Lat: 45.622168 Long: -122.45612559 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 Soil Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	

Remarks: **Not all three wetland criteria not met; only hydrophytic vegetation present. Data collected in an upland area on the southeast portion of the property.**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Poa pratensis	40	Yes	FAC
2. Trifolium repens	35	Yes	FAC
3. Agrostis capillaris	20	Yes	FAC
4. Hypochaeris radicata	2	No	FACU
5. Taraxacum officinale	2	No	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	99 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 1

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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: Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-16d

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	7.5 YR 3/2	100	-	-	-	-	MeLo	Medium Loam
10-15	7.5 YR 3/2	99	7.5 YR 3/4	1	C	M	MeLo	Medium 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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil criteria met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/07/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-19u

Investigator(s): Jacob Layman Section, Township, Range: 29, 02N, 03E, SE

Landform (hillslope, terrace, etc.): Terrace; Swale Local relief (concave, convex, none): Concave Slope (%): 2%

Subregion (LRR): A2 Lat: 45.623253 Long: -122.45761989 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria not met; only hydric soils and hydrophytic vegetation present. Data collected in an upland area on the south-central portion of the site.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Agrostis capillaris	60	Yes	FAC
2. Poa pratensis	40	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0 = 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: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-19d

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5 YR 3/2	60	2.5 YR 3/6	7	C	M, PL	MeLo	Medium Loam; Mixed matrix
0-4	5Y 3/1	33	-	-	-	-	MeLo	Medium Loam; Mixed matrix
4-12	7.5 YR 3/2	100	-	-	-	-	ClLo	Clay Loam
12-18	7.5 YR 3/2	98	7.5 YR 3/4	2	C	M	ClLO	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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F6.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches. Data was collected early in the growing season when precipitation was within the normal range for the water year and the calendar year. Additionally, no hydrology indicators were observed in the December 2020 reconnaissance investigation, immediately following a heavy rain event.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/07/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-20U

Investigator(s): Rachael Hyland, Jacob Layman Section, Township, Range: 29,02N,03E,SE

Landform (hillslope, terrace, etc.): Rolling Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): A2 Lat: 45.623806 Long: -122.45958918 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all wetland criteria met; only hydrophytic vegetation and hydric soils present. Data collected in an upland area near the western property boundary approximately 845 feet north of NW Lake Road.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Agrostis capillaris	40	Yes	FAC
2. Poa pratensis	30	Yes	FAC
3. Alopercurus pratensis	20	Yes	FAC
4. Alopecurus aequalis	5	No	OBL
5. Anthoxanthum odoratum	5	No	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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:
Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-26G

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-9	7.5YR 3/1	75	5YR 3/4	25	C	M/PL	SiClLo	Silty Clay Loam
9-16	7.5YR 3/1	70	7.5YR 3/4	30	C	M	ClLo	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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F6.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches. Data was collected early in the growing season when precipitation was within the normal range for the water year and the calendar year.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1144.0027 E Vancouver E-Commerce Center City/County: Camas, Clark Sampling Date: 04/07/2021

Applicant/Owner: Panattoni Development Company, Inc. State: WA Sampling Point: DP-21U

Investigator(s): Rachael Hyland, Jacob Layman Section, Township, Range: 29,02N,03E,SE

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): A2 Lat: 45.621863 Long: -122.45851848 Datum: WGS 84

Soil Map Unit Name: Hesson clay loam, 0 to 8 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks: Not all three wetland criteria met; only hydrophytic vegetation and hydric soil present. Data collected in southern portion of property approximately 150 feet northwest of the existing residence driveway.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Agrostis capillaris	70	Yes	FAC
2. Poa pratensis	20	Yes	FAC
3. Schedonorus arundinaceus	10	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= 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: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 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: Hydrophytic vegetation criteria met through dominance test.

SOIL

Sampling Point: DP-210

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 3/1	85	7.5YR 3/3	15	C	M/PL	SiLo	Silty Loam
6-16	7.5YR 3/2	92	7.5YR 3/3	8	C	M	SiLo	Silty 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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:

- ☐ 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: None

Depth (inches): ---

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F6. Soil was highly compacted.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed. Soil pit was excavated to a depth of 16 inches. Data was collected early in the growing season when precipitation was within the normal range for the water year and the calendar year. Additionally, no hydrology indicators were observed in the December 2020 reconnaissance investigation, immediately following a heavy rain event.

Appendix E — Wetland Rating Forms

Wetland name or number A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): A Date of site visit: 04/07/21

Rated by Jake Layman Trained by Ecology? ✔ Yes ___No Date of training_____

HGM Class used for rating Depressional Wetland has multiple HGM classes?___Y ✔ N

NOTE: **Form is not complete without the figures requested** *(figures can be combined)*.

Source of base aerial photo/map ESRI ArcGIS

OVERALL WETLAND CATEGORY III (based on functions ✔ 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	
		Circle the appropriate ratings		
Site Potential	M	M	L	
Landscape Potential	M	M	L	
Value	H	M	M	TOTAL
Score Based on Ratings	7	6	4	17

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	N/A

Wetland name or number 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	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

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 undisturbed 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 undisturbed 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 undisturbed 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 name or number 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 sheetflow, 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).

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.

Wetland name or number A

☒ 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 name or number 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	1
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	4
Total for D 1 Add the points in the boxes above	7

Rating of Site Potential If score is: ___ **12-16 = H** X **6-11 = M** ___ **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	0
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	0
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 Golf course Yes = 1 No = 0	1
Total for D 2 Add the points in the boxes above	2

Rating of Landscape Potential If score is: ___ **3 or 4 = H** X **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 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*

NOTES and FIELD OBSERVATIONS:

Wetland name or number 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 or 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	3
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 wetland 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	8

Rating of Site Potential If score is: ___ **12-16 = H** _X_ **6-11 = M** ___ **0-5 = L** *Record the rating on the first page*

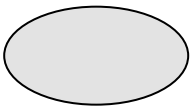
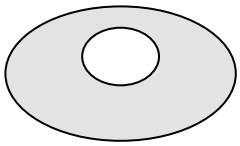
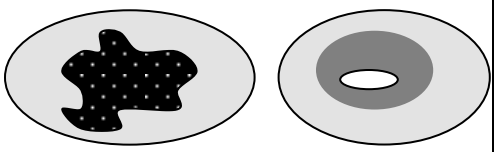
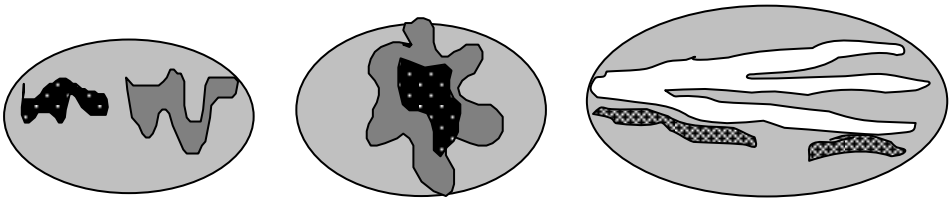
D 5.0. Does the landscape have the potential to support hydrologic functions of the site?	
D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	0
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	1
D 5.3. Is more than 25% 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	0
Total for D 5 Add the points in the boxes above	1

Rating of Landscape Potential If score is: ___ **3 = H** _X_ **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. The unit is 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 down-gradient 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 down-gradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther down-gradient. 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	1
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	1

Rating of Value If score is: ___ **2-4 = H** _X_ **1 = M** ___ **0 = L** *Record the rating on the first page*

Wetland name or number 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 or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ____Aquatic bed — 4 structures or more: points = 4 ____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:* __x__The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) 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 or ¼ 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 ____Saturated only — 1 type present: points = 0 ____Permanently flowing stream or river in, or adjacent to, the wetland ____Seasonally flowing stream in, or adjacent to, the wetland ____**Lake Fringe wetland** — **2 points** ____**Freshwater tidal wetland** — **2 points**	0
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, Canadian thistle*** If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	1
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** = 3points 	0

Wetland name or number 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.* __×__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 extends at least 3.3 ft (1 m) over 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 for list of strata*)	3
Total for H 1 Add the points in the boxes above	5

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 that directly abuts wetland unit*). *Calculate:* [0.00] % undisturbed habitat **+** [(% moderate and low intensity land uses) [12.35] /2] **=** 6.175 % If 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. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* [9.1] % undisturbed habitat **+** [(% moderate and low intensity land uses) [33.73] /2] **=** 25.964999999999 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 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 — 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*

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **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 (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **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) 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.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

— **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **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.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **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.

— **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.

X **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.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number 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**	
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 page 25) ☐ 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**	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes **– Go to SC 2.2** ☒ No **– Go to SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes **= Category I** ☒ No **= Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes **– Contact WNHP/WDNR and go to SC 2.4** ☒ No **= Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes **= Category I** ☒ No **= Not a WHCV**	
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 = **Is 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 = **Is a 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 = **Is a Category I bog** ☐ No **= Is not a bog**	

Wetland name or number 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**

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)*

☐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 on p. 100).
- 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**

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

☐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**

Category of wetland based on Special Characteristics

If you answered No for all types, enter "Not Applicable" on Summary Form

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Wetland name or number B

RATING SUMMARY – Western Washington

Name of wetland (or ID #): B Date of site visit: 04/07/21

Rated by Jake Layman Trained by Ecology? ✔ Yes ___No Date of training_____

HGM Class used for rating Slope Wetland has multiple HGM classes?___Y ✔ N

NOTE: **Form is not complete without the figures requested** *(figures can be combined)*.

Source of base aerial photo/map ESRI ArcGIS

OVERALL WETLAND CATEGORY III (based on functions ✔ 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	
		Circle the appropriate ratings		
Site Potential	L	L	L	
Landscape Potential	M	M	L	
Value	H	M	H	TOTAL
Score Based on Ratings	6	5	5	16

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	N/A

Wetland name or number B

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	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

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 undisturbed 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 undisturbed 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 undisturbed 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 name or number B

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 sheetflow, 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).

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.

Wetland name or number B

☐ 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 name or number B

SLOPE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

S 1.0. Does the site have the potential to improve water quality?	
S 1.1. Characteristics of the average slope of the wetland: *(a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance*) Slope is 1% or less points = 3 Slope is > 1%-2% points = 2 Slope is > 2%-5% points = 1 Slope is greater than 5% points = 0	2
S 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*: Yes = 3 No = 0	0
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. *Dense means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.* Dense, uncut, herbaceous plants > 90% of the wetland area points = 6 Dense, uncut, herbaceous plants > ½ of area points = 3 Dense, woody, plants > ½ of area points = 2 Dense, uncut, herbaceous plants > ¼ of area points = 1 Does not meet any of the criteria above for plants points = 0	0
Total for S 1 Add the points in the boxes above	2

Rating of Site Potential If score is: ___ **12 = H** ___ **6-11 = M** X **0-5 = L** *Record the rating on the first page*

S 2.0. Does the landscape have the potential to support the water quality function of the site?	
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other sources _____ Yes = 1 No = 0	1
Total for S 2 Add the points in the boxes above	2

Rating of Landscape Potential If score is: X **1-2 = M** **0 = L** *Record the rating on the first page*

S 3.0. Is the water quality improvement provided by the site valuable to society?	
S 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
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? *At least one aquatic resource in the basin is on the 303(d) list*. Yes = 1 No = 0	1
S 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 for the basin in which unit is found.* Yes = 2 No = 0	2
Total for S 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 name or number B

SLOPE WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream erosion

S 4.0. Does the site have the potential to reduce flooding and stream erosion?	
S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. *Stems of plants should be thick enough (usually > 1/8 in), or dense enough, to remain erect during surface flows.* Dense, uncut, **rigid** plants cover > 90% of the area of the wetland points = 1 All other conditions points = 0	0

Rating of Site Potential If score is: ___ **1 = M** X **0 = L** *Record the rating on the first page*

S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?	
S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff? Yes = 1 No = 0	1

Rating of Landscape Potential If score is: X **1 = M** ___ **0 = L** *Record the rating on the first page*

S 6.0. Are the hydrologic functions provided by the site valuable to society?	
S 6.1. Distance to the nearest areas downstream that have flooding problems: The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) points = 2 Surface flooding problems are in a sub-basin farther down-gradient points = 1 No flooding problems anywhere downstream points = 0	1
S 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 S 6 Add the points in the boxes above	1

Rating of Value If score is: ___ **2-4 = H** X **1 = M** ___ **0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number B___

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 or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

____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/ground-cover) 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 or ¼ 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	
____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.

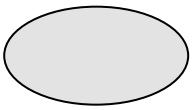
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

If you counted: > 19 species	points = 2
5 - 19 species	points = 1
< 5 species	points = 0

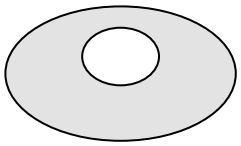
1

H 1.4. Interspersion of habitats

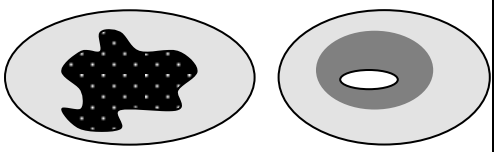
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*



None = 0 points

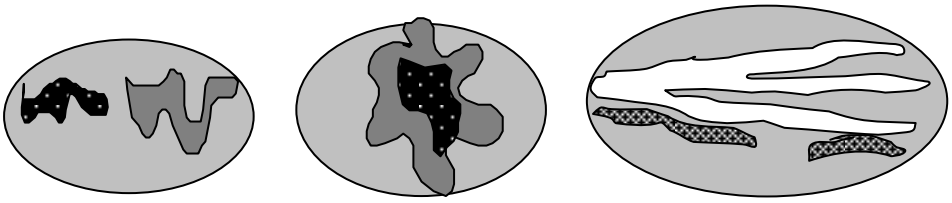


Low = 1 point



Moderate = 2 points

All three diagrams in this row are **HIGH** = 3points



1

Wetland name or number B

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.* ____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 extends at least 3.3 ft (1 m) over 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)* __x__Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	1
Total for H 1 Add the points in the boxes above	5

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 that directly abuts wetland unit*). *Calculate:* [0.00] % undisturbed habitat **+** [(% moderate and low intensity land uses) [12.35] /2] **=** 6.175 % If 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. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* [9.17] % undisturbed habitat **+** [(% moderate and low intensity land uses) [33.73] /2] **=** 26.034999999998 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 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 __x__ 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 — 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	2

Rating of Value If score is: __X__ **2 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **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 (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **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) 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.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

X **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

X **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.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **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.

— **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.

X **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.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number B

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**	
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 page 25) ☐ 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**	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes **– Go to SC 2.2** ☒ No **– Go to SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes **= Category I** ☒ No **= Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes **– Contact WNHP/WDNR and go to SC 2.4** ☒ No **= Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes **= Category I** ☒ No **= Not a WHCV**	
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 = **Is 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 = **Is a 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 = **Is a Category I bog** ☐ No **= Is not a bog**	

Wetland name or number B

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**

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)*

☐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 on p. 100).
- 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**

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

☐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**

Category of wetland based on Special Characteristics

If you answered No for all types, enter "Not Applicable" on Summary Form

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Wetland name or number C

RATING SUMMARY – Western Washington

Name of wetland (or ID #): C Date of site visit: 04/07/21

Rated by Jake Layman Trained by Ecology? ✔ Yes ___No Date of training_____

HGM Class used for rating Slope Wetland has multiple HGM classes?___Y ✔ N

NOTE: **Form is not complete without the figures requested** *(figures can be combined)*.

Source of base aerial photo/map ESRI ArcGIS

OVERALL WETLAND CATEGORY IV (based on functions ✔ or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

_____**Category II** – Total score = 20 - 22

_____**Category III** – Total score = 16 - 19

__X__**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
		Circle the appropriate ratings		
Site Potential	L	L	L	
Landscape Potential	M	M	L	
Value	H	M	M	TOTAL
Score Based on Ratings	6	5	4	15

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	N/A

Wetland name or number C

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	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

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 undisturbed 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 undisturbed 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 undisturbed 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 name or number C

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 sheetflow, 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).

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.

Wetland name or number C

☐ 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 name or number C

SLOPE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

S 1.0. Does the site have the potential to improve water quality?	
S 1.1. Characteristics of the average slope of the wetland: *(a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance*) Slope is 1% or less points = 3 Slope is > 1%-2% points = 2 Slope is > 2%-5% points = 1 Slope is greater than 5% points = 0	1
S 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*: Yes = 3 No = 0	0
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. *Dense means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.* Dense, uncut, herbaceous plants > 90% of the wetland area points = 6 Dense, uncut, herbaceous plants > ½ of area points = 3 Dense, woody, plants > ½ of area points = 2 Dense, uncut, herbaceous plants > ¼ of area points = 1 Does not meet any of the criteria above for plants points = 0	0
Total for S 1 Add the points in the boxes above	1

Rating of Site Potential If score is: ___ **12 = H** ___ **6-11 = M** X **0-5 = L** *Record the rating on the first page*

S 2.0. Does the landscape have the potential to support the water quality function of the site?	
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other sources _____ Yes = 1 No = 0	0
Total for S 2 Add the points in the boxes above	1

Rating of Landscape Potential If score is: X **1-2 = M** **0 = L** *Record the rating on the first page*

S 3.0. Is the water quality improvement provided by the site valuable to society?	
S 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
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? *At least one aquatic resource in the basin is on the 303(d) list*. Yes = 1 No = 0	1
S 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 for the basin in which unit is found.* Yes = 2 No = 0	2
Total for S 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 name or number C

SLOPE WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream erosion

S 4.0. Does the site have the potential to reduce flooding and stream erosion?	
S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. *Stems of plants should be thick enough (usually > 1/8 in), or dense enough, to remain erect during surface flows.* Dense, uncut, **rigid** plants cover > 90% of the area of the wetland points = 1 All other conditions points = 0	0

Rating of Site Potential If score is: ___ **1 = M** X **0 = L** *Record the rating on the first page*

S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?	
S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff? Yes = 1 No = 0	1

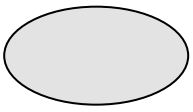
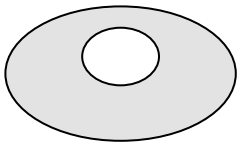
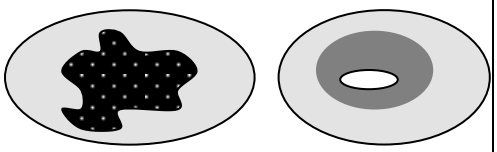
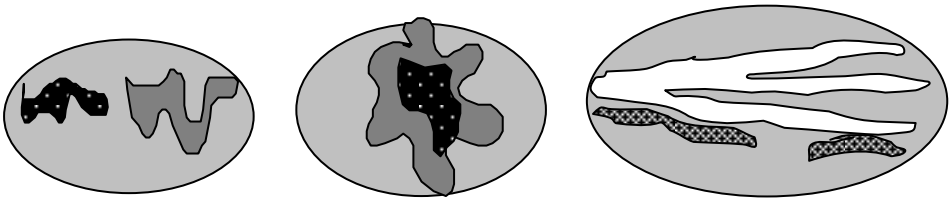
Rating of Landscape Potential If score is: X **1 = M** ___ **0 = L** *Record the rating on the first page*

S 6.0. Are the hydrologic functions provided by the site valuable to society?	
S 6.1. Distance to the nearest areas downstream that have flooding problems: The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) points = 2 Surface flooding problems are in a sub-basin farther down-gradient points = 1 No flooding problems anywhere downstream points = 0	1
S 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 S 6 Add the points in the boxes above	1

Rating of Value If score is: ___ **2-4 = H** X **1 = M** ___ **0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number C

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 or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ____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 ____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/ground-cover) that each cover 20% within the Forested polygon	0
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 or ¼ ac to count (*see text for descriptions of hydroperiods*). ____Permanently flooded or inundated — 4 or more types present: points = 3 ____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 ____Seasonally flowing stream in, or adjacent to, the wetland ____**Lake Fringe wetland** — **2 points** ____**Freshwater tidal wetland** — **2 points**	0
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, Canadian thistle*** If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	1
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** = 3points 	0

Wetland name or number C

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.* ____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 extends at least 3.3 ft (1 m) over 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 for list of strata*)	1
Total for H 1 Add the points in the boxes above	2

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 that directly abuts wetland unit*). *Calculate:* [0.00] % undisturbed habitat **+** [(% moderate and low intensity land uses) [12.35] /2] **=** 6.175 % If 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. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* [9.17] % undisturbed habitat **+** [(% moderate and low intensity land uses) [33.73] /2] **=** 26.034999999998 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 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 — 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*

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **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 (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **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) 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.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

— **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **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.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **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.

— **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.

X **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.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number C

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**	
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 page 25) ☐ 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**	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes **– Go to SC 2.2** ☒ No **– Go to SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes **= Category I** ☒ No **= Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes **– Contact WNHP/WDNR and go to SC 2.4** ☒ No **= Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes **= Category I** ☒ No **= Not a WHCV**	
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 = **Is 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 = **Is a 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 = **Is a Category I bog** ☐ No **= Is not a bog**	

Wetland name or number C

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**

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)*

☐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 on p. 100).
- 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**

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

☐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**

Category of wetland based on Special Characteristics

If you answered No for all types, enter "Not Applicable" on Summary Form

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Wetland name or number D

RATING SUMMARY – Western Washington

Name of wetland (or ID #): D Date of site visit: 04/07/21

Rated by Rachael Hyland, Jake Layman Trained by Ecology? ✔ Yes ___No Date of training_____

HGM Class used for rating Depressional Wetland has multiple HGM classes?___Y ✔ N

NOTE: **Form is not complete without the figures requested** *(figures can be combined)*.

Source of base aerial photo/map ESRI ArcGIS

OVERALL WETLAND CATEGORY III (based on functions ✔ 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	
		Circle the appropriate ratings		
Site Potential	M	M	M	
Landscape Potential	M	M	L	
Value	H	M	H	TOTAL
Score Based on Ratings	7	6	6	19

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	N/A

Wetland name or number D

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	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

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 undisturbed 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 undisturbed 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 undisturbed 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 name or number D

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 sheetflow, 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).

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.

Wetland name or number D

☒ 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 name or number D

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	3
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	4
Total for D 1 Add the points in the boxes above	10

Rating of Site Potential If score is: ___ **12-16 = H** _X_ **6-11 = M** ___ **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	0
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	2

Rating of Landscape Potential If score is: ___ **3 or 4 = H** _X_ **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 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*

NOTES and FIELD OBSERVATIONS:

Wetland name or number D

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 or 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	4
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	3
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 wetland 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	10

Rating of Site Potential If score is: ___ **12-16 = H** _X_ **6-11 = M** ___ **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	0
Total for D 5 Add the points in the boxes above	2

Rating of Landscape Potential If score is: ___ **3 = H** _X_ **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. The unit is 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 down-gradient 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 down-gradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther down-gradient. 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	1
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	1

Rating of Value If score is: ___ **2-4 = H** _X_ **1 = M** ___ **0 = L** *Record the rating on the first page*

Wetland name or number D

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 or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

____Aquatic bed	4 structures or more: points = 4	2
__x__Emergent	3 structures: points = 2	
__x__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/ground-cover) that each cover 20% within the Forested polygon

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 or ¼ ac to count (*see text for descriptions of hydroperiods*).

____Permanently flooded or inundated	4 or more types present: points = 3	1
__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		
____Seasonally flowing stream in, or adjacent to, the wetland		
____**Lake Fringe wetland**	**2 points**	
____**Freshwater tidal wetland**	**2 points**	

H 1.3. Richness of plant species

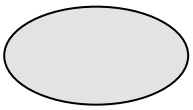
Count the number of plant species in the wetland that cover at least 10 ft^2.

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, Canadian thistle***

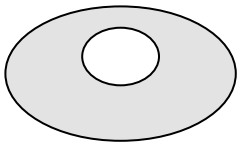
If you counted: > 19 species	points = 2	1
5 - 19 species	points = 1	
< 5 species	points = 0	

H 1.4. Interspersion of habitats

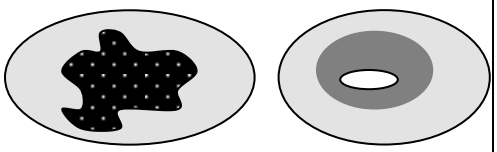
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*



None = 0 points



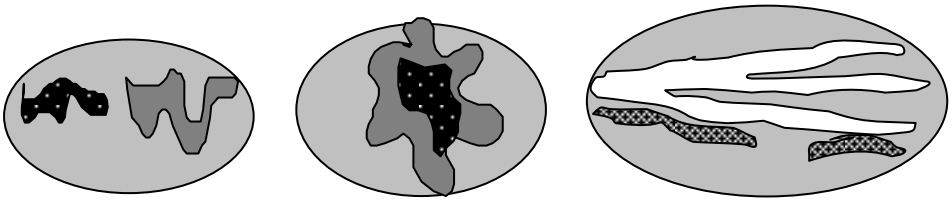
Low = 1 point



Moderate = 2 points

2

All three diagrams in this row are **HIGH** = 3points



Wetland name or number D

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 extends at least 3.3 ft (1 m) over 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 for list of strata*)	1
Total for H 1 Add the points in the boxes above	7

Rating of Site Potential If score is:___**15-18 = H** _X_ **7-14 = M** ___**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 that directly abuts wetland unit*). *Calculate:* [0.00] % undisturbed habitat **+** [(% moderate and low intensity land uses) [12.35] /2] **=** 6.175 % If 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. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* [9.17] % undisturbed habitat **+** [(% moderate and low intensity land uses) [33.73] /2] **=** 26.034999999999 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 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 _x_ 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 — 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	2

Rating of Value If score is: _X_ **2 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **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 (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **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) 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.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

X **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

X **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.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **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.

— **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.

X **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.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number D

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**	
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 page 25) ☐ 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**	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes **– Go to SC 2.2** ☒ No **– Go to SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes **= Category I** ☒ No **= Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes **– Contact WNHP/WDNR and go to SC 2.4** ☒ No **= Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes **= Category I** ☒ No **= Not a WHCV**	
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 = **Is 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 = **Is a 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 = **Is a Category I bog** ☐ No **= Is not a bog**	

Wetland name or number D

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**

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)*

☐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 on p. 100).
- 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**

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

☐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**

Category of wetland based on Special Characteristics

If you answered No for all types, enter "Not Applicable" on Summary Form

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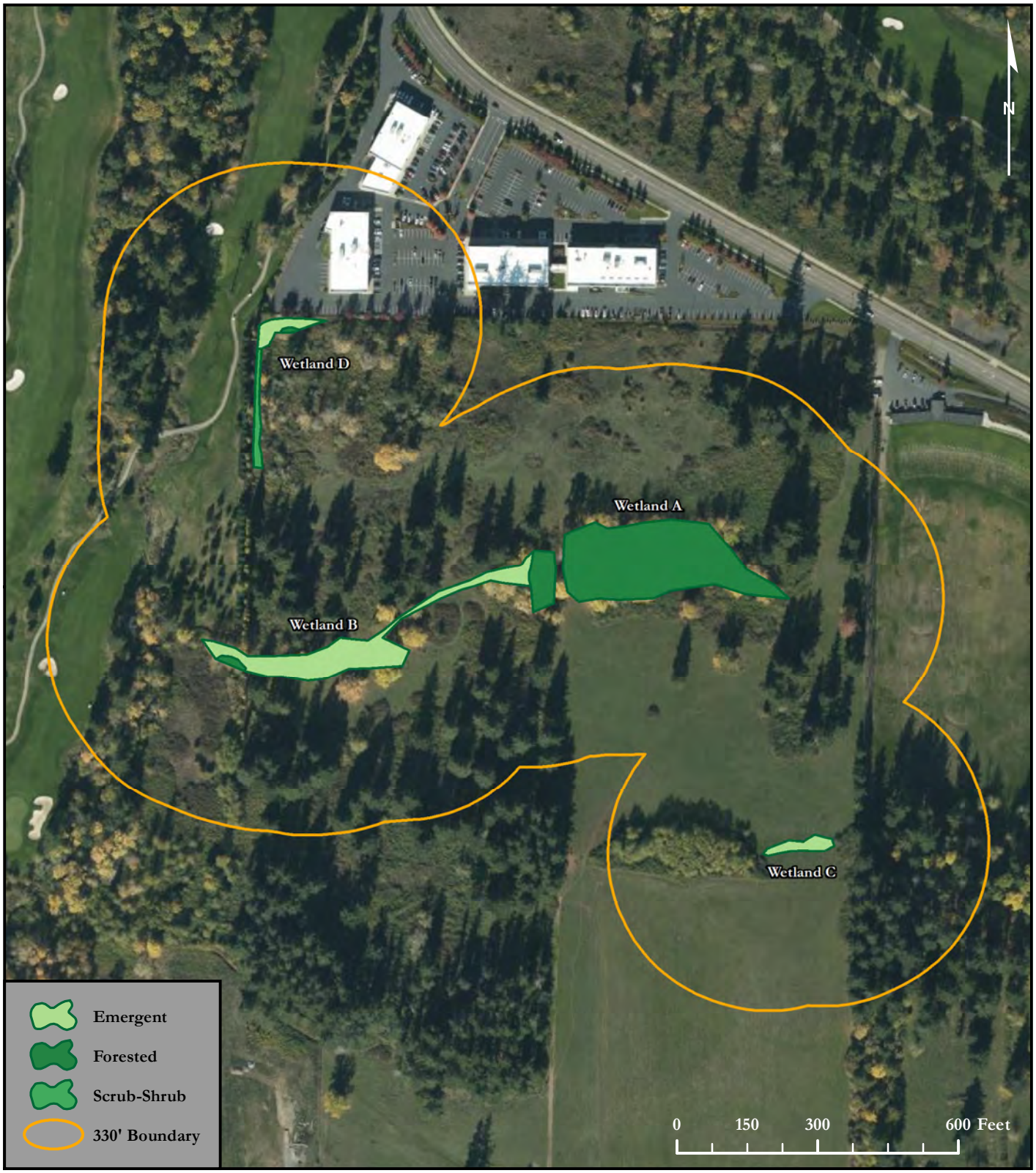
Appendix F — Wetland Rating Maps

CAMAS BUSINESS CENTER - COWARDIN MAP



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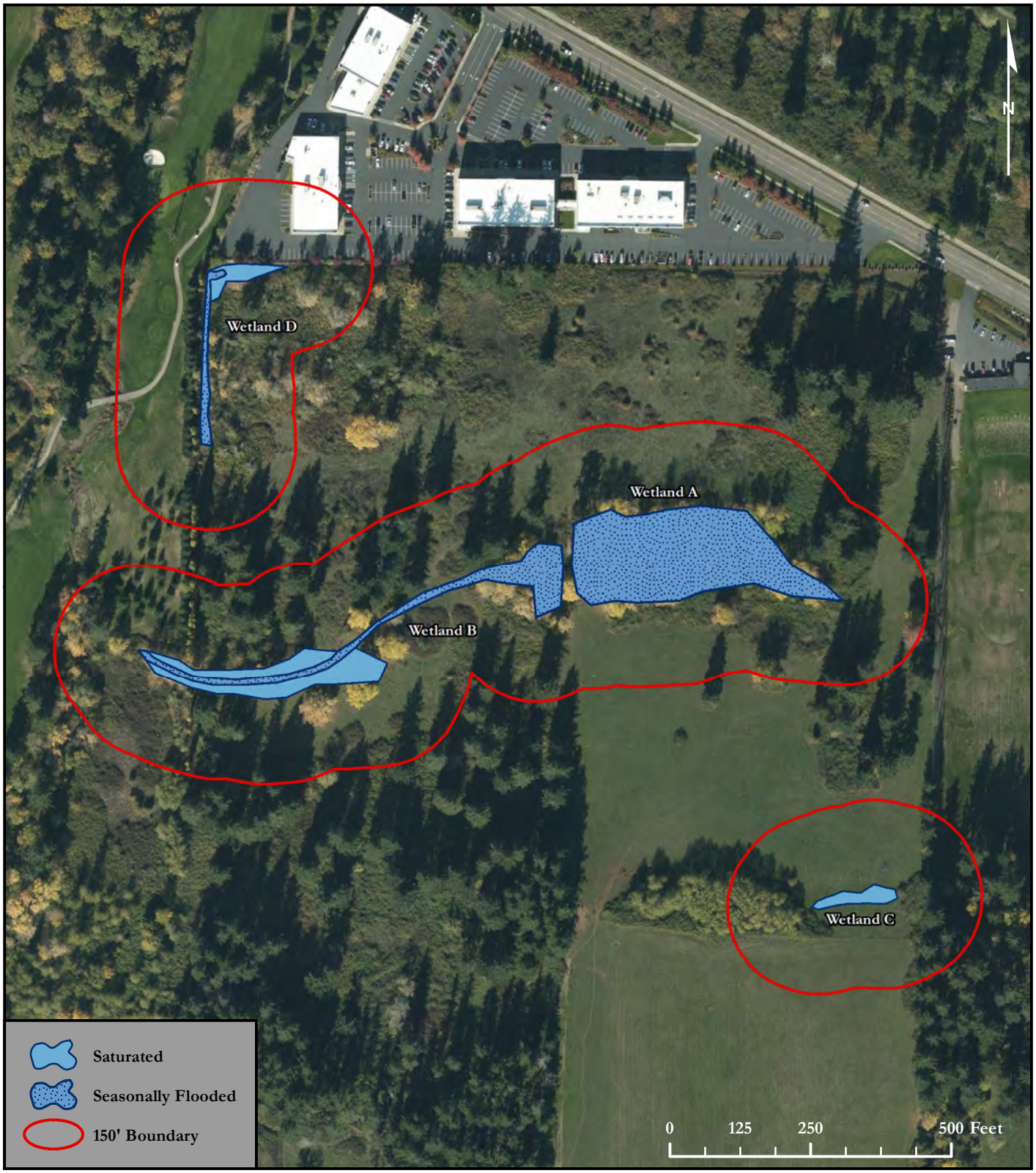
CAMAS BUSINESS CENTER
4707 & 4723 NW LAKE ROAD CAMAS, WA 98607

CLARK COUNTY PARCEL NUMBERS:
176155000 and 176170000

DATE:	8/16/2021
JOB:	1144.0027
BY:	DDS
SCALE:	1 " = 300 '
FIGURE NO.	1 of 5

CAMAS BUSINESS CENTER - HYDROPERIOD MAP



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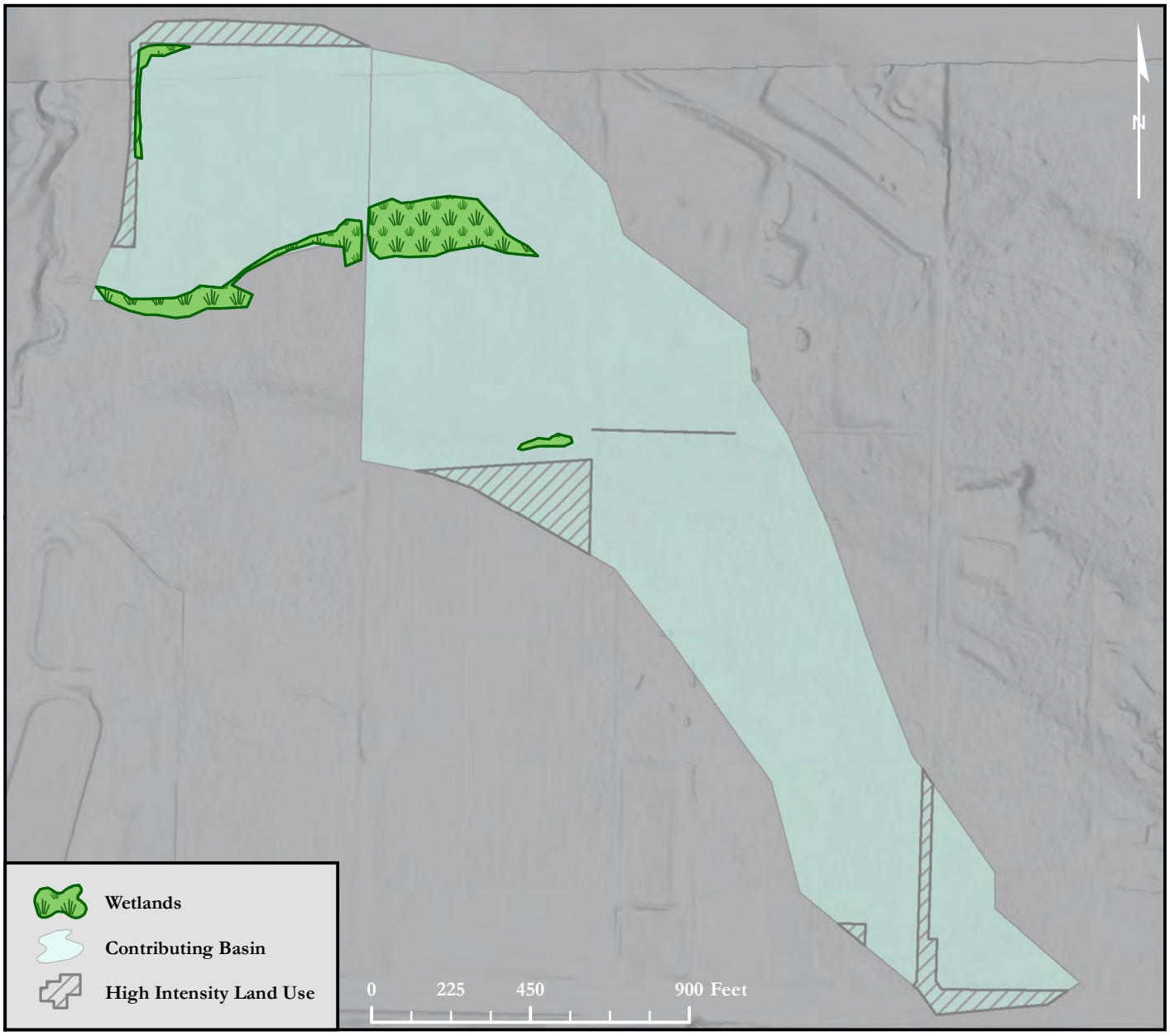
CLARK COUNTY PARCEL NUMBERS:
176155000 and 176170000

DATE:	8/16/2021
JOB:	1144.0027
BY:	DDS
SCALE:	1 " = 250 '
FIGURE NO.	2 of 5

CAMAS BUSINESS CENTER - CONTRIBUTING BASIN MAP



D.4.0		
D.4.3		
	Area of Contributing Basin (SF)	1,852,722
	Area of Wetland A (SF)	57,197
	Percent of Wetland A within Contributing Basin	**3.087%**
D.5.0		
D.5.3		
	Area of Contributing Basin	1,852,722
	Area of Intensive Human Land Uses	104,292
	Percent of Intensive Human Land Use within Contributing Basin	**6%**

D.4.0		
D.4.3		
	Area of Contributing Basin (SF)	488,807
	Area of Wetland D (SF)	7,089
	Percent of Wetland D within Contributing Basin	**1.450%**
D.5.0		
D.5.3		
	Area of Contributing Basin	488,807
	Area of Intensive Human Land Uses	53,728
	Percent of Intensive Human Land Use within Contributing Basin	**11%**

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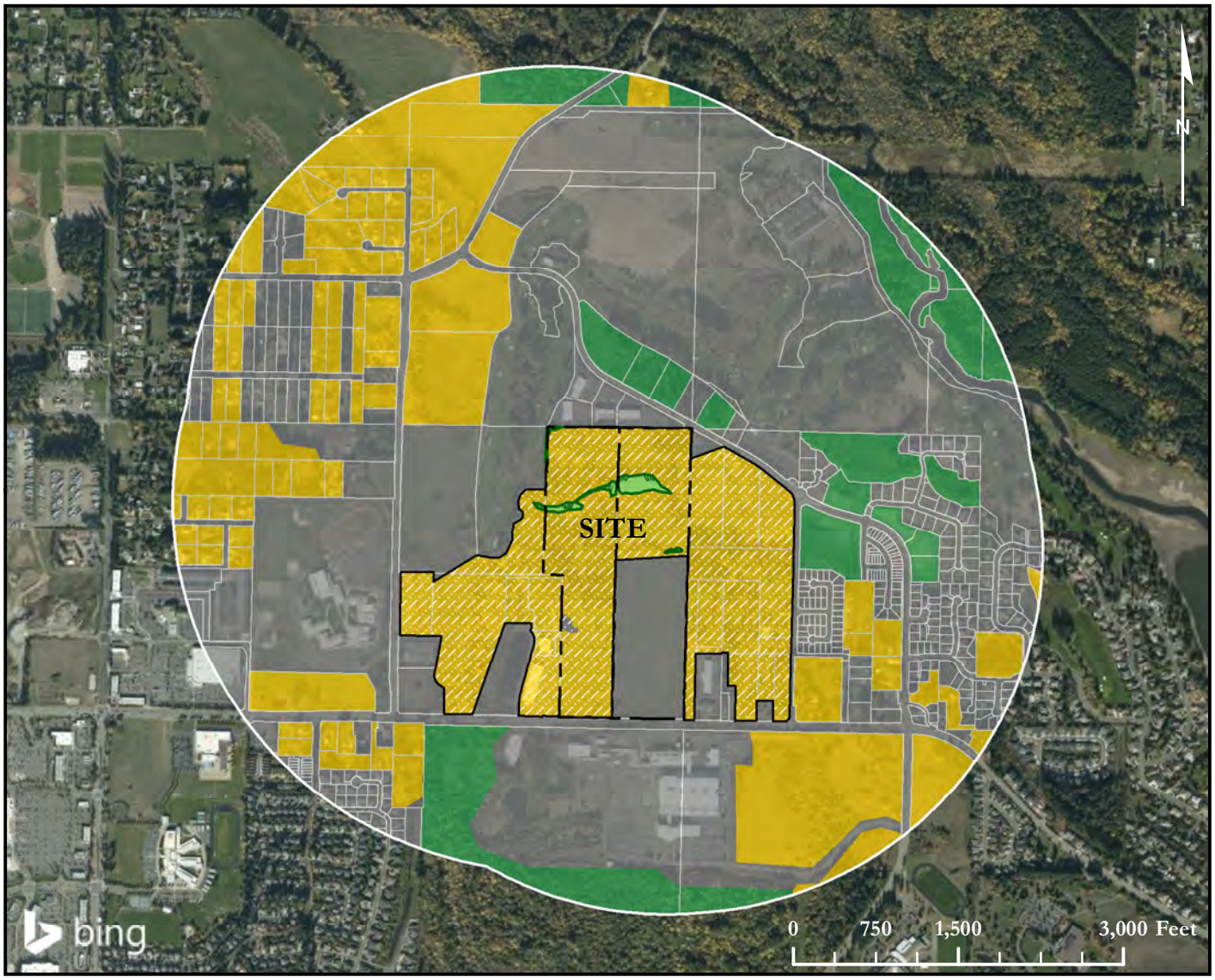
CAMAS BUSINESS CENTER
4707 & 4723 NW LAKE ROAD CAMAS, WA 98607

CLARK COUNTY PARCEL NUMBERS:
176155000 and 176170000

DATE: 8/16/2021
JOB: 1144.0027
BY: DDS
SCALE: 1 " = 450 '
FIGURE NO. 3 of 5

CAMAS BUSINESS CENTER - HABITAT MAP



H.2.0 Wetland A		
H.2.1		
	Abutting Undisturbed Habitat	0.00%
	Abutting Moderate & Low Intensity Land Uses	12.35%
	Accessible Habitat	**6.18%**
H.2.2		
	Undisturbed Habitat	9.17%
	Moderate & Low Intensity Land Uses	33.73%
	Undisturbed Habitat in 1 KM Polygon	**26.03%**
H.2.3		
	High Intensity Land Use in 1 KM Polygon	**57.10%**

- **1 KM Polygon**
- **Accessible Habitat**
- **High Intensity**
- **Moderate & Low Intensity**
- **Undisturbed Habitat**

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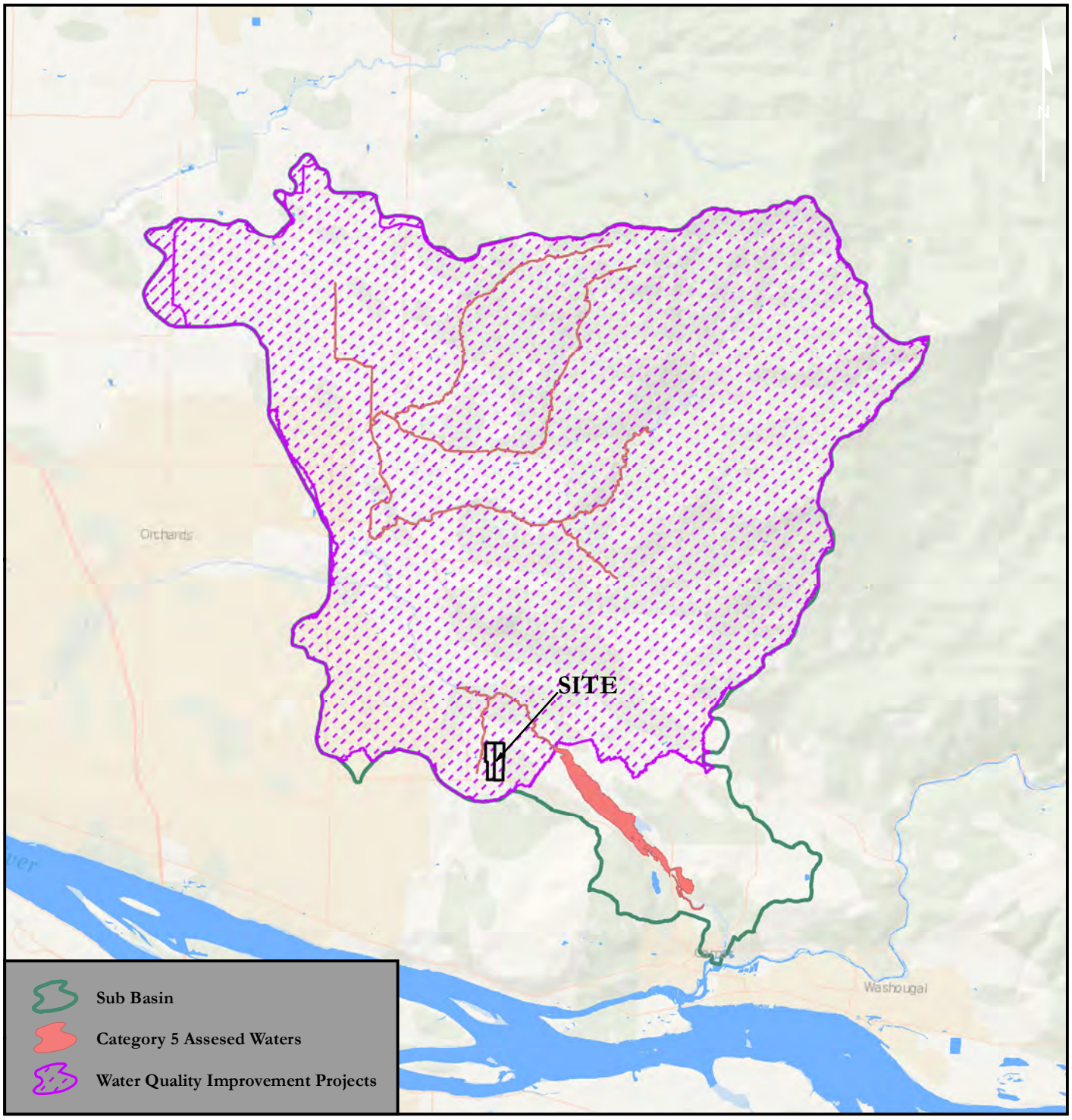
4707 & 4723 NW LAKE ROAD CAMAS, WA 98607

CLARK COUNTY PARCEL NUMBERS:
176155000 and 176170000

DATE: 8/16/2021
JOB: 1144.0027
BY: DDS
SCALE: 1 " = 1,500 '
FIGURE NO. 4 of 5

CAMAS BUSINESS CENTER CENTER - 303D MAP



Name	Pollutants	TMDL ID	WRIA	Year Approved
Salmon Creek Bacteria and Turbidity TMDL	Bacteria, Turbidity	33	28	2001
Salmon Creek Watershed Temperature TMDL	Temperature	123	28	2011

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4707 & 4723 NW LAKE ROAD CAMAS, WA 98607

CLARK COUNTY PARCEL NUMBERS:
176155000 and 176170000

DATE: 8/16/2021
JOB: 1144.0027
BY: DDS
SCALE: 1 " = 2 mi
FIGURE NO. 5 of 5

Appendix G – Qualifications

All field inspections, wetland determinations, habitat assessments, and supporting documentation, including this ***Wetland and Fish and Wildlife Habitat Assessment Report*** prepared for the ***Camas Commerce Center*** property were prepared by, or under the direction of, Matt DeCaro of SVC. In addition, the site investigations were performed by Rachael Hyland and Jake Layman, and report preparation was completed by Casey Lanier and Kelly Kramer

Matt DeCaro

Associate Principal
Professional Experience: 13 years

Matt DeCaro is an Associate Principal and Senior Scientist with a diverse background in environmental planning, wetland science, stream ecology, water quality, site remediation, NEPA compliance, and project management. He manages a wide range of industrial, commercial, and multi-family residential projects throughout Western Washington, providing environmental permitting and regulatory compliance assistance for land use projects from their planning stages through entitlement and construction. His local expertise, diverse professional background, and positive relationships with regulatory personnel are integral components of his successful project outcomes.

Matt earned a Bachelor of Science degree with a focus in Environmental Science from the Evergreen State College in Olympia, Washington, with additional graduate-level coursework and research in aquatic restoration and salmonid ecology. Matt has received 40-hour wetland delineation training (*Western Mountains, Valleys, & Coast and Arid West Regional Supplements*) and regularly performs wetland, stream, and shoreline delineations. Matt has been formally trained in the use of the *2014 Washington State Wetland Rating System* and *Determination of Ordinary High Water Mark* by WSDOE, and he is a Pierce County Qualified Wetland Specialist and Wildlife Biologist. He has attended USFWS survey workshops for multiple threatened and endangered species, and he is a Senior Author of WSDOT Biological Assessments. Matt holds 40-hour HAZWOPER training and has managed Phase I Environmental Site Assessments, subsurface investigations, and contaminant remediation projects throughout the Pacific Northwest. His diverse experience also includes NEPA compliance for federal permitting projects; noxious weed abatement; army ant research in the Costa Rican tropical rainforest; spotted owl surveys on federal and private lands; and salmonid spawning and migration surveys.

Jake Layman

Environmental Scientist
Professional Experience: 12+ years

Jake Layman is an Environmental Scientist with a varied background in fisheries, wildlife, and aquatic invertebrate biology and stream and lake ecology. Jakes's expertise includes endangered species monitoring, lake limnology assessments, water chemistry profiles, off-channel habitat characterization, laboratory management, and terrestrial and aquatic amphibian identification with associated habitat assessments. Jake also has experience in fish population assessments, stream typing, spawning escapement, environmental disaster recovery, and amphibian toxicology research. Jake has over 10 years of experience at the federal and state levels conducting ecological monitoring surveys throughout Eastern and Western Washington. He worked with the National Park Service to conduct environmental compliance monitoring on park construction projects, infrastructure maintenance

projects, and federal highways projects. This position also included environmental spill response, fish exclusion surveys in support of construction, and effectiveness monitoring on Engineered Log Jam (ELJ) projects. Jake has worked with the Washington Department of Fish and Wildlife (WDFW) to assess and inventory fish passage barriers and monitor culvert removal projects throughout Western Washington. While working for WDFW, Jake managed the daily operation for the intensive habitat study, on off-channel wetlands, for the Chehalis Aquatic Resources Protection Plan (ASRP).

Jake earned bachelor's degrees in both Biology, with an Ecology specialization, and Geography, with a Natural Resource Management specialization, from Central Washington University. In addition, Jake has a Minor in Environmental Studies and a Certificate in Geographic Information Systems (GIS) and Cartography form Central Washington University. Jake has received a 40-hour wetland delineation training (Western Mtns, Valleys, & Coast and Arid West Regional Supplement) and training from the Washington State Department of Ecology in Environmental Negotiations; Navigating SEPA; Conducting Forage Fish Surveys; Puget Sound Coastal Processes, Shoreline Modifications, and Beach Restoration; Using the Marine Shoreline Design Guidelines for Marine Shoreline Stabilization; How to Determine the Ordinary High Water Mark; and Using the Revised Washington State Wetland Rating System (2014) in Western Washington.

Rachael Hyland

Environmental Scientist & Certified Ecologist
Professional Experience: 7 years

Rachael Hyland is a Wetland Professional in Training (WPIT) through the Society of Wetland Scientists and a Certified Ecologist through the Ecological Society of America. Rachael has a background in wetland and ecological habitat assessments in various states, most notably Washington, Connecticut, Massachusetts, Rhode Island, and Ohio. She has experience in assessing tidal, stream, and wetland systems, reporting on biological evaluations, permitting, and site assessments. She also has extensive knowledge of bats and white nose syndrome (*Pseudogymnoascus destructans*), a fungal disease affecting bats which was recently documented in Washington.

Rachael earned a Bachelor of Science degree in Ecology and Evolutionary Biology from the University of Connecticut, with additional ecology studies at the graduate level. Rachael has completed 40-hour wetland delineation training for Western Mountains, Valleys, & Coast and Arid West Regional Supplement, in addition to formal training for the Northcentral and Northeast supplement, and experience with the Eastern Mountains and Piedmont and Atlantic and Gulf Coast supplements. She has also received formal training from the Washington State Department of Ecology in the Using the Revised 2014 Wetland Rating System for Western Washington, How to Determine the Ordinary High Water Mark, Navigating SEPA, and Selecting Wetland Mitigation Sites Using a Watershed Approach. Rachael has also received training from the Washington State Department of Transportation in Biological Assessment Preparation for Transportation Projects and is listed by WSDOT as a junior author for preparing Biological Assessments.

CAMAS BUSINESS CENTER
TRAFFIC IMPACT ANALYSIS

Camas, WA

11/11/2021

Prepared for: Mr. Bjorn Brynestad
Panattoni Development Company, Inc.
1821 Dock Street, Suite 100
Tacoma, WA 98402

November 2021

CAMAS BUSINESS CENTER
TRAFFIC IMPACT ANALYSIS

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CAMAS BUSINESS CENTER
TRAFFIC IMPACT ANALYSIS

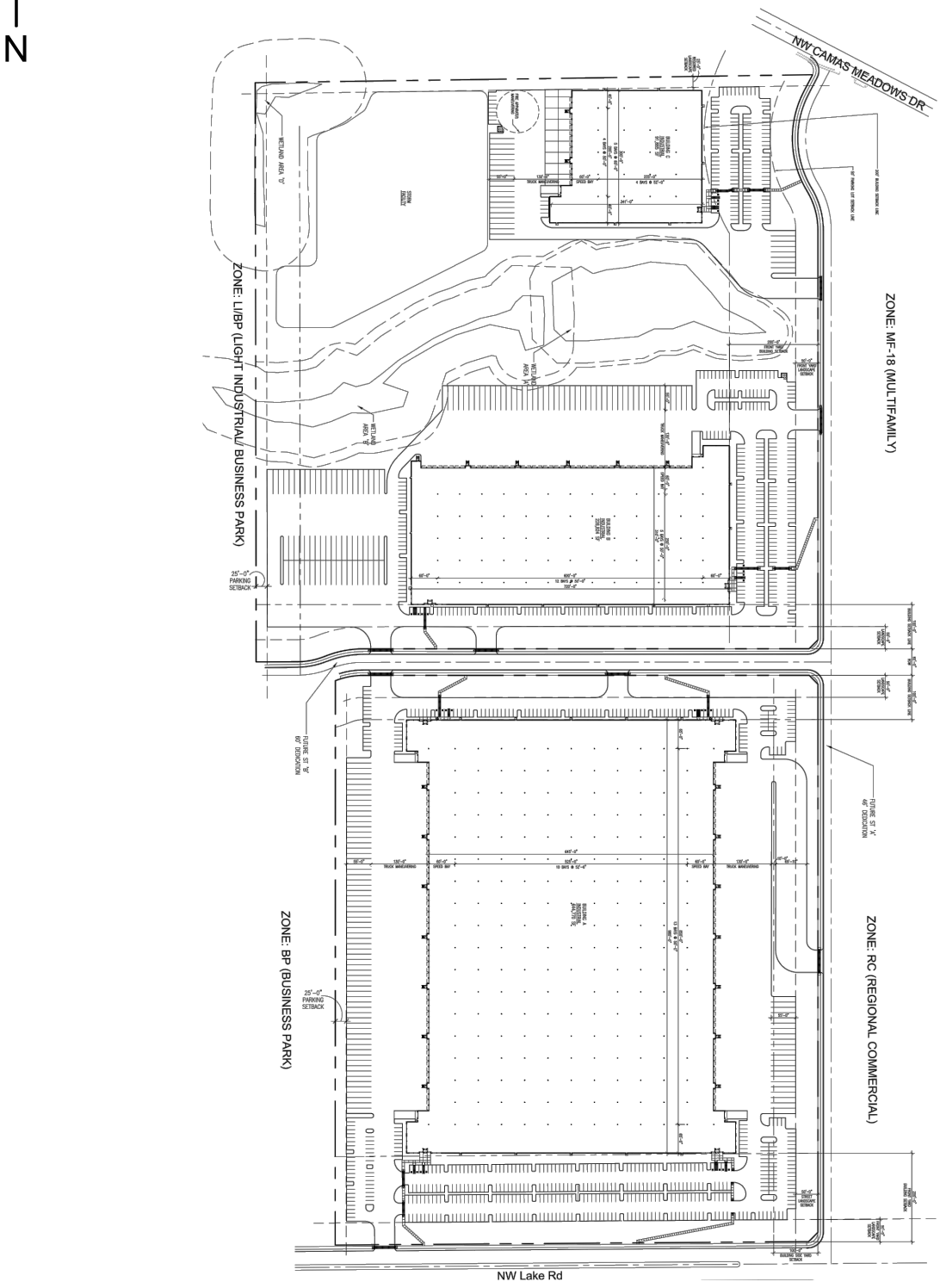
1. INTRODUCTION

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

Camas Business Center proposes an industrial site comprising 963,479 square feet within three buildings located in the city of Camas. The proposed development contains a site address of 4704 NW Lake Road. The subject property is bordered to the south by NW Lake Road on a cumulative 74.06-acres within tax parcel #'s: 176155000; & 176170000. Primary access to and from the site is proposed via NW Lake Road and NW Camas Meadows Drive. Shown below in Figure 1 is an aerial vicinity map outlining the subject parcel. A site plan illustrating the proposed building layout and access configuration is presented in Figure 2 on the following page.

Figure 1: Vicinity Map



HEATH & ASSOCIATES

TRAFFIC AND CIVIL ENGINEERING

CAMAS BUSINESS CENTER

SITE PLAN
FIGURE 2

PO Box 397 Puyallup, WA 98371 (253) 770 1401 heathtraffic.com

3. EXISTING CONDITIONS

3.1 Existing Roadway Characteristics

Adjacent streets to the site are listed and described below:

NW Lake Road/SE 1st Street: is an east-west multi-lane arterial bordering the subject site to the south. Travel lanes are approximately 11-12 feet in width with left-turn lanes and marked crosswalks provided at major intersections. Bicycle lanes approximately 5-feet in width are provided along either side of the roadway. Shoulders are comprised of curb, gutter and detached sidewalk. The posted speed limit along the project frontage is 40-mph.

NW Camas Meadows Drive: is a northwest-southeast, 2- to 3-lane arterial abutting the northeastern corner of the subject site. The roadway cross-section at the proposed site access consists of 1 travel lane in either direction and a center two-way left-turn lane. Travel lanes are approximately 11-12 feet in width. With the exception of a segment of roadway southeast of the subject site that provides solely curb, shoulders generally consists of curb, gutter and detached sidewalk. The posted speed limit is 35-mph.

3.2 Transit Service

A review of the C-Tran regional bus schedule indicates that the nearest bus route in relation to the subject site, Routes 37, is provided in excess of 1-mile walking distance. Routes 37 – Mill Plain/Fisher's provides service from downtown Vancouver, east along Mill Plain Boulevard, terminating at Fisher's Landing Transit Center. The nearest stop in relation to the subject site is located 1.25-miles walking distance southwest at SE 192nd Avenue & Mill Plain Boulevard. Weekday service is provided from 4:47 AM – 1:10 AM with 15-minute headway frequency. Saturday service is provided from 7:15 AM – 11:37 PM with 20-minute headway frequency. Sunday/Holiday service is provided from 7:30 AM – 11:02 PM with 30-minute headway frequency. Continuous sidewalk paths are provided between the subject site and Route 37 service. Refer to C-Tran Routes for more detailed route information.

3.3 Non-Motorist Traffic

Observations for pedestrian and bicycle activity were made at the study intersections most immediate to the subject site: NW Payne Street & NW Lake Road and NE Camas Meadows Drive & NE Goodwin Road. During the PM peak hour, 1 pedestrian and 8 bicyclists were observed at NW Payne Street & NW Lake Road. No pedestrians and 12

bicyclists were observed at NE Camas Meadows Drive & NE Goodwin Road. The surrounding area offers continuous sidewalk and marked crosswalks at nearby intersections. Moreover, bike lanes are provided on NW Lake Road and additional roadways in the vicinity of the subject site. No significant increase with respect to non-motorist transport would be expected from the project given the industrial nature of the proposed development.

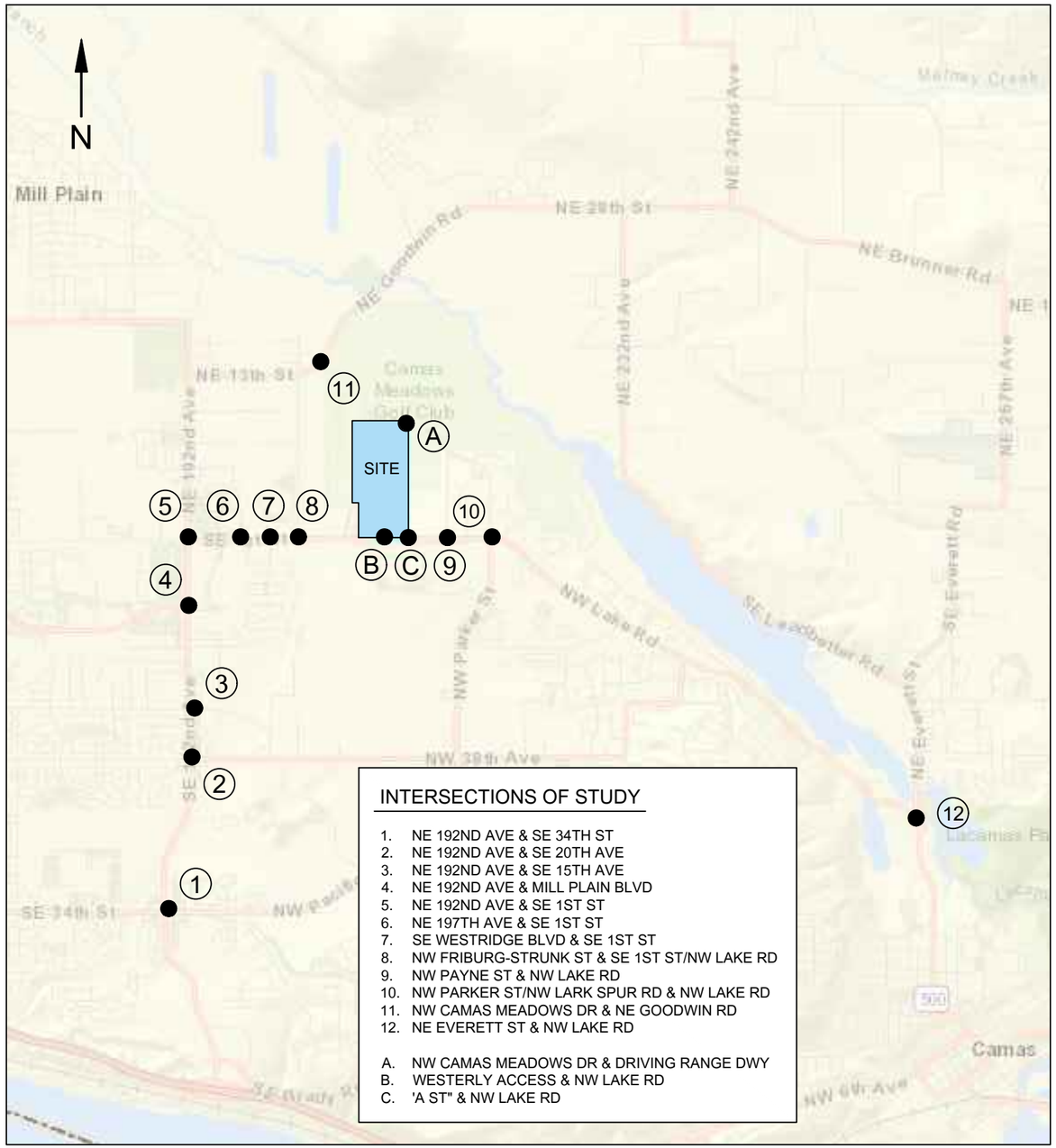
3.4 Existing Peak Hour Volumes

Field data was collected in October of 2021 to determine baseline vehicular volumes in the study area. Turning movement counts were performed at the following intersections, as directed by the city of Camas and city of Vancouver.

1. NE 192nd Ave & SE 34th St
2. NE 192nd Ave & SE 20th Ave
3. NE 192nd Ave & SE 15th Ave
4. NE 192nd Ave & Mill Plain Blvd
5. NE 192nd Ave & SE 1st St
6. NE 197th Ave & SE 1st St
7. SE Westridge Blvd & SE 1st St
8. NW Friburg-Strunk St & SE 1st St/NW Lake Rd
9. NW Payne St & NW Lake Rd
10. NW Parker St /NW Lark Spur Rd & NW Lake Rd
11. NW Camas Meadows Dr & NE Goodwin Rd
12. NE Everett St & NW Lake Rd

All study intersections were analyzed between the weekday peak period of 4:00 PM - 6:00 PM. The one hour reflecting highest overall roadway volumes (peak hour) was then derived from these counts. To determine if gathered 2021 PM peak hour count volumes should be grossed up due to potential travel skews associated with the ongoing COVID-19 pandemic, 2021 counts were compared with historic 2018 counts at several study intersections. Data indicated that 2021 volumes were higher than 2018 volumes at NE 192nd Avenue & SE 34th Street and lower at slightly lower at NE 192nd Avenue & SE 1st Street. It should be noted that travel patterns are trending towards normalization. Current traffic volumes being lower than previous years may be attributed to a handful of factors, anticipated to continue beyond the pandemic. These influences include an increase in the population share working from home, shifting peak hours and overall changes in travel behavior. Given the similar traffic volumes and the additional reasons above, no adjustments were applied to the traffic counts.

Lastly, it should be noted that the proposed NW Camas Meadows Drive & Street “A” access is located in close proximity to an existing driveway serving the Camas Meadows Driving Range. Therefore, a count was performed at this intersection in (July of 2021), which is additionally depicted in Figure. Existing PM peak hour volumes are illustrated in Figure 3. Full-count sheets have been included in the appendix.

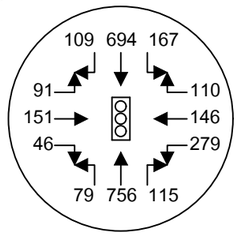


INTERSECTIONS OF STUDY

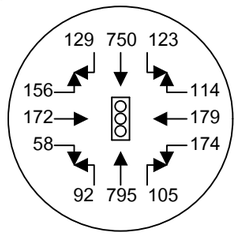
1. NE 192ND AVE & SE 34TH ST
2. NE 192ND AVE & SE 20TH AVE
3. NE 192ND AVE & SE 15TH AVE
4. NE 192ND AVE & MILL PLAIN BLVD
5. NE 192ND AVE & SE 1ST ST
6. NE 197TH AVE & SE 1ST ST
7. SE WESTRIDGE BLVD & SE 1ST ST
8. NW FRIBURG-STRUNK ST & SE 1ST ST/NW LAKE RD
9. NW PAYNE ST & NW LAKE RD
10. NW PARKER ST/NW LARK SPUR RD & NW LAKE RD
11. NW CAMAS MEADOWS DR & NE GOODWIN RD
12. NE EVERETT ST & NW LAKE RD

A. NW CAMAS MEADOWS DR & DRIVING RANGE DWY
B. WESTERLY ACCESS & NW LAKE RD
C. 'A ST" & NW LAKE RD

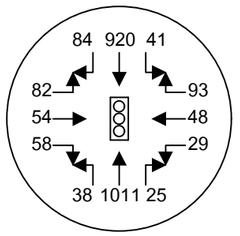
① NE 192ND AVE & SE 34TH ST



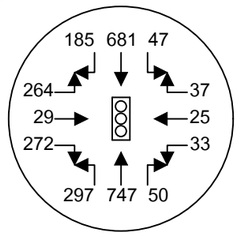
② NE 192ND AVE & SE 20TH AVE



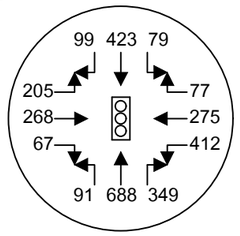
③ NE 192ND AVE & SE 15TH AVE



④ NE 192ND AVE & MILL PLAIN BLVD



⑤ NE 192ND AVE & SE 1ST ST



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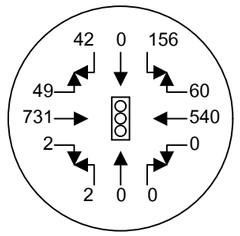

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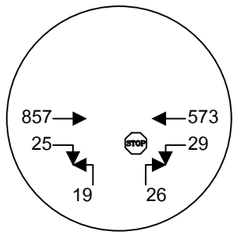

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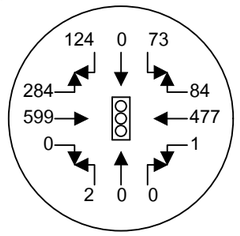

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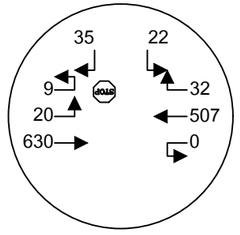

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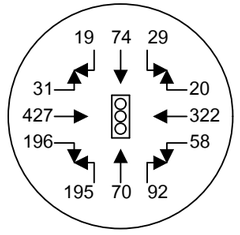

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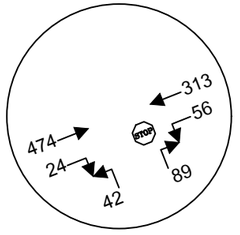

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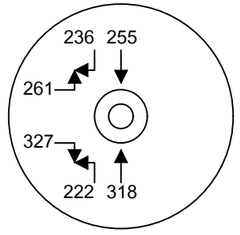

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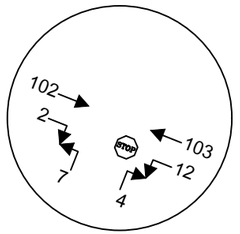
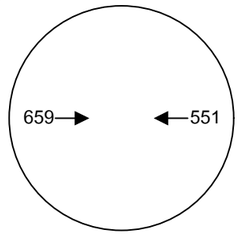
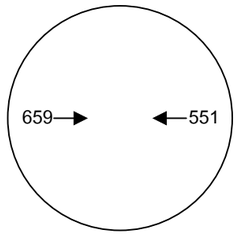


Ⓑ WESTERLY ACCESS & NW LAKE RD



Ⓒ "A ST" & NW LAKE RD



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EXISTING PM PEAK HOUR VOLUMES
FIGURE 740

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3.5 Existing Level of Service

Peak hour delays were determined through the use of the *Highway Capacity Manual* 6th Edition. Capacity analysis is used to determine level of service (LOS) which is an established measure of congestion for transportation facilities. The range[1] for intersection level of service is LOS A to LOS F with the former indicating the best operating conditions with low control delays and the latter indicating saturated conditions with heavy control delays. Level of service calculations were made through the use of the *Synchro 11* analysis program and *SIDRA* (roundabouts). Signalized LOS is reported as the intersection's overall average delay. Stop-controlled is reported for the highest delays approach. Table 3 below summarizes existing LOS delays for the study intersections.

Table 1: Existing PM Peak Hour Level of Service

Delays given in seconds per vehicle

ID	Intersection	Control [2]	LOS	Delay	V/C
1	NE 192nd Ave & SE 34th St	Signal	C	24.2	0.70
2	NE 192nd Ave & SE 20th Ave	Signal	D	35.9	0.86
3	NE 192nd Ave & SE 15th Ave	Signal	B	18.7	0.56
4	NE 192nd Ave & Mill Plain Blvd	Signal	C	27.6	0.78
5	NE 192nd Ave & SE 1st St	Signal	C	31.4	0.72
6	NE 197th Ave & SE 1st St	Signal	B	10.4	0.45
7	SE Westridge Blvd & SE 1st St	Stop	C	20.8	0.14
8	NW Friburg-Strunk St & SE 1st St/NW Lake Rd	Signal	B	13.1	0.55
9	NW Payne St & NW Lake Rd	Stop	B	14.9	0.14
10	NW Parker St /NW Lark Spur Rd & NW Lake Rd	Signal	B	18.2	0.63
11	NW Camas Meadows Dr & NE Goodwin Rd	Stop	B	14.9	0.16
12	NE Everett St & NW Lake Rd	RAB	A	6.6	0.28
A	NW Camas Meadows Dr & Driving Range Dwy	Stop	A	9.6	0.20

[1] *Signalized Intersections - Level of Service*

Level of Service	Control Delay per Vehicle (sec)
A	≤10
B	> 10 and ≤20
C	> 20 and ≤35
D	> 35 and ≤55
E	> 55 and ≤80
F	> 80

Stop Controlled Intersections – Level of Service

Level of Service	Control Delay per Vehicle (sec)
A	≤10
B	> 10 and ≤15
C	> 15 and ≤25
D	> 25 and ≤35
E	> 35 and ≤50
F	> 50

Highway Capacity Manual, 6th Edition

[2] Signal timing was obtained from City of Vancouver's Public Works Traffic Engineering and Operations

All outlying study intersections currently operate with LOS D or better conditions during the critical PM peak hour.

3.6 Roadway Improvement Projects

A review of the City of Camas Six-Year Comprehensive Transportation Improvement Program (2022-2027) indicates that the following projects are currently planned in the vicinity of Camas Business Center project.

Table 2: City of Camas Transportation Improvement Projects

Name	Location	Improvement	Cost
SR-500 (Everett St/Rd) (Priority #2)	NW Lake Rd to SE 4th St	Widening, bike lanes, pedestrian access	$45,700,000
NE Goodwin Rd (Priority #5)	@ NE Ingle Rd	Traffic signal	$380,000
Lake Road (Priority #7)	NW Lacamas Ln - Lacamas Lk Lodge	Widening, sidewalk	$3,475,000
NW Lake Road (Priority #8)	@ NW Sierra St	Traffic signal	$380,000
NE Goodwin Road/28th Street (Priority #10)	NW Camas Meadows Dr - NE 232nd Ave	Widen to 5 lanes with bike lanes, sidewalk west of Ingle; Widen to 3 lanes with bike lanes, sidewalk east of Ingle	$21,670,000
North Dwyer Creek Master Plan Street "B" (Priority #17)	NW Friberg St./Strunk to NW Larkspur St.	New construction	TBD
NW Payne Street (Priority #18)	NW Lake Rd. to NW Camas Meadows Dr	Widening, bike lanes, sidewalk	TBD
North Dwyer Creek Master Plan Street "A" (Priority #20)	NW Lake Rd to NW Camas Meadows Dr	New construction	TBD
NW Leadbetter Drive (Priority #21)	NW Lake Rd to NW Fremont St	Sidewalk	CN: $66,000
NE 18th Street (Priority #33)	NE 192nd Ave to NE Goodwin Rd	New construction (potential alternate alignment)	TBD
NW Camas Meadows Drive (Priority #35)	NE 13th St to NE 18th St	New construction (potential alternate alignment)	TBD
E Goodwin Road @ NW Camas Meadows Drive (Priority #37)	Intersection	Traffic signal	$350,000

Moreover, a review of the City of Vancouver Six-Year Comprehensive Transportation Improvement Program (2022-2027) indicates that the following projects are currently planned in the vicinity of several outlying study intersections for the Camas Business Center project.

Table 3: City of Vancouver Transportation Improvement Projects

Name	Location	Improvement	Cost
SE 1st St (TRANS-268)	SE 164th Ave to SE 177th Ave	New cross section to be 3 lanes wide with improvements to include sidewalks, ADA ramps, bike facilities	$14,100,000
SE 1st St (TRANS-870)	SE 177th Ave to SE 192nd Ave	Install roundabouts and transition to a 5-lane cross-section. Improvements include sidewalks, ADA ramps, bike facilities, etc.	$11,000,000
NE 192nd Ave (TRANS-607)	SE 1st St to NE 18th St	Additional travel lanes, sidewalks, bike facilities, ADA ramps and streetlights	$20,000,000

3.7 Project Access, Vision Clearance & Driveway Spacing

Three new primary access points are proposed for site ingress and egress. Two new accesses (one westerly right-in, right-out driveway and one full turning movement Street “A” intersection) are proposed to extend north from NW Lake Road. One new access, Street “A”, is to extend southwest from NW Camas Meadows Drive. It should be noted that Street “A” is classified as a future City collector roadway, providing a new north-south connection from NW Lake Road to NW Camas Meadows Drive. In accordance with established AASHTO “Green Book” standards, a minimum entering sight distances of 475 feet and 390 feet are required based on the 40- and 35-mph posted speed limits and number of travel lanes on NW Lake Road and NW Camas Meadows Drive, respectively. Based on preliminary measurements, sight lines appear to be met at all proposed accesses. Final verification may be required upon final site plan and access locations.

Moreover, all new access intersections constructed by the proposed development are to conform with CMC 18.17.030 vision clearance standards. No vision clearance issues are identified with the development proposal, however, final verification may be required upon final site plan and access locations.

Lastly, all proposed project driveways on Street “A” and Street “B” and their respective distances to one another are illustrated in Figure A in the appendix. Figure A additionally illustrates all intersections/private driveways located in close proximity to the westerly project access on NW Lake Road, Street “A” & NW Lake Road and Street “A” & NW Camas Meadows Drive.

4. FUTURE TRAFFIC DEMAND

4.1 Trip Generation

Trip generation is defined as the number of vehicle movements that enter or exit the respective project site during a designated time period such as the PM peak hour or an entire day. The magnitude of the anticipated vehicle trip generation for the proposed project was derived from the Institute of Transportation Engineers (ITE) publication, *Trip Generation,* 11th Edition. The proposed land uses utilized for analysis are defined under ITE's Land Use Code (LUC) 154 – High-Cube Warehouse (Buildings A & B) and LUC 140 – Manufacturing (Building C). Square footage was used as the input variable and average rates were used in determining trip ends. Table 4 below summarizes anticipated vehicular movements for the average weekday daily trips (AWDT) and the AM and PM peak hours.

Table 4: Project Trip Generation

Building	Land Use	Size	AWDT	AM Peak-Hour Trips			PM Peak-Hour Trips		
				In	Out	Total	In	Out	Total
A & B	High-Cube Warehouse (LUC 154)	871,594 SF	**1220**	54	16	**70**	24	63	**87**
C	Manufacturing (LUC 140)	91,885 SF	**436**	47	15	**62**	21	47	**68**
	Total		**1656**	101	31	**132**	45	110	**155**

Based on ITE data, the proposed development is anticipated to generate 1656 average weekday daily trips with 132 AM (101 in/31 out) and 155 PM (45 in/110 out) peak hour trips. Moreover, ITE data indicates that approximately 20 AM (10 in/10 out) 12 PM (5 in/7 out) peak hour trips are anticipated to be in the form of heavy vehicle.

4.2 Trip Distribution Pattern

Trip distribution can be described as the travel routes to/from the subject site relative to the adjacent street system. The specific destinations and origins of the generated traffic primarily influence the key study intersections, which will effectively receive the bulk of project impacts. Trips generated by the project are expected to follow the general trip pattern as shown in Figure 4 for the PM peak hour. Trip distribution used herein this analysis has been approved by the City during the scoping process. Trips were disseminated between the proposed accesses on NW Lake Road (westerly access and new Street "A" intersection) and NW Camas Meadows Drive based on optimal travel

routing and parking availability on-site. It should be noted that a center median island is provided along NW Lake Road, restricting movements at the westerly access to right-in, right-out maneuvers. A left-turn pocket and receiving lane for southbound left-turn maneuvers at the Street “A” & NW Lake Road is to be constructed, permitting full turning movements at the intersection. The new intersection of Street “A” at Camas Meadows Drive is proposed for 3/4 road improvements and is assumed to allow two-way traffic flow.

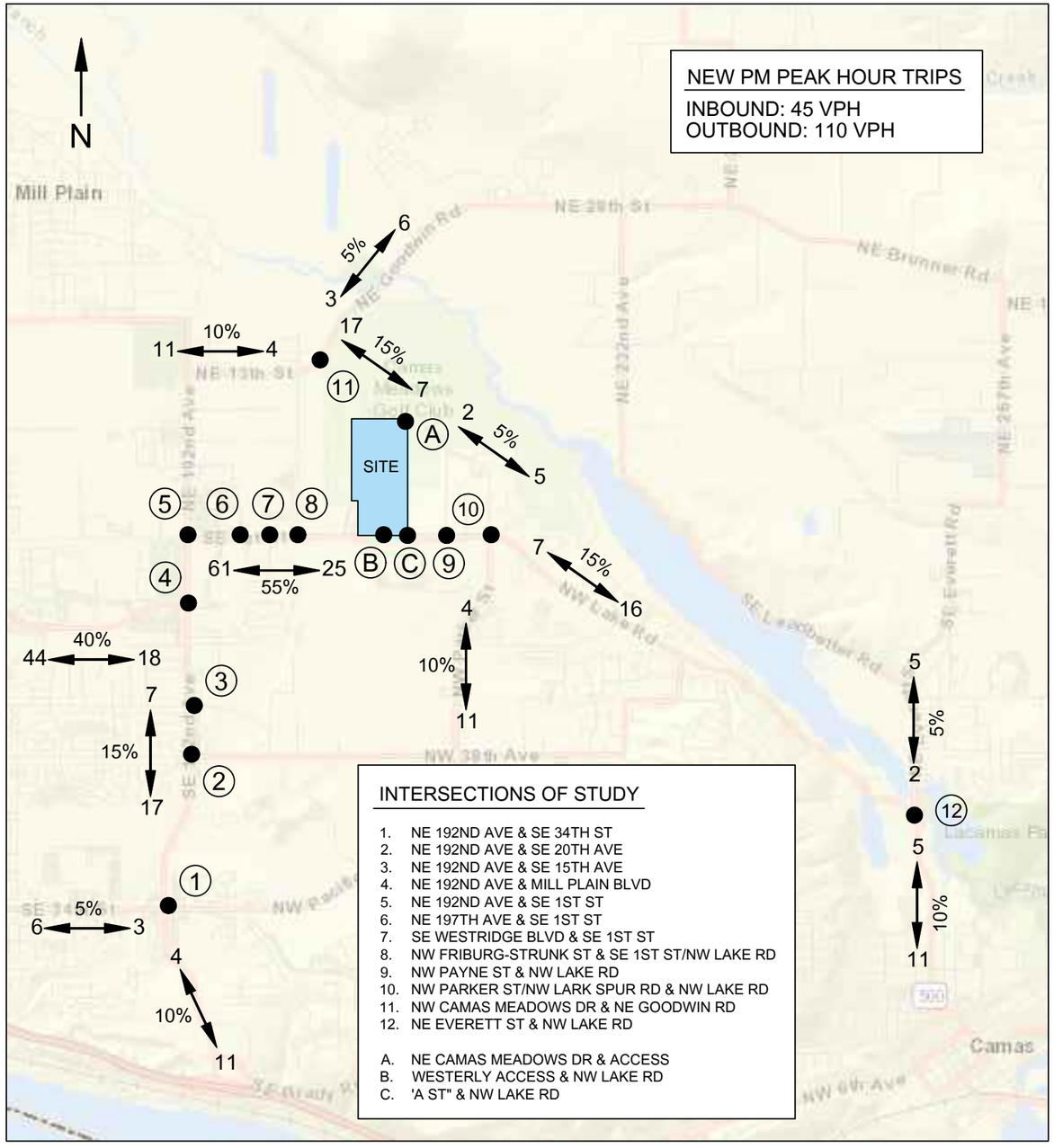
Discussion with the cities of both Camas and Vancouver during the scoping process indicated that several intersections in the vicinity of the subject site require proportional share fees for PM peak hour trip ends associated with new development. Figure B, attached in the appendix, outlines total PM peak hour trips at these intersections as requested. Moreover, as instructed in comments by the City, a diagram illustrating onsite traffic circulation showing ingress and egress in relation to future Street “A” and Street “B” is provided in the appendix in Figure C. Lastly, AM peak hour trip distribution and assignment is illustrated in Figure D in the appendix.

4.3 Peak Hour Volumes With and Without the Project

A 3-year horizon of 2024 was used for future traffic delay analysis. Forecast 2024 traffic volumes were derived by applying a 3.0 percent[3] compound annual growth rate to the existing PM peak hour volumes illustrated in Figure 3. Figure 5 shows future 2024 PM peak hour volumes without the project. Figure 6 shows 2024 PM peak hour volumes with the proposed project trips added to the study intersections.

It should be noted that Street “A”, being constructed as part of site development, is anticipated to serve future development. Moreover, the new collector roadway may reroute future travel volumes a it provides a new north-south connection. Therefore, additional turn-volumes were added to the Street “A” & NW Lake Road and Street “A” & NW Camas Meadows Drive intersections. Turn volumes added at this intersections emulate those observed at NW Payne Street & NW Lake Road, as this intersection provides similar routing options to that of the proposed access intersections. Said turn-volumes were grossed up by a factor of 1.2 to present a conservative analysis. Lastly, no reductions were applied to adjacent study intersections as a result of this rerouting.

[3] City of Camas, WA-Traffic Impact Fee Update (Annualized growth rate of about 2.9% per year)



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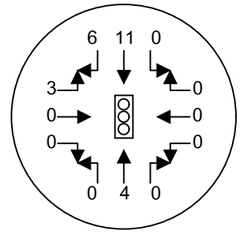

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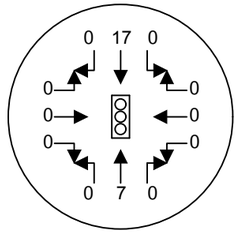

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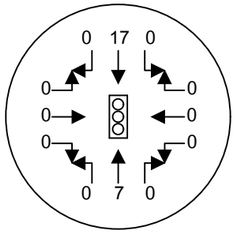

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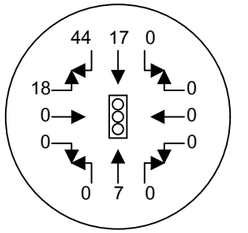

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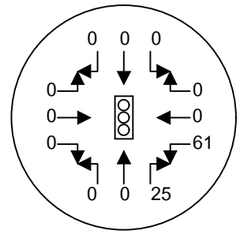

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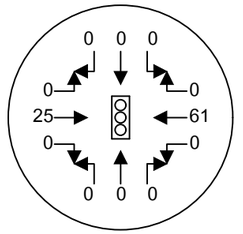

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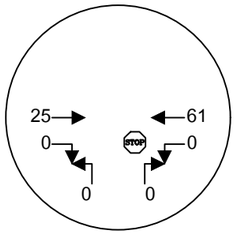

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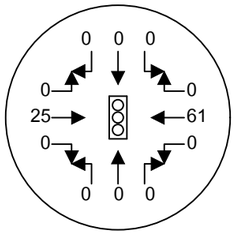

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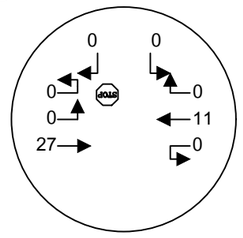

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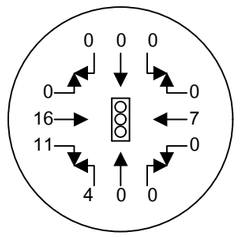

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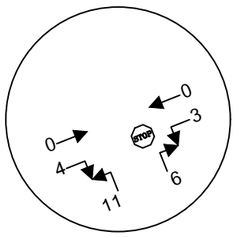

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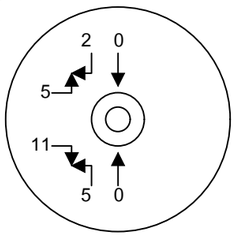

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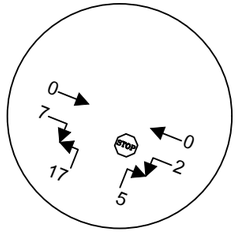

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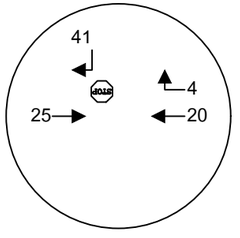
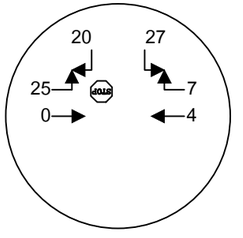


Ⓒ "A ST" & NW LAKE RD



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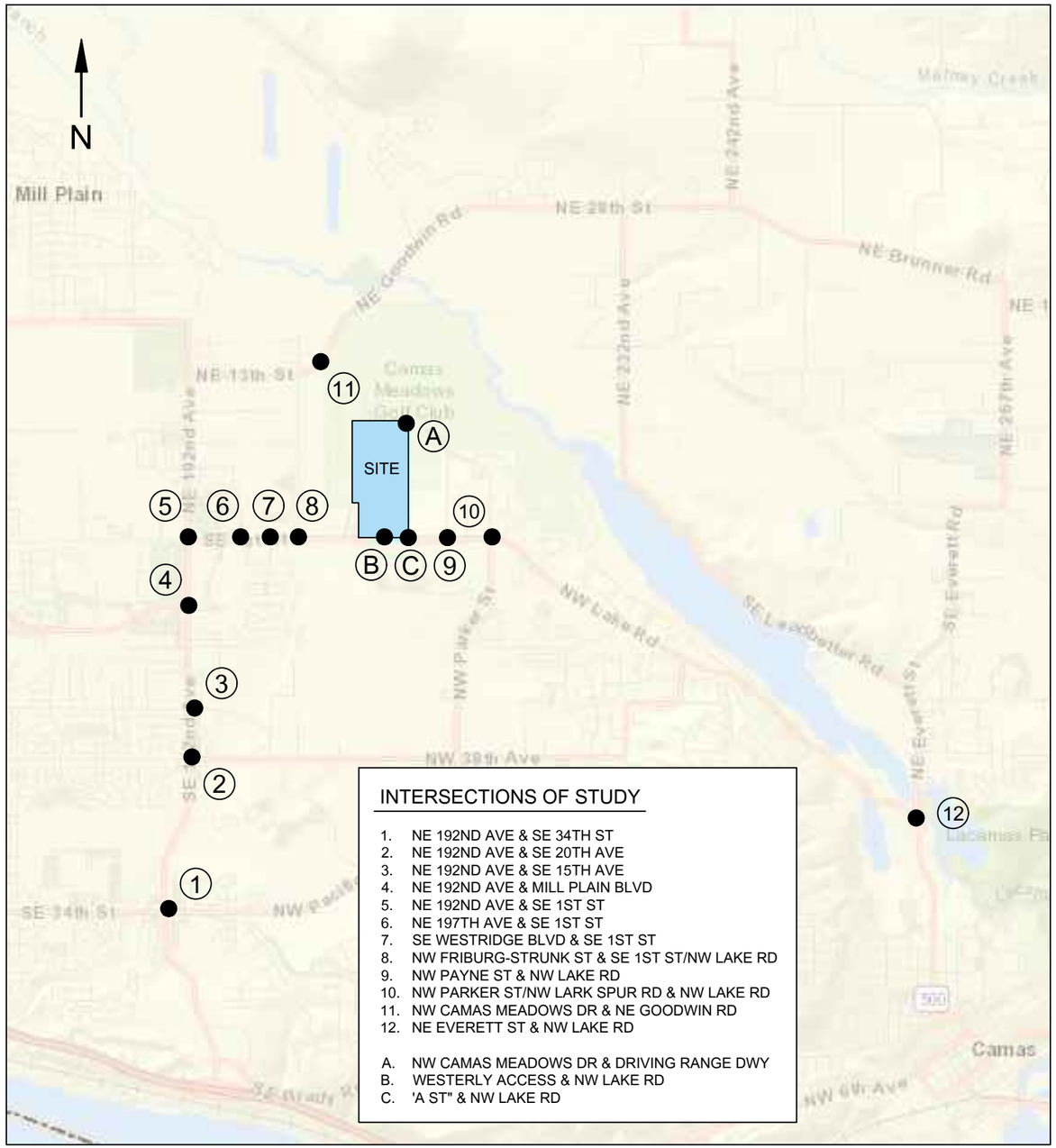
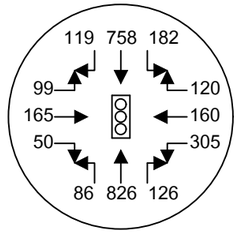


INTERSECTIONS OF STUDY

1. NE 192ND AVE & SE 34TH ST
2. NE 192ND AVE & SE 20TH AVE
3. NE 192ND AVE & SE 15TH AVE
4. NE 192ND AVE & MILL PLAIN BLVD
5. NE 192ND AVE & SE 1ST ST
6. NE 197TH AVE & SE 1ST ST
7. SE WESTRIDGE BLVD & SE 1ST ST
8. NW FRIBURG-STRUNK ST & SE 1ST ST/NW LAKE RD
9. NW PAYNE ST & NW LAKE RD
10. NW PARKER ST/NW LARK SPUR RD & NW LAKE RD
11. NW CAMAS MEADOWS DR & NE GOODWIN RD
12. NE EVERETT ST & NW LAKE RD

A. NW CAMAS MEADOWS DR & DRIVING RANGE DWY
B. WESTERLY ACCESS & NW LAKE RD
C. 'A ST" & NW LAKE RD

① NE 192ND AVE & SE 34TH ST



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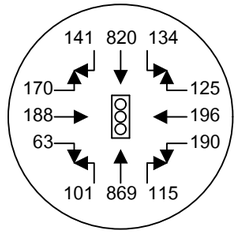

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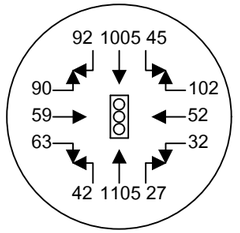

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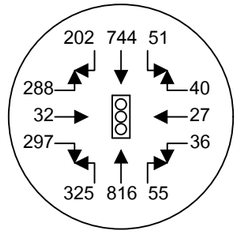

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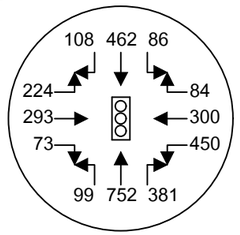

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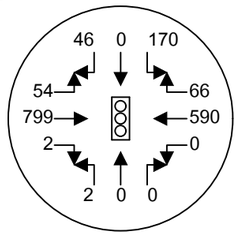

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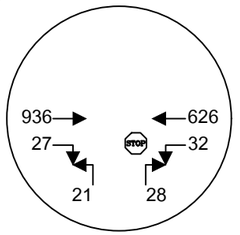

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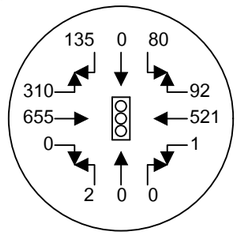

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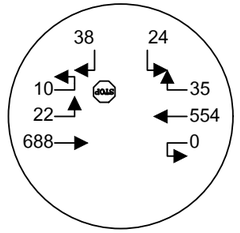

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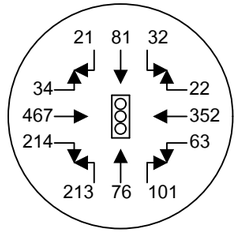

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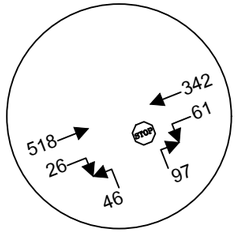

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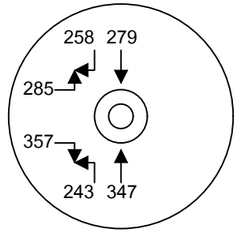

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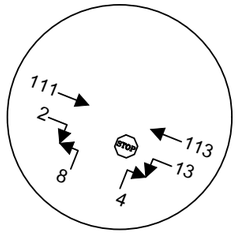

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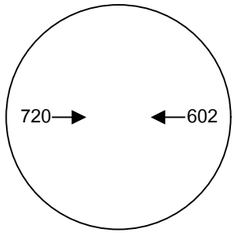

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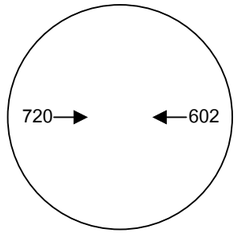
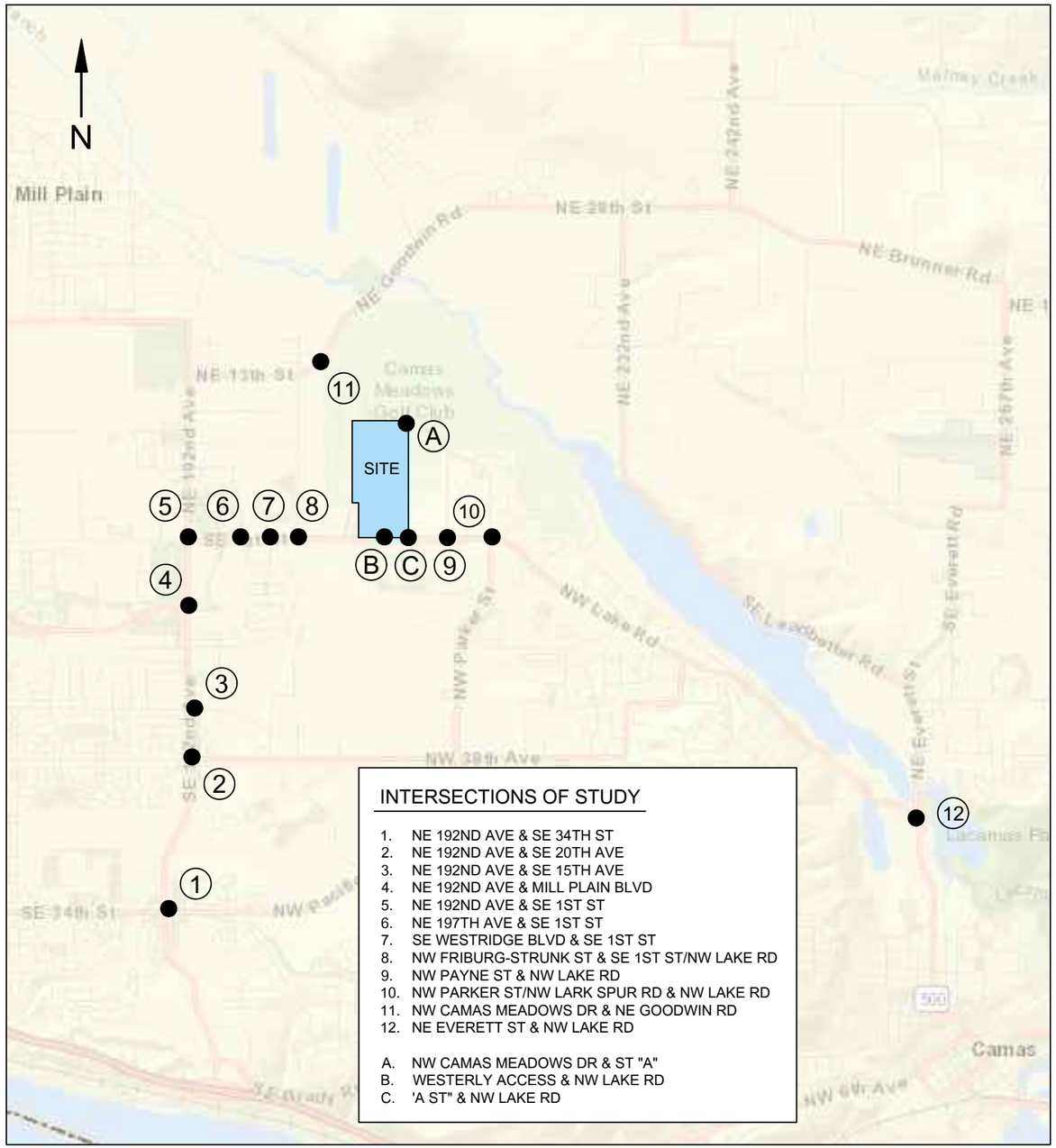


HEATH & ASSOCIATES
TRAFFIC AND CIVIL ENGINEERING

CAMAS BUSINESS CENTER
FORECAST 2024 PM PEAK HOUR BACKGROUND VOLUMES
FIGURE 747

PO Box 397 Puyallup, WA 98371 (253) 770 1401 heathtraffic.com

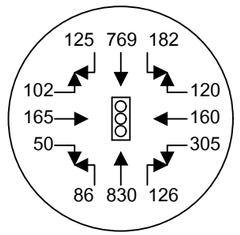


INTERSECTIONS OF STUDY

1. NE 192ND AVE & SE 34TH ST
2. NE 192ND AVE & SE 20TH AVE
3. NE 192ND AVE & SE 15TH AVE
4. NE 192ND AVE & MILL PLAIN BLVD
5. NE 192ND AVE & SE 1ST ST
6. NE 197TH AVE & SE 1ST ST
7. SE WESTRIDGE BLVD & SE 1ST ST
8. NW FRIBURG-STRUNK ST & SE 1ST ST/NW LAKE RD
9. NW PAYNE ST & NW LAKE RD
10. NW PARKER ST/NW LARK SPUR RD & NW LAKE RD
11. NW CAMAS MEADOWS DR & NE GOODWIN RD
12. NE EVERETT ST & NW LAKE RD

A. NW CAMAS MEADOWS DR & ST "A"
B. WESTERLY ACCESS & NW LAKE RD
C. 'A ST" & NW LAKE RD

① NE 192ND AVE & SE 34TH ST



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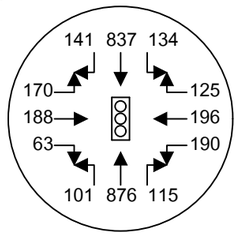

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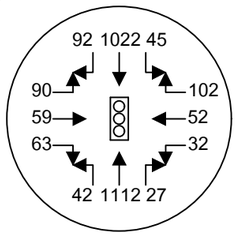

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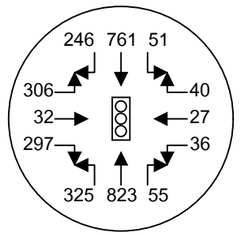

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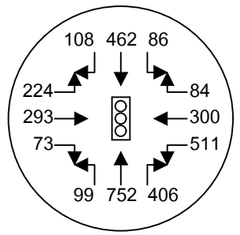

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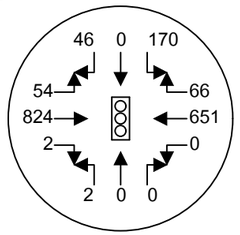

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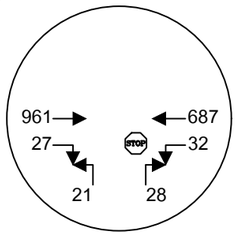

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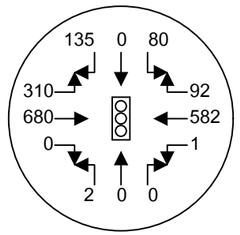

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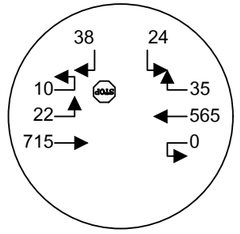

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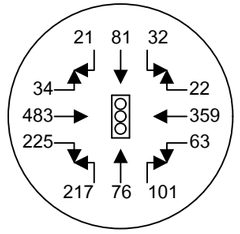

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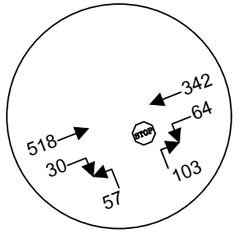

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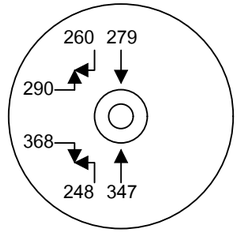

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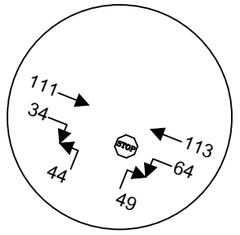

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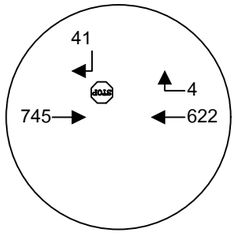
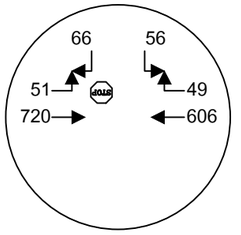


Ⓒ "A ST" & NW LAKE RD



4.4 Future Level of Service

Level of service analyses were made of the PM peak hour conditions at the study intersections under the three-year horizon. Delays for the key intersections without and with the proposed Camas Business Center facility are summarized below.

Table 5: Forecast 2024 PM Peak Hour Level of Service

Delays given in seconds per vehicle

			Without Project			With Project		
ID	Intersection	Control [4]	LOS	Delay	V/C	LOS	Delay	V/C
1	NE 192nd Ave & SE 34th St	Signal	C	26.0	0.75	C	26.1	0.75
2	NE 192nd Ave & SE 20th Ave	Signal	D	39.5	0.93	D	39.6	0.93
3	NE 192nd Ave & SE 15th Ave	Signal	B	19.5	0.59	B	19.4	0.60
4	NE 192nd Ave & Mill Plain Blvd	Signal	C	29.5	0.80	C	30.7	0.84
5	NE 192nd Ave & SE 1st St	Signal	C	32.9	0.75	C	33.1	0.77
6	NE 197th Ave & SE 1st St	Signal	B	11.6	0.51	B	11.7	0.52
7	SE Westridge Blvd & SE 1st St	Stop	C	24.4	0.18	D	26.3	0.20
8	NW Friburg-Strunk St & SE 1st St/ NW Lake Rd	Signal	B	14.9	0.61	B	15.4	0.63
9	NW Payne St & NW Lake Rd	Stop	C	16.3	0.17	C	16.7	0.17
10	NW Parker St /NW Lark Spur Rd & NW Lake Rd	Signal	B	18.8	0.68	B	19.0	0.69
11	NW Camas Meadows Dr & NE Goodwin Rd	Stop	C	16.2	0.19	C	17.1	0.24
12	NE Everett St & NW Lake Rd	RAB	A	6.7	0.35	A	6.7	0.35
A	NW Camas Meadows Dr & Access	Stop	A	9.8	0.02	B	10.9	0.16
B	Westerly Access & NW Lake Rd	Stop	-	-		B	11.1	0.07
C	Street “A” & NW Lake Road	Stop	-	-		D	28.6	0.47

The outlying intersections of study are anticipated to operate with LOS D or better conditions. Moreover, the proposed accesses are anticipated to operate acceptably with LOS D or better conditions. No level of service intersection deficiencies are identified as a result of the proposed development.

[4] Signal timing was obtained from City of Vancouver’s Public Works Traffic Engineering and Operations

4.5 Turn Lane Warrants & Queuing Analysis

Turn lanes are a means of providing necessary storage space for right and left turning vehicles at intersections. It should be noted that the westerly access proposed on NW Lake Road is to be restricted to right-in, right-out maneuvers and that a center two-way left-turn lane currently exists at the proposed Street “A” & NW Camas Meadows Drive intersection. Therefore, for this impact study, procedures described by the WSDOT Design Manual Exhibit 1310-8 (left-turn) as used to ascertain storage requirements at the Street “A” & NW Lake Road intersection. Storage requirements were evaluated using forecast 2024 PM peak hour volumes with project at the access intersection as outlined in Figure 6.

Based on estimated forecast volumes, a left-turn pocket is warranted at Street “A” & NW Lake Road. The warrant nomograph indicates a 100-foot left-turn pocket length. However, assuming that approximately 10-20% of the left-turning vehicles may be in the form of heavy vehicle, Exhibit 1310-12 indicates increasing the recommended storage length to at least 125-feet. Discussion should be made with development engineering regarding final design of the left-turn pocket at the study intersection. Overall, the provision of a left-turn pocket not only enhances operations for the subject property but also benefits the City as Street “A” is a planned collector roadway. Refer to the appendix for the associated left-turn warrant nomographs.

Lastly, the city of Vancouver requested that queuing data and LOS be provided at several outlying study intersections. This data can be found in the LOS sheets attached in the appendix.

5. CONCLUSIONS AND MITIGATION

The Camas Business Center project proposes to construct a new industrial facility comprising 963,479 square feet in the city of Camas. With a site address of 4704 NW Lake Road, the subject site is comprised within 39.79-acre tax parcel #: 176155000. Access is proposed by way of NW Camas Meadows Drive and NW Lake Road. A new roadway, future Street “A” is to be constructed as a part of site development along the eastern edge of the subject parcel, providing a new north-south connection between NW Lake Road and NE Camas Meadows Drive. Moreover, a new east-west roadway (Street “B”) is to be constructed through the center of the subject site, providing a future east-west connection to future development located west of the subject parcel.

Based on ITE data, 1656 average daily weekday trips, 132 AM (101 in / 31 out) peak hour trips and 155 PM (45 in / 110 out) peak hour trips can be expected to/from the site. Existing Level of Service (LOS) was evaluated at 12 outlying intersections as directed by the cities of Camas and Vancouver. Existing PM peak hour conditions were shown to operate at LOS D or better. A three-year horizon of 2024 was evaluated at the study locations and three proposed accesses for the PM peak hour with and without the proposed development. Conditions with or without the project are shown to operate at LOS D or better for all outlying signalized intersections and proposed accesses.

Based on the findings of this report, the following mitigation is proposed for the Camas Business Center facility:

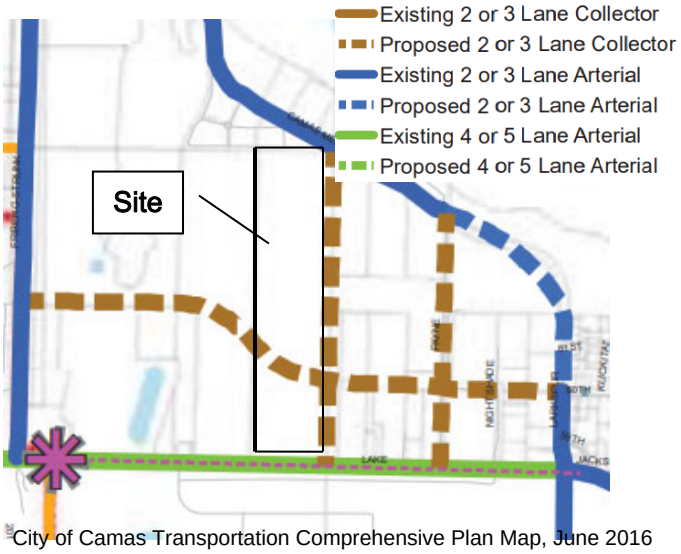
1. Modify center median along NW Lake Street to install an eastbound left-turn lane at the new proposed intersection of Street “A”. Based on WSDOT standards and potential heavy vehicle proportions, the recommended design is to comprise an approximate 125-foot eastbound storage lane. Final design should discussed and coordinated with the City.

2. Construct Streets “A” and “B” to account for the City’s future planned roadways. Design shall be consistent with City standards and is recommended to be coordinated with the City for final design.

3. Pay Traffic Impact Fees (TIF) as required by the City of Camas. According to the City of Camas 2021 Transportation Impact Fee Schedule, transportation impact fees are based on the number of new PM peak hour trips. Based on ITE data, the project is anticipated to generate 155 new PM peak hour trip ends. Therefore, the development's TIF, located in the south district, would be calculated as follows:

   $3,555.00 x 155 = $551,025.00

   Exact fees and calculations will be determined by the. Furthermore, the project may be eligible for TIF credit to apply against construction costs associated with the street improvements occurring via the new north-south Street "A" and east-west Street "B". The construction of these roadways are consistent with the City's Comprehensive Plan and future connectivity plans. Additional credit may be received for the construction of the eastbound left-turn lane at the future Street "A" & NW Lake Street as this feature would enhance the roadway's operations and would be necessary once the roadway is connected to the north.



City of Camas Transportation Comprehensive Plan Map, June 2016

   Moreover, the development would be subject to proportionate share fees for three city of Vancouver intersections per new PM peak hour trip end. Figure A in the appendix outlines the trip distribution and respective number of project-associated trips traveling through the critical intersections. The table below outlines the calculated proportionate share fees per intersection.

Table 6: City of Vancouver Proportional Share Fees

Intersection	Fee per PM Peak Hour Trip End	# of Peak Hour Trip Ends	Total Prop. Share Fee
NE 192nd Ave & NE 13th St	$400	15	$6,000.00
NE 192nd Ave & SE 34th St	$150	24	$3,600.00
NE 192nd Ave & SR-14 Ramps	$2,000	15	$30,000.00

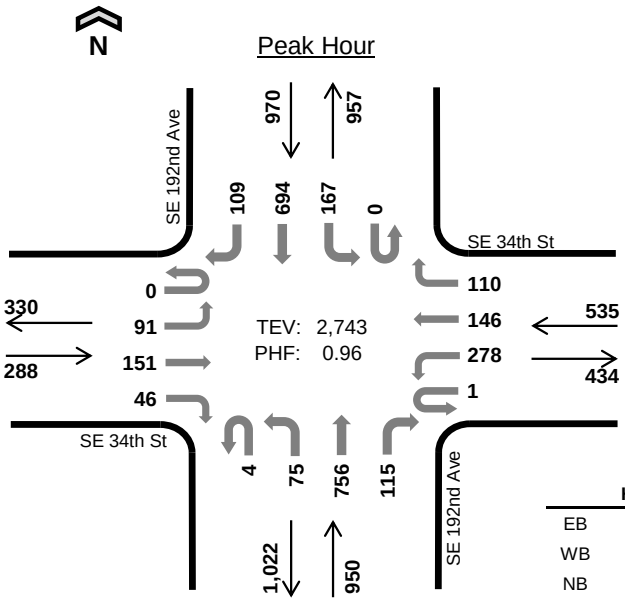
No other mitigation is identified at this time.

CAMAS BUSINESS CENTER
TRAFFIC IMPACT ANALYSIS

APPENDIX

INTERSECTION COUNT SHEETS

SE 192nd Ave
SE 34th St



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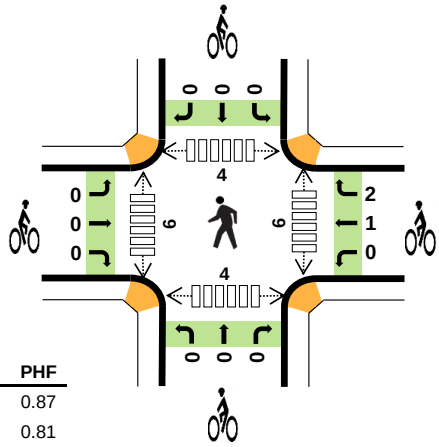
Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	1.7%	0.87
WB	0.7%	0.81
NB	2.3%	0.98
SB	1.1%	0.92
TOTAL	1.5%	0.96

Two-Hour Count Summaries

Interval Start		SE 34th St Eastbound				SE 34th St Westbound				SE 192nd Ave Northbound				SE 192nd Ave Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	28	36	12	0	82	42	25	1	20	184	26	0	28	172	25	681	0
4:15 PM		0	26	43	13	0	58	31	17	0	19	205	33	0	40	160	27	672	0
4:30 PM		**0**	**21**	**35**	**9**	**0**	**80**	**39**	**29**	**0**	**25**	**185**	**32**	**0**	**32**	**170**	**28**	**685**	0
4:45 PM		**0**	**24**	**35**	**10**	**1**	**52**	**30**	**25**	**0**	**15**	**195**	**30**	**0**	**48**	**171**	**33**	**669**	2,707
5:00 PM		**0**	**33**	**38**	**12**	**0**	**87**	**44**	**35**	**4**	**15**	**190**	**29**	**0**	**43**	**154**	**28**	**712**	2,738
5:15 PM		**0**	**13**	**43**	**15**	**0**	**59**	**33**	**21**	**0**	**20**	**186**	**24**	**0**	**44**	**199**	**20**	**677**	**2,743**
5:30 PM		0	24	41	10	0	44	27	21	0	12	187	30	0	40	131	16	583	2,641
5:45 PM		0	16	34	19	0	42	27	22	0	7	173	23	0	39	132	21	555	2,527
Count Total		0	185	305	100	1	504	273	195	5	133	1,505	227	0	314	1,289	198	5,234	0
Peak Hour	**All**	**0**	**91**	**151**	**46**	**1**	**278**	**146**	**110**	**4**	**75**	**756**	**115**	**0**	**167**	**694**	**109**	**2,743**	**0**
	HV	**0**	**4**	**0**	**1**	**0**	**1**	**3**	**0**	**0**	**0**	**20**	**2**	**0**	**0**	**5**	**6**	**42**	**0**
	HV%	**-**	**4%**	**0%**	**2%**	**0%**	**0%**	**2%**	**0%**	**0%**	**0%**	**3%**	**2%**	**-**	**0%**	**1%**	**6%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	2	8	3	5	*18*	0	0	0	0	*0*	0	3	0	0	*3*
4:15 PM	2	2	6	3	*13*	0	0	0	0	*0*	2	2	3	0	*7*
4:30 PM	**2**	**2**	**9**	**4**	***17***	**0**	**3**	**0**	**0**	***3***	**0**	**1**	**0**	**0**	*1*
4:45 PM	**1**	**0**	**5**	**3**	***9***	**0**	**0**	**0**	**0**	***0***	**3**	**2**	**1**	**0**	*6*
5:00 PM	**2**	**2**	**6**	**2**	***12***	**0**	**0**	**0**	**0**	***0***	**1**	**2**	**1**	**1**	*5*
5:15 PM	**0**	**0**	**2**	**2**	***4***	**0**	**0**	**0**	**0**	***0***	**2**	**1**	**2**	**3**	***8***
5:30 PM	1	2	2	3	*8*	0	0	0	0	*0*	2	1	5	1	*9*
5:45 PM	0	0	4	3	*7*	0	0	0	0	*0*	1	0	1	1	*3*
Count Total	10	16	37	25	*88*	0	3	0	0	*3*	11	12	13	6	*42*
Peak Hour	**5**	**4**	**22**	**11**	***42***	**0**	**3**	**0**	**0**	***3***	**6**	**6**	**4**	**4**	***20***

Two-Hour Count Summaries - Heavy Vehicles

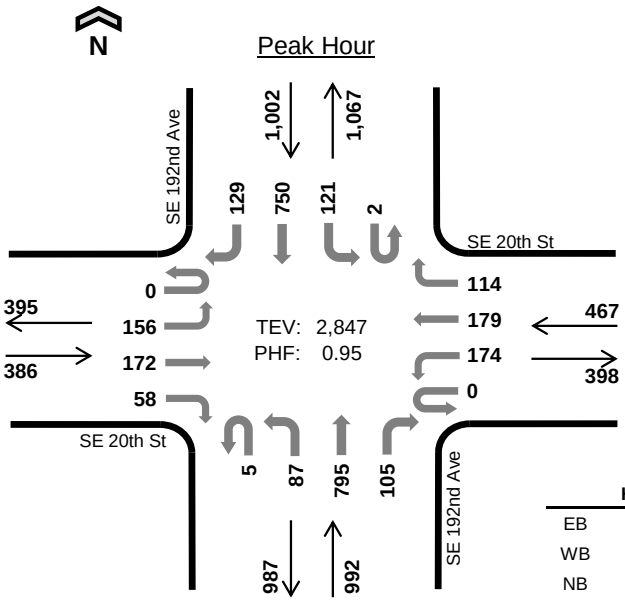
Interval Start	SE 34th St Eastbound				SE 34th St Westbound				SE 192nd Ave Northbound				SE 192nd Ave Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	2	0	0	0	6	0	2	0	1	2	0	0	1	1	3	18	0
4:15 PM	0	0	2	0	0	0	1	1	0	0	5	1	0	0	0	3	13	0
4:30 PM	**0**	**2**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**8**	**1**	**0**	**0**	**2**	**2**	**17**	0
4:45 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**3**	**9**	57
5:00 PM	**0**	**2**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**5**	**1**	**0**	**0**	**1**	**1**	**12**	51
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**4**	**42**
5:30 PM	0	1	0	0	0	0	2	0	0	0	2	0	0	0	3	0	8	33
5:45 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	2	1	7	31
Count Total	0	7	2	1	0	7	6	3	0	1	33	3	0	1	11	13	88	0
Peak Hour	**0**	**4**	**0**	**1**	**0**	**1**	**3**	**0**	**0**	**0**	**20**	**2**	**0**	**0**	**5**	**6**	**42**	**0**

Two-Hour Count Summaries - Bikes

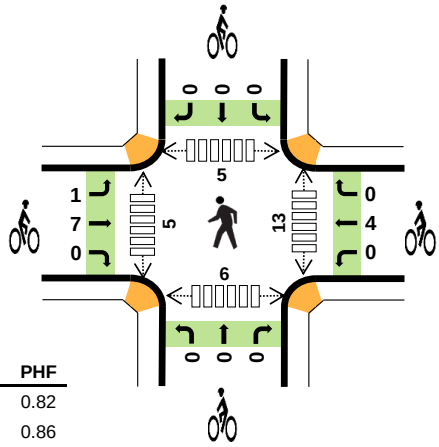
Interval Start	SE 34th St Eastbound			SE 34th St Westbound			SE 192nd Ave Northbound			SE 192nd Ave Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	1	2	0	0	0	0	0	0	3	0
Peak Hour	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

SE 192nd Ave
SE 20th St



Date: 10-19-2021
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	0.5%	0.82
WB	0.2%	0.86
NB	2.1%	0.98
SB	1.1%	0.93
TOTAL	1.2%	0.95

Two-Hour Count Summaries

Interval Start		SE 20th St Eastbound				SE 20th St Westbound				SE 192nd Ave Northbound				SE 192nd Ave Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	31	47	13	0	51	44	30	3	19	191	30	0	33	159	38	689	0
4:15 PM		0	35	34	10	0	24	44	24	2	31	196	18	0	28	192	28	666	0
4:30 PM		**0**	**34**	**43**	**16**	**0**	**38**	**44**	**27**	**1**	**21**	**203**	**22**	**0**	**32**	**179**	**39**	**699**	0
4:45 PM		**0**	**38**	**31**	**11**	**0**	**37**	**30**	**28**	**0**	**17**	**209**	**28**	**0**	**33**	**210**	**26**	**698**	2,752
5:00 PM		**0**	**44**	**33**	**18**	**0**	**45**	**54**	**28**	**2**	**20**	**202**	**27**	**2**	**28**	**170**	**28**	**701**	2,764
5:15 PM		**0**	**40**	**65**	**13**	**0**	**54**	**51**	**31**	**2**	**29**	**181**	**28**	**0**	**28**	**191**	**36**	**749**	**2,847**
5:30 PM		0	32	42	15	0	28	37	30	0	25	182	26	0	34	140	43	634	2,782
5:45 PM		0	29	42	17	0	29	36	27	0	12	189	27	0	41	149	36	634	2,718
Count Total		0	283	337	113	0	306	340	225	10	174	1,553	206	2	257	1,390	274	5,470	0
Peak Hour	**All**	**0**	**156**	**172**	**58**	**0**	**174**	**179**	**114**	**5**	**87**	**795**	**105**	**2**	**121**	**750**	**129**	**2,847**	**0**
	HV	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**18**	**2**	**0**	**0**	**10**	**1**	**35**	**0**
	HV%	**-**	**1%**	**0%**	**0%**	**-**	**1%**	**0%**	**0%**	**0%**	**1%**	**2%**	**2%**	**0%**	**0%**	**1%**	**1%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	2	0	7	5	*14*	1	0	1	1	*3*	1	0	2	0	*3*
4:15 PM	5	1	5	2	*13*	2	0	0	0	*2*	1	3	2	0	*6*
4:30 PM	**0**	**0**	**10**	**4**	***14***	**5**	**0**	**0**	**0**	***5***	**3**	**1**	**1**	**1**	*6*
4:45 PM	**1**	**0**	**4**	**4**	***9***	**2**	**0**	**0**	**0**	***2***	**6**	**3**	**3**	**2**	*14*
5:00 PM	**1**	**1**	**3**	**2**	***7***	**1**	**3**	**0**	**0**	***4***	**1**	**1**	**1**	**1**	*4*
5:15 PM	**0**	**0**	**4**	**1**	***5***	**0**	**1**	**0**	**0**	***1***	**3**	**0**	**0**	**2**	***5***
5:30 PM	0	1	2	5	*8*	0	0	0	0	*0*	1	0	1	1	*3*
5:45 PM	1	1	5	1	*8*	4	0	0	0	*4*	1	3	2	0	*6*
Count Total	10	4	40	24	*78*	15	4	1	1	*21*	17	11	12	7	*47*
Peak Hour	**2**	**1**	**21**	**11**	***35***	**8**	**4**	**0**	**0**	***12***	**13**	**5**	**5**	**6**	***29***

Two-Hour Count Summaries - Heavy Vehicles

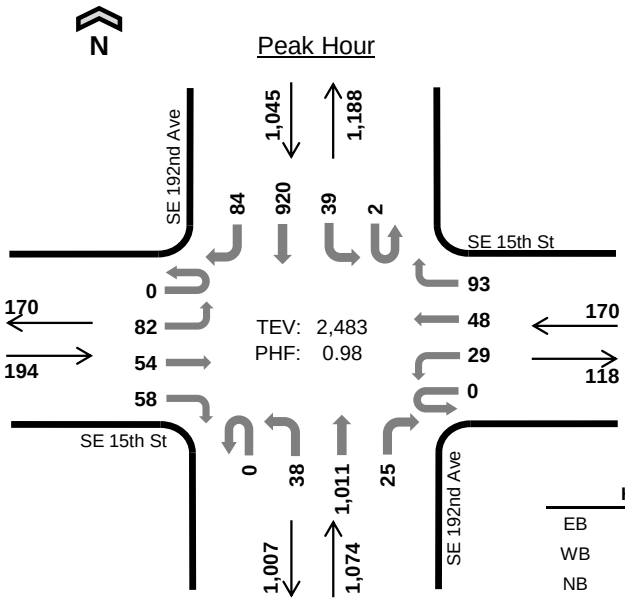
Interval Start	SE 20th St Eastbound				SE 20th St Westbound				SE 192nd Ave Northbound				SE 192nd Ave Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	2	0	0	0	0	0	0	0	3	2	2	0	0	4	1	14	0
4:15 PM	0	3	0	2	0	0	1	0	0	1	4	0	0	0	2	0	13	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**8**	**1**	**0**	**0**	**4**	**0**	**14**	0
4:45 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**0**	**0**	**3**	**1**	**9**	50
5:00 PM	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**2**	**0**	**7**	43
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**5**	**35**
5:30 PM	0	0	0	0	0	0	0	1	0	0	2	0	0	1	3	1	8	29
5:45 PM	0	1	0	0	0	1	0	0	0	0	4	1	0	0	1	0	8	28
Count Total	0	8	0	2	0	2	1	1	0	5	30	5	0	1	20	3	78	0
Peak Hour	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**18**	**2**	**0**	**0**	**10**	**1**	**35**	**0**

Two-Hour Count Summaries - Bikes

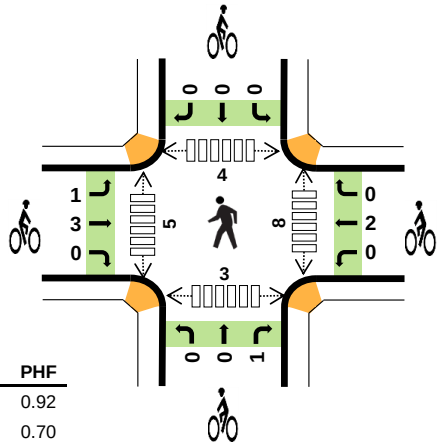
Interval Start	SE 20th St Eastbound			SE 20th St Westbound			SE 192nd Ave Northbound			SE 192nd Ave Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	1	0	0	0	0	1	0	0	0	0	1	3	0
4:15 PM	0	2	0	0	0	0	0	0	0	0	0	0	2	0
4:30 PM	**1**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	0
4:45 PM	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	12
5:00 PM	**0**	**1**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	13
5:15 PM	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**12**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	7
5:45 PM	0	4	0	0	0	0	0	0	0	0	0	0	4	9
Count Total	1	14	0	0	4	0	1	0	0	0	0	1	21	0
Peak Hour	**1**	**7**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**12**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

SE 192nd Ave
SE 15th St



Date: 10-19-2021
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	0.5%	0.92
WB	0.6%	0.70
NB	2.0%	0.97
SB	1.2%	0.95
TOTAL	1.5%	0.98

Two-Hour Count Summaries

Interval Start		SE 15th St Eastbound				SE 15th St Westbound				SE 192nd Ave Northbound				SE 192nd Ave Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	15	7	18	0	7	18	21	0	17	231	7	0	14	209	26	590	0
4:15 PM		0	23	6	10	0	7	11	22	0	16	237	6	0	8	226	16	588	0
4:30 PM		**0**	**17**	**14**	**15**	**0**	**6**	**13**	**13**	**0**	**7**	**255**	**5**	**0**	**12**	**230**	**28**	**615**	0
4:45 PM		**0**	**20**	**12**	**16**	**0**	**9**	**12**	**16**	**0**	**14**	**253**	**10**	**2**	**15**	**237**	**20**	**636**	2,429
5:00 PM		**0**	**20**	**14**	**13**	**0**	**10**	**11**	**40**	**0**	**11**	**258**	**7**	**0**	**5**	**219**	**19**	**627**	2,466
5:15 PM		**0**	**25**	**14**	**14**	**0**	**4**	**12**	**24**	**0**	**6**	**245**	**3**	**0**	**7**	**234**	**17**	**605**	**2,483**
5:30 PM		0	26	18	10	0	5	15	16	0	10	227	9	0	12	195	24	567	2,435
5:45 PM		0	22	16	18	0	4	11	14	0	10	229	8	0	17	206	21	576	2,375
Count Total		0	168	101	114	0	52	103	166	0	91	1,935	55	2	90	1,756	171	4,804	0
Peak Hour	**All**	**0**	**82**	**54**	**58**	**0**	**29**	**48**	**93**	**0**	**38**	**1,011**	**25**	**2**	**39**	**920**	**84**	**2,483**	**0**
	HV	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**19**	**1**	**0**	**0**	**13**	**0**	**37**	**0**
	HV%	**-**	**1%**	**0%**	**0%**	**-**	**0%**	**0%**	**1%**	**-**	**5%**	**2%**	**4%**	**0%**	**0%**	**1%**	**0%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	2	3	6	*12*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	0	0	9	2	*11*	1	1	0	0	*2*	0	2	2	0	*4*
4:30 PM	**0**	**0**	**8**	**5**	***13***	**1**	**1**	**1**	**0**	***3***	**4**	**1**	**2**	**0**	*7*
4:45 PM	**0**	**1**	**5**	**3**	***9***	**1**	**1**	**0**	**0**	***2***	**4**	**2**	**0**	**1**	*7*
5:00 PM	**0**	**0**	**5**	**3**	***8***	**2**	**0**	**0**	**0**	***2***	**0**	**2**	**2**	**2**	*6*
5:15 PM	**1**	**0**	**4**	**2**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:30 PM	1	0	2	5	*8*	0	0	1	2	*3*	2	2	0	2	*6*
5:45 PM	0	0	4	2	*6*	0	1	1	0	*2*	1	1	4	0	*6*
Count Total	3	3	40	28	*74*	5	4	3	2	*14*	11	10	10	5	*36*
Peak Hour	**1**	**1**	**22**	**13**	***37***	**4**	**2**	**1**	**0**	***7***	**8**	**5**	**4**	**3**	***20***

Two-Hour Count Summaries - Heavy Vehicles

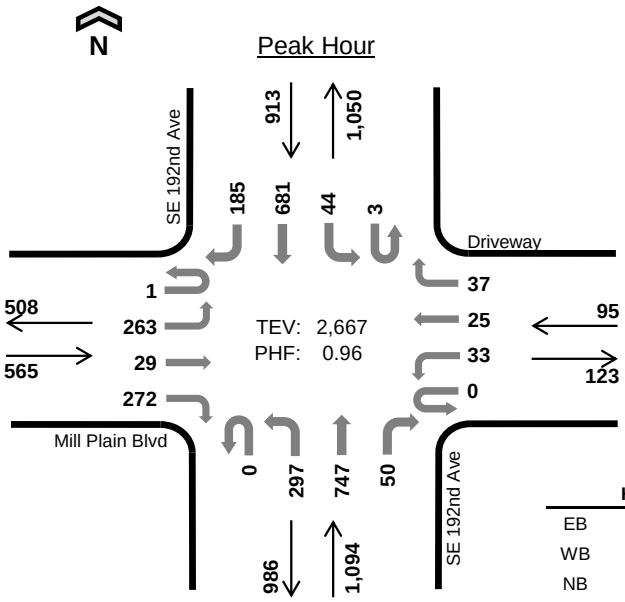
Interval Start	SE 15th St Eastbound				SE 15th St Westbound				SE 192nd Ave Northbound				SE 192nd Ave Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	1	0	0	1	1	0	0	3	0	0	0	4	2	12	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	8	1	0	0	2	0	11	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**5**	**0**	**13**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**4**	**0**	**0**	**0**	**3**	**0**	**9**	45
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**1**	**0**	**0**	**3**	**0**	**8**	41
5:15 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**2**	**0**	**7**	**37**
5:30 PM	0	1	0	0	0	0	0	0	0	0	1	1	0	0	5	0	8	32
5:45 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	2	0	6	29
Count Total	0	2	0	1	0	0	1	2	0	2	35	3	0	0	26	2	74	0
Peak Hour	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**19**	**1**	**0**	**0**	**13**	**0**	**37**	**0**

Two-Hour Count Summaries - Bikes

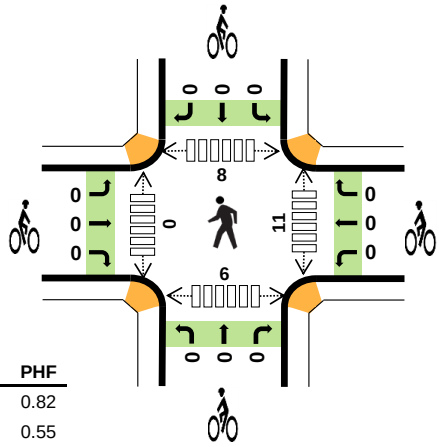
Interval Start	SE 15th St Eastbound			SE 15th St Westbound			SE 192nd Ave Northbound			SE 192nd Ave Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	1	0	1	0	0	0	0	0	0	0	2	0
4:30 PM	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	0
4:45 PM	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	7
5:00 PM	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	9
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**
5:30 PM	0	0	0	0	0	0	1	0	0	0	1	1	3	7
5:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	2	7
Count Total	1	3	1	0	4	0	1	1	1	0	1	1	14	0
Peak Hour	**1**	**3**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**7**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

SE 192nd Ave
Mill Plain Blvd



Date: 10-19-2021
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	0.5%	0.82
WB	3.2%	0.55
NB	2.2%	0.90
SB	0.9%	0.93
TOTAL	1.4%	0.96

Two-Hour Count Summaries

Interval Start		Mill Plain Blvd Eastbound				Driveway Westbound				SE 192nd Ave Northbound				SE 192nd Ave Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	62	5	77	0	5	1	4	0	77	170	6	0	0	165	61	633	0
4:15 PM		0	47	6	60	0	10	7	3	0	82	175	12	1	7	155	33	598	0
4:30 PM		**0**	**63**	**6**	**57**	**0**	**19**	**9**	**15**	**0**	**60**	**186**	**16**	**0**	**11**	**186**	**49**	**677**	0
4:45 PM		**0**	**48**	**9**	**74**	**0**	**10**	**5**	**12**	**0**	**74**	**182**	**8**	**0**	**10**	**177**	**51**	**660**	2,568
5:00 PM		**1**	**89**	**8**	**74**	**0**	**2**	**9**	**6**	**0**	**85**	**207**	**12**	**2**	**13**	**154**	**36**	**698**	2,633
5:15 PM		**0**	**63**	**6**	**67**	**0**	**2**	**2**	**4**	**0**	**78**	**172**	**14**	**1**	**10**	**164**	**49**	**632**	**2,667**
5:30 PM		0	61	3	68	0	2	1	5	0	82	172	3	0	1	161	52	611	2,601
5:45 PM		0	65	0	60	0	3	3	2	0	60	176	10	0	5	158	45	587	2,528
Count Total		1	498	43	537	0	53	37	51	0	598	1,440	81	4	57	1,320	376	5,096	0
Peak Hour	**All**	**1**	**263**	**29**	**272**	**0**	**33**	**25**	**37**	**0**	**297**	**747**	**50**	**3**	**44**	**681**	**185**	**2,667**	**0**
	HV	**0**	**0**	**0**	**3**	**0**	**2**	**1**	**0**	**0**	**3**	**19**	**2**	**0**	**0**	**8**	**0**	**38**	**0**
	HV%	**0%**	**0%**	**0%**	**1%**	**-**	**6%**	**4%**	**0%**	**-**	**1%**	**3%**	**4%**	**0%**	**0%**	**1%**	**0%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	4	0	6	5	*15*	0	0	1	0	*1*	5	0	1	0	*6*
4:15 PM	3	0	9	3	*15*	0	0	0	0	*0*	4	0	1	3	*8*
4:30 PM	**2**	**0**	**7**	**6**	***15***	**0**	**0**	**0**	**0**	***0***	**4**	**0**	**6**	**2**	*12*
4:45 PM	**0**	**3**	**7**	**0**	***10***	**0**	**0**	**0**	**0**	***0***	**4**	**0**	**2**	**4**	*10*
5:00 PM	**1**	**0**	**2**	**1**	***4***	**0**	**0**	**0**	**0**	***0***	**3**	**0**	**0**	**0**	*3*
5:15 PM	**0**	**0**	**8**	**1**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:30 PM	1	0	3	3	*7*	0	0	0	0	*0*	1	0	0	2	*3*
5:45 PM	0	0	6	1	*7*	0	0	0	0	*0*	0	0	0	2	*2*
Count Total	11	3	48	20	*82*	0	0	1	0	*1*	21	0	10	13	*44*
Peak Hour	**3**	**3**	**24**	**8**	***38***	**0**	**0**	**0**	**0**	***0***	**11**	**0**	**8**	**6**	***25***

Two-Hour Count Summaries - Heavy Vehicles

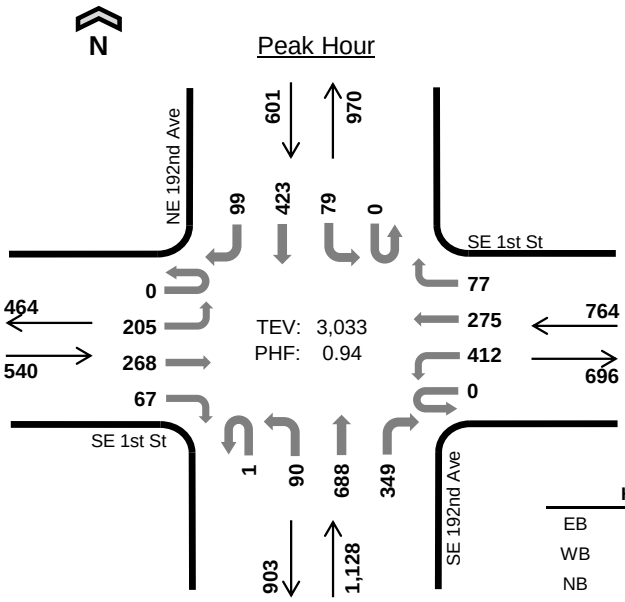
Interval Start	Mill Plain Blvd				Driveway				SE 192nd Ave				SE 192nd Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	3	0	1	0	0	0	0	0	0	6	0	0	0	5	0	15	0
4:15 PM	0	2	1	0	0	0	0	0	0	1	8	0	0	1	2	0	15	0
4:30 PM	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**5**	**1**	**0**	**0**	**6**	**0**	**15**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**1**	**6**	**0**	**0**	**0**	**0**	**0**	**10**	55
5:00 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**4**	44
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**6**	**1**	**0**	**0**	**1**	**0**	**9**	**38**
5:30 PM	0	0	0	1	0	0	0	0	0	0	3	0	0	0	3	0	7	30
5:45 PM	0	0	0	0	0	0	0	0	0	1	5	0	0	0	1	0	7	27
Count Total	0	5	1	5	0	2	1	0	0	5	41	2	0	1	19	0	82	0
Peak Hour	**0**	**0**	**0**	**3**	**0**	**2**	**1**	**0**	**0**	**3**	**19**	**2**	**0**	**0**	**8**	**0**	**38**	**0**

Two-Hour Count Summaries - Bikes

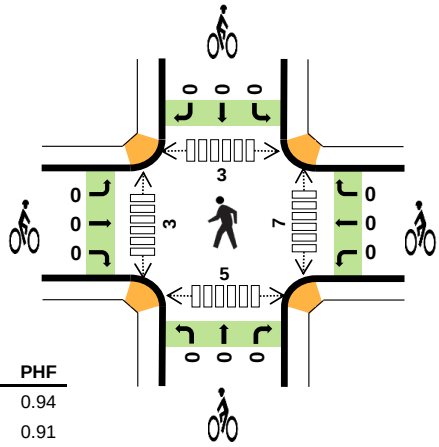
Interval Start	Mill Plain Blvd			Driveway			SE 192nd Ave			SE 192nd Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	1	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

SE 192nd Ave
SE 1st St



Date: 10-19-2021
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	0.2%	0.94
WB	0.4%	0.91
NB	1.4%	0.91
SB	1.2%	0.90
TOTAL	0.9%	0.94

Two-Hour Count Summaries

Interval Start		SE 1st St Eastbound				SE 1st St Westbound				SE 192nd Ave Northbound				NE 192nd Ave Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	47	52	15	1	122	74	9	0	25	143	71	0	10	97	29	695	0
4:15 PM		0	60	52	21	0	95	57	20	1	27	164	74	0	8	78	21	678	0
4:30 PM		**0**	**59**	**55**	**21**	**0**	**98**	**59**	**21**	**0**	**16**	**181**	**89**	**0**	**20**	**121**	**22**	**762**	0
4:45 PM		**0**	**45**	**60**	**16**	**0**	**93**	**60**	**21**	**0**	**25**	**149**	**74**	**0**	**20**	**116**	**31**	**710**	2,845
5:00 PM		**0**	**53**	**75**	**15**	**0**	**112**	**78**	**19**	**0**	**23**	**194**	**92**	**0**	**21**	**97**	**26**	**805**	2,955
5:15 PM		**0**	**48**	**78**	**15**	**0**	**109**	**78**	**16**	**1**	**26**	**164**	**94**	**0**	**18**	**89**	**20**	**756**	**3,033**
5:30 PM		0	48	85	9	0	106	67	27	0	23	124	102	0	18	89	22	720	2,991
5:45 PM		0	50	74	9	0	97	68	19	0	21	156	87	0	25	107	20	733	3,014
Count Total		0	410	531	121	1	832	541	152	2	186	1,275	683	0	140	794	191	5,859	0
Peak Hour	**All**	**0**	**205**	**268**	**67**	**0**	**412**	**275**	**77**	**1**	**90**	**688**	**349**	**0**	**79**	**423**	**99**	**3,033**	**0**
	HV	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**1**	**0**	**3**	**13**	**0**	**0**	**0**	**6**	**1**	**27**	**0**
	HV%	**-**	**0%**	**0%**	**1%**	**-**	**0%**	**1%**	**1%**	**0%**	**3%**	**2%**	**0%**	**-**	**0%**	**1%**	**1%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	2	9	7	1	*19*	0	0	1	0	*1*	4	0	0	4	*8*
4:15 PM	5	5	10	0	*20*	0	0	0	0	*0*	7	0	0	4	*11*
4:30 PM	**1**	**0**	**5**	**4**	***10***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**2**	**0**	*4*
4:45 PM	**0**	**1**	**5**	**0**	***6***	**0**	**0**	**0**	**0**	***0***	**2**	**2**	**1**	**1**	*6*
5:00 PM	**0**	**2**	**2**	**2**	***6***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**1**	*2*
5:15 PM	**0**	**0**	**4**	**1**	***5***	**0**	**0**	**0**	**0**	***0***	**3**	**0**	**0**	**3**	***6***
5:30 PM	2	0	1	1	*4*	1	0	0	0	*1*	0	0	2	2	*4*
5:45 PM	0	0	5	1	*6*	0	0	0	0	*0*	3	0	0	3	*6*
Count Total	10	17	39	10	*76*	1	0	1	0	*2*	21	3	5	18	*47*
Peak Hour	**1**	**3**	**16**	**7**	***27***	**0**	**0**	**0**	**0**	***0***	**7**	**3**	**3**	**5**	***18***

Two-Hour Count Summaries - Heavy Vehicles

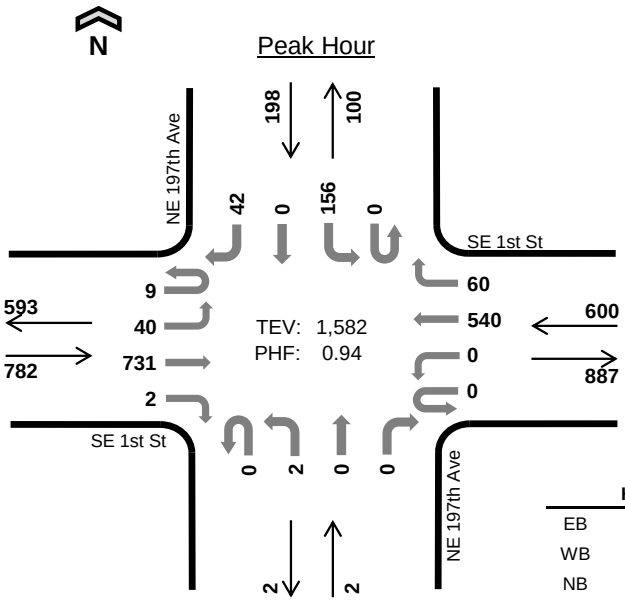
Interval Start	SE 1st St Eastbound				SE 1st St Westbound				SE 192nd Ave Northbound				NE 192nd Ave Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	1	0	0	5	4	0	0	3	2	2	0	1	0	0	19	0
4:15 PM	0	0	3	2	0	0	2	3	0	1	7	2	0	0	0	0	20	0
4:30 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**4**	**0**	**0**	**0**	**4**	**0**	**10**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**4**	**0**	**0**	**0**	**0**	**0**	**6**	55
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**1**	**6**	42
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**0**	**0**	**0**	**1**	**0**	**5**	**27**
5:30 PM	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1	0	4	21
5:45 PM	0	0	0	0	0	0	0	0	0	0	4	1	0	0	1	0	6	21
Count Total	0	1	5	4	0	5	8	4	0	7	27	5	0	1	8	1	76	0
Peak Hour	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**1**	**0**	**3**	**13**	**0**	**0**	**0**	**6**	**1**	**27**	**0**

Two-Hour Count Summaries - Bikes

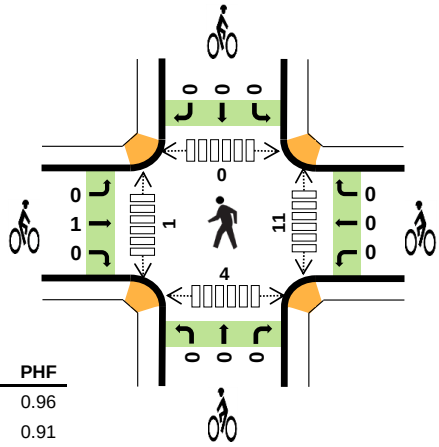
Interval Start	SE 1st St Eastbound			SE 1st St Westbound			SE 192nd Ave Northbound			NE 192nd Ave Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	1	0	0	0	0	0	1	0	0	0	0	2	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

NE 197th Ave
SE 1st St



Date: 10-19-2021
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM



	HV %:	PHF
EB	0.6%	0.96
WB	0.5%	0.91
NB	0.0%	0.50
SB	0.0%	0.74
TOTAL	0.5%	0.94

Two-Hour Count Summaries

Interval Start		SE 1st St Eastbound				SE 1st St Westbound				NE 197th Ave Northbound				NE 197th Ave Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		16	9	134	3	0	0	109	10	0	3	0	1	0	54	0	8	347	0
4:15 PM		2	8	129	3	0	0	116	18	0	3	1	0	0	44	0	7	331	0
4:30 PM		0	12	153	1	0	0	109	12	0	0	0	0	0	40	0	13	340	0
4:45 PM		4	10	147	3	0	0	104	21	0	3	0	0	0	44	0	6	342	1,360
5:00 PM		**4**	**8**	**187**	**1**	**0**	**0**	**139**	**15**	**0**	**1**	**0**	**0**	**0**	**52**	**0**	**15**	**422**	1,435
5:15 PM		**2**	**12**	**174**	**1**	**0**	**0**	**132**	**9**	**0**	**1**	**0**	**0**	**0**	**27**	**0**	**10**	**368**	1,472
5:30 PM		**3**	**8**	**192**	**0**	**0**	**0**	**146**	**18**	**0**	**0**	**0**	**0**	**0**	**35**	**0**	**9**	**411**	1,543
5:45 PM		**0**	**12**	**178**	**0**	**0**	**0**	**123**	**18**	**0**	**0**	**0**	**0**	**0**	**42**	**0**	**8**	**381**	**1,582**
Count Total		31	79	1,294	12	0	0	978	121	0	11	1	1	0	338	0	76	2,942	0
Peak Hour	**All**	**9**	**40**	**731**	**2**	**0**	**0**	**540**	**60**	**0**	**2**	**0**	**0**	**0**	**156**	**0**	**42**	**1,582**	**0**
	HV	**0**	**1**	**4**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**0**
	HV%	**0%**	**3%**	**1%**	**0%**	**-**	**-**	**0%**	**2%**	**-**	**0%**	**-**	**-**	**-**	**0%**	**-**	**0%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	3	2	4	0	*9*	0	0	0	0	*0*	25	8	0	4	*37*
4:15 PM	5	4	3	0	*12*	0	0	0	0	*0*	3	0	0	0	*3*
4:30 PM	1	0	0	0	*1*	0	0	0	0	*0*	1	0	0	1	*2*
4:45 PM	0	1	0	0	*1*	0	0	0	0	*0*	4	3	0	0	*7*
5:00 PM	**1**	**2**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	*1*
5:15 PM	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**1**	*3*
5:30 PM	**2**	**0**	**0**	**0**	***2***	**1**	**0**	**0**	**0**	***1***	**5**	**0**	**0**	**1**	*6*
5:45 PM	**1**	**1**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**3**	**1**	**0**	**2**	***6***
Count Total	14	10	7	0	*31*	1	0	0	0	*1*	44	12	0	9	*65*
Peak Hour	**5**	**3**	**0**	**0**	***8***	**1**	**0**	**0**	**0**	***1***	**11**	**1**	**0**	**4**	***16***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	SE 1st St				SE 1st St				NE 197th Ave				NE 197th Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	2	1	0	0	2	0	0	3	0	1	0	0	0	0	9	0
4:15 PM	0	0	2	3	0	0	3	1	0	2	1	0	0	0	0	0	12	0
4:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
4:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	23
5:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	17
5:15 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	6
5:30 PM	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	7
5:45 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**8**
Count Total	0	1	9	4	0	0	8	2	0	5	1	1	0	0	0	0	31	0
Peak Hour	**0**	**1**	**4**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	SE 1st St			SE 1st St			NE 197th Ave			NE 197th Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:30 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	1
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
Count Total	0	1	0	0	0	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**

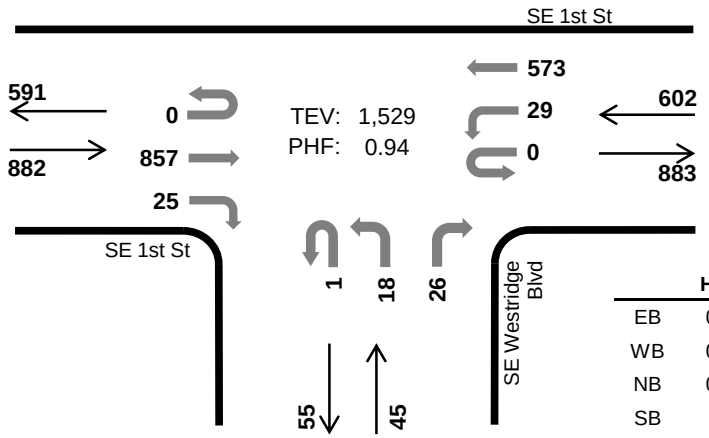
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

SE Westridge Blvd
SE 1st St

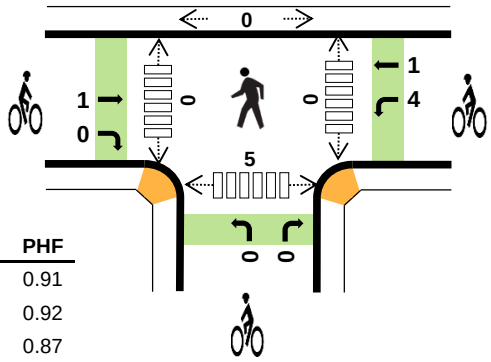
N

Peak Hour

Date: 10-19-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM



	HV %:	PHF
EB	0.5%	0.91
WB	0.5%	0.92
NB	0.0%	0.87
SB	-	-
TOTAL	0.5%	0.94



Two-Hour Count Summaries

Interval Start		SE 1st St Eastbound				SE 1st St Westbound				SE Westridge Blvd Northbound				0 Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	0	180	13	0	12	118	0	0	1	0	11	0	0	0	0	335	0
4:15 PM		0	0	164	12	0	4	129	0	0	5	0	9	0	0	0	0	323	0
4:30 PM		0	0	181	13	0	11	114	0	0	3	0	12	0	0	0	0	334	0
4:45 PM		0	0	180	8	0	10	120	0	0	6	0	3	0	0	0	0	327	1,319
5:00 PM		**0**	**0**	**233**	**8**	**0**	**8**	**148**	**0**	**0**	**1**	**0**	**10**	**0**	**0**	**0**	**0**	**408**	1,392
5:15 PM		**0**	**0**	**197**	**3**	**0**	**8**	**139**	**0**	**1**	**1**	**0**	**8**	**0**	**0**	**0**	**0**	**357**	1,426
5:30 PM		**0**	**0**	**221**	**7**	**0**	**8**	**156**	**0**	**0**	**8**	**0**	**3**	**0**	**0**	**0**	**0**	**403**	1,495
5:45 PM		**0**	**0**	**206**	**7**	**0**	**5**	**130**	**0**	**0**	**8**	**0**	**5**	**0**	**0**	**0**	**0**	**361**	**1,529**
Count Total		0	0	1,562	71	0	66	1,054	0	1	33	0	61	0	0	0	0	2,848	0
Peak Hour	**All**	**0**	**0**	**857**	**25**	**0**	**29**	**573**	**0**	**1**	**18**	**0**	**26**	**0**	**0**	**0**	**0**	**1,529**	**0**
	HV	**0**	**0**	**4**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**
	HV%	**-**	**-**	**0%**	**0%**	**-**	**0%**	**1%**	**-**	**0%**	**0%**	**-**	**0%**	**-**	**-**	**-**	**-**	**0%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	4	1	0	0	*5*	0	1	0	0	*1*	0	0	0	1	*1*
4:15 PM	2	4	2	0	*8*	0	1	0	0	*1*	0	0	0	0	*0*
4:30 PM	0	0	0	0	*0*	0	1	5	0	*6*	0	0	0	0	*0*
4:45 PM	0	1	0	0	*1*	0	0	1	0	*1*	0	0	0	0	*0*
5:00 PM	**1**	**2**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**1**	**0**	**0**	**0**	***1***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**1**	*1*
5:30 PM	**2**	**0**	**0**	**0**	***2***	**1**	**3**	**0**	**0**	***4***	**0**	**0**	**0**	**2**	*2*
5:45 PM	**0**	**1**	**0**	**0**	***1***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**2**	***2***
Count Total	10	9	2	0	*21*	1	8	6	0	*15*	0	0	0	6	*6*
Peak Hr	**4**	**3**	**0**	**0**	***7***	**1**	**5**	**0**	**0**	***6***	**0**	**0**	**0**	**5**	***5***

Two-Hour Count Summaries - Heavy Vehicles

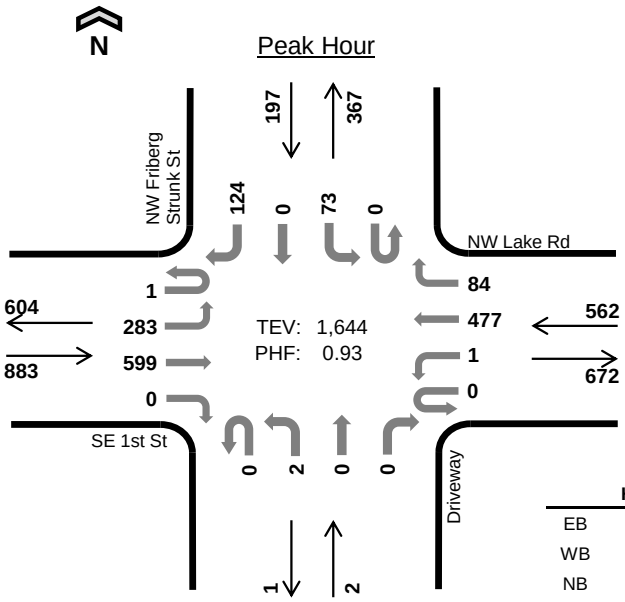
Interval Start	SE 1st St				SE 1st St				SE Westridge Blvd				0				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	5	0
4:15 PM	0	0	2	0	0	1	3	0	0	2	0	0	0	0	0	0	8	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	14
5:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	12
5:15 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	5
5:30 PM	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	7
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**7**
Count Total	0	0	10	0	0	1	8	0	0	2	0	0	0	0	0	0	21	0
Peak Hour	**0**	**0**	**4**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**

Two-Hour Count Summaries - Bikes

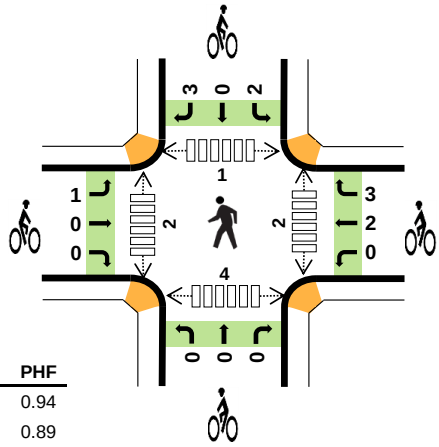
Interval Start	SE 1st St			SE 1st St			SE Westridge Blvd			0			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	1	0
4:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
4:30 PM	0	0	0	1	0	0	0	0	5	0	0	0	6	0
4:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	1	9
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	8
5:15 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	8
5:30 PM	**0**	**1**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	6
5:45 PM	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**6**
Count Total	0	1	0	6	2	0	1	0	5	0	0	0	15	0
Peak Hour	**0**	**1**	**0**	**4**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

NW Friberg Strunk St
SE 1st St



Date: 10-19-2021
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM



	HV %:	PHF
EB	0.1%	0.94
WB	0.4%	0.89
NB	0.0%	0.50
SB	0.5%	0.82
TOTAL	0.2%	0.93

Two-Hour Count Summaries

Interval Start		SE 1st St Eastbound				NW Lake Rd Westbound				Driveway Northbound				NW Friberg Strunk St Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	65	124	0	1	0	104	14	0	0	0	0	0	8	0	31	347	0
4:15 PM		0	48	123	0	0	0	105	19	0	0	0	0	0	11	0	28	334	0
4:30 PM		0	67	128	0	0	0	93	27	0	1	0	0	0	13	0	34	363	0
4:45 PM		0	62	127	0	0	0	107	27	0	0	0	0	0	19	0	24	366	1,410
5:00 PM		**1**	**88**	**147**	**0**	**0**	**0**	**134**	**23**	**0**	**1**	**0**	**0**	**0**	**15**	**0**	**23**	**432**	1,495
5:15 PM		**0**	**45**	**153**	**0**	**0**	**0**	**116**	**20**	**0**	**0**	**0**	**0**	**0**	**24**	**0**	**28**	**386**	1,547
5:30 PM		**0**	**85**	**151**	**0**	**0**	**1**	**134**	**22**	**0**	**0**	**0**	**0**	**0**	**16**	**0**	**31**	**440**	1,624
5:45 PM		**0**	**65**	**148**	**0**	**0**	**0**	**93**	**19**	**0**	**1**	**0**	**0**	**0**	**18**	**0**	**42**	**386**	**1,644**
Count Total		1	525	1,101	0	1	1	886	171	0	3	0	0	0	124	0	241	3,054	0
Peak Hour	**All**	**1**	**283**	**599**	**0**	**0**	**1**	**477**	**84**	**0**	**2**	**0**	**0**	**0**	**73**	**0**	**124**	**1,644**	**0**
	HV	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**4**	**0**
	HV%	**0%**	**0%**	**0%**	**-**	**-**	**0%**	**0%**	**0%**	**-**	**0%**	**-**	**-**	**-**	**0%**	**-**	**1%**	**0%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	3	0	0	1	*4*	0	0	0	0	*0*	0	1	0	0	*1*
4:15 PM	2	3	0	0	*5*	0	1	0	0	*1*	0	0	0	0	*0*
4:30 PM	0	0	0	0	*0*	5	0	0	0	*5*	0	0	1	0	*1*
4:45 PM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	1	*1*
5:00 PM	**0**	**2**	**0**	**0**	***2***	**0**	**3**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**3**	***3***	**0**	**1**	**1**	**0**	*2*
5:30 PM	**1**	**0**	**0**	**0**	***1***	**1**	**1**	**0**	**2**	***4***	**0**	**0**	**0**	**1**	*1*
5:45 PM	**0**	**0**	**0**	**1**	***1***	**0**	**1**	**0**	**0**	***1***	**2**	**1**	**0**	**3**	***6***
Count Total	6	7	0	2	*15*	6	6	0	5	*17*	2	3	2	5	*12*
Peak Hour	**1**	**2**	**0**	**1**	***4***	**1**	**5**	**0**	**5**	***11***	**2**	**2**	**1**	**4**	***9***

Two-Hour Count Summaries - Heavy Vehicles

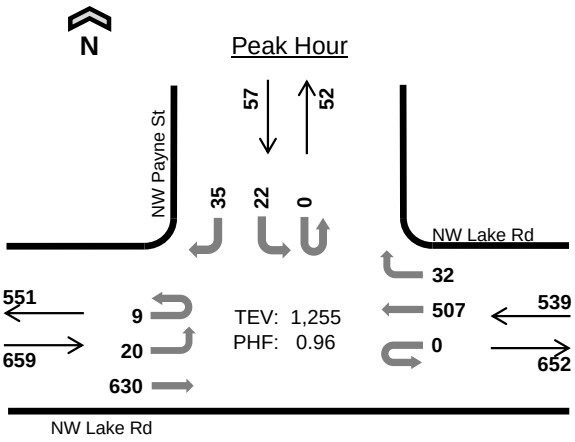
Interval Start	SE 1st St				NW Lake Rd				Driveway				NW Friberg Strunk St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	1	4	0
4:15 PM	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	5	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	11
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	9
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	4
5:30 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	5
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**4**
Count Total	0	2	4	0	0	0	7	0	0	0	0	0	0	0	0	2	15	0
Peak Hour	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**4**	**0**

Two-Hour Count Summaries - Bikes

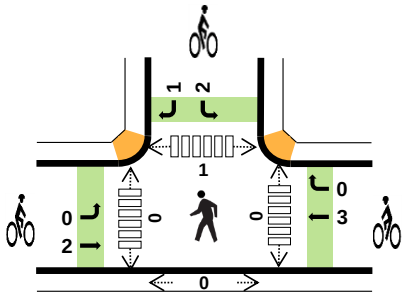
Interval Start	SE 1st St			NW Lake Rd			Driveway			NW Friberg Strunk St			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
4:30 PM	5	0	0	0	0	0	0	0	0	0	0	0	5	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	6
5:00 PM	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	9
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**3**	11
5:30 PM	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**4**	10
5:45 PM	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**11**
Count Total	6	0	0	0	3	3	0	0	0	2	0	3	17	0
Peak Hour	**1**	**0**	**0**	**0**	**2**	**3**	**0**	**0**	**0**	**2**	**0**	**3**	**11**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

NW Payne St
NW Lake Rd



Date: 10-19-2021
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM



	HV %:	PHF
EB	0.0%	0.97
WB	0.4%	0.92
NB	-	-
SB	0.0%	0.75
TOTAL	0.2%	0.96

Two-Hour Count Summaries

Interval Start		NW Lake Rd Eastbound				NW Lake Rd Westbound				0 Northbound				NW Payne St Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		1	7	125	0	0	0	100	7	0	0	0	0	0	3	0	9	252	0
4:15 PM		7	2	117	0	0	0	120	6	0	0	0	0	0	9	0	12	273	0
4:30 PM		0	5	127	0	0	0	112	4	0	0	0	0	0	2	0	5	255	0
4:45 PM		1	6	143	0	0	0	106	11	0	0	0	0	0	5	0	6	278	1,058
5:00 PM		**1**	**6**	**146**	**0**	**0**	**0**	**133**	**8**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**7**	**306**	1,112
5:15 PM		**2**	**7**	**160**	**0**	**0**	**0**	**120**	**9**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**12**	**317**	1,156
5:30 PM		**5**	**3**	**161**	**0**	**0**	**0**	**139**	**8**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**8**	**328**	1,229
5:45 PM		**1**	**4**	**163**	**0**	**0**	**0**	**115**	**7**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**8**	**304**	**1,255**
Count Total		18	40	1,142	0	0	0	945	60	0	0	0	0	0	41	0	67	2,313	0
Peak Hour	**All**	**9**	**20**	**630**	**0**	**0**	**0**	**507**	**32**	**0**	**0**	**0**	**0**	**0**	**22**	**0**	**35**	**1,255**	**0**
	HV	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**
	HV%	**0%**	**0%**	**0%**	**-**	**-**	**-**	**0%**	**0%**	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**0%**	**0%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	2	1	0	3	*6*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	3	2	0	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	1	2	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	**0**	**2**	**0**	**0**	***2***	**0**	**3**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**2**	***4***	**0**	**0**	**0**	**0**	*0*
5:30 PM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:45 PM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	***1***	**0**	**0**	**1**	**0**	***1***
Count Total	6	7	0	3	*16*	2	3	0	3	*8*	0	0	1	0	*1*
Peak Hr	**0**	**2**	**0**	**0**	***2***	**2**	**3**	**0**	**3**	***8***	**0**	**0**	**1**	**0**	***1***

Two-Hour Count Summaries - Heavy Vehicles

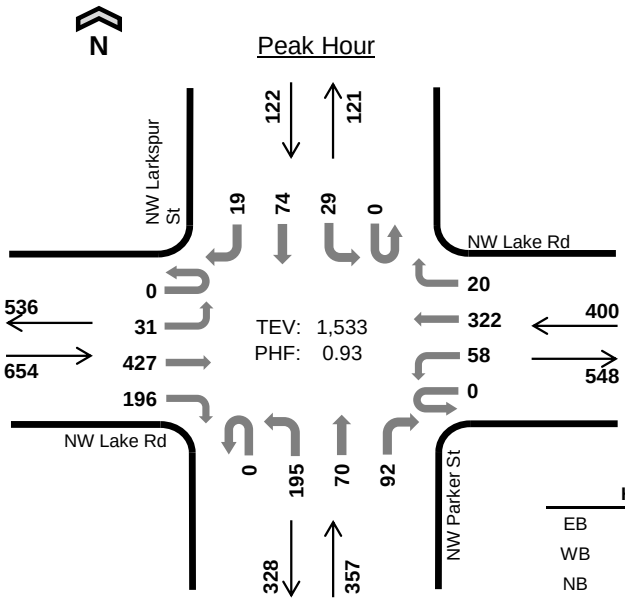
Interval Start	NW Lake Rd Eastbound				NW Lake Rd Westbound				0 Northbound				NW Payne St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	2	0	0	0	0	1	0	0	0	0	0	1	0	2	6	0
4:15 PM	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	5	0
4:30 PM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	3	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	10
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	5
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
Count Total	0	0	6	0	0	0	6	1	0	0	0	0	0	1	0	2	16	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**

Two-Hour Count Summaries - Bikes

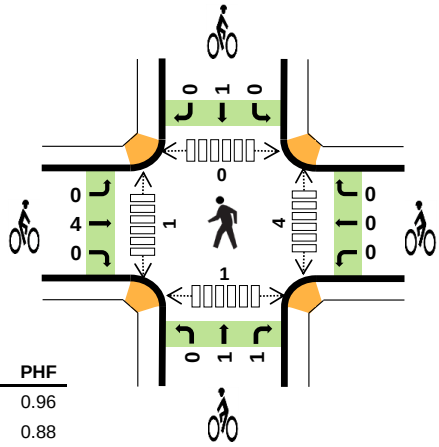
Interval Start	NW Lake Rd Eastbound			NW Lake Rd Westbound			0 Northbound			NW Payne St Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	3
5:15 PM	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**4**	7
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	7
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**8**
Count Total	0	2	0	0	3	0	0	0	0	2	0	1	8	0
Peak Hour	**0**	**2**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**8**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

NW Parker St
NW Lake Rd



Date: 10-19-2021
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM



	HV %:	PHF
EB	0.2%	0.96
WB	1.0%	0.88
NB	0.3%	0.71
SB	0.0%	0.85
TOTAL	0.4%	0.93

Two-Hour Count Summaries

Interval Start		NW Lake Rd Eastbound				NW Lake Rd Westbound				NW Parker St Northbound				NW Larkspur St Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		1	6	95	25	0	13	68	4	0	36	22	22	0	5	6	5	308	0
4:15 PM		0	6	83	30	0	9	88	3	0	33	19	8	0	5	8	3	295	0
4:30 PM		0	7	94	32	0	6	78	5	0	36	17	12	0	4	11	7	309	0
4:45 PM		1	4	102	33	0	6	75	3	0	44	17	11	0	8	6	3	313	1,225
5:00 PM		**0**	**11**	**113**	**32**	**0**	**10**	**77**	**4**	**0**	**56**	**20**	**20**	**0**	**7**	**16**	**5**	**371**	1,288
5:15 PM		**0**	**9**	**111**	**50**	**0**	**21**	**87**	**5**	**0**	**42**	**13**	**20**	**0**	**7**	**20**	**5**	**390**	1,383
5:30 PM		**0**	**5**	**94**	**61**	**0**	**15**	**81**	**6**	**0**	**60**	**24**	**42**	**0**	**8**	**16**	**2**	**414**	1,488
5:45 PM		**0**	**6**	**109**	**53**	**0**	**12**	**77**	**5**	**0**	**37**	**13**	**10**	**0**	**7**	**22**	**7**	**358**	**1,533**
Count Total		2	54	801	316	0	92	631	35	0	344	145	145	0	51	105	37	2,758	0
Peak Hour	**All**	**0**	**31**	**427**	**196**	**0**	**58**	**322**	**20**	**0**	**195**	**70**	**92**	**0**	**29**	**74**	**19**	**1,533**	**0**
	HV	**0**	**0**	**1**	**0**	**0**	**1**	**2**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**
	HV%	**-**	**0%**	**0%**	**0%**	**-**	**2%**	**1%**	**5%**	**-**	**1%**	**0%**	**0%**	**-**	**0%**	**0%**	**0%**	**0%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	3	3	5	1	*12*	0	0	1	0	*1*	1	0	1	0	*2*
4:15 PM	3	3	0	2	*8*	0	0	1	0	*1*	0	0	0	0	*0*
4:30 PM	1	2	1	0	*4*	0	0	1	0	*1*	0	0	0	0	*0*
4:45 PM	0	0	0	1	*1*	0	0	0	0	*0*	0	0	1	1	*2*
5:00 PM	**0**	**2**	**1**	**0**	***3***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**0**	**1**	**0**	**0**	***1***	**4**	**0**	**0**	**0**	***4***	**0**	**0**	**0**	**1**	*1*
5:30 PM	**1**	**1**	**0**	**0**	***2***	**0**	**0**	**1**	**1**	***2***	**0**	**0**	**0**	**0**	*0*
5:45 PM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**4**	**1**	**0**	**0**	***5***
Count Total	8	12	7	4	*31*	4	0	5	1	*10*	5	1	2	2	*10*
Peak Hour	**1**	**4**	**1**	**0**	***6***	**4**	**0**	**2**	**1**	***7***	**4**	**1**	**0**	**1**	***6***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	NW Lake Rd Eastbound				NW Lake Rd Westbound				NW Parker St Northbound				NW Larkspur St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	2	1	0	0	1	2	0	1	0	4	0	1	0	0	12	0
4:15 PM	0	0	3	0	0	0	3	0	0	0	0	0	0	1	1	0	8	0
4:30 PM	0	1	0	0	0	0	2	0	0	0	1	0	0	0	0	0	4	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	25
5:00 PM	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	16
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	9
5:30 PM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	7
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**
Count Total	0	1	6	1	0	1	8	3	0	2	1	4	0	3	1	0	31	0
Peak Hour	**0**	**0**	**1**	**0**	**0**	**1**	**2**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	NW Lake Rd Eastbound			NW Lake Rd Westbound			NW Parker St Northbound			NW Larkspur St Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	1	0	0	0	1	0
4:30 PM	0	0	0	0	0	0	0	0	1	0	0	0	1	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	3
5:15 PM	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	6
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**2**	7
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**
Count Total	0	4	0	0	0	0	0	1	4	0	1	0	10	0
Peak Hour	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**1**	**0**	**7**	**0**

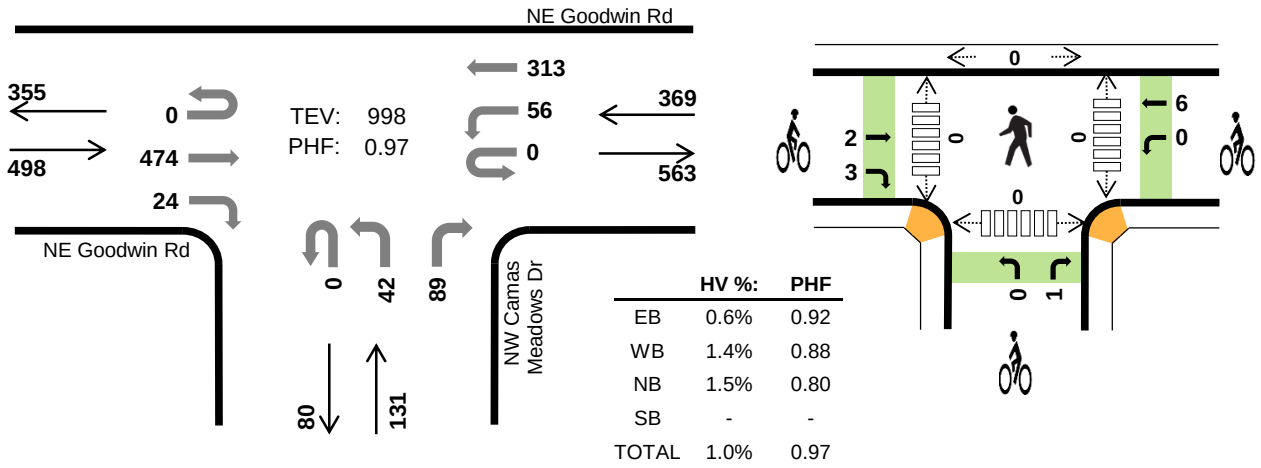
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

NW Camas Meadows Dr
NE Goodwin Rd

N

Peak Hour

Date: 10-19-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM



	HV %:	PHF
EB	0.6%	0.92
WB	1.4%	0.88
NB	1.5%	0.80
SB	-	-
TOTAL	1.0%	0.97

Two-Hour Count Summaries

Interval Start		NE Goodwin Rd Eastbound				NE Goodwin Rd Westbound				NW Camas Meadows Dr Northbound				0 Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	0	131	6	0	7	64	0	0	4	0	26	0	0	0	0	238	0
4:15 PM		0	0	105	3	0	15	89	0	0	6	0	22	0	0	0	0	240	0
4:30 PM		0	0	118	4	0	9	82	0	0	11	0	15	0	0	0	0	239	0
4:45 PM		0	0	114	4	1	14	83	0	1	8	0	20	0	0	0	0	245	962
5:00 PM		**0**	**0**	**125**	**4**	**0**	**12**	**78**	**0**	**0**	**9**	**0**	**26**	**0**	**0**	**0**	**0**	**254**	978
5:15 PM		**0**	**0**	**105**	**6**	**0**	**13**	**81**	**0**	**0**	**12**	**0**	**18**	**0**	**0**	**0**	**0**	**235**	973
5:30 PM		**0**	**0**	**125**	**10**	**0**	**14**	**66**	**0**	**0**	**10**	**0**	**31**	**0**	**0**	**0**	**0**	**256**	990
5:45 PM		**0**	**0**	**119**	**4**	**0**	**17**	**88**	**0**	**0**	**11**	**0**	**14**	**0**	**0**	**0**	**0**	**253**	**998**
Count Total		0	0	942	41	1	101	631	0	1	71	0	172	0	0	0	0	1,960	0
Peak Hour	**All**	**0**	**0**	**474**	**24**	**0**	**56**	**313**	**0**	**0**	**42**	**0**	**89**	**0**	**0**	**0**	**0**	**998**	**0**
	HV	**0**	**0**	**3**	**0**	**0**	**0**	**5**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**10**	**0**
	HV%	**-**	**-**	**1%**	**0%**	**-**	**0%**	**2%**	**-**	**-**	**2%**	**-**	**1%**	**-**	**-**	**-**	**-**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	5	2	1	0	*8*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	4	6	3	0	*13*	0	0	0	0	*0*	0	0	0	1	*1*
4:30 PM	1	5	0	0	*6*	5	0	0	0	*5*	0	0	0	0	*0*
4:45 PM	1	1	1	0	*3*	2	0	0	0	*2*	0	0	0	0	*0*
5:00 PM	**0**	**0**	**0**	**0**	***0***	**2**	**1**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**1**	**2**	**2**	**0**	***5***	**1**	**3**	**0**	**0**	***4***	**0**	**0**	**0**	**0**	*0*
5:30 PM	**1**	**3**	**0**	**0**	***4***	**2**	**2**	**1**	**0**	***5***	**0**	**0**	**0**	**0**	*0*
5:45 PM	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
Count Total	14	19	7	0	*40*	12	6	1	0	*19*	0	0	0	1	*1*
Peak Hr	**3**	**5**	**2**	**0**	***10***	**5**	**6**	**1**	**0**	***12***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

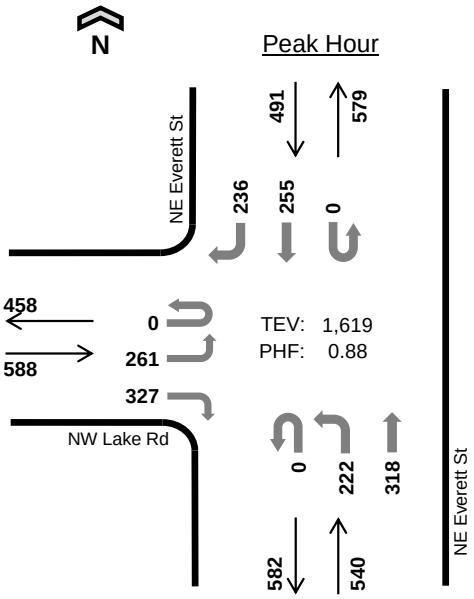
Interval Start	NE Goodwin Rd				NE Goodwin Rd				NW Camas Meadows Dr				0				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	5	0	0	0	2	0	0	0	0	1	0	0	0	0	8	0
4:15 PM	0	0	4	0	0	1	5	0	0	0	0	3	0	0	0	0	13	0
4:30 PM	0	0	1	0	0	0	5	0	0	0	0	0	0	0	0	0	6	0
4:45 PM	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	3	30
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	22
5:15 PM	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**5**	14
5:30 PM	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	12
5:45 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**10**
Count Total	0	0	14	0	0	1	18	0	0	1	0	6	0	0	0	0	40	0
Peak Hour	**0**	**0**	**3**	**0**	**0**	**0**	**5**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**10**	**0**

Two-Hour Count Summaries - Bikes

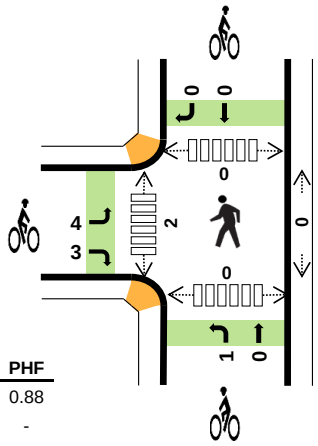
Interval Start	NE Goodwin Rd			NE Goodwin Rd			NW Camas Meadows Dr			0			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	5	0	0	0	0	0	0	0	0	0	0	5	0
4:45 PM	0	2	0	0	0	0	0	0	0	0	0	0	2	7
5:00 PM	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	10
5:15 PM	**0**	**1**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	14
5:30 PM	**0**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**5**	14
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**12**
Count Total	0	9	3	0	6	0	0	0	1	0	0	0	19	0
Peak Hour	**0**	**2**	**3**	**0**	**6**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**12**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

NE Everett St
NW Lake Rd



Date: 10-19-2021
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM



	HV %:	PHF
EB	0.3%	0.88
WB	-	-
NB	0.0%	0.96
SB	0.4%	0.79
TOTAL	0.2%	0.88

Two-Hour Count Summaries

Interval Start		NW Lake Rd Eastbound				0 Westbound				NE Everett St Northbound				NE Everett St Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	54	0	66	0	0	0	0	0	64	79	0	0	0	72	67	402	0
4:15 PM		0	49	0	66	0	0	0	0	0	48	75	0	0	0	67	62	367	0
4:30 PM		0	43	0	58	0	0	0	0	0	53	86	0	0	0	62	58	360	0
4:45 PM		**0**	**54**	**0**	**84**	**0**	**0**	**0**	**0**	**0**	**46**	**89**	**0**	**0**	**0**	**64**	**52**	**389**	1,518
5:00 PM		**0**	**70**	**0**	**76**	**0**	**0**	**0**	**0**	**0**	**70**	**71**	**0**	**0**	**0**	**58**	**53**	**398**	1,514
5:15 PM		**0**	**80**	**0**	**87**	**0**	**0**	**0**	**0**	**0**	**61**	**75**	**0**	**0**	**0**	**70**	**85**	**458**	1,605
5:30 PM		**0**	**57**	**0**	**80**	**0**	**0**	**0**	**0**	**0**	**45**	**83**	**0**	**0**	**0**	**63**	**46**	**374**	**1,619**
5:45 PM		0	54	0	72	0	0	0	0	0	61	95	0	0	0	52	53	387	1,617
Count Total		0	461	0	589	0	0	0	0	0	448	653	0	0	0	508	476	3,135	0
Peak Hour	**All**	**0**	**261**	**0**	**327**	**0**	**0**	**0**	**0**	**0**	**222**	**318**	**0**	**0**	**0**	**255**	**236**	**1,619**	**0**
	HV	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**4**	**0**
	HV%	**-**	**0%**	**-**	**0%**	**-**	**-**	**-**	**-**	**-**	**0%**	**0%**	**-**	**-**	**-**	**1%**	**0%**	**0%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	7	0	1	1	*9*	1	0	0	0	*1*	0	0	0	0	*0*
4:15 PM	7	0	1	5	*13*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	3	0	0	8	*11*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	**1**	**0**	**0**	**0**	***1***	**4**	**0**	**0**	**0**	***4***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**1**	**0**	**0**	**2**	***3***	**1**	**0**	**0**	**2**	***3***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**1**	**0**	***3***	**0**	**2**	**0**	**0**	*2*
5:30 PM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:45 PM	0	0	2	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	19	0	4	16	*39*	8	0	1	2	*11*	0	2	0	0	*2*
Peak Hr	**2**	**0**	**0**	**2**	***4***	**7**	**0**	**1**	**2**	***10***	**0**	**2**	**0**	**0**	***2***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	NW Lake Rd				0				NE Everett St				NE Everett St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	7	0	0	0	0	0	0	1	0	0	0	1	0	9	0
4:15 PM	0	2	0	5	0	0	0	0	0	0	1	0	0	0	4	1	13	0
4:30 PM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	7	1	11	0
4:45 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	34
5:00 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**3**	28
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	15
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**
5:45 PM	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2	5
Count Total	0	3	0	16	0	0	0	0	0	1	3	0	0	0	14	2	39	0
Peak Hour	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**4**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	NW Lake Rd			0			NE Everett St			NE Everett St			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	5
5:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**3**	7
5:15 PM	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	10
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Count Total	4	0	4	0	0	0	1	0	0	2	0	0	11	0
Peak Hour	**4**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**10**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Heath & Associates

PO Box 397
Puyallup, WA 98371

File Name : 4679a
Site Code : 00004679
Start Date : 7/27/2021
Page No : 1

Groups Printed- Passenger + - Heavy

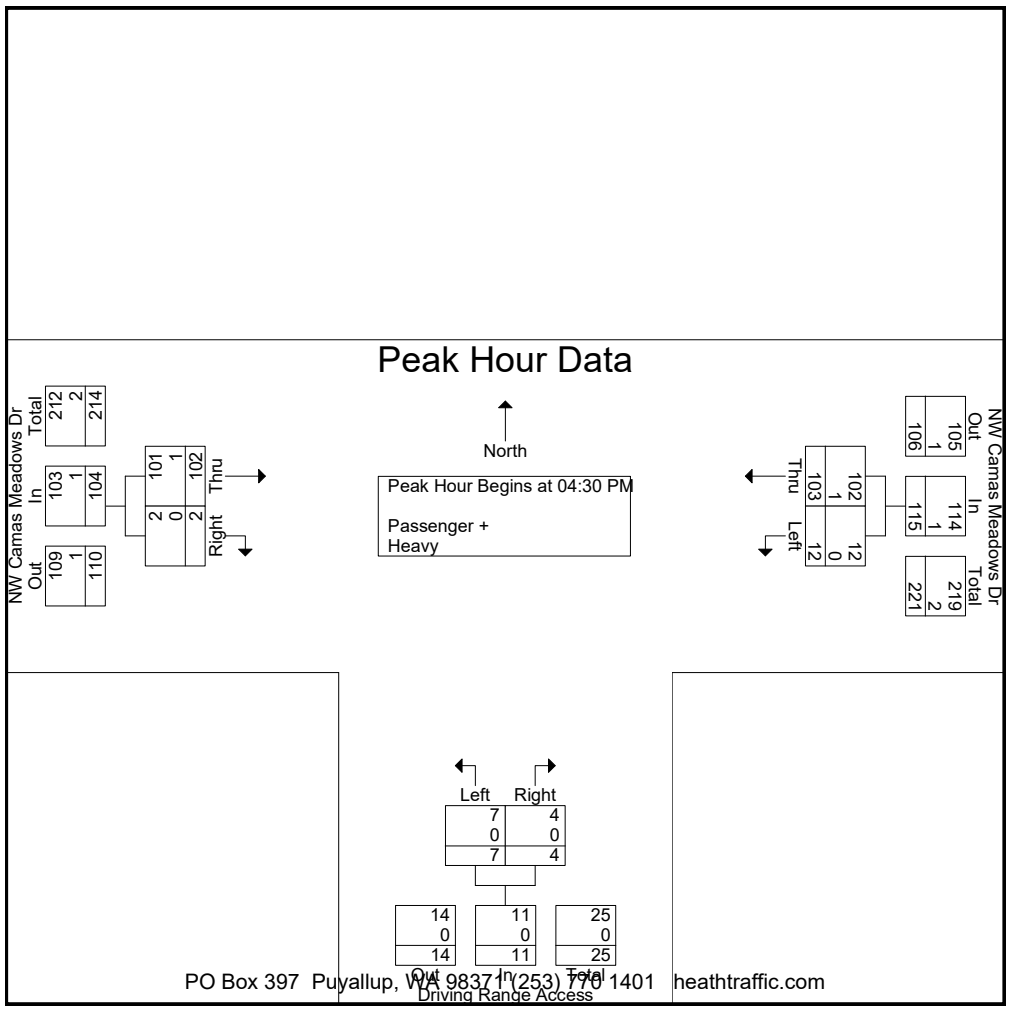
	NW Camas Meadows Dr Westbound			Driving Range Access Northbound			NW Camas Meadows Dr Eastbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
04:00 PM	26	4	30	3	3	6	1	22	23	59
04:15 PM	16	2	18	1	1	2	1	21	22	42
04:30 PM	29	2	31	3	0	3	1	18	19	53
04:45 PM	26	3	29	0	3	3	0	25	25	57
Total	97	11	108	7	7	14	3	86	89	211
05:00 PM	22	3	25	0	0	0	0	26	26	51
05:15 PM	26	4	30	1	4	5	1	33	34	69
05:30 PM	18	3	21	4	1	5	2	21	23	49
05:45 PM	21	4	25	2	1	3	1	14	15	43
Total	87	14	101	7	6	13	4	94	98	212
Grand Total	184	25	209	14	13	27	7	180	187	423
Apprch %	88	12		51.9	48.1		3.7	96.3		
Total %	43.5	5.9	49.4	3.3	3.1	6.4	1.7	42.6	44.2	
Passenger +	180	25	205	14	13	27	7	179	186	418
% Passenger +	97.8	100	98.1	100	100	100	100	99.4	99.5	98.8
Heavy	4	0	4	0	0	0	0	1	1	5
% Heavy	2.2	0	1.9	0	0	0	0	0.6	0.5	1.2

Heath & Associates

PO Box 397
Puyallup, WA 98371

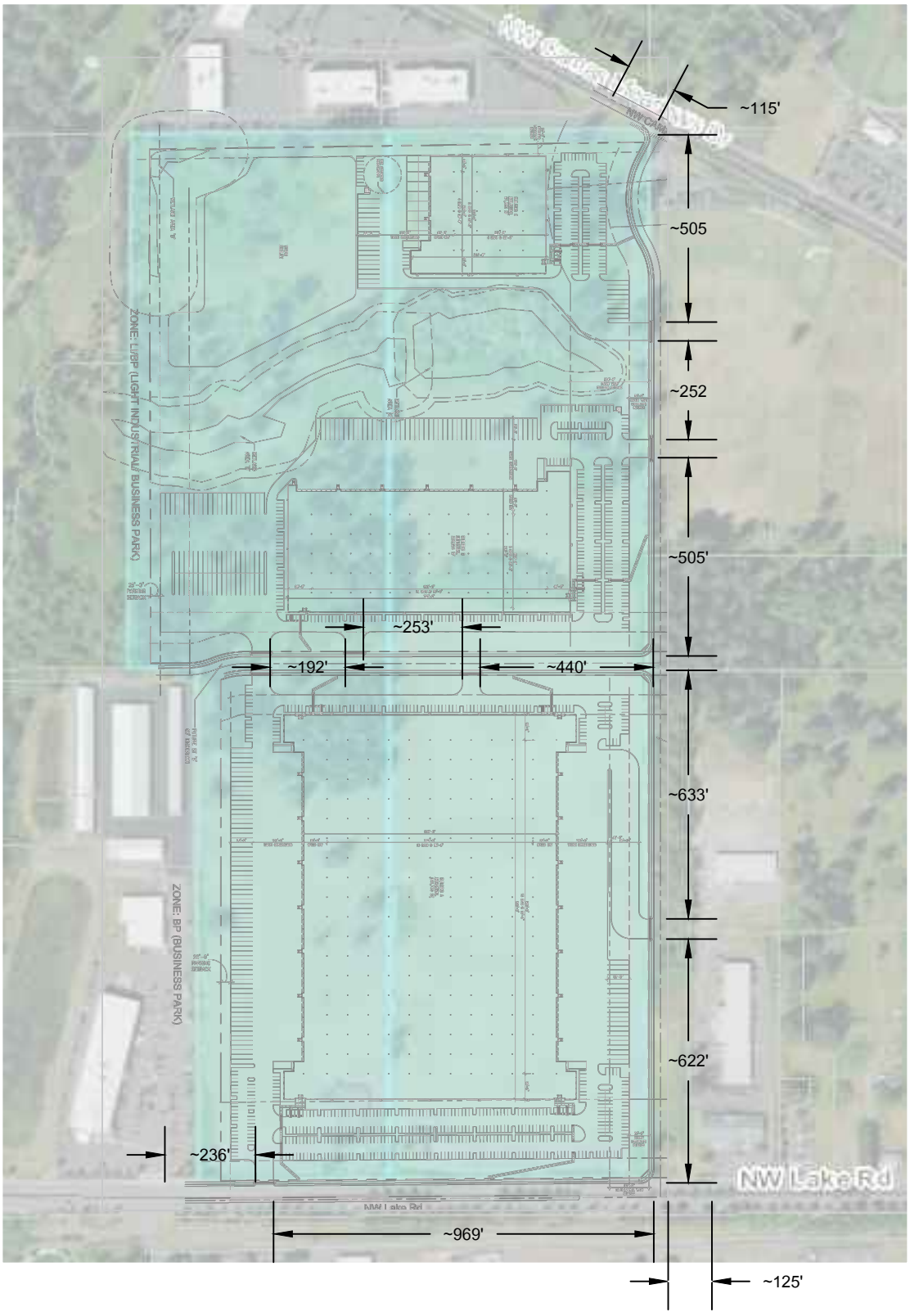
File Name : 4679a
Site Code : 00004679
Start Date : 7/27/2021
Page No : 2

	NW Camas Meadows Dr Westbound			Driving Range Access Northbound			NW Camas Meadows Dr Eastbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	**29**	2	**31**	**3**	0	3	**1**	18	19	53
04:45 PM	26	3	29	0	3	3	0	25	25	57
05:00 PM	22	3	25	0	0	0	0	26	26	51
05:15 PM	26	**4**	30	1	**4**	**5**	1	**33**	**34**	**69**
Total Volume	103	12	115	4	7	11	2	102	104	230
% App. Total	89.6	10.4		36.4	63.6		1.9	98.1		
PHF	.888	.750	.927	.333	.438	.550	.500	.773	.765	.833
Passenger +	102	12	114	4	7	11	2	101	103	228
% Passenger +	99.0	100	99.1	100	100	100	100	99.0	99.0	99.1
Heavy	1	0	1	0	0	0	0	1	1	2
% Heavy	1.0	0	0.9	0	0	0	0	1.0	1.0	0.9



APPENDIX

SUPPLEMENTARY FIGURES



HEATH & ASSOCIATES

TRAFFIC AND CIVIL ENGINEERING

CAMAS BUSINESS CENTER

DRIVEWAY SPACING DIAGRAM
FIGURE A

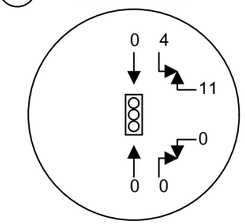
PO Box 397 Puyallup, WA 98371 (253) 770 1401 heathtraffic.com

N

CITY OF VANCOUVER PROPORTIONAL SHARE INTERSECTIONS

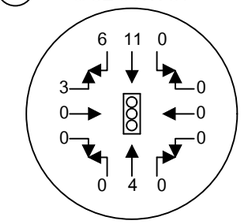
1.1 NE 192ND AVE & NE 13TH ST
2.1 NE 192ND AVE & SE 34TH ST
3.1 NE 192ND AVE & SR-14 WB RAMPS

(1.1) NE 192ND AVE & NE 13TH ST



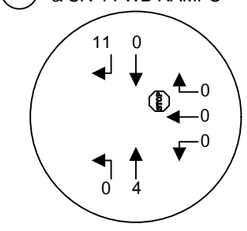
15 TOTAL TRIPS

(2.1) NE 192ND AVE & SE 34TH ST

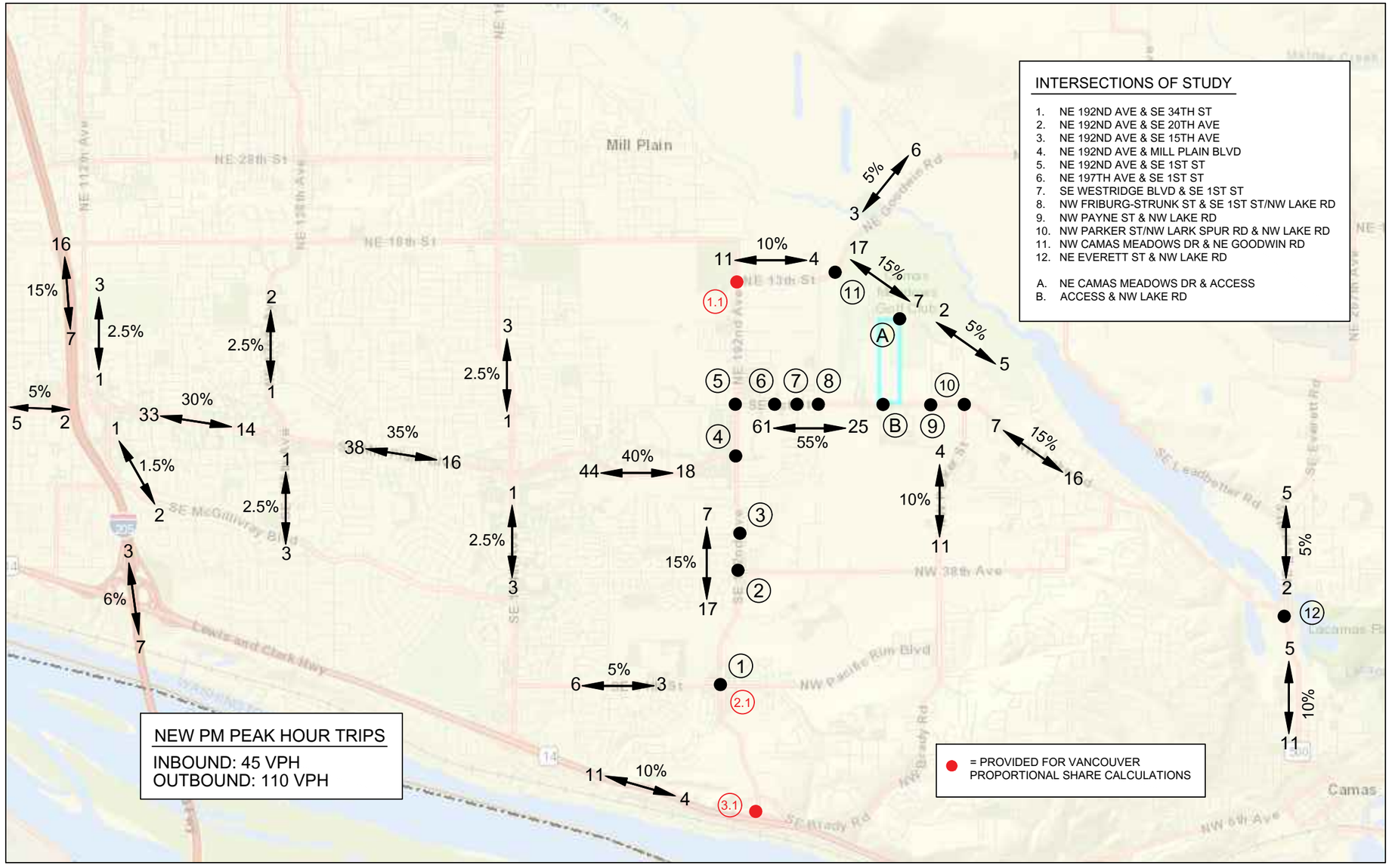


24 TOTAL TRIPS

(3.1) NE 192ND AVE & SR-14 WB RAMPS



15 TOTAL TRIPS



INTERSECTIONS OF STUDY

1. NE 192ND AVE & SE 34TH ST
2. NE 192ND AVE & SE 20TH AVE
3. NE 192ND AVE & SE 15TH AVE
4. NE 192ND AVE & MILL PLAIN BLVD
5. NE 192ND AVE & SE 1ST ST
6. NE 197TH AVE & SE 1ST ST
7. SE WESTRIDGE BLVD & SE 1ST ST
8. NW FRIBURG-STRUNK ST & SE 1ST ST/NW LAKE RD
9. NW PAYNE ST & NW LAKE RD
10. NW PARKER ST/NW LARK SPUR RD & NW LAKE RD
11. NW CAMAS MEADOWS DR & NE GOODWIN RD
12. NE EVERETT ST & NW LAKE RD

A. NE CAMAS MEADOWS DR & ACCESS
B. ACCESS & NW LAKE RD

HEATH & ASSOCIATES
TRAFFIC AND CIVIL ENGINEERING

CAMAS BUSINESS CENTER
PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT & PROPORTIONATE SHARE TRIPS ENDS
FIGURE 782

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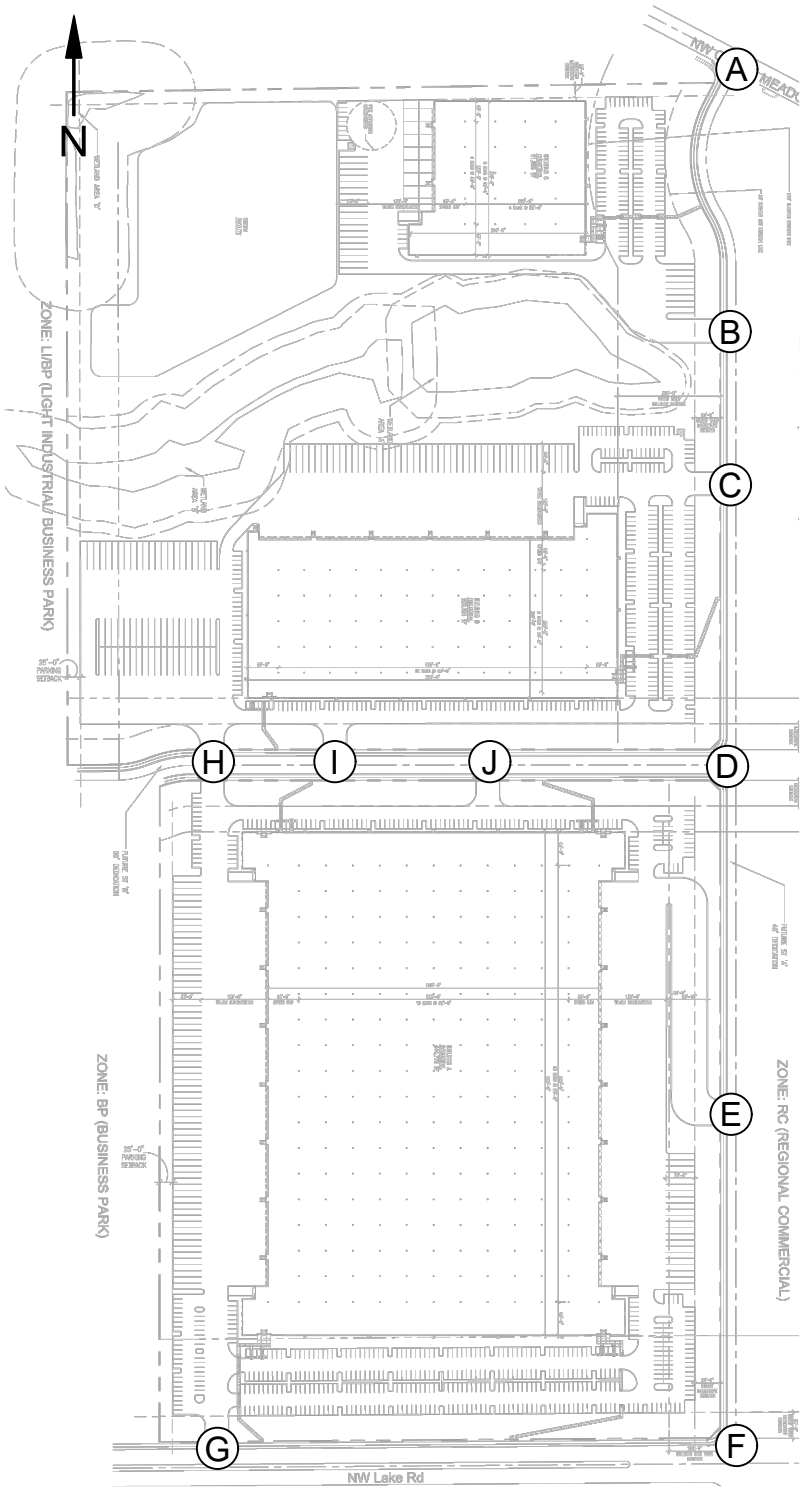
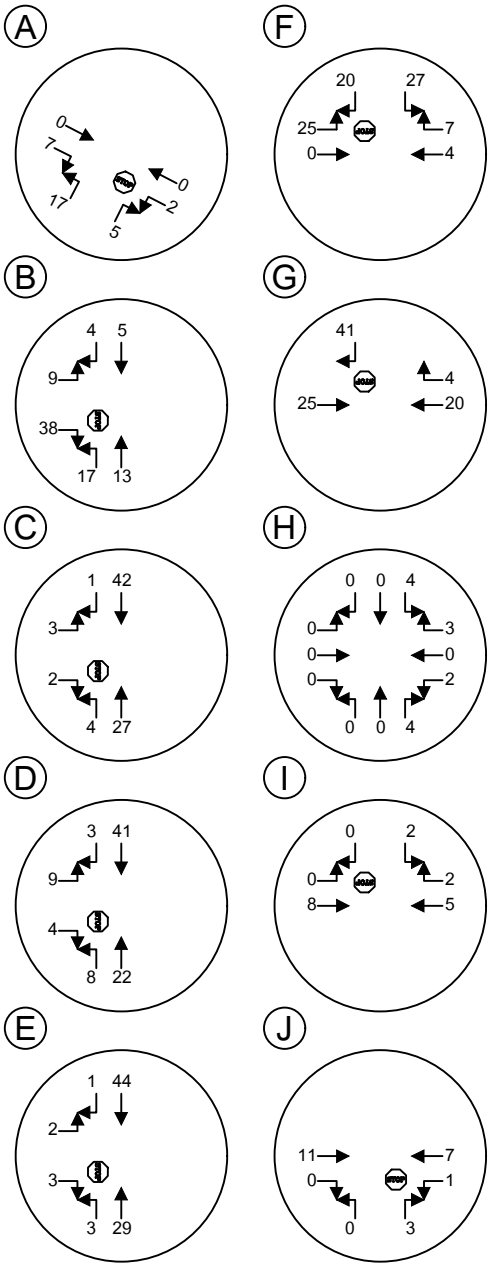




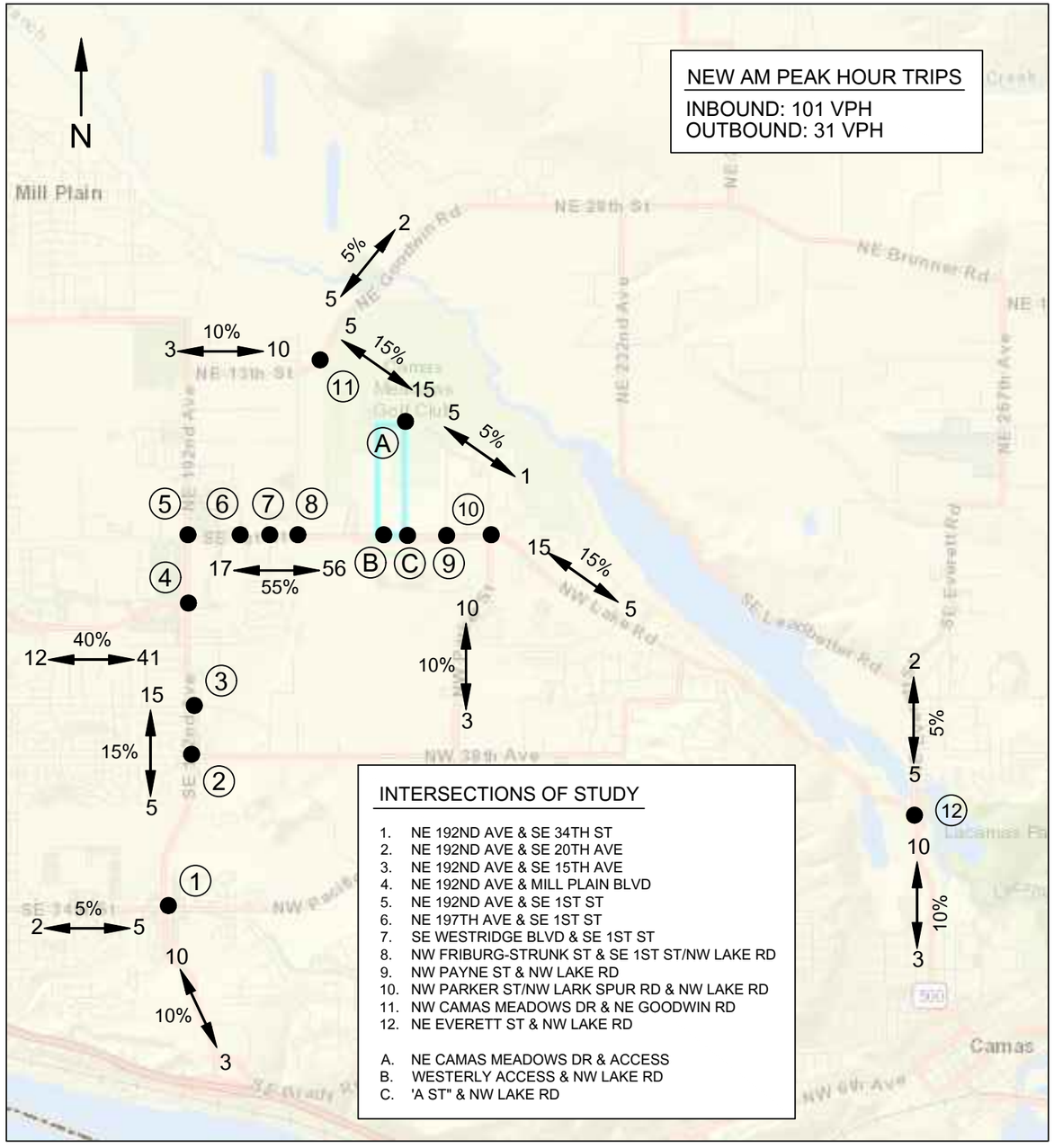
HEATH & ASSOCIATES

TRAFFIC AND CIVIL ENGINEERING

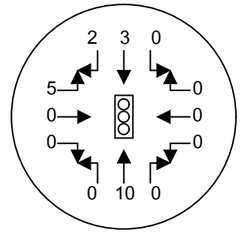
CAMAS BUSINESS CENTER

PM PEAK HOUR ONSITE TRAFFIC CIRCULATION PLAN
FIGURE C

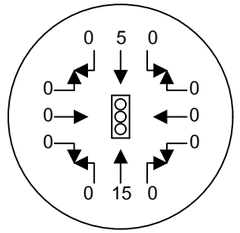
PO Box 397 Puyallup, WA 98371 (253) 770 1401 heathtraffic.com



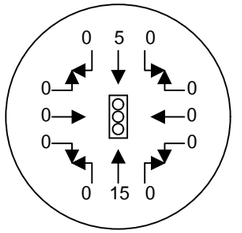
① NE 192ND AVE & SE 34TH ST



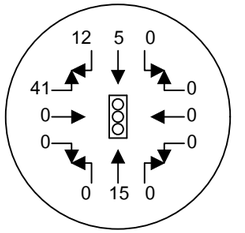
② NE 192ND AVE & SE 20TH AVE



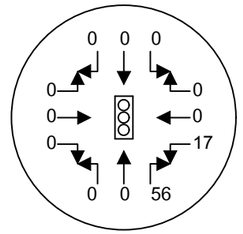
③ NE 192ND AVE & SE 15TH AVE



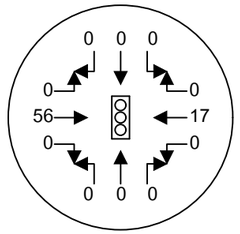
④ NE 192ND AVE & MILL PLAIN BLVD



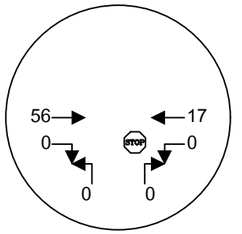
⑤ NE 192ND AVE & SE 1ST ST



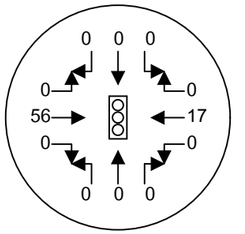
⑥ NE 197TH AVE & SE 1ST ST



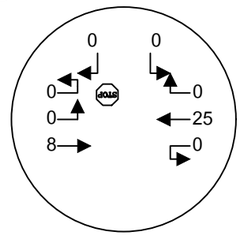
⑦ SE WESTRIDGE BLVD & SE 1ST ST



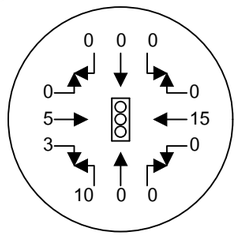
⑧ NW FRIBURG-STRNK ST & SE 1ST ST/ NW LAKE RD



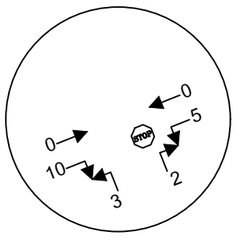
⑨ NW PAYNE ST & NW LAKE RD



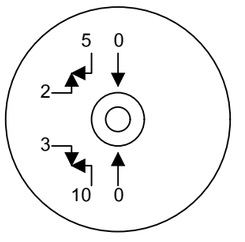
⑩ NW PARKER ST/ NW LARK SPUR RD & NW LAKE RD



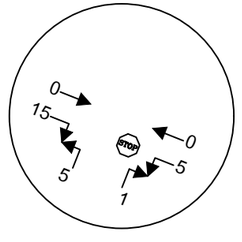
⑪ NW CAMAS MEADOWS DR & NE GOODWIN RD



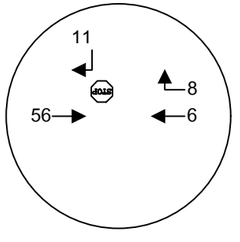
⑫ NE EVERETT ST & NW LAKE RD



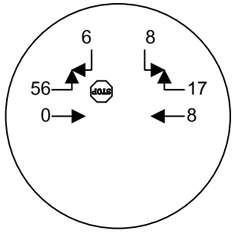
Ⓐ NW CAMAS MEADOWS DR & ACCESS



Ⓑ WESTERLY ACCESS & NW LAKE RD



Ⓒ "A ST" & NW LAKE RD



HEATH & ASSOCIATES
TRAFFIC AND CIVIL ENGINEERING

CAMAS BUSINESS CENTER
AM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT
FIGURE

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PO Box 397 Puyallup, WA 98371 (253) 770 1401 heathtraffic.com

APPENDIX

LEVEL OF SERVICE

Lanes, Volumes, Timings
1: SE 34th St & NE 192nd Ave

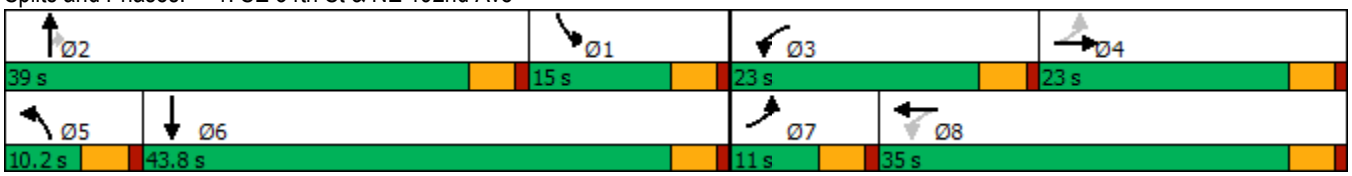
Existing PM Peak H
11/08/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	151	46	279	146	110	79	756	115	167	694	109
Future Volume (vph)	91	151	46	279	146	110	79	756	115	167	694	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	300		375	175		0
Storage Lanes	1		0	1		0	2		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	0.95	1.00	0.97	0.95	0.95
Ped Bike Factor		0.99			0.98				0.97		1.00	
Frt		0.965			0.935				0.850		0.980	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3383	0	1787	3291	0	3433	3539	1583	3467	3489	0
Flt Permitted	0.587			0.448			0.950			0.950		
Satd. Flow (perm)	1093	3383	0	843	3291	0	3433	3539	1529	3467	3489	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35			115				164		21	
Link Speed (mph)		35			40			40			40	
Link Distance (ft)		798			760			812			788	
Travel Time (s)		15.5			13.0			13.8			13.4	
Confl. Peds. (#/hr)			10			10			10			10
Confl. Bikes (#/hr)			10			10			10			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	95	157	48	291	152	115	82	788	120	174	723	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	205	0	291	267	0	82	788	120	174	837	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8					2			
Detector Phase	7	4		3	8		5	2	2	1	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)	9.5	22.5		9.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (s)	11.0	23.0		23.0	35.0		10.2	39.0	39.0	15.0	43.8	
Total Split (%)	11.0%	23.0%		23.0%	35.0%		10.2%	39.0%	39.0%	15.0%	43.8%	
Maximum Green (s)	6.5	18.5		18.5	30.5		5.7	34.5	34.5	10.5	39.3	
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	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead	Lead	Lag	Lag	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		11.0			11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)		10			10			10	10		10	
Act Effct Green (s)	16.9	10.3		29.2	20.8		5.9	24.3	24.3	9.1	30.3	
Actuated g/C Ratio	0.22	0.13		0.38	0.27		0.08	0.32	0.32	0.12	0.40	
v/c Ratio	0.32	0.42		0.59	0.27		0.31	0.70	0.20	0.42	0.60	
Control Delay	21.4	29.9		23.9	14.8		42.4	27.5	2.3	38.4	21.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	21.4	29.9		23.9	14.8		42.4	27.5	2.3	38.4	21.5	
LOS	C	C		C	B		D	C	A	D	C	
Approach Delay		27.2			19.6			25.7			24.4	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	29	39		100	30		19	168	0	39	163	
Queue Length 95th (ft)	70	83		197	68		51	283	17	88	275	
Internal Link Dist (ft)		718			680			732			708	
Turn Bay Length (ft)	150			150			300		375	175		
Base Capacity (vph)	303	877		558	1433		266	1661	804	495	1875	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.31	0.23		0.52	0.19		0.31	0.47	0.15	0.35	0.45	

Intersection Summary	
Area Type:	Other
Cycle Length: 100	
Actuated Cycle Length: 76.7	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 24.2	Intersection LOS: C
Intersection Capacity Utilization 65.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: SE 34th St & NE 192nd Ave



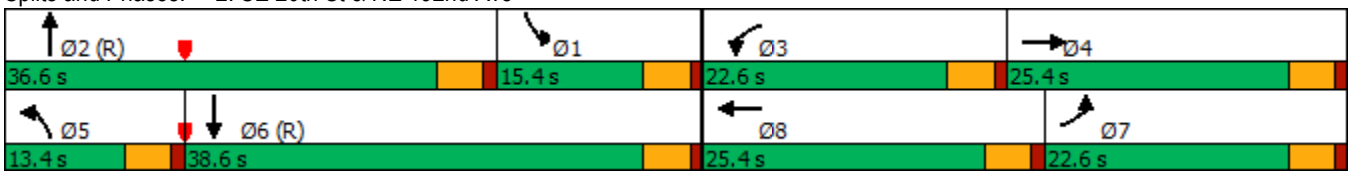
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	172	58	174	179	114	92	795	105	123	750	129
Future Volume (vph)	156	172	58	174	179	114	92	795	105	123	750	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	100		0	350		0	400		0
Storage Lanes	2		0	2		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.99			0.98			0.99			0.99	
Frt		0.962			0.942			0.982			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3467	1792	0	3467	1745	0	1770	3452	0	1787	3471	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3467	1792	0	3467	1745	0	1770	3452	0	1787	3471	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			29			15			21	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		1025			1210			957			1224	
Travel Time (s)		17.5			20.6			16.3			20.9	
Confl. Peds. (#/hr)			10			10			10			10
Confl. Bikes (#/hr)			10			10			10			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	164	181	61	183	188	120	97	837	111	129	789	136
Shared Lane Traffic (%)												
Lane Group Flow (vph)	164	242	0	183	308	0	97	948	0	129	925	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	22.6	25.4		22.6	25.4		13.4	36.6		15.4	38.6	
Total Split (%)	22.6%	25.4%		22.6%	25.4%		13.4%	36.6%		15.4%	38.6%	
Maximum Green (s)	18.1	20.9		18.1	20.9		8.9	32.1		10.9	34.1	
Yellow Time (s)	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	
Lost Time Adjust (s)	0.0	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	4.5	
Lead/Lag	Lag	Lag		Lead	Lead		Lead	Lead		Lag	Lag	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	
Pedestrian Calls (#/hr)	10	10		10	10			10			10	
Act Effct Green (s)	11.2	18.9		11.5	19.2		9.7	41.3		10.3	44.1	
Actuated g/C Ratio	0.11	0.19		0.12	0.19		0.10	0.41		0.10	0.44	
v/c Ratio	0.42	0.69		0.46	0.86		0.56	0.66		0.70	0.60	
Control Delay	43.8	46.0		44.3	58.3		56.4	27.6		64.3	25.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	43.8	46.0		44.3	58.3		56.4	27.6		64.3	25.1	
LOS	D	D		D	E		E	C		E	C	
Approach Delay		45.1			53.1			30.3			29.9	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	51	134		57	170		59	253		80	243	
Queue Length 95th (ft)	76	215		84	#304		#128	#378		#160	346	
Internal Link Dist (ft)		945			1130			877			1144	
Turn Bay Length (ft)	150			100			350			400		
Base Capacity (vph)	627	386		627	387		179	1434		194	1543	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.26	0.63		0.29	0.80		0.54	0.66		0.66	0.60	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 35.9 Intersection LOS: D
Intersection Capacity Utilization 68.5% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: SE 20th St & NE 192nd Ave

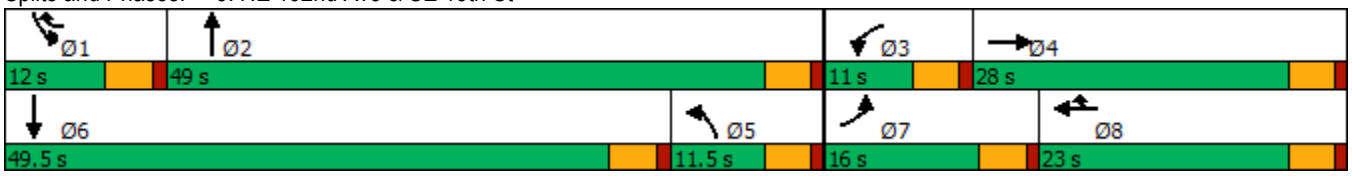


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	54	58	29	48	93	38	1011	25	41	920	84
Future Volume (vph)	82	54	58	29	48	93	38	1011	25	41	920	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		0	125		100	175		0	475		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.922				0.850		0.996			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1734	0	1787	1881	1599	1770	3525	0	1787	3528	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1787	1734	0	1787	1881	1599	1770	3525	0	1787	3528	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50				164		3			12	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		507			479			1224			918	
Travel Time (s)		9.9			9.3			20.9			15.6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	84	55	59	30	49	95	39	1032	26	42	939	86
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	114	0	30	49	95	39	1058	0	42	1025	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	8 1	5	2		1	6	
Permitted Phases												
Detector Phase	7	4		3	8	8 1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	16.0	28.0		11.0	23.0		11.5	49.0		12.0	49.5	
Total Split (%)	16.0%	28.0%		11.0%	23.0%		11.5%	49.0%		12.0%	49.5%	
Maximum Green (s)	11.5	23.5		6.5	18.5		7.0	44.5		7.5	45.0	
Yellow Time (s)	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	
Lost Time Adjust (s)	0.0	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	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		10			10			10			10	
Act Effct Green (s)	9.3	15.8		7.0	9.2	17.6	7.8	36.7		7.5	38.8	
Actuated g/C Ratio	0.14	0.23		0.10	0.13	0.26	0.11	0.53		0.11	0.57	
v/c Ratio	0.35	0.26		0.17	0.20	0.18	0.20	0.56		0.22	0.51	
Control Delay	38.2	18.7		39.8	34.1	1.1	38.5	18.1		39.3	16.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	38.2	18.7		39.8	34.1	1.1	38.5	18.1		39.3	16.4	
LOS	D	B		D	C	A	D	B		D	B	
Approach Delay		27.0			17.0			18.8			17.3	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)	34	20		12	20	0	16	195		17	187	
Queue Length 95th (ft)	99	79		48	59	4	57	342		60	327	
Internal Link Dist (ft)		427			399			1144			838	
Turn Bay Length (ft)	125			125		100	175			475		
Base Capacity (vph)	346	717		195	586	643	221	2369		225	2393	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.24	0.16		0.15	0.08	0.15	0.18	0.45		0.19	0.43	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 68.6			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 18.7		Intersection LOS: B	
Intersection Capacity Utilization 52.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: NE 192nd Ave & SE 15th St



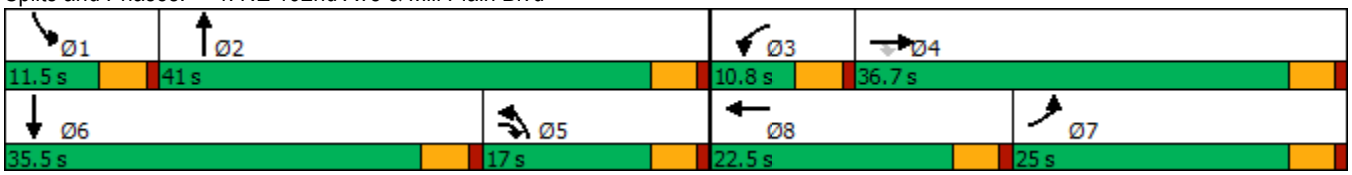
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	264	29	272	33	25	37	297	747	50	47	681	185
Future Volume (vph)	264	29	272	33	25	37	297	747	50	47	681	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		200	100		0	200		0	150		0
Storage Lanes	1		1	1		0	2		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.97		0.98			1.00			0.99	
Frt			0.850		0.910			0.991			0.968	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1881	1599	1752	1638	0	3433	3495	0	1787	3434	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1787	1881	1546	1752	1638	0	3433	3495	0	1787	3434	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			142		39			8			36	
Link Speed (mph)		40			25			40			40	
Link Distance (ft)		504			806			810			686	
Travel Time (s)		8.6			22.0			13.8			11.7	
Confl. Peds. (#/hr)			10			10			10			10
Confl. Bikes (#/hr)			10			10			10			10
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	275	30	283	34	26	39	309	778	52	49	709	193
Shared Lane Traffic (%)												
Lane Group Flow (vph)	275	30	283	34	65	0	309	830	0	49	902	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	5	3	8		5	2		1	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)	9.5	22.5	9.5	9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	25.0	36.7	17.0	10.8	22.5		17.0	41.0		11.5	35.5	
Total Split (%)	25.0%	36.7%	17.0%	10.8%	22.5%		17.0%	41.0%		11.5%	35.5%	
Maximum Green (s)	20.5	32.2	12.5	6.3	18.0		12.5	36.5		7.0	31.0	
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		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lag		Lead	Lead	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		10			10			10			10	
Act Effct Green (s)	17.2	21.7	33.4	6.4	8.6		11.7	37.0		6.9	26.4	
Actuated g/C Ratio	0.22	0.27	0.42	0.08	0.11		0.15	0.46		0.09	0.33	
v/c Ratio	0.71	0.06	0.38	0.24	0.31		0.61	0.51		0.32	0.78	
Control Delay	43.6	24.7	7.1	45.7	23.0		41.4	19.8		46.4	30.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	43.6	24.7	7.1	45.7	23.0		41.4	19.8		46.4	30.2	
LOS	D	C	A	D	C		D	B		D	C	
Approach Delay		25.1			30.8			25.7			31.0	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	137	13	35	18	13		81	176		25	214	
Queue Length 95th (ft)	#283	34	75	53	52		#146	293		68	348	
Internal Link Dist (ft)		424			726			730			606	
Turn Bay Length (ft)	250		200	100			200			150		
Base Capacity (vph)	489	808	765	147	423		572	1742		166	1442	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.56	0.04	0.37	0.23	0.15		0.54	0.48		0.30	0.63	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 79.9
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 27.6 Intersection LOS: C
Intersection Capacity Utilization 66.0% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: NE 192nd Ave & Mill Plain Blvd



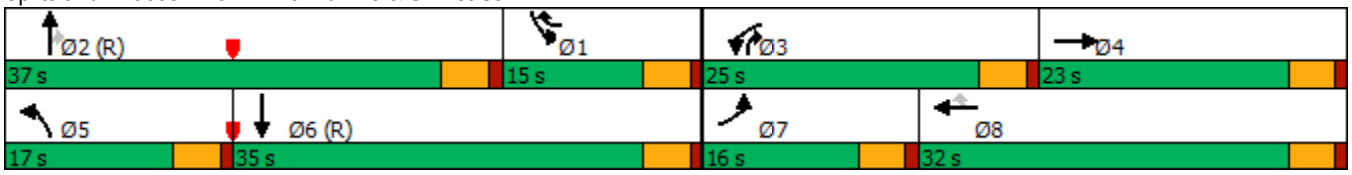
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	268	67	412	275	77	91	688	349	79	423	99
Future Volume (vph)	205	268	67	412	275	77	91	688	349	79	423	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	250		250	175		175	250		0
Storage Lanes	2		0	2		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor		0.99				0.97			0.97		0.99	
Frt		0.970				0.850			0.850		0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3467	3439	0	3467	1881	1599	1787	3574	1599	1787	3443	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3467	3439	0	3467	1881	1545	1787	3574	1547	1787	3443	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27				115			219		29	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		844			1324			866			732	
Travel Time (s)		14.4			22.6			14.8			12.5	
Confl. Peds. (#/hr)			10			10			10			10
Confl. Bikes (#/hr)			10			10			10			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	218	285	71	438	293	82	97	732	371	84	450	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	218	356	0	438	293	82	97	732	371	84	555	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	1	5	2	3	1	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)	9.5	22.5		9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	
Total Split (s)	16.0	23.0		25.0	32.0	15.0	17.0	37.0	25.0	15.0	35.0	
Total Split (%)	16.0%	23.0%		25.0%	32.0%	15.0%	17.0%	37.0%	25.0%	15.0%	35.0%	
Maximum Green (s)	11.5	18.5		20.5	27.5	10.5	12.5	32.5	20.5	10.5	30.5	
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	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Min	None	None	C-Min	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		10			10			10			10	
Act Effct Green (s)	10.9	14.8		17.7	21.6	30.9	10.2	42.3	60.0	9.3	41.5	
Actuated g/C Ratio	0.11	0.15		0.18	0.22	0.31	0.10	0.42	0.60	0.09	0.42	
v/c Ratio	0.58	0.67		0.71	0.72	0.15	0.53	0.48	0.36	0.51	0.38	
Control Delay	48.6	43.4		45.3	46.5	1.5	52.9	24.7	3.5	53.4	22.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	48.6	43.4		45.3	46.5	1.5	52.9	24.7	3.5	53.4	22.7	
LOS	D	D		D	D	A	D	C	A	D	C	
Approach Delay		45.4			41.3			20.4			26.8	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	68	105		135	173	0	59	186	21	51	128	
Queue Length 95th (ft)	107	147		183	247	10	110	270	52	100	197	
Internal Link Dist (ft)		764			1244			786			652	
Turn Bay Length (ft)	250			250		250	175		175	250		
Base Capacity (vph)	408	658		710	517	583	223	1511	1063	191	1445	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.53	0.54		0.62	0.57	0.14	0.43	0.48	0.35	0.44	0.38	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 31.4 — Intersection LOS: C
Intersection Capacity Utilization 61.4% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 5: NE 192nd Ave & SE 1st St

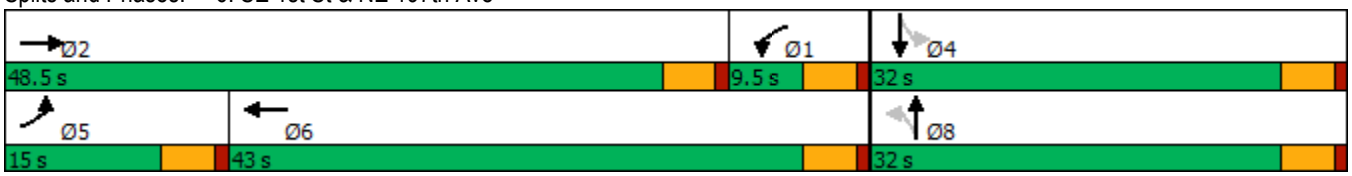


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	731	2	0	540	60	2	0	0	156	0	42
Future Volume (vph)	49	731	2	0	540	60	2	0	0	156	0	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		0	150		0	40		0	200		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.99						0.96	
Frt					0.985						0.850	
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1787	3574	0	1881	3502	0	1787	1881	0	1787	1528	0
Flt Permitted	0.950						0.728			0.757		
Satd. Flow (perm)	1787	3574	0	1881	3502	0	1370	1881	0	1424	1528	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					16						392	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1324			632			136			474	
Travel Time (s)		22.6			10.8			3.7			12.9	
Confl. Peds. (#/hr)			10			10			10			10
Confl. Bikes (#/hr)			10			10			10			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	52	778	2	0	574	64	2	0	0	166	0	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	780	0	0	638	0	2	0	0	166	45	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA		Perm			Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	15.0	48.5		9.5	43.0		32.0	32.0		32.0	32.0	
Total Split (%)	16.7%	53.9%		10.6%	47.8%		35.6%	35.6%		35.6%	35.6%	
Maximum Green (s)	10.5	44.0		5.0	38.5		27.5	27.5		27.5	27.5	
Yellow Time (s)	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	
Lost Time Adjust (s)	0.0	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	4.5	
Lead/Lag	Lead	Lead		Lag	Lag							

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Min		None	Min		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		10			10		10	10		10	10	
Act Effct Green (s)	7.3	24.0			19.9		11.7			11.7	11.7	
Actuated g/C Ratio	0.16	0.53			0.44		0.26			0.26	0.26	
v/c Ratio	0.18	0.41			0.41		0.01			0.45	0.07	
Control Delay	21.3	7.3			11.7		15.0			19.7	0.2	
Queue Delay	0.0	0.0			0.0		0.0			0.0	0.0	
Total Delay	21.3	7.3			11.7		15.0			19.7	0.2	
LOS	C	A			B		B			B	A	
Approach Delay		8.1			11.7			15.0			15.5	
Approach LOS		A			B			B			B	
Queue Length 50th (ft)	8	51			38		0			23	0	
Queue Length 95th (ft)	46	108			142		5			100	0	
Internal Link Dist (ft)		1244			552			56			394	
Turn Bay Length (ft)	175						40			200		
Base Capacity (vph)	438	3240			2992		880			915	1122	
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	0.12	0.24			0.21		0.00			0.18	0.04	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 45.2			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 10.4		Intersection LOS: B	
Intersection Capacity Utilization 51.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: SE 1st St & NE 197th Ave



Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	857	25	29	573	19	26
Future Vol, veh/h	857	25	29	573	19	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	912	27	31	610	20	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	939	0	1293	470
Stage 1	-	-	-	-	926	-
Stage 2	-	-	-	-	367	-
Critical Hdwy	-	-	4.12	-	6.82	6.92
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	-	-	2.21	-	3.51	3.31
Pot Cap-1 Maneuver	-	-	732	-	156	543
Stage 1	-	-	-	-	349	-
Stage 2	-	-	-	-	674	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	732	-	149	543
Mov Cap-2 Maneuver	-	-	-	-	149	-
Stage 1	-	-	-	-	349	-
Stage 2	-	-	-	-	646	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	20.8
HCM LOS			C

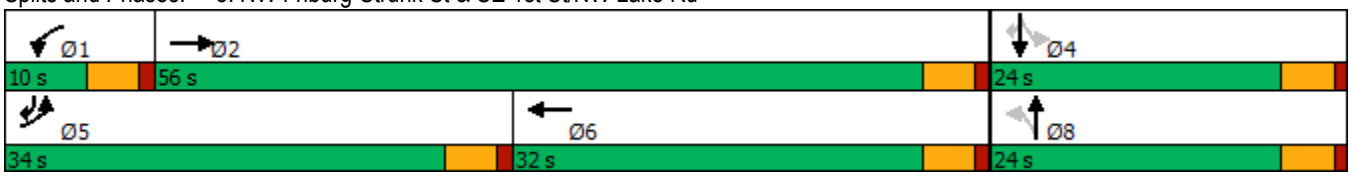
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	149	543	-	-	732	-
HCM Lane V/C Ratio	0.136	0.051	-	-	0.042	-
HCM Control Delay (s)	32.9	12	-	-	10.1	-
HCM Lane LOS	D	B	-	-	B	-
HCM 95th %tile Q(veh)	0.5	0.2	-	-	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	284	599	0	1	477	84	2	0	0	73	0	124
Future Volume (vph)	284	599	0	1	477	84	2	0	0	73	0	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	0		0	0		150
Storage Lanes	1		0	1		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.99							0.97
Frt					0.978							0.850
Flt Protected	0.950			0.950				0.950			0.950	
Satd. Flow (prot)	1787	3574	0	1787	3466	0	0	1787	0	0	1787	1599
Flt Permitted	0.950			0.950				0.706			0.757	
Satd. Flow (perm)	1787	3574	0	1787	3466	0	0	1328	0	0	1424	1556
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					23							108
Link Speed (mph)		40			40			25			40	
Link Distance (ft)		687			911			123			618	
Travel Time (s)		11.7			15.5			3.4			10.5	
Confl. Peds. (#/hr)			10			10			10			10
Confl. Bikes (#/hr)			10			10			10			
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 (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	305	644	0	1	513	90	2	0	0	78	0	133
Shared Lane Traffic (%)												
Lane Group Flow (vph)	305	644	0	1	603	0	0	2	0	0	78	133
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases							8			4		4
Detector Phase	5	2		1	6		8	8		4	4	5
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)	9.5	22.5		9.5	22.5		22.5	22.5		22.5	22.5	9.5
Total Split (s)	34.0	56.0		10.0	32.0		24.0	24.0		24.0	24.0	34.0
Total Split (%)	37.8%	62.2%		11.1%	35.6%		26.7%	26.7%		26.7%	26.7%	37.8%
Maximum Green (s)	29.5	51.5		5.5	27.5		19.5	19.5		19.5	19.5	29.5
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		Lead	Lag							Lead

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	Min		None	Min		None	None		None	None	None
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		10			10		10	10		10	10	
Act Effct Green (s)	15.8	39.6		6.4	16.7			9.4			10.0	21.5
Actuated g/C Ratio	0.31	0.78		0.13	0.33			0.18			0.20	0.42
v/c Ratio	0.55	0.23		0.00	0.52			0.01			0.28	0.18
Control Delay	21.9	4.9		31.0	17.8			23.0			25.5	3.1
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Delay	21.9	4.9		31.0	17.8			23.0			25.5	3.1
LOS	C	A		C	B			C			C	A
Approach Delay		10.4			17.8			23.0			11.4	
Approach LOS		B			B			C			B	
Queue Length 50th (ft)	81	33		0	78			1			22	3
Queue Length 95th (ft)	209	122		5	182			6			71	27
Internal Link Dist (ft)		607			831			43			538	
Turn Bay Length (ft)	250			150								150
Base Capacity (vph)	1181	3196		225	2192			595			638	1255
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	0.26	0.20		0.00	0.28			0.00			0.12	0.11

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 50.9			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 13.1		Intersection LOS: B	
Intersection Capacity Utilization 50.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 8: NW Friburg-Strunk St & SE 1st St/NW Lake Rd



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Intersection	
Int Delay, s/veh	0.9

Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Vol, veh/h	9	20	630	507	32	22	35
Future Vol, veh/h	9	20	630	507	32	22	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	-	125	-	-	-	0	-
Veh in Median Storage, #	-	-	0	0	-	0	-
Grade, %	-	-	0	0	-	0	-
Peak Hour Factor	92	96	96	96	96	96	96
Heavy Vehicles, %	2	1	1	1	1	1	1
Mvmt Flow	10	21	656	528	33	23	36

Major/Minor	Major1		Major2		Minor2		
Conflicting Flow All	561	561	0	-	0	935	281
Stage 1	-	-	-	-	-	545	-
Stage 2	-	-	-	-	-	390	-
Critical Hdwy	6.44	4.12	-	-	-	6.82	6.92
Critical Hdwy Stg 1	-	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	-	5.82	-
Follow-up Hdwy	2.52	2.21	-	-	-	3.51	3.31
Pot Cap-1 Maneuver	633	1013	-	-	-	266	719
Stage 1	-	-	-	-	-	548	-
Stage 2	-	-	-	-	-	656	-
Platoon blocked, %			-	-	-		
Mov Cap-1 Maneuver	832	832	-	-	-	256	719
Mov Cap-2 Maneuver	-	-	-	-	-	256	-
Stage 1	-	-	-	-	-	528	-
Stage 2	-	-	-	-	-	656	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	832	-	-	-	423
HCM Lane V/C Ratio	0.037	-	-	-	0.14
HCM Control Delay (s)	9.5	-	-	-	14.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

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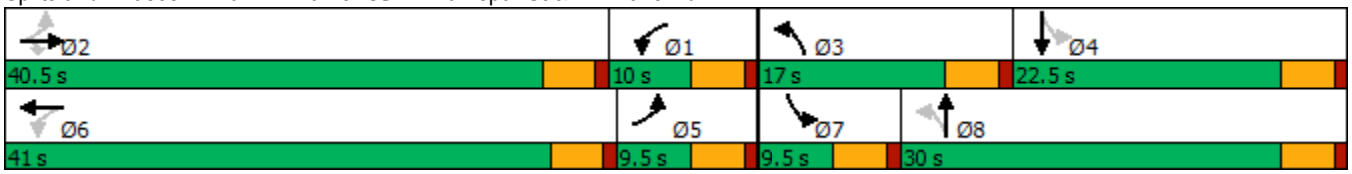
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	427	196	58	322	20	195	70	92	29	74	19
Future Volume (vph)	31	427	196	58	322	20	195	70	92	29	74	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		175	75		0	250		0	75		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.95	0.99	1.00		0.99	0.97		0.98	0.99	
Frt			0.850		0.991			0.915			0.970	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1881	1599	1787	3531	0	1787	1665	0	1787	1811	0
Flt Permitted	0.513			0.262			0.473			0.647		
Satd. Flow (perm)	951	1881	1513	489	3531	0	880	1665	0	1193	1811	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			211		9			74			12	
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		601			545			558			730	
Travel Time (s)		10.2			9.3			10.9			14.2	
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			10			10			10			10
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 (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	33	459	211	62	346	22	210	75	99	31	80	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	459	211	62	368	0	210	174	0	31	100	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Detector Phase	5	2	2	1	6		3	8		7	4	
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)	9.5	22.5	22.5	9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	9.5	40.5	40.5	10.0	41.0		17.0	30.0		9.5	22.5	
Total Split (%)	10.6%	45.0%	45.0%	11.1%	45.6%		18.9%	33.3%		10.6%	25.0%	
Maximum Green (s)	5.0	36.0	36.0	5.5	36.5		12.5	25.5		5.0	18.0	
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		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lag		Lead	Lag	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Min	Min	None	Min		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		11.0	11.0		11.0			11.0			11.0	
Pedestrian Calls (#/hr)		10	10		10			10			10	
Act Effct Green (s)	28.6	23.3	23.3	26.2	20.7		21.6	18.8		13.5	10.0	
Actuated g/C Ratio	0.47	0.39	0.39	0.43	0.34		0.36	0.31		0.22	0.17	
v/c Ratio	0.06	0.63	0.30	0.18	0.30		0.44	0.31		0.10	0.32	
Control Delay	11.7	22.5	4.0	14.5	20.9		19.0	14.5		17.0	28.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	11.7	22.5	4.0	14.5	20.9		19.0	14.5		17.0	28.0	
LOS	B	C	A	B	C		B	B		B	C	
Approach Delay		16.5			20.0			17.0			25.4	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)	9	156	0	12	39		57	26		8	32	
Queue Length 95th (ft)	23	304	41	37	141		135	97		28	87	
Internal Link Dist (ft)		521			465			478			650	
Turn Bay Length (ft)	125		175	75			250			75		
Base Capacity (vph)	594	1213	1050	351	2302		575	867		325	645	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.38	0.20	0.18	0.16		0.37	0.20		0.10	0.16	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 60.4			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 18.2		Intersection LOS: B	
Intersection Capacity Utilization 60.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 10: NW Parker St/NW Larkspur St & NW Lake Rd



Intersection	
Int Delay, s/veh	2.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	474	24	56	313	42	89
Future Vol, veh/h	474	24	56	313	42	89
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	75	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	1	1	1	2	2
Mvmt Flow	489	25	58	323	43	92

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	514	0	928	489
Stage 1	-	-	-	-	489	-
Stage 2	-	-	-	-	439	-
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	-	-	1057	-	297	579
Stage 1	-	-	-	-	616	-
Stage 2	-	-	-	-	650	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1057	-	281	579
Mov Cap-2 Maneuver	-	-	-	-	281	-
Stage 1	-	-	-	-	616	-
Stage 2	-	-	-	-	614	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	14.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	281	579	-	-	1057	-
HCM Lane V/C Ratio	0.154	0.158	-	-	0.055	-
HCM Control Delay (s)	20.1	12.4	-	-	8.6	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.5	0.6	-	-	0.2	-

MOVEMENT SUMMARY

Site: 101 [Site1 (Site Folder: General)]

Existing PM Peak Hour
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NE Everett St														
3	L2	222	1.0	252	1.0	0.237	11.4	LOS B	1.5	36.6	0.52	0.69	0.52	33.7
8	T1	318	1.0	361	1.0	0.282	5.2	LOS A	1.9	47.3	0.52	0.51	0.52	36.3
Approach		540	1.0	614	1.0	0.282	7.7	LOS A	1.9	47.3	0.52	0.58	0.52	35.2
North: NE Everett St														
4	T1	255	1.0	290	1.0	0.220	4.9	LOS A	1.4	35.1	0.46	0.48	0.46	36.5
14	R2	236	1.0	268	1.0	0.162	4.1	LOS A	0.0	0.0	0.00	0.45	0.00	37.2
Approach		491	1.0	558	1.0	0.220	4.5	LOS A	1.4	35.1	0.24	0.46	0.24	36.8
West: NW Lake Road														
5	L2	261	1.0	297	1.0	0.230	11.0	LOS B	1.5	36.7	0.49	0.67	0.49	33.8
12	R2	327	1.0	372	1.0	0.224	4.3	LOS A	0.0	0.0	0.00	0.44	0.00	37.2
Approach		588	1.0	668	1.0	0.230	7.2	LOS A	1.5	36.7	0.22	0.54	0.22	35.6
All Vehicles		1619	1.0	1840	1.0	0.282	6.6	LOS A	1.9	47.3	0.33	0.53	0.33	35.8

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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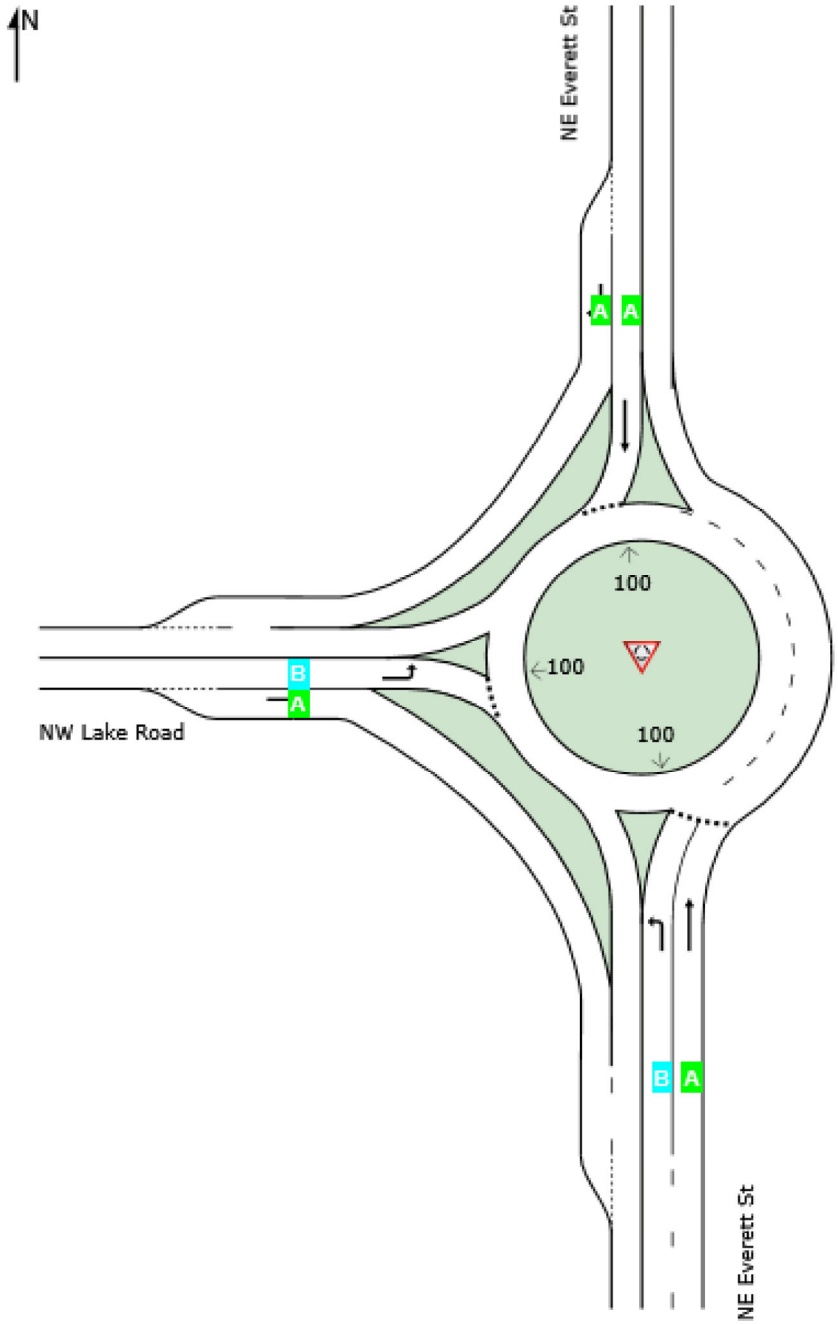

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Delay Model: SIDRA Standard (Geometric Delay is included).

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Project: Not Saved

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	102	2	12	103	7	4
Future Vol, veh/h	102	2	12	103	7	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	123	2	14	124	8	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	125	0	276	124
Stage 1	-	-	-	-	124	-
Stage 2	-	-	-	-	152	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1468	-	716	929
Stage 1	-	-	-	-	904	-
Stage 2	-	-	-	-	878	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1468	-	709	929
Mov Cap-2 Maneuver	-	-	-	-	727	-
Stage 1	-	-	-	-	904	-
Stage 2	-	-	-	-	869	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	789	-	-	1468	-
HCM Lane V/C Ratio	0.017	-	-	0.01	-
HCM Control Delay (s)	9.6	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Lanes, Volumes, Timings
1: SE 34th St & NE 192nd Ave

Forecast 2024 PM Peak Hour Without Proj

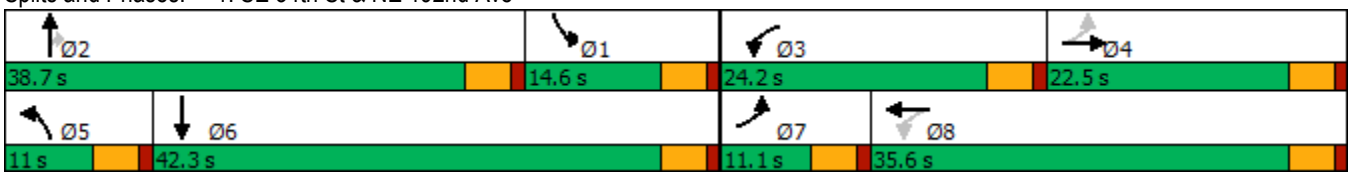
11/08/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	165	50	305	160	120	86	826	126	182	758	119
Future Volume (vph)	99	165	50	305	160	120	86	826	126	182	758	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	300		375	175		0
Storage Lanes	1		0	1		0	2		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	0.95	1.00	0.97	0.95	0.95
Ped Bike Factor		0.99			0.98				0.97		1.00	
Frt		0.965			0.936				0.850		0.980	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3383	0	1787	3295	0	3433	3539	1583	3467	3489	0
Flt Permitted	0.573			0.430			0.950			0.950		
Satd. Flow (perm)	1067	3383	0	809	3295	0	3433	3539	1528	3467	3489	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35			125				164		20	
Link Speed (mph)		35			40			40			40	
Link Distance (ft)		798			760			812			788	
Travel Time (s)		15.5			13.0			13.8			13.4	
Confl. Peds. (#/hr)			10			10			10			10
Confl. Bikes (#/hr)			10			10			10			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	103	172	52	318	167	125	90	860	131	190	790	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	103	224	0	318	292	0	90	860	131	190	914	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8					2			
Detector Phase	7	4		3	8		5	2	2	1	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)	9.5	22.5		9.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (s)	11.1	22.5		24.2	35.6		11.0	38.7	38.7	14.6	42.3	
Total Split (%)	11.1%	22.5%		24.2%	35.6%		11.0%	38.7%	38.7%	14.6%	42.3%	
Maximum Green (s)	6.6	18.0		19.7	31.1		6.5	34.2	34.2	10.1	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	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead	Lead	Lag	Lag	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		11.0			11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)		10			10			10	10		10	
Act Effct Green (s)	17.5	10.8		31.0	22.5		6.6	26.1	26.1	9.2	31.6	
Actuated g/C Ratio	0.22	0.13		0.39	0.28		0.08	0.33	0.33	0.11	0.39	
v/c Ratio	0.35	0.46		0.64	0.29		0.32	0.75	0.22	0.48	0.66	
Control Delay	22.6	32.0		25.7	15.0		43.3	29.5	3.0	41.0	23.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	22.6	32.0		25.7	15.0		43.3	29.5	3.0	41.0	23.9	
LOS	C	C		C	B		D	C	A	D	C	
Approach Delay		29.0			20.6			27.4			26.8	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	34	47		120	35		22	201	0	47	198	
Queue Length 95th (ft)	74	91		213	73		54	319	24	96	319	
Internal Link Dist (ft)		718			680			732			708	
Turn Bay Length (ft)	150			150			300		375	175		
Base Capacity (vph)	294	814		560	1399		288	1565	767	452	1715	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.35	0.28		0.57	0.21		0.31	0.55	0.17	0.42	0.53	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 80.3			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 26.0		Intersection LOS: C	
Intersection Capacity Utilization 69.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: SE 34th St & NE 192nd Ave



Lanes, Volumes, Timings
2: SE 20th St & NE 192nd Ave

Forecast 2024 PM Peak Hour Without Proj

11/08/2021

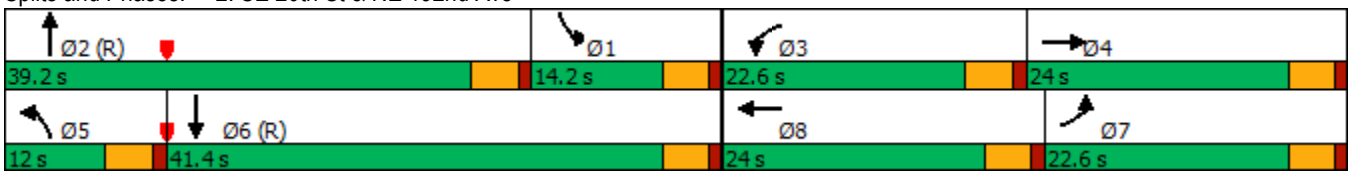
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	188	63	190	196	125	101	869	115	134	820	141
Future Volume (vph)	170	188	63	190	196	125	101	869	115	134	820	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	100		0	350		0	400		0
Storage Lanes	2		0	2		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.99			0.98			0.99			0.99	
Frt		0.962			0.941			0.982			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3467	1792	0	3467	1743	0	1770	3452	0	1787	3471	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3467	1792	0	3467	1743	0	1770	3452	0	1787	3471	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			29			16			22	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		1025			1210			957			1224	
Travel Time (s)		17.5			20.6			16.3			20.9	
Confl. Peds. (#/hr)			10			10			10			10
Confl. Bikes (#/hr)			10			10			10			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	179	198	66	200	206	132	106	915	121	141	863	148
Shared Lane Traffic (%)												
Lane Group Flow (vph)	179	264	0	200	338	0	106	1036	0	141	1011	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	22.6	24.0		22.6	24.0		12.0	39.2		14.2	41.4	
Total Split (%)	22.6%	24.0%		22.6%	24.0%		12.0%	39.2%		14.2%	41.4%	
Maximum Green (s)	18.1	19.5		18.1	19.5		7.5	34.7		9.7	36.9	
Yellow Time (s)	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	
Lost Time Adjust (s)	0.0	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	4.5	
Lead/Lag	Lag	Lag		Lead	Lead		Lead	Lead		Lag	Lag	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	
Pedestrian Calls (#/hr)	10	10		10	10			10			10	
Act Effct Green (s)	12.2	19.9		11.8	19.5		9.8	40.1		10.2	40.4	
Actuated g/C Ratio	0.12	0.20		0.12	0.20		0.10	0.40		0.10	0.40	
v/c Ratio	0.42	0.72		0.49	0.93		0.61	0.74		0.78	0.71	
Control Delay	42.8	47.4		44.6	69.9		59.9	30.1		72.7	28.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	42.8	47.4		44.6	69.9		59.9	30.1		72.7	28.6	
LOS	D	D		D	E		E	C		E	C	
Approach Delay		45.5			60.5			32.9			34.0	
Approach LOS		D			E			C			C	
Queue Length 50th (ft)	56	151		62	197		64	277		90	279	
Queue Length 95th (ft)	82	#259		91	#367		#161	#408		#194	372	
Internal Link Dist (ft)		945			1130			877			1144	
Turn Bay Length (ft)	150			100			350			400		
Base Capacity (vph)	627	373		627	367		174	1394		183	1416	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.29	0.71		0.32	0.92		0.61	0.74		0.77	0.71	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 39.5 Intersection LOS: D
Intersection Capacity Utilization 73.4% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: SE 20th St & NE 192nd Ave



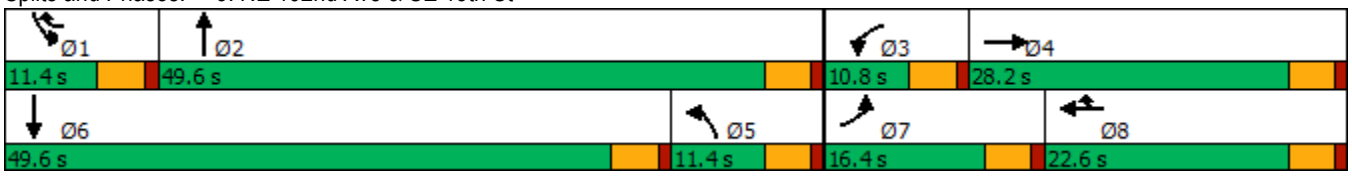
PO Box 397 Puyallup, WA 98371 (253) 770 1401 heathtraffic.com

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	59	63	32	52	102	42	1105	27	45	1105	92
Future Volume (vph)	90	59	63	32	52	102	42	1105	27	45	1105	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		0	125		100	175		0	475		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.923				0.850		0.996			0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1736	0	1787	1881	1599	1770	3525	0	1787	3531	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1787	1736	0	1787	1881	1599	1770	3525	0	1787	3531	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50				164		3			11	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		507			479			1224			918	
Travel Time (s)		9.9			9.3			20.9			15.6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	92	60	64	33	53	104	43	1128	28	46	1128	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	92	124	0	33	53	104	43	1156	0	46	1222	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	8 1	5	2		1	6	
Permitted Phases												
Detector Phase	7	4		3	8	8 1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	16.4	28.2		10.8	22.6		11.4	49.6		11.4	49.6	
Total Split (%)	16.4%	28.2%		10.8%	22.6%		11.4%	49.6%		11.4%	49.6%	
Maximum Green (s)	11.9	23.7		6.3	18.1		6.9	45.1		6.9	45.1	
Yellow Time (s)	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	
Lost Time Adjust (s)	0.0	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	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		10			10			10			10	
Act Effct Green (s)	9.8	14.4		6.8	9.4	17.5	7.2	40.5		7.2	42.8	
Actuated g/C Ratio	0.13	0.20		0.09	0.13	0.24	0.10	0.56		0.10	0.59	
v/c Ratio	0.38	0.32		0.20	0.22	0.20	0.25	0.59		0.26	0.59	
Control Delay	40.5	22.1		42.4	36.2	1.8	42.5	18.3		42.7	17.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	40.5	22.1		42.4	36.2	1.8	42.5	18.3		42.7	17.1	
LOS	D	C		D	D	A	D	B		D	B	
Approach Delay		29.9			18.5			19.2			18.1	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)	41	32		15	24	0	20	226		21	245	
Queue Length 95th (ft)	106	87		52	63	10	62	386		65	415	
Internal Link Dist (ft)		427			399			1144			838	
Turn Bay Length (ft)	125			125		100	175			475		
Base Capacity (vph)	335	681		177	537	605	193	2289		194	2295	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.27	0.18		0.19	0.10	0.17	0.22	0.51		0.24	0.53	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 72.6			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 19.5		Intersection LOS: B	
Intersection Capacity Utilization 59.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: NE 192nd Ave & SE 15th St



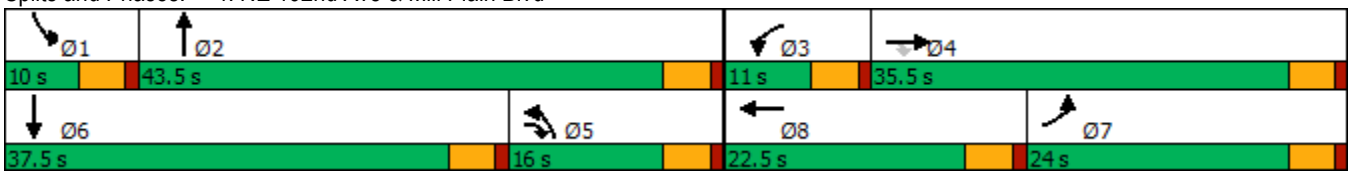
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	288	32	297	36	27	40	325	816	55	51	744	202
Future Volume (vph)	288	32	297	36	27	40	325	816	55	51	744	202
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		200	100		0	200		0	150		0
Storage Lanes	1		1	1		0	2		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.97		0.98			1.00			0.99	
Frt			0.850		0.910			0.991			0.968	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1881	1599	1752	1638	0	3433	3495	0	1787	3434	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1787	1881	1546	1752	1638	0	3433	3495	0	1787	3434	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			130		42			8			37	
Link Speed (mph)		40			25			40			40	
Link Distance (ft)		504			806			810			686	
Travel Time (s)		8.6			22.0			13.8			11.7	
Confl. Peds. (#/hr)			10			10			10			10
Confl. Bikes (#/hr)			10			10			10			10
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	300	33	309	38	28	42	339	850	57	53	775	210
Shared Lane Traffic (%)												
Lane Group Flow (vph)	300	33	309	38	70	0	339	907	0	53	985	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	5	3	8		5	2		1	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)	9.5	22.5	9.5	9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	24.0	35.5	16.0	11.0	22.5		16.0	43.5		10.0	37.5	
Total Split (%)	24.0%	35.5%	16.0%	11.0%	22.5%		16.0%	43.5%		10.0%	37.5%	
Maximum Green (s)	19.5	31.0	11.5	6.5	18.0		11.5	39.0		5.5	33.0	
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		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lag		Lead	Lead	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		10			10			10			10	
Act Effct Green (s)	18.1	22.5	34.0	6.4	8.6		11.5	37.8		5.7	29.1	
Actuated g/C Ratio	0.22	0.27	0.41	0.08	0.10		0.14	0.45		0.07	0.35	
v/c Ratio	0.77	0.06	0.43	0.28	0.34		0.72	0.57		0.43	0.80	
Control Delay	48.2	25.5	8.9	47.0	23.3		47.0	20.8		54.2	30.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	48.2	25.5	8.9	47.0	23.3		47.0	20.8		54.2	30.7	
LOS	D	C	A	D	C		D	C		D	C	
Approach Delay		28.1			31.6			27.9			31.9	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	156	14	49	20	15		94	194		29	241	
Queue Length 95th (ft)	#333	37	97	57	54		#186	313		#85	#384	
Internal Link Dist (ft)		424			726			730			606	
Turn Bay Length (ft)	250		200	100			200			150		
Base Capacity (vph)	436	730	725	142	401		494	1710		123	1440	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.69	0.05	0.43	0.27	0.17		0.69	0.53		0.43	0.68	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 83.1
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 29.5 Intersection LOS: C
Intersection Capacity Utilization 70.4% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: NE 192nd Ave & Mill Plain Blvd



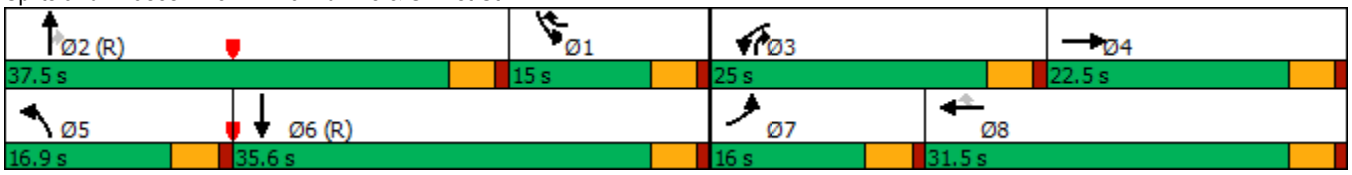
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	293	73	450	300	84	99	752	381	86	462	108
Future Volume (vph)	224	293	73	450	300	84	99	752	381	86	462	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	250		250	175		175	250		0
Storage Lanes	2		0	2		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor		0.99				0.97			0.97		0.99	
Frt		0.970				0.850			0.850		0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3467	3439	0	3467	1881	1599	1787	3574	1599	1787	3443	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3467	3439	0	3467	1881	1544	1787	3574	1547	1787	3443	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27				115			190		29	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		844			1324			866			732	
Travel Time (s)		14.4			22.6			14.8			12.5	
Confl. Peds. (#/hr)			10			10			10			10
Confl. Bikes (#/hr)			10			10			10			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	238	312	78	479	319	89	105	800	405	91	491	115
Shared Lane Traffic (%)												
Lane Group Flow (vph)	238	390	0	479	319	89	105	800	405	91	606	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	1	5	2	3	1	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)	9.5	22.5		9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	
Total Split (s)	16.0	22.5		25.0	31.5	15.0	16.9	37.5	25.0	15.0	35.6	
Total Split (%)	16.0%	22.5%		25.0%	31.5%	15.0%	16.9%	37.5%	25.0%	15.0%	35.6%	
Maximum Green (s)	11.5	18.0		20.5	27.0	10.5	12.4	33.0	20.5	10.5	31.1	
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	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Min	None	None	C-Min	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		10			10			10			10	
Act Effct Green (s)	10.9	15.4		18.4	22.8	32.4	10.6	38.7	57.1	9.6	40.0	
Actuated g/C Ratio	0.11	0.15		0.18	0.23	0.32	0.11	0.39	0.57	0.10	0.40	
v/c Ratio	0.63	0.71		0.75	0.74	0.15	0.56	0.58	0.42	0.54	0.44	
Control Delay	50.4	44.5		46.5	46.6	1.8	53.6	27.7	4.8	54.5	24.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	50.4	44.5		46.5	46.6	1.8	53.6	27.7	4.8	54.5	24.3	
LOS	D	D		D	D	A	D	C	A	D	C	
Approach Delay		46.7			42.0			22.7			28.2	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	74	116		147	188	0	64	218	33	56	149	
Queue Length 95th (ft)	115	163		201	272	13	117	297	66	107	216	
Internal Link Dist (ft)		764			1244			786			652	
Turn Bay Length (ft)	250			250		250	175		175	250		
Base Capacity (vph)	402	641		710	507	600	223	1387	1003	191	1393	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.59	0.61		0.67	0.63	0.15	0.47	0.58	0.40	0.48	0.44	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 32.9 Intersection LOS: C
Intersection Capacity Utilization 65.3% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 5: NE 192nd Ave & SE 1st St

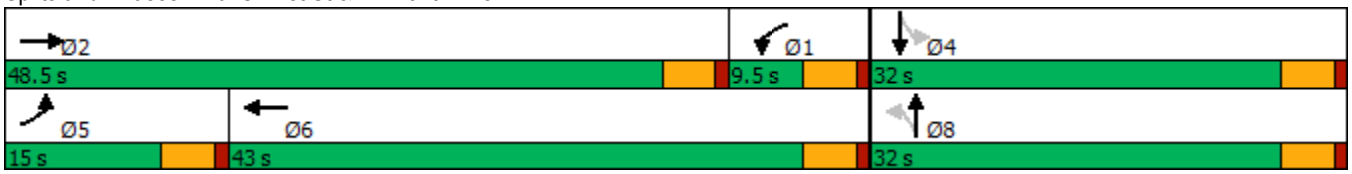


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	799	2	0	590	66	2	0	0	170	0	46
Future Volume (vph)	54	799	2	0	590	66	2	0	0	170	0	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		0	150		0	40		0	200		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.99						0.96	
Frt					0.985						0.850	
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1787	3574	0	1881	3502	0	1787	1881	0	1787	1528	0
Flt Permitted	0.950						0.725			0.757		
Satd. Flow (perm)	1787	3574	0	1881	3502	0	1364	1881	0	1424	1528	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					16						371	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1324			632			136			474	
Travel Time (s)		22.6			10.8			3.7			12.9	
Confl. Peds. (#/hr)			10			10			10			10
Confl. Bikes (#/hr)			10			10			10			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	57	850	2	0	628	70	2	0	0	181	0	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	57	852	0	0	698	0	2	0	0	181	49	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA		Perm			Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	15.0	48.5		9.5	43.0		32.0	32.0		32.0	32.0	
Total Split (%)	16.7%	53.9%		10.6%	47.8%		35.6%	35.6%		35.6%	35.6%	
Maximum Green (s)	10.5	44.0		5.0	38.5		27.5	27.5		27.5	27.5	
Yellow Time (s)	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	
Lost Time Adjust (s)	0.0	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	4.5	
Lead/Lag	Lead	Lead		Lag	Lag							

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Min		None	Min		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		10			10		10	10		10	10	
Act Effct Green (s)	7.5	28.2			21.4		12.4			12.4	12.4	
Actuated g/C Ratio	0.15	0.56			0.43		0.25			0.25	0.25	
v/c Ratio	0.21	0.42			0.46		0.01			0.51	0.07	
Control Delay	24.2	7.2			13.6		16.5			23.4	0.2	
Queue Delay	0.0	0.0			0.0		0.0			0.0	0.0	
Total Delay	24.2	7.2			13.6		16.5			23.4	0.2	
LOS	C	A			B		B			C	A	
Approach Delay		8.3			13.6			16.5			18.4	
Approach LOS		A			B			B			B	
Queue Length 50th (ft)	14	60			81		1			44	0	
Queue Length 95th (ft)	51	125			162		5			117	0	
Internal Link Dist (ft)		1244			552			56			394	
Turn Bay Length (ft)	175						40			200		
Base Capacity (vph)	393	3104			2775		786			821	1038	
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	0.15	0.27			0.25		0.00			0.22	0.05	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 50.1			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 11.6		Intersection LOS: B	
Intersection Capacity Utilization 53.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: SE 1st St & NE 197th Ave



Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	936	27	32	626	21	28
Future Vol, veh/h	936	27	32	626	21	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	996	29	34	666	22	30

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1025	0	1412	513
Stage 1	-	-	-	-	1011	-
Stage 2	-	-	-	-	401	-
Critical Hdwy	-	-	4.12	-	6.82	6.92
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	-	-	2.21	-	3.51	3.31
Pot Cap-1 Maneuver	-	-	679	-	130	509
Stage 1	-	-	-	-	315	-
Stage 2	-	-	-	-	648	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	679	-	124	509
Mov Cap-2 Maneuver	-	-	-	-	124	-
Stage 1	-	-	-	-	315	-
Stage 2	-	-	-	-	616	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	24.4
HCM LOS			C

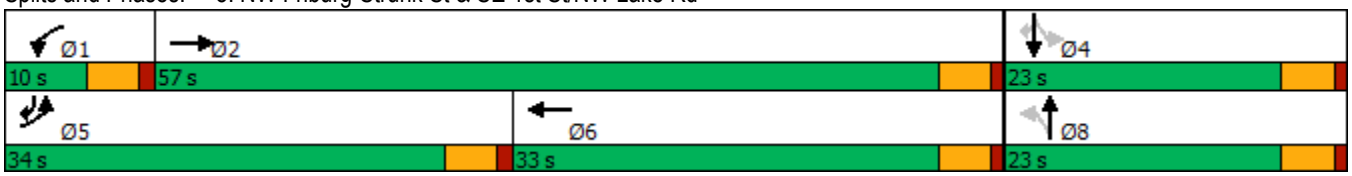
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	124	509	-	-	679	-
HCM Lane V/C Ratio	0.18	0.059	-	-	0.05	-
HCM Control Delay (s)	40.3	12.5	-	-	10.6	-
HCM Lane LOS	E	B	-	-	B	-
HCM 95th %tile Q(veh)	0.6	0.2	-	-	0.2	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	310	655	0	1	521	92	2	0	0	80	0	135
Future Volume (vph)	310	655	0	1	521	92	2	0	0	80	0	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	0		0	0		150
Storage Lanes	1		0	1		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.99							0.97
Frt					0.977							0.850
Flt Protected	0.950			0.950				0.950			0.950	
Satd. Flow (prot)	1787	3574	0	1787	3463	0	0	1787	0	0	1787	1599
Flt Permitted	0.950			0.950				0.701			0.757	
Satd. Flow (perm)	1787	3574	0	1787	3463	0	0	1319	0	0	1424	1556
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					23							96
Link Speed (mph)		40			40			25			40	
Link Distance (ft)		687			911			123			618	
Travel Time (s)		11.7			15.5			3.4			10.5	
Confl. Peds. (#/hr)			10			10			10			10
Confl. Bikes (#/hr)			10			10			10			
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 (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	333	704	0	1	560	99	2	0	0	86	0	145
Shared Lane Traffic (%)												
Lane Group Flow (vph)	333	704	0	1	659	0	0	2	0	0	86	145
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases							8			4		4
Detector Phase	5	2		1	6		8	8		4	4	5
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)	9.5	22.5		9.5	22.5		22.5	22.5		22.5	22.5	9.5
Total Split (s)	34.0	57.0		10.0	33.0		23.0	23.0		23.0	23.0	34.0
Total Split (%)	37.8%	63.3%		11.1%	36.7%		25.6%	25.6%		25.6%	25.6%	37.8%
Maximum Green (s)	29.5	52.5		5.5	28.5		18.5	18.5		18.5	18.5	29.5
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		Lead	Lag							Lead

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	Min		None	Min		None	None		None	None	None
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		10			10		10	10		10	10	
Act Effct Green (s)	17.3	41.1		6.4	17.9			10.3			10.3	25.1
Actuated g/C Ratio	0.30	0.72		0.11	0.31			0.18			0.18	0.44
v/c Ratio	0.61	0.27		0.00	0.60			0.01			0.33	0.19
Control Delay	25.2	5.4		34.0	20.4			26.0			29.2	4.0
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Delay	25.2	5.4		34.0	20.4			26.0			29.2	4.0
LOS	C	A		C	C			C			C	A
Approach Delay		11.7			20.4			26.0			13.4	
Approach LOS		B			C			C			B	
Queue Length 50th (ft)	95	38		0	93			1			26	7
Queue Length 95th (ft)	238	133		6	210			7			83	35
Internal Link Dist (ft)		607			831			43			538	
Turn Bay Length (ft)	250			150								150
Base Capacity (vph)	1043	3097		202	1986			502			542	1175
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	0.32	0.23		0.00	0.33			0.00			0.16	0.12

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 56.9			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 14.9		Intersection LOS: B	
Intersection Capacity Utilization 53.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 8: NW Friburg-Strunk St & SE 1st St/NW Lake Rd



Intersection	
Int Delay, s/veh	0.9

Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Vol, veh/h	10	22	688	554	35	24	38
Future Vol, veh/h	10	22	688	554	35	24	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	-	125	-	-	-	0	-
Veh in Median Storage, #	-	-	0	0	-	0	-
Grade, %	-	-	0	0	-	0	-
Peak Hour Factor	92	96	96	96	96	96	96
Heavy Vehicles, %	2	1	1	1	1	1	1
Mvmt Flow	11	23	717	577	36	25	40

Major/Minor	Major1		Major2		Minor2		
Conflicting Flow All	614	613	0	-	0	1022	307
Stage 1	-	-	-	-	-	595	-
Stage 2	-	-	-	-	-	427	-
Critical Hdwy	6.44	4.12	-	-	-	6.82	6.92
Critical Hdwy Stg 1	-	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	-	5.82	-
Follow-up Hdwy	2.52	2.21	-	-	-	3.51	3.31
Pot Cap-1 Maneuver	586	969	-	-	-	234	692
Stage 1	-	-	-	-	-	517	-
Stage 2	-	-	-	-	-	629	-
Platoon blocked, %			-	-	-		
Mov Cap-1 Maneuver	781	781	-	-	-	224	692
Mov Cap-2 Maneuver	-	-	-	-	-	224	-
Stage 1	-	-	-	-	-	494	-
Stage 2	-	-	-	-	-	629	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	16.3
HCM LOS			C

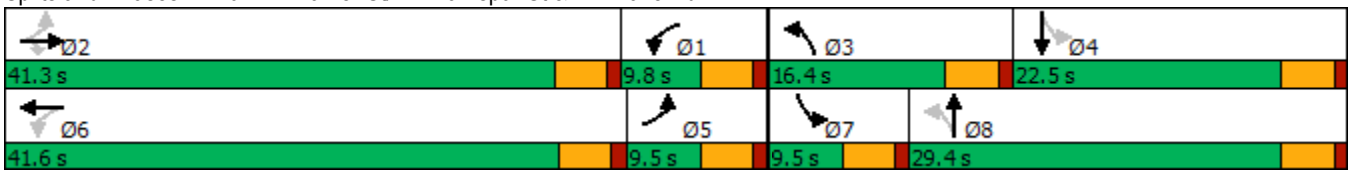
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	781	-	-	-	383
HCM Lane V/C Ratio	0.043	-	-	-	0.169
HCM Control Delay (s)	9.8	-	-	-	16.3
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	467	214	63	352	22	213	76	101	32	81	21
Future Volume (vph)	34	467	214	63	352	22	213	76	101	32	81	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		175	75		0	250		0	75		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.95	0.99	1.00		0.99	0.97		0.98	0.99	
Frt			0.850		0.991			0.914			0.969	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1881	1599	1787	3531	0	1787	1663	0	1787	1809	0
Flt Permitted	0.484			0.217			0.470			0.637		
Satd. Flow (perm)	898	1881	1514	405	3531	0	874	1663	0	1175	1809	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			230		9			74			13	
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		601			545			558			730	
Travel Time (s)		10.2			9.3			10.9			14.2	
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			10			10			10			10
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 (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	37	502	230	68	378	24	229	82	109	34	87	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	502	230	68	402	0	229	191	0	34	110	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Detector Phase	5	2	2	1	6		3	8		7	4	
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)	9.5	22.5	22.5	9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	9.5	41.3	41.3	9.8	41.6		16.4	29.4		9.5	22.5	
Total Split (%)	10.6%	45.9%	45.9%	10.9%	46.2%		18.2%	32.7%		10.6%	25.0%	
Maximum Green (s)	5.0	36.8	36.8	5.3	37.1		11.9	24.9		5.0	18.0	
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		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lag		Lead	Lag	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Min	Min	None	Min		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		11.0	11.0		11.0			11.0			11.0	
Pedestrian Calls (#/hr)		10	10		10			10			10	
Act Effct Green (s)	29.6	24.3	24.3	27.0	21.6		22.2	19.3		13.9	10.5	
Actuated g/C Ratio	0.48	0.39	0.39	0.44	0.35		0.36	0.31		0.22	0.17	
v/c Ratio	0.06	0.68	0.31	0.21	0.33		0.48	0.34		0.11	0.35	
Control Delay	11.6	23.5	3.9	15.9	20.6		20.4	15.8		17.6	28.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	11.6	23.5	3.9	15.9	20.6		20.4	15.8		17.6	28.9	
LOS	B	C	A	B	C		C	B		B	C	
Approach Delay		17.1			19.9			18.3			26.2	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)	10	182	0	14	46		68	33		9	38	
Queue Length 95th (ft)	25	335	42	39	148		148	111		31	94	
Internal Link Dist (ft)		521			465			478			650	
Turn Bay Length (ft)	125		175	75			250			75		
Base Capacity (vph)	580	1196	1046	318	2261		557	844		322	640	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.42	0.22	0.21	0.18		0.41	0.23		0.11	0.17	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 62			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 18.8		Intersection LOS: B	
Intersection Capacity Utilization 63.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 10: NW Parker St/NW Larkspur St & NW Lake Rd



Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	518	26	61	342	46	97
Future Vol, veh/h	518	26	61	342	46	97
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	75	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	1	1	1	2	2
Mvmt Flow	534	27	63	353	47	100

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	561	0	1013	534
Stage 1	-	-	-	-	534	-
Stage 2	-	-	-	-	479	-
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	-	-	1015	-	265	546
Stage 1	-	-	-	-	588	-
Stage 2	-	-	-	-	623	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1015	-	249	546
Mov Cap-2 Maneuver	-	-	-	-	249	-
Stage 1	-	-	-	-	588	-
Stage 2	-	-	-	-	584	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	16.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	249	546	-	-	1015	-
HCM Lane V/C Ratio	0.19	0.183	-	-	0.062	-
HCM Control Delay (s)	22.8	13.1	-	-	8.8	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.7	0.7	-	-	0.2	-

MOVEMENT SUMMARY

Site: 101 [Site1 (Site Folder: General)]

Forecast 2024 Background PM Peak Hour
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NE Everett St														
3	L2	243	1.0	276	1.0	0.266	11.6	LOS B	1.7	42.4	0.56	0.71	0.56	33.6
8	T1	347	1.0	394	1.0	0.315	5.3	LOS A	2.2	54.8	0.56	0.53	0.56	36.1
Approach		590	1.0	670	1.0	0.315	7.9	LOS A	2.2	54.8	0.56	0.60	0.56	35.0
North: NE Everett St														
4	T1	279	1.0	317	1.0	0.245	5.0	LOS A	1.6	40.4	0.50	0.50	0.50	36.3
14	R2	258	1.0	293	1.0	0.177	4.2	LOS A	0.0	0.0	0.00	0.45	0.00	37.2
Approach		537	1.0	610	1.0	0.245	4.6	LOS A	1.6	40.4	0.26	0.47	0.26	36.7
West: NW Lake Road														
5	L2	285	1.0	324	1.0	0.257	11.2	LOS B	1.7	42.3	0.53	0.68	0.53	33.7
12	R2	357	1.0	406	1.0	0.245	4.4	LOS A	0.0	0.0	0.00	0.44	0.00	37.2
Approach		642	1.0	730	1.0	0.257	7.4	LOS A	1.7	42.3	0.23	0.55	0.23	35.5
All Vehicles		1769	1.0	2010	1.0	0.315	6.7	LOS A	2.2	54.8	0.35	0.54	0.35	35.7

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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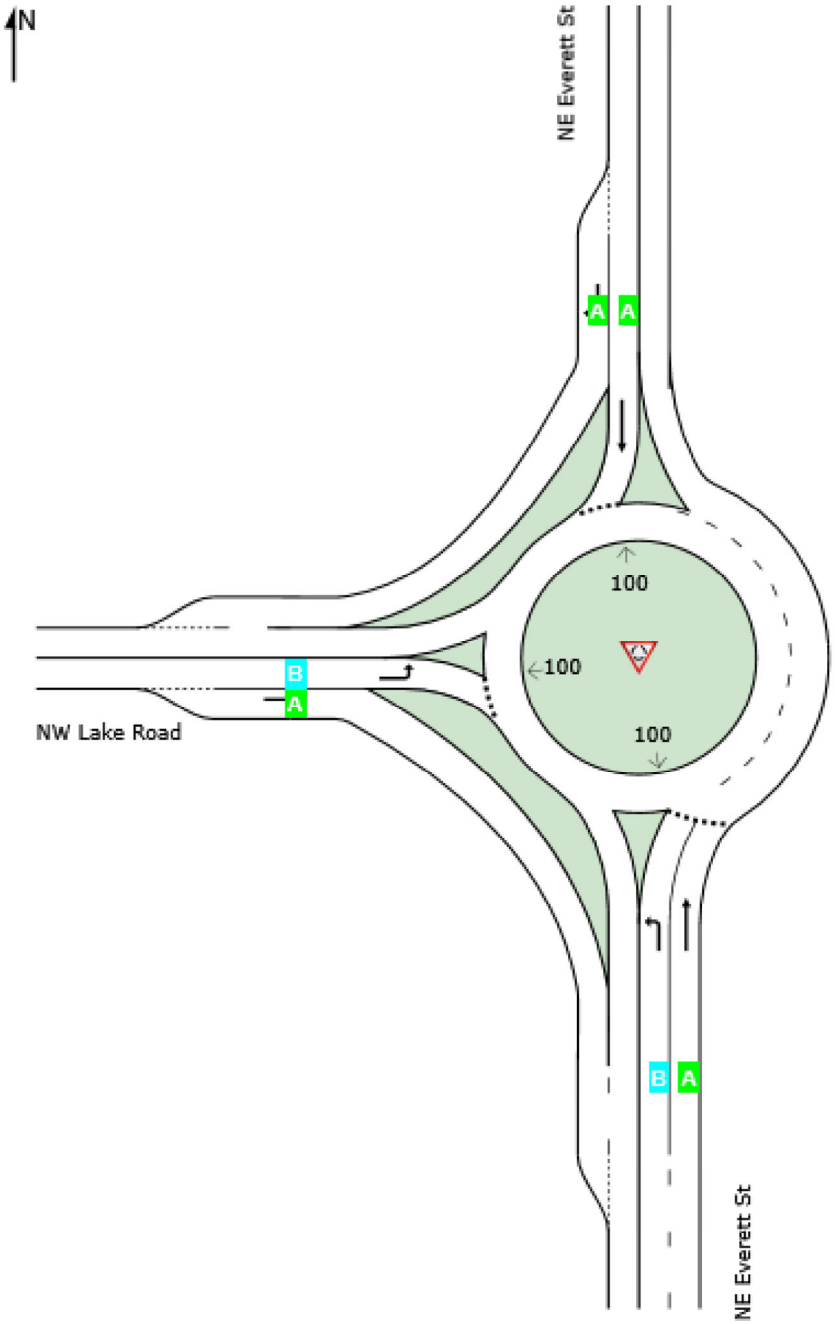

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Delay Model: SIDRA Standard (Geometric Delay is included).

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Project: T:\Sidra\4679\2. Forecast 2024 PM Peak Hour Background.sip9

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	111	2	13	113	8	4
Future Vol, veh/h	111	2	13	113	8	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	134	2	16	136	10	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	136	0	303	135
Stage 1	-	-	-	-	135	-
Stage 2	-	-	-	-	168	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1454	-	691	917
Stage 1	-	-	-	-	894	-
Stage 2	-	-	-	-	864	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1454	-	683	917
Mov Cap-2 Maneuver	-	-	-	-	710	-
Stage 1	-	-	-	-	894	-
Stage 2	-	-	-	-	854	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	768	-	-	1454	-
HCM Lane V/C Ratio	0.019	-	-	0.011	-
HCM Control Delay (s)	9.8	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Lanes, Volumes, Timings
1: SE 34th St & NE 192nd Ave

Forecast 2024 PM Peak Hour With Proj

11/08/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	165	50	305	160	120	86	830	126	182	769	125
Future Volume (vph)	102	165	50	305	160	120	86	830	126	182	769	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	300		375	175		0
Storage Lanes	1		0	1		0	2		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	0.95	1.00	0.97	0.95	0.95
Ped Bike Factor		0.99			0.98				0.97		1.00	
Frt		0.965			0.936				0.850		0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3383	0	1787	3295	0	3433	3539	1583	3467	3485	0
Flt Permitted	0.573			0.429			0.950			0.950		
Satd. Flow (perm)	1067	3383	0	807	3295	0	3433	3539	1528	3467	3485	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35			125				164		21	
Link Speed (mph)		35			40			40			40	
Link Distance (ft)		798			760			812			788	
Travel Time (s)		15.5			13.0			13.8			13.4	
Confl. Peds. (#/hr)			10			10			10			10
Confl. Bikes (#/hr)			10			10			10			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	106	172	52	318	167	125	90	865	131	190	801	130
Shared Lane Traffic (%)												
Lane Group Flow (vph)	106	224	0	318	292	0	90	865	131	190	931	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8					2			
Detector Phase	7	4		3	8		5	2	2	1	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)	9.5	22.5		9.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (s)	11.1	22.5		24.2	35.6		11.0	38.7	38.7	14.6	42.3	
Total Split (%)	11.1%	22.5%		24.2%	35.6%		11.0%	38.7%	38.7%	14.6%	42.3%	
Maximum Green (s)	6.6	18.0		19.7	31.1		6.5	34.2	34.2	10.1	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	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead	Lead	Lag	Lag	

830

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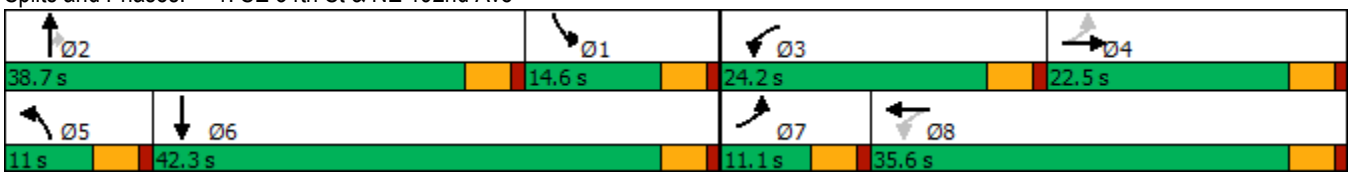
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		11.0			11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)		10			10			10	10		10	
Act Effct Green (s)	17.5	10.8		31.0	22.5		6.6	26.3	26.3	9.2	31.8	
Actuated g/C Ratio	0.22	0.13		0.39	0.28		0.08	0.33	0.33	0.11	0.40	
v/c Ratio	0.37	0.46		0.64	0.29		0.32	0.75	0.22	0.48	0.67	
Control Delay	22.9	32.0		25.8	15.0		43.4	29.5	3.0	41.1	24.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	22.9	32.0		25.8	15.0		43.4	29.5	3.0	41.1	24.1	
LOS	C	C		C	B		D	C	A	D	C	
Approach Delay		29.1			20.6			27.5			27.0	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	35	47		120	35		22	203	0	47	203	
Queue Length 95th (ft)	75	91		213	73		54	321	24	96	327	
Internal Link Dist (ft)		718			680			732			708	
Turn Bay Length (ft)	150			150			300		375	175		
Base Capacity (vph)	294	812		559	1396		288	1561	765	451	1710	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.36	0.28		0.57	0.21		0.31	0.55	0.17	0.42	0.54	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 80.5			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 26.1		Intersection LOS: C	
Intersection Capacity Utilization 70.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: SE 34th St & NE 192nd Ave



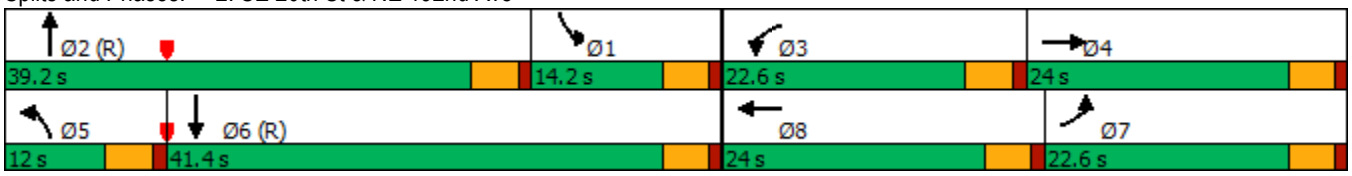
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	188	63	190	196	125	101	876	115	134	837	141
Future Volume (vph)	170	188	63	190	196	125	101	876	115	134	837	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	100		0	350		0	400		0
Storage Lanes	2		0	2		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.99			0.98			0.99			0.99	
Frt		0.962			0.941			0.983			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3467	1792	0	3467	1743	0	1770	3456	0	1787	3472	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3467	1792	0	3467	1743	0	1770	3456	0	1787	3472	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			29			16			21	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		1025			1210			957			1224	
Travel Time (s)		17.5			20.6			16.3			20.9	
Confl. Peds. (#/hr)			10			10			10			10
Confl. Bikes (#/hr)			10			10			10			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	179	198	66	200	206	132	106	922	121	141	881	148
Shared Lane Traffic (%)												
Lane Group Flow (vph)	179	264	0	200	338	0	106	1043	0	141	1029	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	22.6	24.0		22.6	24.0		12.0	39.2		14.2	41.4	
Total Split (%)	22.6%	24.0%		22.6%	24.0%		12.0%	39.2%		14.2%	41.4%	
Maximum Green (s)	18.1	19.5		18.1	19.5		7.5	34.7		9.7	36.9	
Yellow Time (s)	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	
Lost Time Adjust (s)	0.0	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	4.5	
Lead/Lag	Lag	Lag		Lead	Lead		Lead	Lead		Lag	Lag	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	
Pedestrian Calls (#/hr)	10	10		10	10			10			10	
Act Effct Green (s)	12.2	19.9		11.8	19.5		9.8	40.1		10.2	40.5	
Actuated g/C Ratio	0.12	0.20		0.12	0.20		0.10	0.40		0.10	0.40	
v/c Ratio	0.42	0.72		0.49	0.93		0.61	0.75		0.78	0.73	
Control Delay	42.8	47.4		44.6	70.1		59.9	30.2		72.7	29.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	42.8	47.4		44.6	70.1		59.9	30.2		72.7	29.0	
LOS	D	D		D	E		E	C		E	C	
Approach Delay		45.5			60.6			33.0			34.3	
Approach LOS		D			E			C			C	
Queue Length 50th (ft)	56	151		62	197		64	280		90	286	
Queue Length 95th (ft)	82	#259		91	#367		#161	#415		#194	381	
Internal Link Dist (ft)		945			1130			877			1144	
Turn Bay Length (ft)	150			100			350			400		
Base Capacity (vph)	627	372		627	366		174	1396		183	1417	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.29	0.71		0.32	0.92		0.61	0.75		0.77	0.73	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 39.6 Intersection LOS: D
Intersection Capacity Utilization 73.6% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: SE 20th St & NE 192nd Ave

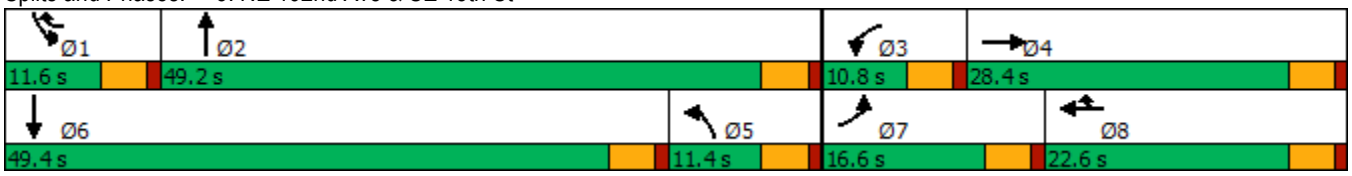


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	59	63	32	52	102	42	1112	27	45	1022	92
Future Volume (vph)	90	59	63	32	52	102	42	1112	27	45	1022	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		0	125		100	175		0	475		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.923				0.850		0.996			0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1736	0	1787	1881	1599	1770	3525	0	1787	3531	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1787	1736	0	1787	1881	1599	1770	3525	0	1787	3531	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50				164		3			12	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		507			479			1224			918	
Travel Time (s)		9.9			9.3			20.9			15.6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	92	60	64	33	53	104	43	1135	28	46	1043	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	92	124	0	33	53	104	43	1163	0	46	1137	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	8 1	5	2		1	6	
Permitted Phases												
Detector Phase	7	4		3	8	8 1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	16.6	28.4		10.8	22.6		11.4	49.2		11.6	49.4	
Total Split (%)	16.6%	28.4%		10.8%	22.6%		11.4%	49.2%		11.6%	49.4%	
Maximum Green (s)	12.1	23.9		6.3	18.1		6.9	44.7		7.1	44.9	
Yellow Time (s)	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	
Lost Time Adjust (s)	0.0	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	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		10			10			10			10	
Act Effct Green (s)	9.8	14.4		6.8	9.4	17.6	7.4	39.8		7.3	42.0	
Actuated g/C Ratio	0.14	0.20		0.09	0.13	0.24	0.10	0.55		0.10	0.58	
v/c Ratio	0.38	0.32		0.20	0.22	0.20	0.24	0.60		0.25	0.55	
Control Delay	40.0	21.8		42.0	35.8	1.8	41.6	18.7		42.0	16.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	40.0	21.8		42.0	35.8	1.8	41.6	18.7		42.0	16.7	
LOS	D	C		D	D	A	D	B		D	B	
Approach Delay		29.5			18.3			19.5			17.7	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)	40	31		15	23	0	19	229		20	222	
Queue Length 95th (ft)	105	87		52	63	10	62	392		65	375	
Internal Link Dist (ft)		427			399			1144			838	
Turn Bay Length (ft)	125			125		100	175			475		
Base Capacity (vph)	344	693		179	543	612	199	2287		202	2301	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.27	0.18		0.18	0.10	0.17	0.22	0.51		0.23	0.49	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 72			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 19.4		Intersection LOS: B	
Intersection Capacity Utilization 59.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: NE 192nd Ave & SE 15th St



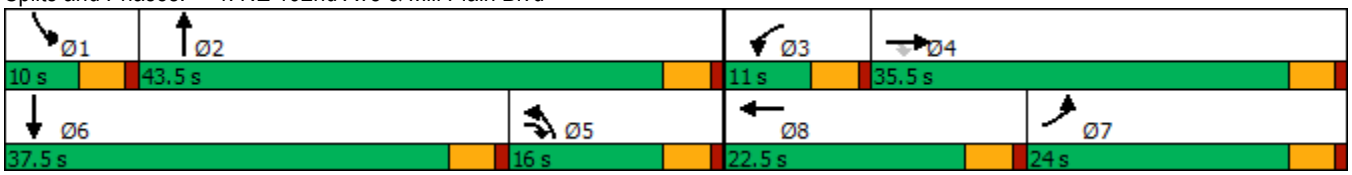
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	306	32	297	36	27	40	325	823	55	51	761	246
Future Volume (vph)	306	32	297	36	27	40	325	823	55	51	761	246
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		200	100		0	200		0	150		0
Storage Lanes	1		1	1		0	2		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.97		0.98			1.00			0.99	
Frt			0.850		0.910			0.991			0.963	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1881	1599	1752	1638	0	3433	3495	0	1787	3413	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1787	1881	1546	1752	1638	0	3433	3495	0	1787	3413	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			127		42			8			46	
Link Speed (mph)		40			25			40			40	
Link Distance (ft)		504			806			810			686	
Travel Time (s)		8.6			22.0			13.8			11.7	
Confl. Peds. (#/hr)			10			10			10			10
Confl. Bikes (#/hr)			10			10			10			10
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	319	33	309	38	28	42	339	857	57	53	793	256
Shared Lane Traffic (%)												
Lane Group Flow (vph)	319	33	309	38	70	0	339	914	0	53	1049	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	5	3	8		5	2		1	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)	9.5	22.5	9.5	9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	24.0	35.5	16.0	11.0	22.5		16.0	43.5		10.0	37.5	
Total Split (%)	24.0%	35.5%	16.0%	11.0%	22.5%		16.0%	43.5%		10.0%	37.5%	
Maximum Green (s)	19.5	31.0	11.5	6.5	18.0		11.5	39.0		5.5	33.0	
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		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lag		Lead	Lead	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		10			10			10			10	
Act Effct Green (s)	18.9	23.3	34.7	6.4	8.6		11.5	39.2		5.7	30.6	
Actuated g/C Ratio	0.22	0.27	0.41	0.08	0.10		0.13	0.46		0.07	0.36	
v/c Ratio	0.81	0.06	0.43	0.29	0.34		0.74	0.57		0.45	0.84	
Control Delay	51.4	25.7	9.2	47.8	23.5		48.8	20.8		55.7	32.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	51.4	25.7	9.2	47.8	23.5		48.8	20.8		55.7	32.4	
LOS	D	C	A	D	C		D	C		E	C	
Approach Delay		30.4			32.0			28.4			33.5	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	171	15	51	21	15		96	197		29	263	
Queue Length 95th (ft)	#363	37	98	57	54		#186	316		#85	#448	
Internal Link Dist (ft)		424			726			730			606	
Turn Bay Length (ft)	250		200	100			200			150		
Base Capacity (vph)	420	703	718	136	388		475	1647		118	1385	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.76	0.05	0.43	0.28	0.18		0.71	0.55		0.45	0.76	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 85.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 30.7 Intersection LOS: C
Intersection Capacity Utilization 73.3% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: NE 192nd Ave & Mill Plain Blvd

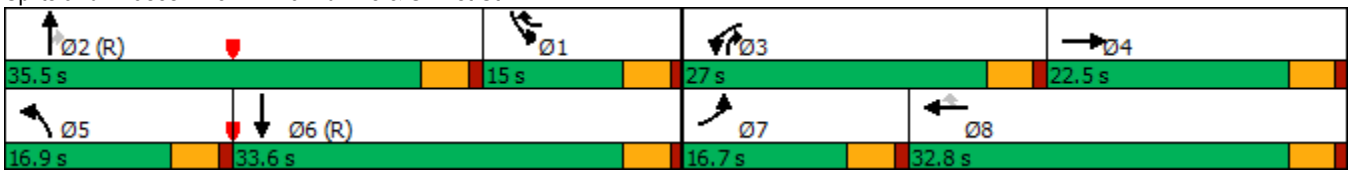


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	293	73	511	300	84	99	752	406	86	462	108
Future Volume (vph)	224	293	73	511	300	84	99	752	406	86	462	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	250		250	175		175	250		0
Storage Lanes	2		0	2		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor		0.99				0.97			0.97		0.99	
Frt		0.970				0.850			0.850		0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3467	3439	0	3467	1881	1599	1787	3574	1599	1787	3443	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3467	3439	0	3467	1881	1545	1787	3574	1547	1787	3443	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27				115			190		29	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		844			1324			866			732	
Travel Time (s)		14.4			22.6			14.8			12.5	
Confl. Peds. (#/hr)			10			10			10			10
Confl. Bikes (#/hr)			10			10			10			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	238	312	78	544	319	89	105	800	432	91	491	115
Shared Lane Traffic (%)												
Lane Group Flow (vph)	238	390	0	544	319	89	105	800	432	91	606	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases						8			2			
Detector Phase	7	4		3	8	1	5	2	3	1	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)	9.5	22.5		9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	
Total Split (s)	16.7	22.5		27.0	32.8	15.0	16.9	35.5	27.0	15.0	33.6	
Total Split (%)	16.7%	22.5%		27.0%	32.8%	15.0%	16.9%	35.5%	27.0%	15.0%	33.6%	
Maximum Green (s)	12.2	18.0		22.5	28.3	10.5	12.4	31.0	22.5	10.5	29.1	
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	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Min	None	None	C-Min	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		10			10			10			10	
Act Effct Green (s)	11.2	15.4		20.4	24.6	33.9	10.6	36.9	57.3	9.3	37.9	
Actuated g/C Ratio	0.11	0.15		0.20	0.25	0.34	0.11	0.37	0.57	0.09	0.38	
v/c Ratio	0.61	0.71		0.77	0.69	0.15	0.56	0.61	0.44	0.55	0.46	
Control Delay	49.4	44.5		45.3	42.2	1.7	53.6	29.4	5.1	55.7	25.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	49.4	44.5		45.3	42.2	1.7	53.6	29.4	5.1	55.7	25.9	
LOS	D	D		D	D	A	D	C	A	E	C	
Approach Delay		46.4			40.2			23.5			29.8	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	74	116		167	183	0	64	225	37	56	154	
Queue Length 95th (ft)	114	163		223	267	12	117	307	75	107	223	
Internal Link Dist (ft)		764			1244			786			652	
Turn Bay Length (ft)	250			250		250	175		175	250		
Base Capacity (vph)	422	641		780	532	622	223	1318	1007	187	1324	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.56	0.61		0.70	0.60	0.14	0.47	0.61	0.43	0.49	0.46	

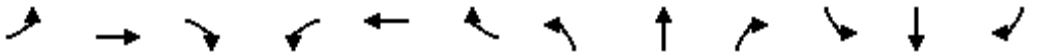
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 33.1		Intersection LOS: C	
Intersection Capacity Utilization 67.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: NE 192nd Ave & SE 1st St



Lanes, Volumes, Timings
6: SE 1st St & NE 197th Ave

Forecast 2024 PM Peak Hour With Proj
11/08/2021

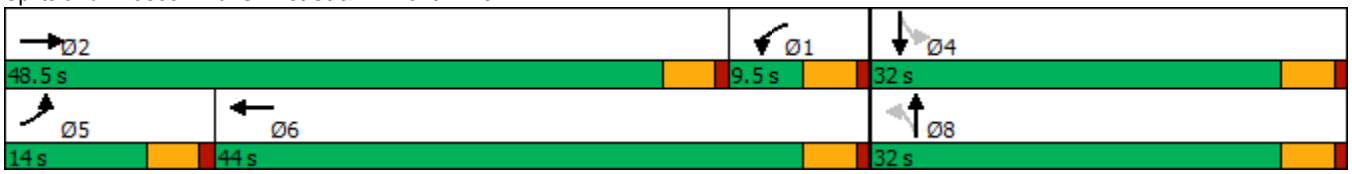


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	824	2	0	651	66	2	0	0	170	0	46
Future Volume (vph)	54	824	2	0	651	66	2	0	0	170	0	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		0	150		0	40		0	200		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00						0.96	
Frt					0.986						0.850	
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1787	3574	0	1881	3507	0	1787	1881	0	1787	1528	0
Flt Permitted	0.950						0.725			0.757		
Satd. Flow (perm)	1787	3574	0	1881	3507	0	1364	1881	0	1424	1528	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					15						333	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1324			632			136			474	
Travel Time (s)		22.6			10.8			3.7			12.9	
Confl. Peds. (#/hr)			10			10			10			10
Confl. Bikes (#/hr)			10			10			10			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	57	877	2	0	693	70	2	0	0	181	0	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	57	879	0	0	763	0	2	0	0	181	49	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA		Perm			Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	14.0	48.5		9.5	44.0		32.0	32.0		32.0	32.0	
Total Split (%)	15.6%	53.9%		10.6%	48.9%		35.6%	35.6%		35.6%	35.6%	
Maximum Green (s)	9.5	44.0		5.0	39.5		27.5	27.5		27.5	27.5	
Yellow Time (s)	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	
Lost Time Adjust (s)	0.0	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	4.5	
Lead/Lag	Lead	Lead		Lag	Lag							

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Min		None	Min		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		10			10		10	10		10	10	
Act Effct Green (s)	7.4	29.3			22.6		12.6			12.6	12.6	
Actuated g/C Ratio	0.14	0.57			0.44		0.25			0.25	0.25	
v/c Ratio	0.22	0.43			0.49		0.01			0.52	0.08	
Control Delay	25.4	7.3			13.7		17.0			24.1	0.2	
Queue Delay	0.0	0.0			0.0		0.0			0.0	0.0	
Total Delay	25.4	7.3			13.7		17.0			24.1	0.2	
LOS	C	A			B		B			C	A	
Approach Delay		8.4			13.7			17.0			19.0	
Approach LOS		A			B			B			B	
Queue Length 50th (ft)	15	65			93		1			47	0	
Queue Length 95th (ft)	53	131			178		5			119	0	
Internal Link Dist (ft)		1244			552			56			394	
Turn Bay Length (ft)	175						40			200		
Base Capacity (vph)	346	3047			2778		766			799	1003	
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	0.16	0.29			0.27		0.00			0.23	0.05	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 51.4			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 11.7		Intersection LOS: B	
Intersection Capacity Utilization 54.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: SE 1st St & NE 197th Ave



Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	961	27	32	687	21	28
Future Vol, veh/h	961	27	32	687	21	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	1022	29	34	731	22	30

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1051	0	1471	526
Stage 1	-	-	-	-	1037	-
Stage 2	-	-	-	-	434	-
Critical Hdwy	-	-	4.12	-	6.82	6.92
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	-	-	2.21	-	3.51	3.31
Pot Cap-1 Maneuver	-	-	664	-	119	499
Stage 1	-	-	-	-	305	-
Stage 2	-	-	-	-	624	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	664	-	113	499
Mov Cap-2 Maneuver	-	-	-	-	113	-
Stage 1	-	-	-	-	305	-
Stage 2	-	-	-	-	592	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	26.3
HCM LOS			D

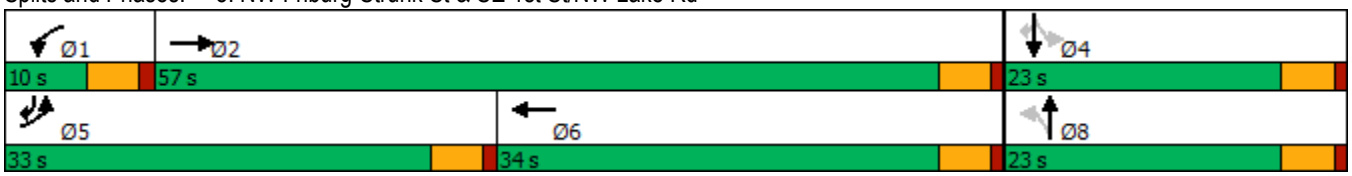
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	113	499	-	-	664	-
HCM Lane V/C Ratio	0.198	0.06	-	-	0.051	-
HCM Control Delay (s)	44.5	12.7	-	-	10.7	-
HCM Lane LOS	E	B	-	-	B	-
HCM 95th %tile Q(veh)	0.7	0.2	-	-	0.2	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	310	680	0	1	582	92	2	0	0	80	0	135
Future Volume (vph)	310	680	0	1	582	92	2	0	0	80	0	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	150		0	0		0	0		150
Storage Lanes	1		0	1		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.99							0.97
Frt					0.980							0.850
Flt Protected	0.950			0.950				0.950			0.950	
Satd. Flow (prot)	1787	3574	0	1787	3476	0	0	1787	0	0	1787	1599
Flt Permitted	0.950			0.950				0.701			0.757	
Satd. Flow (perm)	1787	3574	0	1787	3476	0	0	1319	0	0	1424	1556
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					21							79
Link Speed (mph)		40			40			25			40	
Link Distance (ft)		687			911			123			618	
Travel Time (s)		11.7			15.5			3.4			10.5	
Confl. Peds. (#/hr)			10			10			10			10
Confl. Bikes (#/hr)			10			10			10			
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 (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	333	731	0	1	626	99	2	0	0	86	0	145
Shared Lane Traffic (%)												
Lane Group Flow (vph)	333	731	0	1	725	0	0	2	0	0	86	145
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases							8			4		4
Detector Phase	5	2		1	6		8	8		4	4	5
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)	9.5	22.5		9.5	22.5		22.5	22.5		22.5	22.5	9.5
Total Split (s)	33.0	57.0		10.0	34.0		23.0	23.0		23.0	23.0	33.0
Total Split (%)	36.7%	63.3%		11.1%	37.8%		25.6%	25.6%		25.6%	25.6%	36.7%
Maximum Green (s)	28.5	52.5		5.5	29.5		18.5	18.5		18.5	18.5	28.5
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		Lead	Lag							Lead

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	Min		None	Min		None	None		None	None	None
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		10			10		10	10		10	10	
Act Effct Green (s)	17.6	42.9		6.5	19.4			10.3			10.4	25.5
Actuated g/C Ratio	0.30	0.73		0.11	0.33			0.18			0.18	0.43
v/c Ratio	0.62	0.28		0.01	0.63			0.01			0.34	0.20
Control Delay	26.4	5.3		35.0	20.8			26.5			30.5	5.1
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Delay	26.4	5.3		35.0	20.8			26.5			30.5	5.1
LOS	C	A		C	C			C			C	A
Approach Delay		11.9			20.8			26.5			14.6	
Approach LOS		B			C			C			B	
Queue Length 50th (ft)	103	41		0	108			1			28	11
Queue Length 95th (ft)	244	138		6	235			7			85	42
Internal Link Dist (ft)		607			831			43			538	
Turn Bay Length (ft)	250			150								150
Base Capacity (vph)	996	3033		196	1991			487			525	1126
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	0.24		0.01	0.36			0.00			0.16	0.13

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 58.8			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 15.4		Intersection LOS: B	
Intersection Capacity Utilization 54.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 8: NW Friburg-Strunk St & SE 1st St/NW Lake Rd



Intersection	
Int Delay, s/veh	0.9

Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Vol, veh/h	10	22	715	565	35	24	38
Future Vol, veh/h	10	22	715	565	35	24	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	-	125	-	-	-	0	-
Veh in Median Storage, #	-	-	0	0	-	0	-
Grade, %	-	-	0	0	-	0	-
Peak Hour Factor	92	96	96	96	96	96	96
Heavy Vehicles, %	2	1	1	1	1	1	1
Mvmt Flow	11	23	745	589	36	25	40

Major/Minor	Major1		Major2		Minor2		
Conflicting Flow All	625	625	0	-	0	1048	313
Stage 1	-	-	-	-	-	607	-
Stage 2	-	-	-	-	-	441	-
Critical Hdwy	6.44	4.12	-	-	-	6.82	6.92
Critical Hdwy Stg 1	-	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	-	5.82	-
Follow-up Hdwy	2.52	2.21	-	-	-	3.51	3.31
Pot Cap-1 Maneuver	577	959	-	-	-	225	686
Stage 1	-	-	-	-	-	509	-
Stage 2	-	-	-	-	-	619	-
Platoon blocked, %			-	-	-		
Mov Cap-1 Maneuver	771	771	-	-	-	215	686
Mov Cap-2 Maneuver	-	-	-	-	-	215	-
Stage 1	-	-	-	-	-	487	-
Stage 2	-	-	-	-	-	619	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	16.7
HCM LOS			C

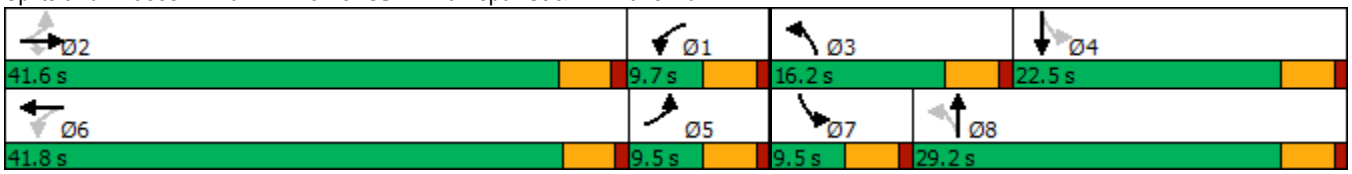
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	771	-	-	-	371
HCM Lane V/C Ratio	0.044	-	-	-	0.174
HCM Control Delay (s)	9.9	-	-	-	16.7
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	483	225	63	359	22	217	76	101	32	81	21
Future Volume (vph)	34	483	225	63	359	22	217	76	101	32	81	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		175	75		0	250		0	75		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.95	0.99	1.00		0.99	0.97		0.98	0.99	
Frt			0.850		0.991			0.914			0.969	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1881	1599	1787	3531	0	1787	1663	0	1787	1809	0
Flt Permitted	0.478			0.202			0.470			0.637		
Satd. Flow (perm)	887	1881	1514	378	3531	0	874	1663	0	1175	1809	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			242		9			73			13	
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		601			545			558			730	
Travel Time (s)		10.2			9.3			10.9			14.2	
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			10			10			10			10
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 (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	37	519	242	68	386	24	233	82	109	34	87	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	519	242	68	410	0	233	191	0	34	110	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Detector Phase	5	2	2	1	6		3	8		7	4	
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)	9.5	22.5	22.5	9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	9.5	41.6	41.6	9.7	41.8		16.2	29.2		9.5	22.5	
Total Split (%)	10.6%	46.2%	46.2%	10.8%	46.4%		18.0%	32.4%		10.6%	25.0%	
Maximum Green (s)	5.0	37.1	37.1	5.2	37.3		11.7	24.7		5.0	18.0	
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		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lag		Lead	Lag	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Min	Min	None	Min		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		11.0	11.0		11.0			11.0			11.0	
Pedestrian Calls (#/hr)		10	10		10			10			10	
Act Effct Green (s)	30.2	24.9	24.9	27.3	22.0		22.2	19.3		13.9	10.6	
Actuated g/C Ratio	0.48	0.40	0.40	0.44	0.35		0.35	0.31		0.22	0.17	
v/c Ratio	0.06	0.69	0.32	0.22	0.33		0.50	0.34		0.11	0.35	
Control Delay	11.4	23.6	3.8	16.6	20.6		21.1	16.2		17.9	29.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	11.4	23.6	3.8	16.6	20.6		21.1	16.2		17.9	29.3	
LOS	B	C	A	B	C		C	B		B	C	
Approach Delay		17.0			20.0			18.9			26.6	
Approach LOS		B			C			B			C	
Queue Length 50th (ft)	10	190	0	14	46		71	34		9	39	
Queue Length 95th (ft)	24	347	43	39	151		152	112		31	94	
Internal Link Dist (ft)		521			465			478			650	
Turn Bay Length (ft)	125		175	75			250			75		
Base Capacity (vph)	583	1193	1049	305	2252		547	831		319	634	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.44	0.23	0.22	0.18		0.43	0.23		0.11	0.17	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 62.6			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 19.0		Intersection LOS: B	
Intersection Capacity Utilization 65.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 10: NW Parker St/NW Larkspur St & NW Lake Rd



Intersection	
Int Delay, s/veh	3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	518	30	64	342	57	103
Future Vol, veh/h	518	30	64	342	57	103
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	75	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	1	1	1	2	2
Mvmt Flow	534	31	66	353	59	106

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	565	0	1019	534
Stage 1	-	-	-	-	534	-
Stage 2	-	-	-	-	485	-
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	-	-	1012	-	263	546
Stage 1	-	-	-	-	588	-
Stage 2	-	-	-	-	619	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1012	-	246	546
Mov Cap-2 Maneuver	-	-	-	-	246	-
Stage 1	-	-	-	-	588	-
Stage 2	-	-	-	-	579	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	17.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	246	546	-	-	1012	-
HCM Lane V/C Ratio	0.239	0.194	-	-	0.065	-
HCM Control Delay (s)	24.2	13.2	-	-	8.8	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.9	0.7	-	-	0.2	-

MOVEMENT SUMMARY

Site: 101 [Site1 (Site Folder: General)]

Forecast 2024 PM Peak Hour with Project
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NE Everett St														
3	L2	248	1.0	282	1.0	0.272	11.7	LOS B	1.7	43.6	0.57	0.71	0.57	33.6
8	T1	347	1.0	394	1.0	0.316	5.4	LOS A	2.2	55.2	0.57	0.53	0.57	36.1
Approach		595	1.0	676	1.0	0.316	8.0	LOS A	2.2	55.2	0.57	0.61	0.57	35.0
North: NE Everett St														
4	T1	279	1.0	317	1.0	0.246	5.0	LOS A	1.6	40.7	0.50	0.50	0.50	36.3
14	R2	260	1.0	295	1.0	0.178	4.2	LOS A	0.0	0.0	0.00	0.45	0.00	37.2
Approach		539	1.0	613	1.0	0.246	4.6	LOS A	1.6	40.7	0.26	0.47	0.26	36.7
West: NW Lake Road														
5	L2	290	1.0	330	1.0	0.261	11.2	LOS B	1.7	43.3	0.53	0.68	0.53	33.7
12	R2	368	1.0	418	1.0	0.252	4.4	LOS A	0.0	0.0	0.00	0.44	0.00	37.2
Approach		658	1.0	748	1.0	0.261	7.4	LOS A	1.7	43.3	0.23	0.55	0.23	35.5
All Vehicles		1792	1.0	2036	1.0	0.316	6.7	LOS A	2.2	55.2	0.35	0.55	0.35	35.7

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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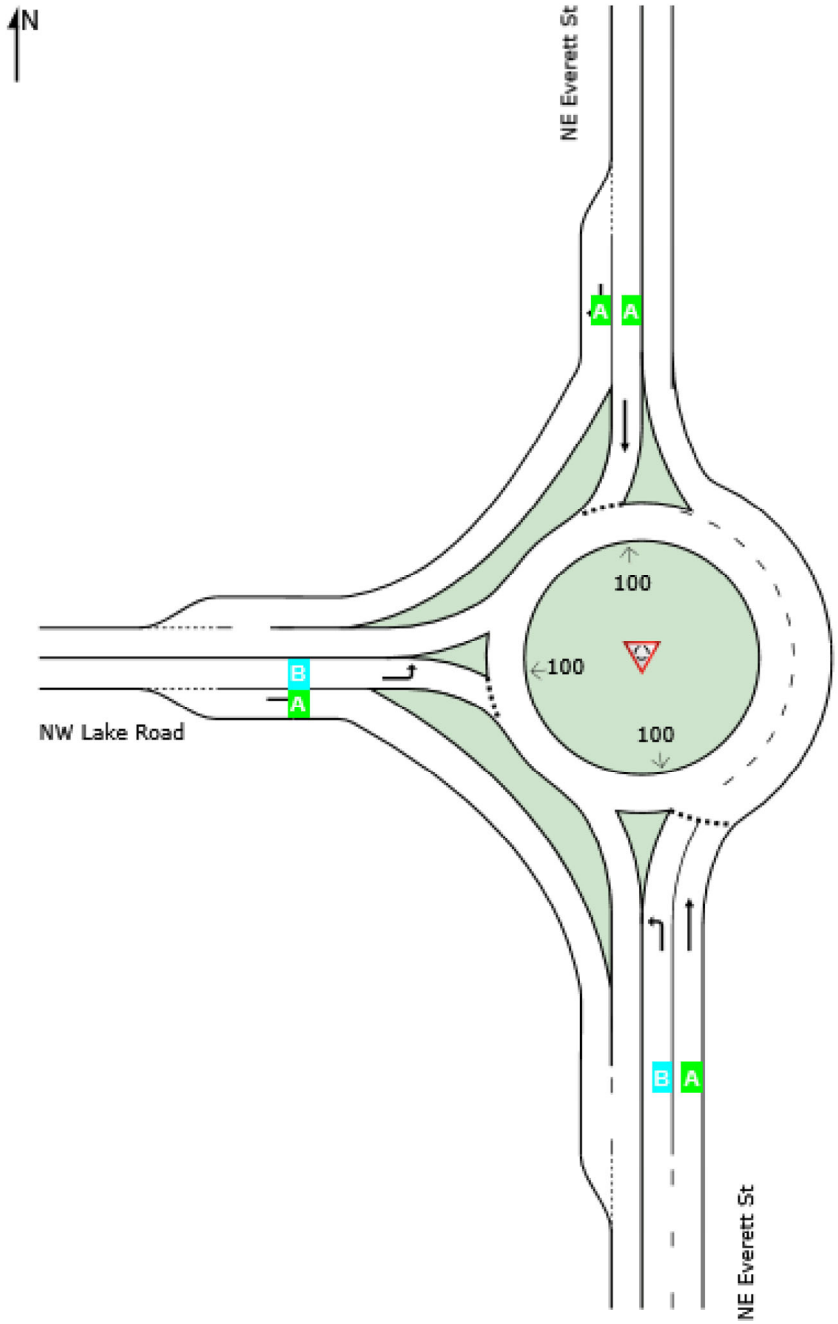

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Delay Model: SIDRA Standard (Geometric Delay is included).

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Intersection	
Int Delay, s/veh	3.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	111	34	64	113	44	49
Future Vol, veh/h	111	34	64	113	44	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	134	41	77	136	53	59

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	175	0	445	155
Stage 1	-	-	-	-	155	-
Stage 2	-	-	-	-	290	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1407	-	573	893
Stage 1	-	-	-	-	876	-
Stage 2	-	-	-	-	762	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1407	-	541	893
Mov Cap-2 Maneuver	-	-	-	-	600	-
Stage 1	-	-	-	-	876	-
Stage 2	-	-	-	-	720	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.8	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	725	-	-	1407	-
HCM Lane V/C Ratio	0.155	-	-	0.055	-
HCM Control Delay (s)	10.9	-	-	7.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↱
Traffic Vol, veh/h	0	745	622	4	0	41
Future Vol, veh/h	0	745	622	4	0	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	10	2	10
Mvmt Flow	0	810	676	4	0	45

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	340
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.1
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.4
Pot Cap-1 Maneuver	0	-	-	-	0	633
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	633
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	633
HCM Lane V/C Ratio	-	-	-	0.07
HCM Control Delay (s)	-	-	-	11.1
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.2

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Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	51	720	606	49	56	66
Future Vol, veh/h	51	720	606	49	56	66
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	783	659	53	61	72

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	712	0	-	0	1188	356
Stage 1	-	-	-	-	686	-
Stage 2	-	-	-	-	502	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	884	-	-	-	181	640
Stage 1	-	-	-	-	461	-
Stage 2	-	-	-	-	573	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	884	-	-	-	170	640
Mov Cap-2 Maneuver	-	-	-	-	170	-
Stage 1	-	-	-	-	432	-
Stage 2	-	-	-	-	573	-

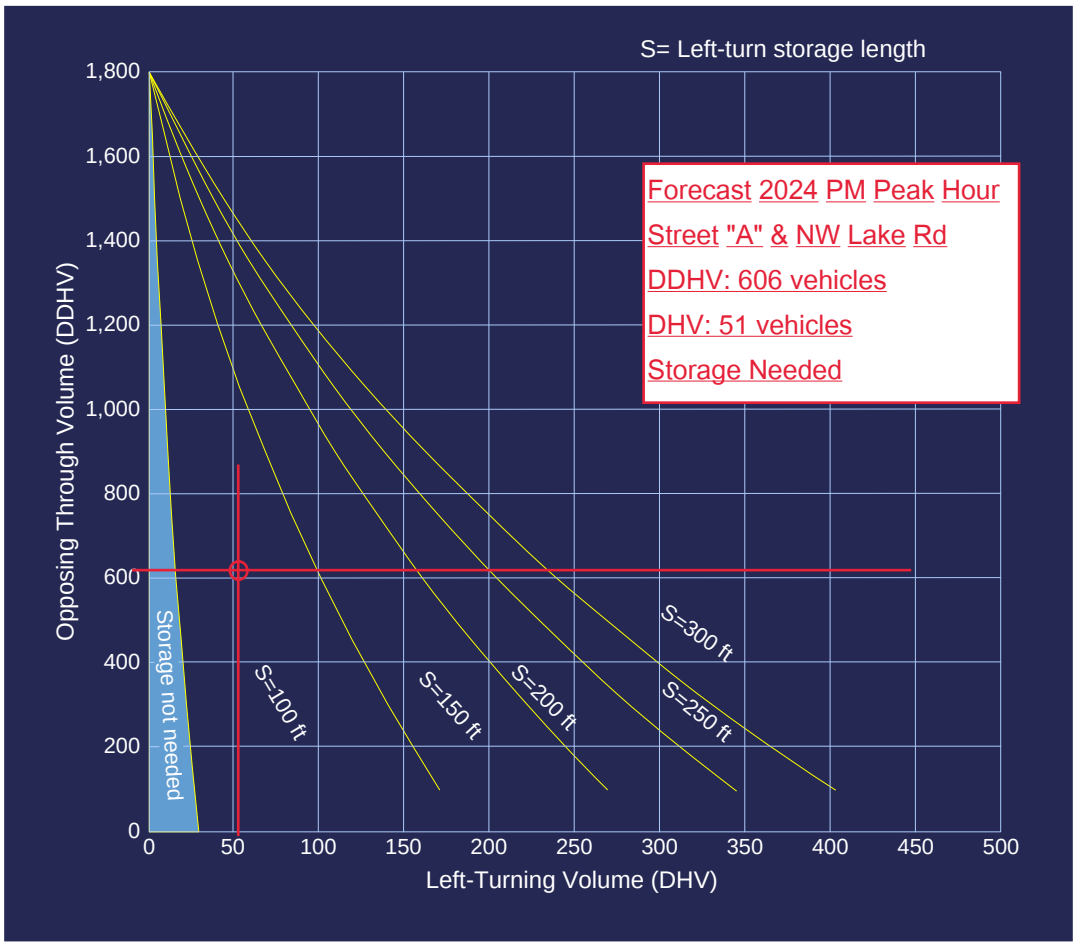
Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	28.6
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	884	-	-	-	282
HCM Lane V/C Ratio	0.063	-	-	-	0.47
HCM Control Delay (s)	9.3	-	-	-	28.6
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0.2	-	-	-	2.4

APPENDIX

LEFT TURN WARRANT SHEET

Exhibit 1310-8 Left-Turn Storage Guidelines: Four-Lane, Unsignalized



Determine the storage length on two-lane highways by using Exhibit 1310-9 through Exhibit 1310-11. On four-lane highways, use Exhibit 1310-8. These lengths do not consider trucks. Use Exhibit 1310-12 for storage length when trucks are present.

Use turn simulation software (such as AutoTURN®) to verify that left-turn movements for the design vehicle(s) do not have conflicts. Design opposing left-turn design vehicle paths with a minimum 4-foot (12-foot desirable) clearance between opposing turning paths.

Where one-way left-turn channelization with curbing is to be provided, evaluate surface water runoff and design additional drainage facilities if needed to control the runoff.

Provide illumination at left-turn lanes in accordance with the guidelines in Chapter 1040.

CAMAS BUSINESS CENTER
TRIP GENERATION & SCOPING MEMO

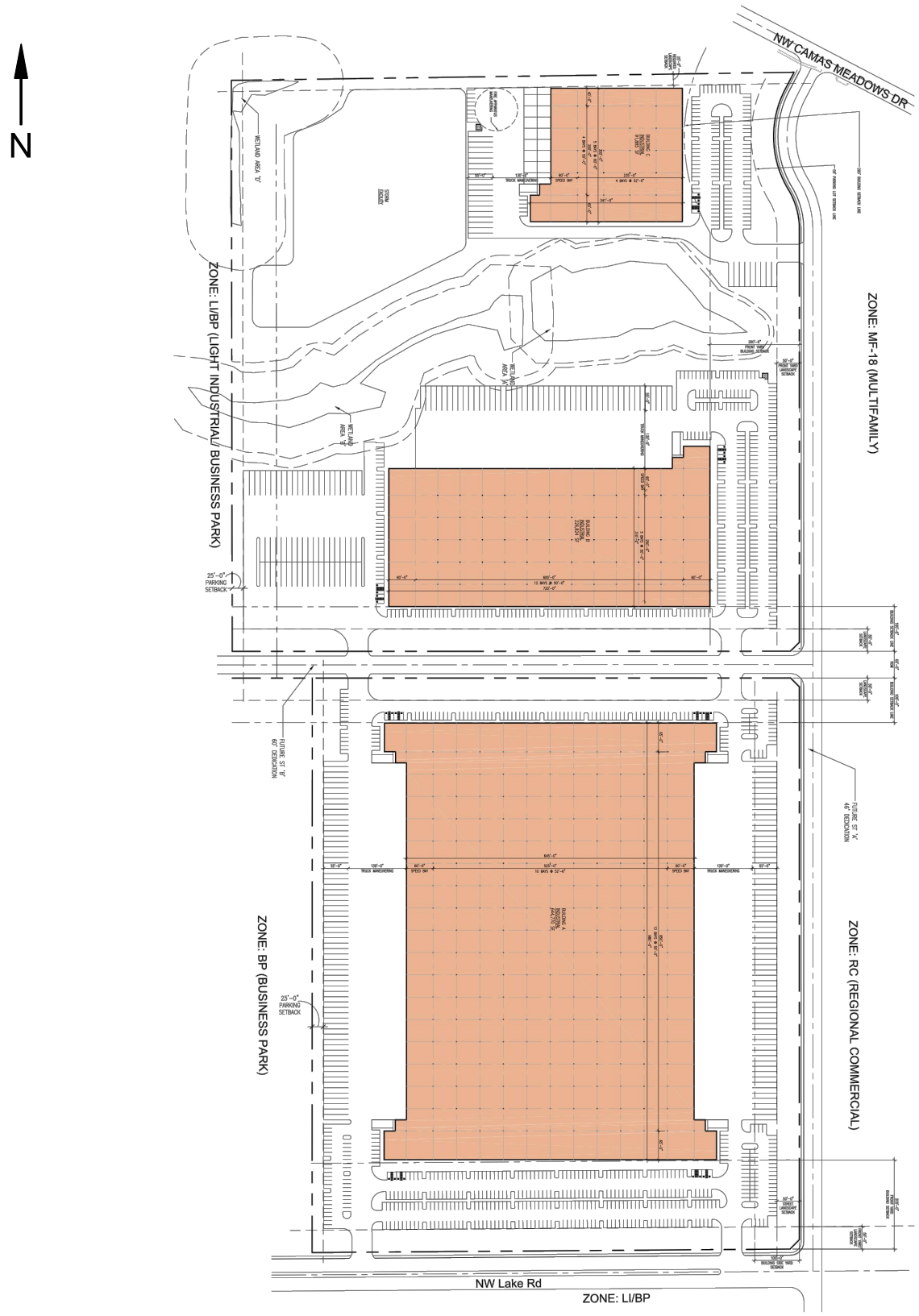
1. Introduction

The main goals of this study focus on the assessment of the trip generation for the proposed Camas Business Center. Moreover, general proposed scoping information is provided herein. A project description is provided below.

2. Project Description

Camas Business Center proposes an industrial site comprising 963,479 square feet within three buildings located in the city of Camas. The proposed development contains a site address of 4704 NW Lake Road. The subject property is bordered to the south by NW Lake Road within 39.79-acre tax parcel #: 176155000. Primary access to and from the site is proposed via NW Lake Road and NW Camas Meadows Drive. Shown below in Figure 1 is an aerial vicinity map outlining the subject parcel. A site plan illustrating the proposed building layout and access configuration is presented in Figure 2 on the following page.

Figure 1: Vicinity Map



HEATH & ASSOCIATES

TRAFFIC AND CIVIL ENGINEERING

CAMAS BUSINESS CENTER

SITE PLAN
FIGURE 2

PO Box 397 Puyallup, WA 98371 (253) 770 1401 heathtraffic.com

3. Project Trip Generation

Trip generation is defined as the number of vehicle movements that enter or exit the respective project site during a designated time period such as the PM peak hour or an entire day. The magnitude of the anticipated vehicle trip generation for the proposed project was derived from the Institute of Transportation Engineers (ITE) publication, *Trip Generation,* 11th Edition. The proposed land uses utilized for analysis are defined under ITE's Land Use Code (LUC) 154 – High-Cube Warehouse (Buildings A &B) and LUC 140 – Manufacturing (Building C). Square footage was used as the input variable and average rates were used in determining trip ends. Table 1 below summarizes anticipated vehicular movements for the average weekday daily trips (AWDT) and the AM and PM peak hours.

Table 1: Project Trip Generation

Building	Land Use	Size	AWDT	AM Peak-Hour Trips			PM Peak-Hour Trips		
				In	Out	Total	In	Out	Total
A & B	High-Cube Warehouse (LUC 154)	871,594 SF	**1220**	54	16	**70**	24	63	**87**
C	Manufacturing (LUC 140)	91,885 SF	**436**	47	15	**62**	21	47	**68**
	Total		**1656**	101	31	**132**	45	110	**155**

Based on ITE data, the proposed development is anticipated to generate 1656 average weekday daily trips with 132 AM (101 in/31 out) and 155 PM (45 in/110 out) peak hour trips.

4. Distribution & Assignment

Trip distribution can be described as the travel routes to/from the subject site relative to the adjacent street system. The specific destinations and origins of the generated traffic primarily influence the key study intersections, which will effectively receive the bulk of project impacts. Trips generated by the project are expected to follow the general trip pattern as shown in Figure 3 for the PM peak hour.

N

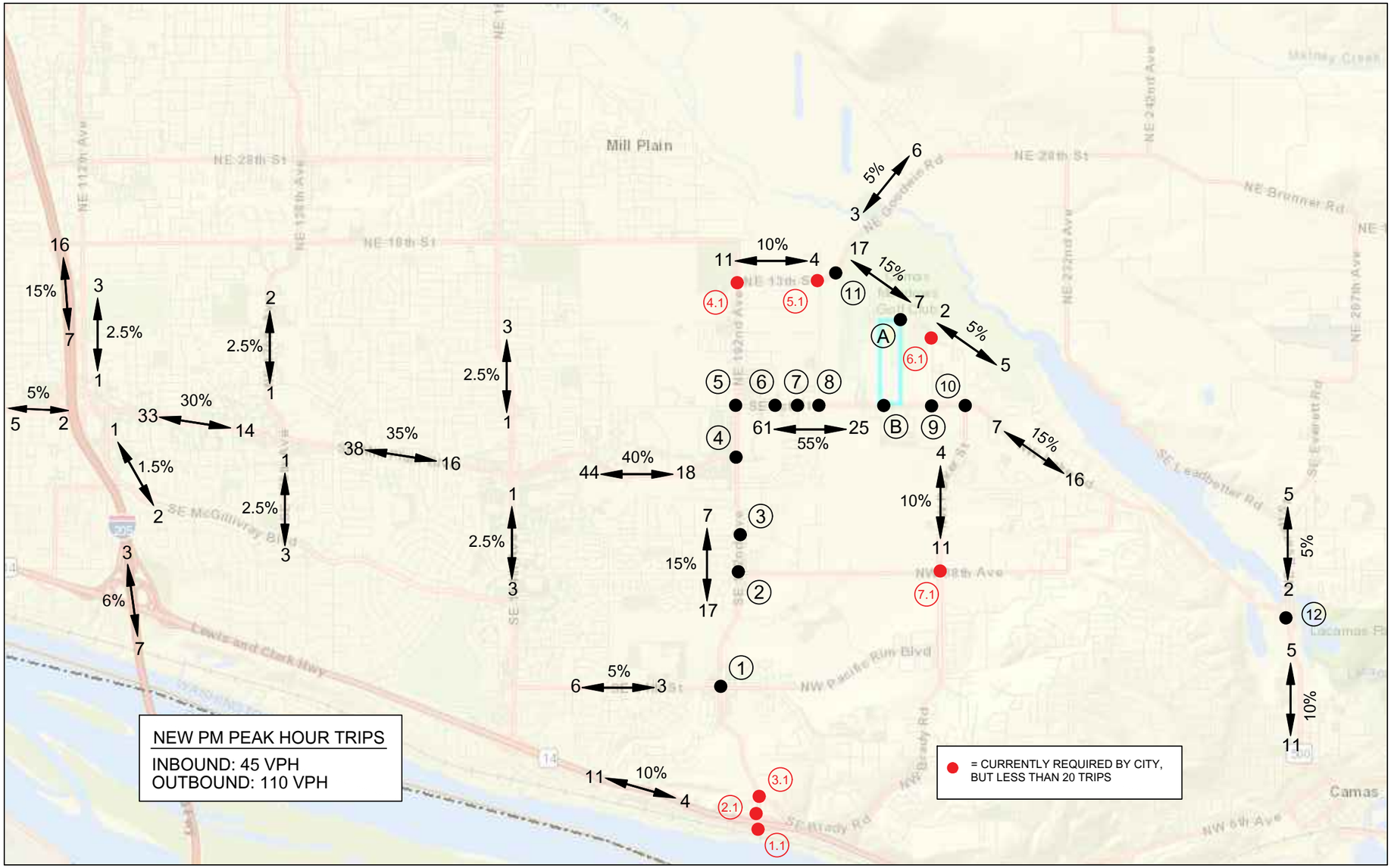
INTERSECTIONS OF STUDY

1. NE 192ND AVE & SE 34TH ST
2. NE 192ND AVE & SE 20TH AVE
3. NE 192ND AVE & SE 15TH AVE
4. NE 192ND AVE & MILL PLAIN BLVD
5. NE 192ND AVE & SE 1ST ST
6. NE 197TH AVE & SE 1ST ST
7. SE WESTRIDGE BLVD & SE 1ST ST
8. NW FRIBURG-STRUNK ST & SE 1ST ST/NW LAKE RD
9. NW PAYNE ST & NW LAKE RD
10. NW PARKER ST/NW LARK SPUR RD & NW LAKE RD
11. NW CAMAS MEADOWS DR & NE GOODWIN RD
12. NE EVERETT ST & NW LAKE RD

A. NE CAMAS MEADOWS DR & ACCESS
B. ACCESS & NW LAKE RD

INTERSECTIONS THAT DO NOT MEET THE 20 TRIP THRESHOLD

1.1 NE 192ND AVE & SR-14 EB RAMPS
2.1 NE 192ND AVE & SR-14 WB RAMPS
3.1 NE 192ND AVE & SE BRADY RD
4.1 NE 192ND AVE & NE 13TH ST
5.1 NW FRIBURG-STRUNK ST & NE 13TH ST/NE GOODWIN RD
6.1 NW CAMAS MEADOWS DR & NW PAYNE ST
7.1 NW PARKER ST & NW 38TH AVE



5. Intersections of Study

Per City of Camas requirements, all study intersections receiving 20 or more PM peak hour trips are to be studied. Moreover, the City of Vancouver requested that several intersections be analyzed. Per Camas and Vancouver requests and as illustrated in Figure 3 based on the 20 PM peak hour trip threshold, the following intersections are proposed for analysis:

1. NE 192nd Avenue & SE 34th Street
2. NE 192nd Avenue & SE 20th Avenue
3. NE 192nd Avenue & SE 15th Avenue
4. NE 192nd Avenue & Mill Plain Blvd
5. NE 192nd Avenue & SE 1st Street
6. NE 197th Avenue & SE 1st Street
7. SE Westridge Boulevard & SE 1st Street
8. NW Friburg-Strunk Street & SE 1st St/NW Lake Road
9. NW PAYNE Street & NW LAKE Road
10. NW Parker Street /NW Lark Spur Road & NW Lake Road
11. NW Camas Meadows Drive & NE Goodwin Road
12. NE Everett Street & NW Lake Road

A. NE Camas Meadows Drive & Access
B. Access & NW Lake Road

5. Additional Proposed Analysis Information

Time Period to Evaluate:	Weekday: 4:00-6:00 PM
Horizon Year:	2024
Background Growth:	3%[1]

[1] City of Camas, WA-Traffic Impact Fee Update (Annualized growth rate of about 2.9% per year)

City of Vancouver Memo

April 21, 2022

To: Anita Ashton, Project Manager

From: Eric Hahn, P.E. Sr. Civil Engineer, Transportation

Re: Transportation Concurrency Review - Camas Business Park (SPRV21-06)

11.70 Transportation Concurrency

Finding: The applicant is proposing the development of multiple industrial warehouse buildings, totaling approximately 963,500 square feet. The project is located at 4704 NW Lake Road, in Camas.

The applicant submitted a Transportation Impact Analysis (TIA) to the City of Camas, dated November 11, 2021, from Heath & Associates, Inc. The TIA included trip generation, trip distribution, intersection level-of-service analysis, crash history review, intersection queueing analysis, intersection warrant analysis, and sight distance analysis.

Trip generation rates were based on the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition, utilizing Land Use Codes 154 (High-Cube Warehouse) and 140 (Manufacturing). Based on this information, the proposed project will generate 1,656 new Average Daily Trips (ADT), including 132 new AM peak hour trips, and 155 new PM peak hour trips. Additionally, the study indicates that the project will generate 20 new AM peak hour truck trips, and 12 new PM peak hour truck trips. The submitted documentation fulfills the City's requirements for concurrency analysis.

Pursuant to VMC 11.70.090, 192nd Avenue is designated as a Category 1 Concurrency corridor, which stipulates that the corridor is operating at or above the City of Vancouver's adopted level of service standards. Based on the trip distribution information contained in the study, the new PM peak hour trips generated to this corridor by the proposed development are not anticipated to cause the corridor to drop below the adopted level of service standard.

The applicant's traffic analysis provides distribution of trips used to establish the proportionate share contribution towards off-site traffic mitigation projects within the City of Vancouver. A list of the intersection(s) slated for proportionate share contributions is as follows:

Proportionate Share Project Name	Fee Rate	Number of Trips	Proportionate Share Cost
NE 192nd Ave & NE 13th St	$400 per PM peak hour trip	15	$6,000
SE 192nd Ave & SE 34th St	$150 per PM peak hour trip	24	$3,600
192nd Ave & SR-14 ramps	$2,000 per PM peak hour trip	15	$30,000
Total Proportionate Share Cost			**$39,600**

Based on the above table, **prior to the issuance of civil plan approval, the applicant shall pay proportionate share fees to the City of Vancouver totaling $39,600.00.**

The submitted documentation fulfills the City of Vancouver's requirements for concurrency analysis.

Conclusion: The proposed development meets the requirements of VMC 11.70 as conditioned.

Lauren Hollenbeck

From: Community Development Email
Sent: Wednesday, April 27, 2022 4:07 PM
To: Lauren Hollenbeck
Subject: FW: SEPA21-12 Camas Business Park: Clark County Concurrency - Comments

Madeline Sutherland, AICP
Planner
Desk 360-817-7237
Cell 360-326-5524
www.cityofcamas.us | msutherland@cityofcamas.us

From: David Jardin <David.Jardin@clark.wa.gov>
Sent: Wednesday, April 27, 2022 2:32 PM
To: Community Development Email <communitydevelopment@cityofcamas.us>
Subject: SEPA21-12 Camas Business Park: Clark County Concurrency - Comments

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County concurrency staff has reviewed the proposed Camas Business Center Traffic Impact Analysis dated November 11, 2021, prepared by Heath & Associates, Inc.

County staff's review of the applicant's traffic study found that the proposed land use is not expected to send 5, or more, peak hour trips to the county's regionally significant intersections and/or corridors. Because of this, county concurrency has no further comments and requires no further county concurrency related analysis. The proposed development site is located on parcels 176155000 and 176170000 in Camas.

Thank you for the opportunity to comment.

David Jardin
Concurrency Engineer
PUBLIC WORKS TRANSPORTATION/COMMUNITY DEVELOPMENT - DEVELOPMENT ENGINEERING

Desk: 564.397.4354
Cell: 360.818.3307

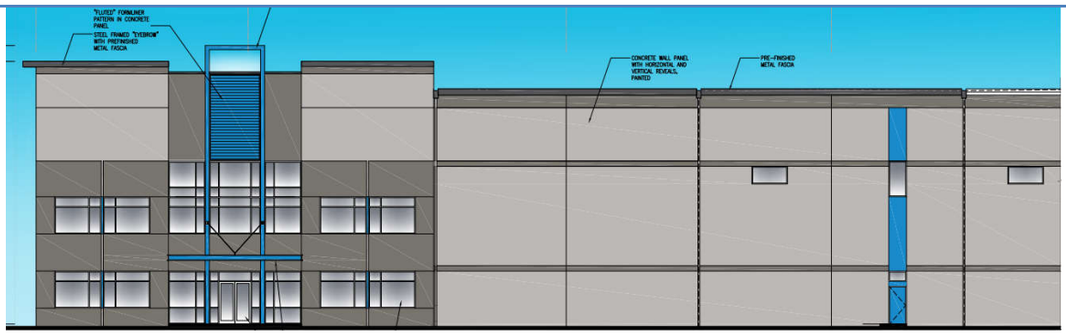
Notice of Design Review Committee Meeting

Thursday, April 14, 2022

A public meeting of the Design Review Committee will be held on April 14, 2022, beginning at 5:00 p.m., via Zoom. 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.

The following application is included on the agenda:

Project	Camas Business Park
File No.	DR21-07
Location	4707 NW Lake Road Camas, WA 98607
Zone	Light Industrial/Business Park (LI/BP)
Applicant	Bjorn Brynestad Panattoni Development Co.
Description	To construct 3 warehouse/office industrial buildings



MORE INFORMATION

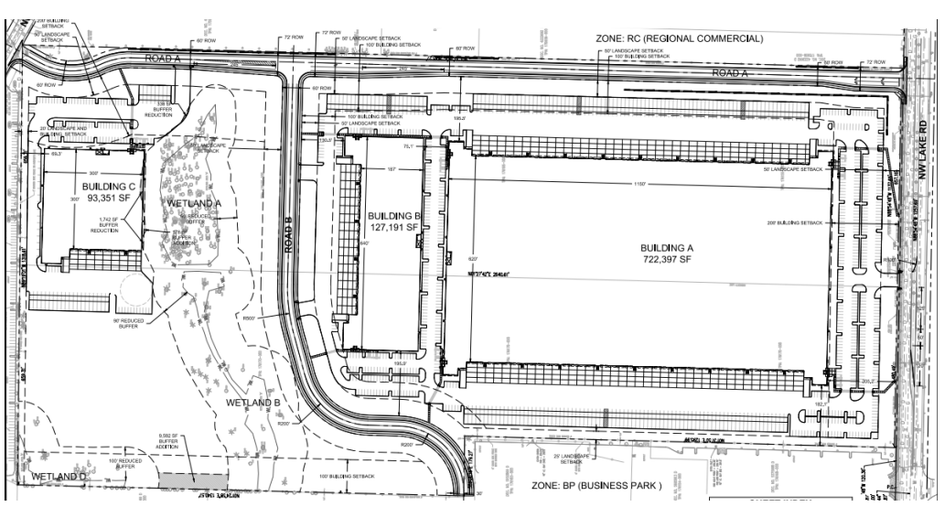
The meeting agenda and supporting documents will be available for review on the city's website at the "Public Meeting" portal or follow this link: www.cityofcamas.us/meetings. Also, Planning Division staff can respond to questions and comments in regard to the public meeting or the projects under review. **Contact staff at (360) 817-1568** or by email at **communitydevelopment@cityofcamas.us.**

OPPORTUNITY FOR COMMENT

You are invited to offer comments regarding important design issues, which you believe, should be addressed in the decision for these projects. Procedures for a public meeting will be followed in accordance with RCW 42.30, which differs from a public hearing. Comments may be submitted by regular mail to the Planning Division, City of Camas, 616 Northeast Fourth Avenue, Camas, WA 98607; or by email to: communitydevelopment@cityofcamas.us.

DESIGN REVIEW COMMITTEE ("DRC")

The DRC conducts a public meeting for the purpose of reviewing specific proposals, and recommending conditions and/or other actions necessary for consistency with the principles of the Design Review Manual. The DRC does not issue a decision, but issues a written recommendation, together with findings to support the recommendation.



CAMAS BUSINESS CENTER

LOCATED IN THE SE 1/4 OF SECTION 29, TOWNSHIP 2 NORTH, RANGE 3 EAST, W.M., CITY OF CAMAS, CLARK COUNTY, WASHINGTON

Exhibit 24
LI/BP21-01

LEGEND

BUFFER REDUCTION AREA
TOTAL = 2,080 SF

BUFFER ADDITION AREA
TOTAL = 9,770 SF

REFER TO WETLAND MITIGATION STUDY

VERTICAL DATUM

ELEVATIONS AND CONTOURS ARE BASED ON CLARK COUNTY BENCHMARK ID NUMBER 265. THE BENCHMARK IS THE SOUTHEAST CORNER OF SECTION 29, BEING A BRASS DISK IN CONCRETE WITHIN A MONUMENT CASE. THE BENCHMARK IS LOCATED IN THE CENTERLINE OF NW LAKE ROAD NEAR THE SOUTHEAST CORNER OF THE SURVEYED PROPERTY. IT HAS AN ELEVATION OF 316.85 FEET BASED ON THE NGVD 1929(47) VERTICAL DATUM.

BASIS OF BEARING

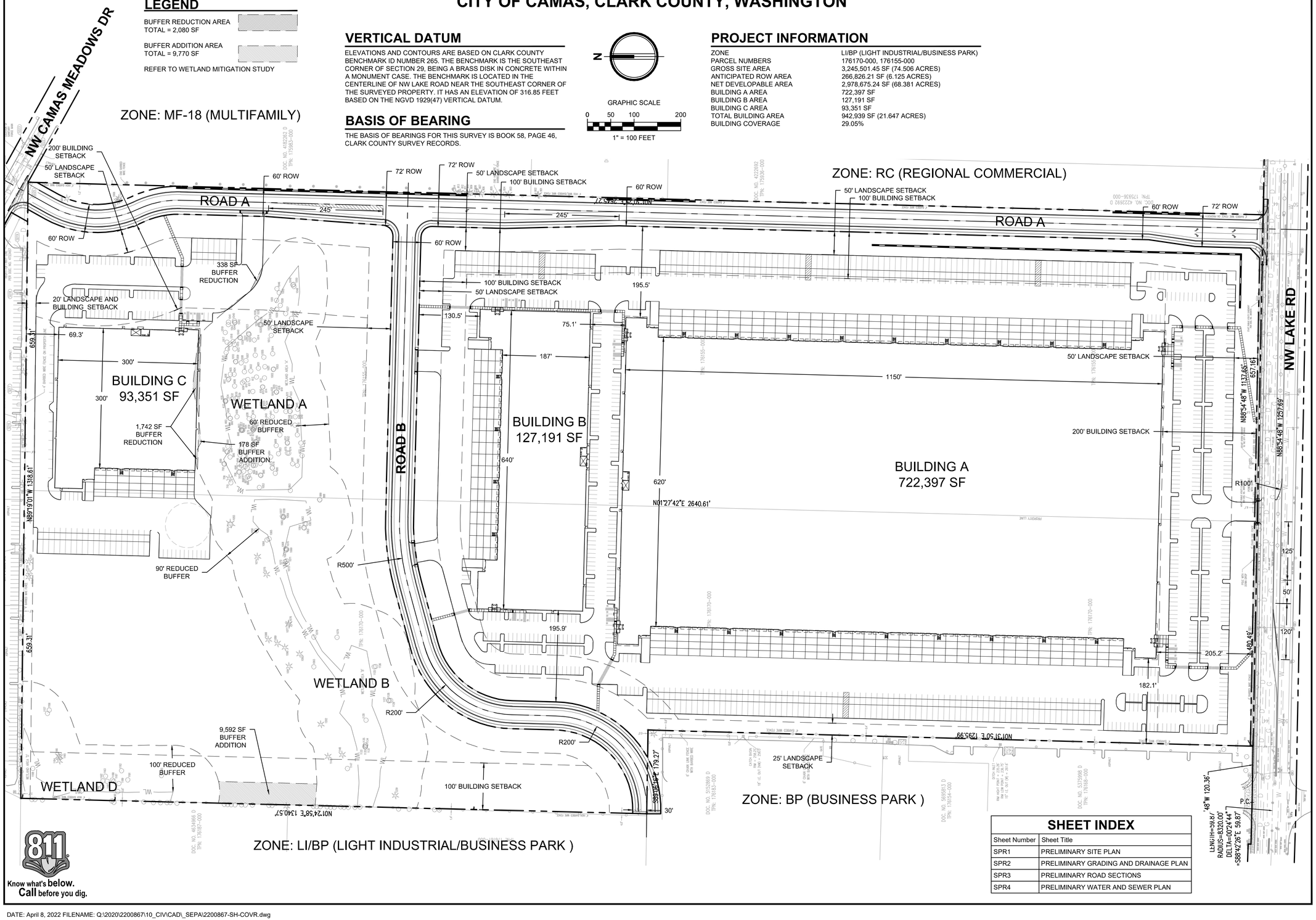
THE BASIS OF BEARINGS FOR THIS SURVEY IS BOOK 58, PAGE 46, CLARK COUNTY SURVEY RECORDS.

N

GRAPHIC SCALE
0 50 100 200
1" = 100 FEET

PROJECT INFORMATION

ZONE	LI/BP (LIGHT INDUSTRIAL/BUSINESS PARK)
PARCEL NUMBERS	176170-000, 176155-000
GROSS SITE AREA	3,245,501.45 SF (74.506 ACRES)
ANTICIPATED ROW AREA	266,826.21 SF (6.125 ACRES)
NET DEVELOPABLE AREA	2,978,675.24 SF (68.381 ACRES)
BUILDING A AREA	722,397 SF
BUILDING B AREA	127,191 SF
BUILDING C AREA	93,351 SF
TOTAL BUILDING AREA	942,939 SF (21.647 ACRES)
BUILDING COVERAGE	29.05%



SHEET INDEX	
Sheet Number	Sheet Title
SPR1	PRELIMINARY SITE PLAN
SPR2	PRELIMINARY GRADING AND DRAINAGE PLAN
SPR3	PRELIMINARY ROAD SECTIONS
SPR4	PRELIMINARY WATER AND SEWER PLAN

811 Know what's below. Call before you dig.

DATE: April 8, 2022 FILENAME: Q:\2020\2200867\10_CIV\CAD_SEPA\2200867-SH-COVR.dwg

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253.383.2422 TEL 253.383.2572 FAX www.ahbl.com WEB

Project Title:
CAMAS BUSINESS CENTER

Client:
PANATTONI DEVELOPMENT COMPANY, LLC
1821 DOCK STREET, SUITE 100
TACOMA, WA 98402

Project No.
2200867.10

Issue Set & Date:
SEPA AND SITE PLAN REVIEW
4/8/2022

J. MATTHEW WEBER
STATE OF WASHINGTON
24550
REGISTERED
PROFESSIONAL ENGINEER

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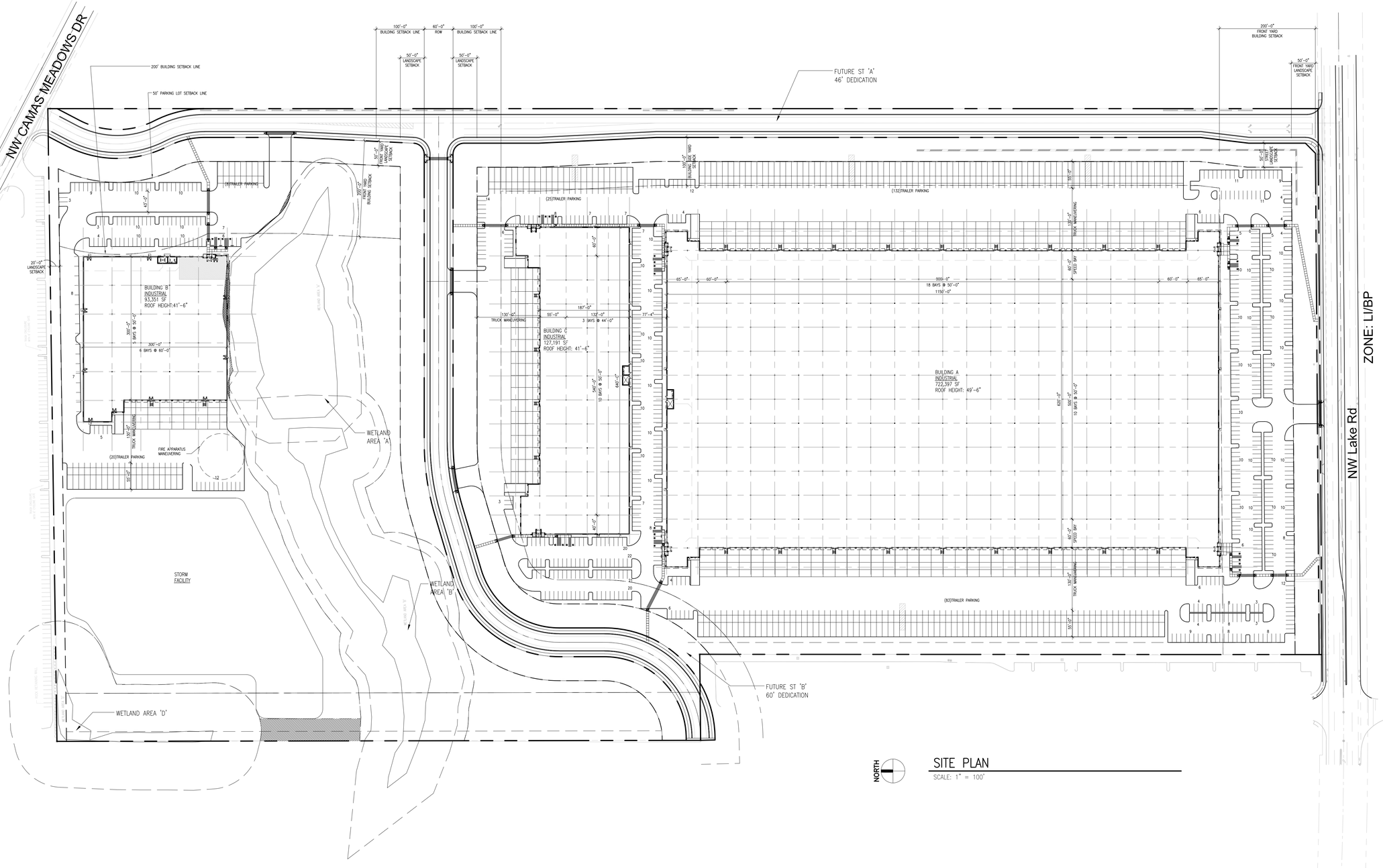
Revisions:
A
A
A
A

Sheet Title:
PRELIMINARY SITE PLAN

Designed by:	Drawn by:	Checked by:
TDW/MW/GG	TDS	BEB

Sheet No.
SPR1
1 of 4 Sheets



SITE PLAN
SCALE: 1" = 100'

PROJECT DATA – BUILDING B

BUILDING AREA	93,351 SF
PARKING PROVIDED	123
TRAILER PARKING	28

SITE AREA TOTAL	3,029,134 SF 69.4 AC
TOTAL BUILDING AREA (A, B & C)	942,939 SF
COVERAGE	31.1%

PROJECT DATA – BUILDING C

BUILDING AREA	127,191 SF
PARKING PROVIDED	192 STALLS
TRAILER PARKING	65

PROJECT DATA – BUILDING A

BUILDING AREA	722,397 SF
PARKING PROVIDED	460 STALLS
TRAILER PARKING	215

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TACOMA, WA 98402

REVISIONS

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3	04 07 2022	DESIGN REVIEW
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1	10 01 2021	SEPA SUBMITTAL

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7154 REGISTERED ARCHITECT
RANDALL LEE BROWN
STATE OF WASHINGTON

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Date: 2022.04.08 13:10:35 -07'00'

PROJECT INFORMATION

CAMAS BUSINESS CENTER
4707 NW Lake Rd
Camas, WA

SHEET INFORMATION

RELEASE FOR: PROGRESS PRINTING
TITLE: MASTER SITE PLAN

DESIGNED BY: DRAWN BY:
REVIEWED BY: APPROVED BY:
DATE: 09-16-2021
SHEET NO: A1.0
PROJECT NO: 200902.24.139

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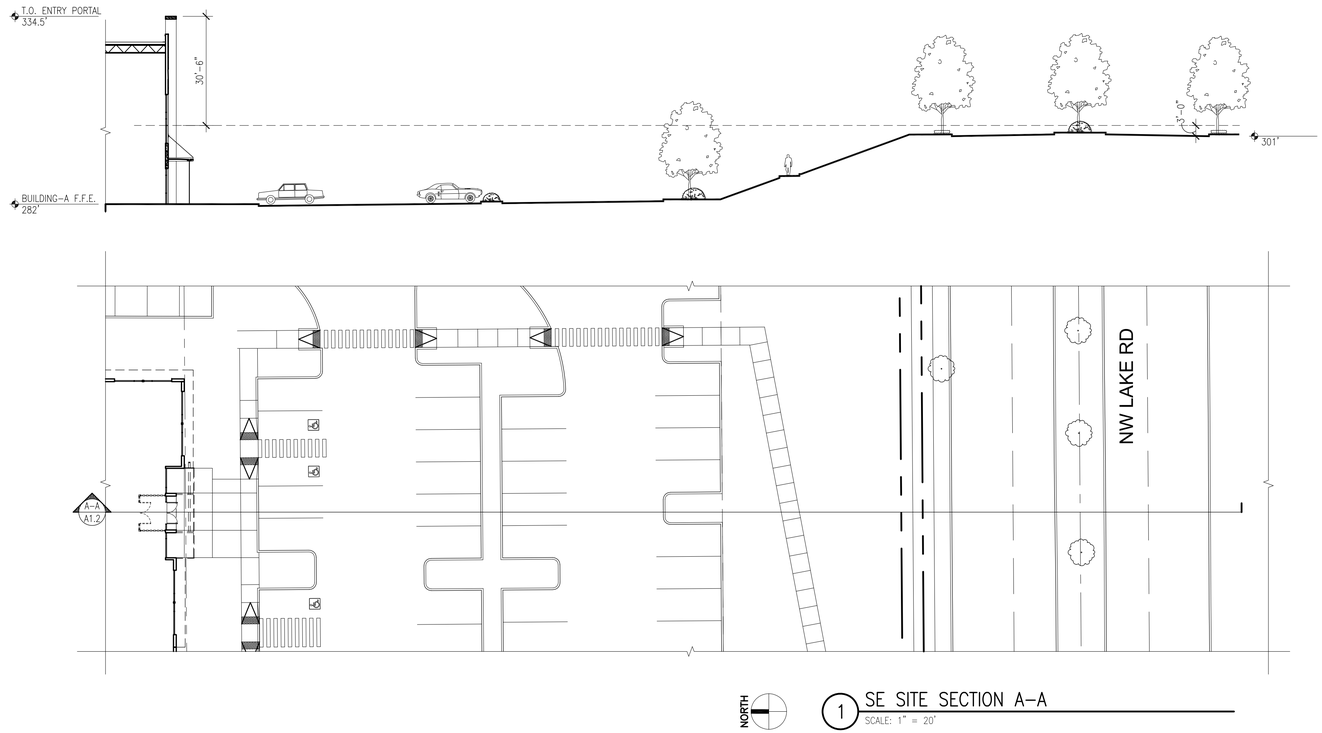

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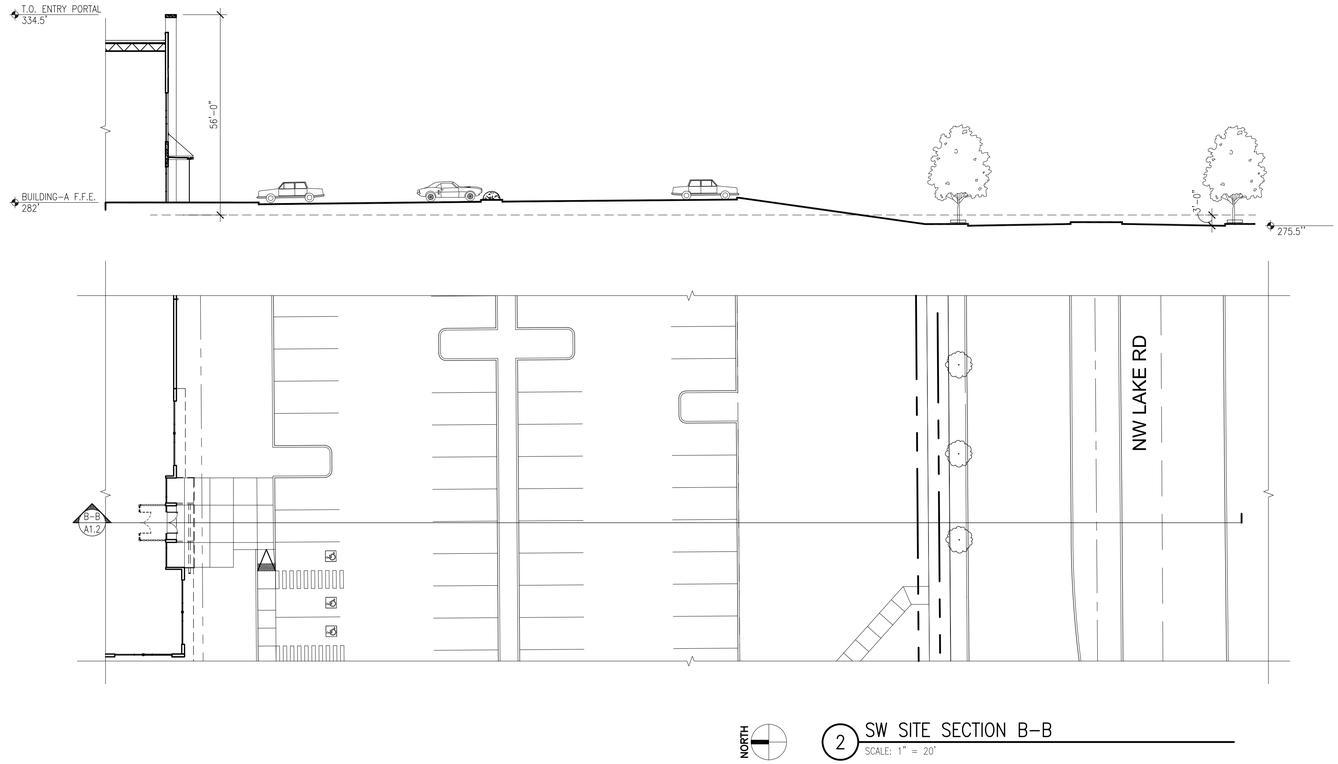

2 SW SITE SECTION B-B
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CAMAS BUSINESS CENTER
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Camas, WA

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SHEET NO: A1.2
PROJECT NO: 200902.24.139

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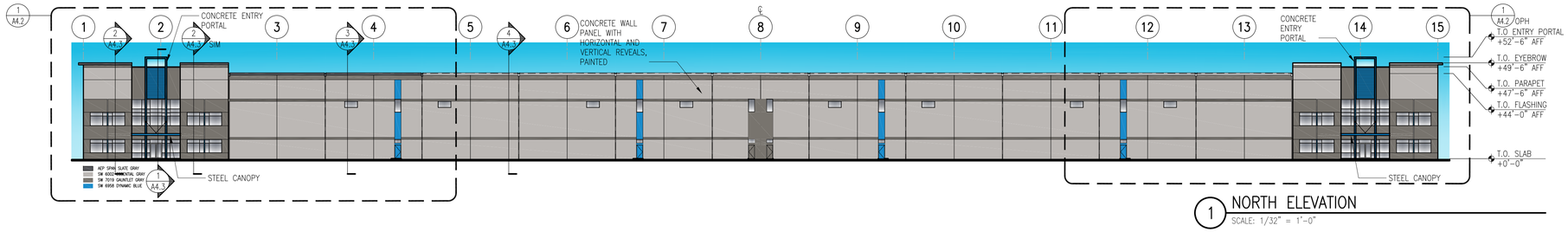

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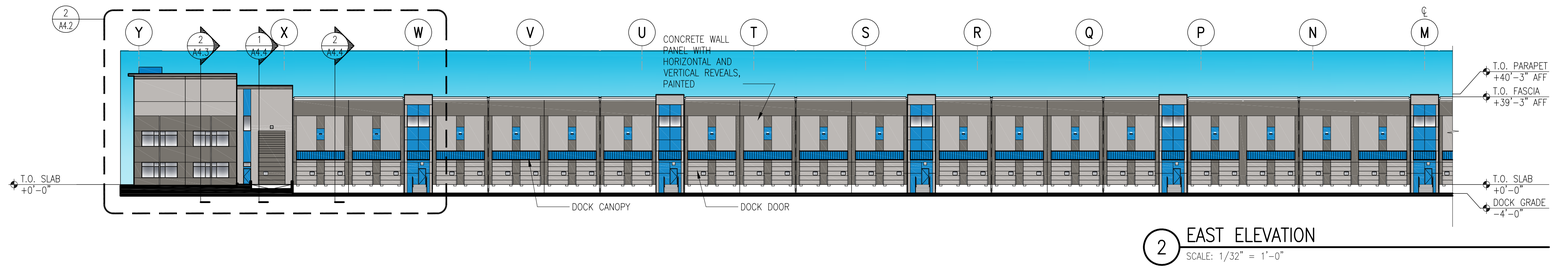

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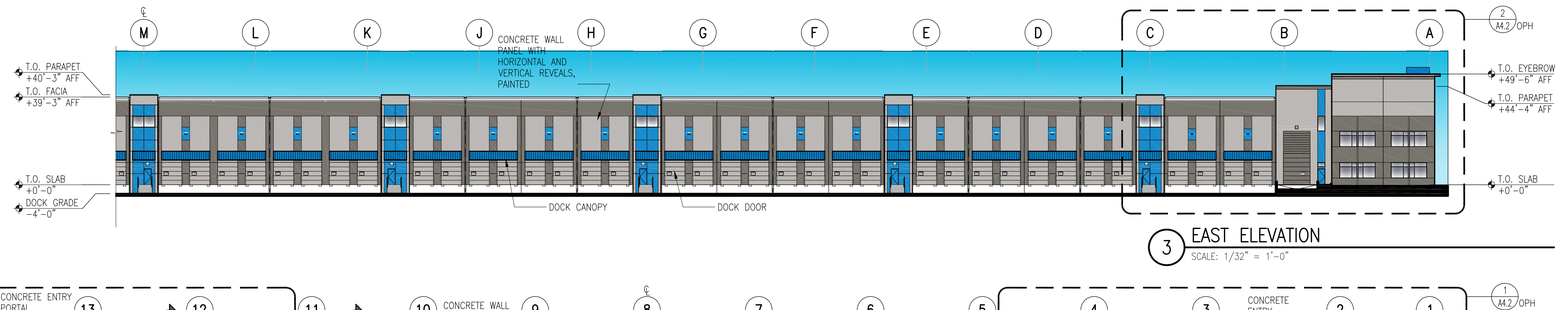

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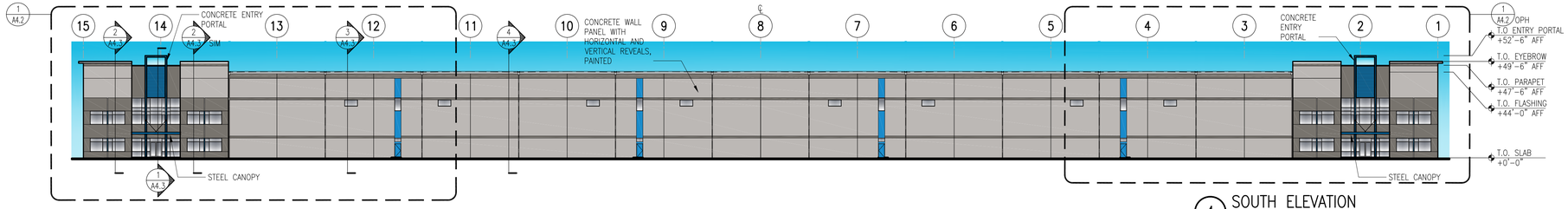

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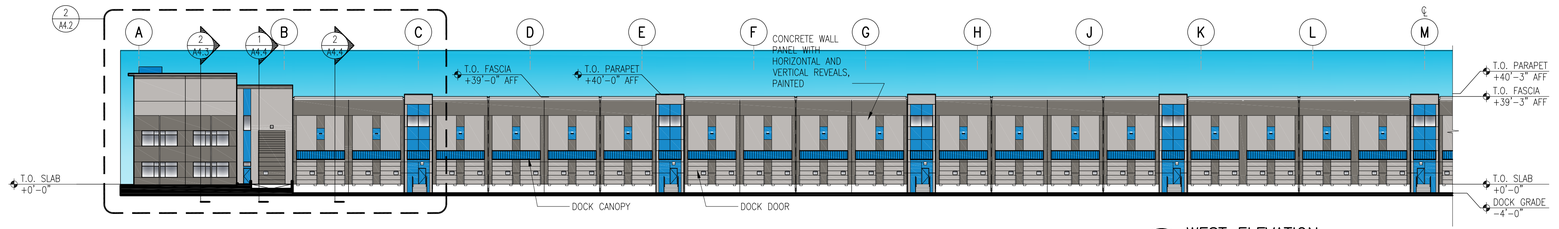

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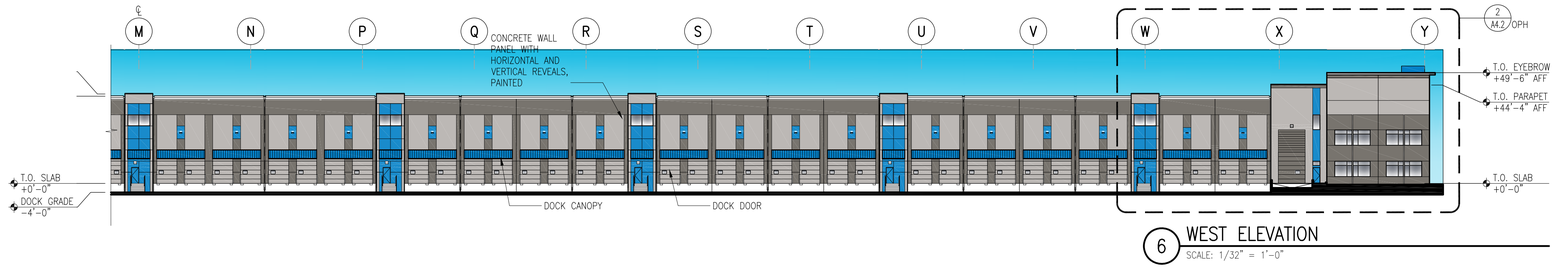

6 WEST ELEVATION
SCALE: 1/32" = 1'-0"

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PROJECT INFORMATION

CAMAS BUSINESS CENTER–BUILDING A
4707 NW Lake Rd
Camas, WA

SHEET INFORMATION

RELEASE FOR: PROGRESS PRINTING
TITLE: ELEVATIONS

DESIGNED BY: DRAWN BY:
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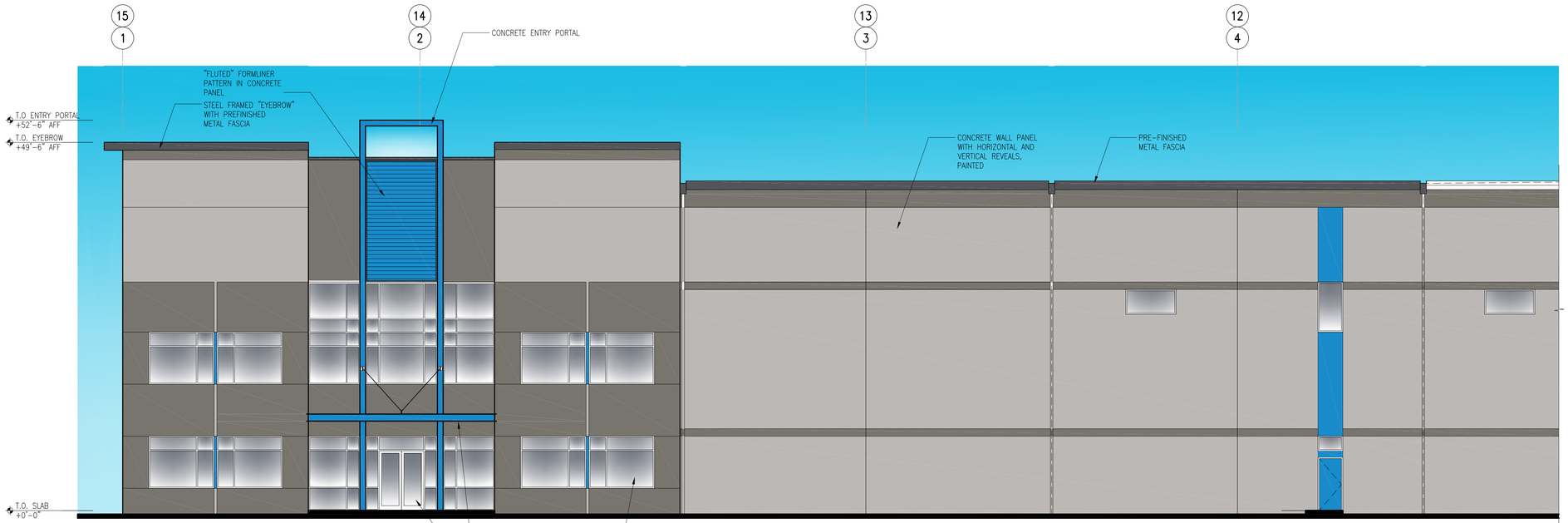

AEP SPAN SLATE GRAY
SW 6002 ESSENTIAL GRAY
SW 7019 GAUNTLET GRAY
SW 6958 DYNAMIC BLUE

1 ENLARGED ELEVATION
SCALE: 1/8" = 1'-0"

2 ENLARGED ELEVATION
SCALE: 1/8" = 1'-0"

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CAMAS BUSINESS CENTER–BUILDING A
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Camas, WA

SHEET INFORMATION

RELEASE FOR: PROGRESS PRINTING
TITLE: ENLARGED ELEVATIONS

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PROJECT NO: 200902.24.139

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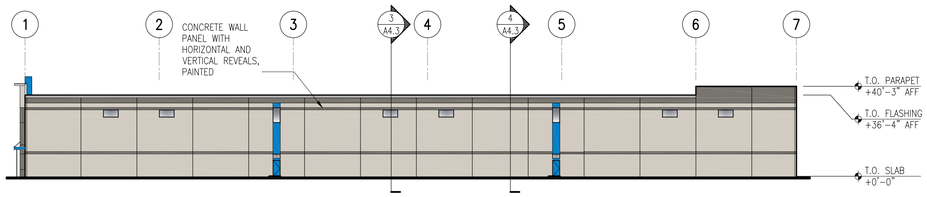
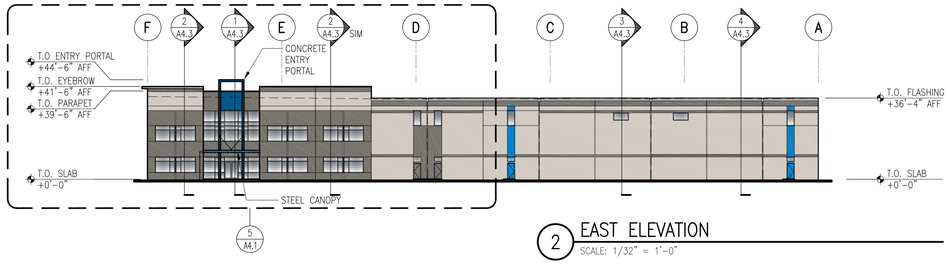


1 NORTH ELEVATION
SCALE: 1/32" = 1'-0"



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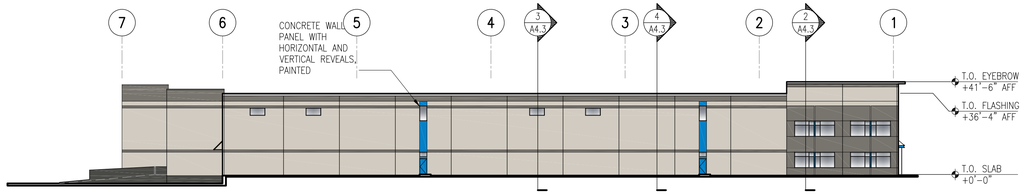
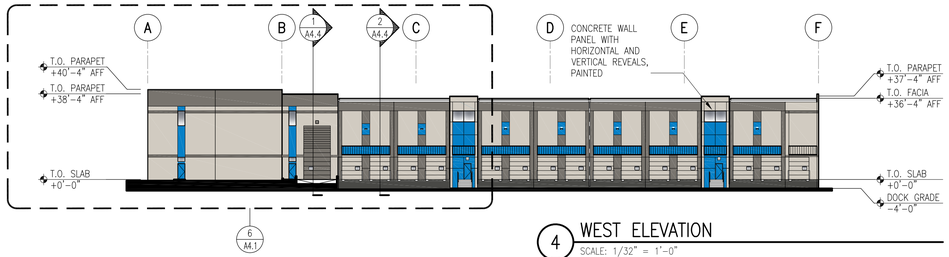
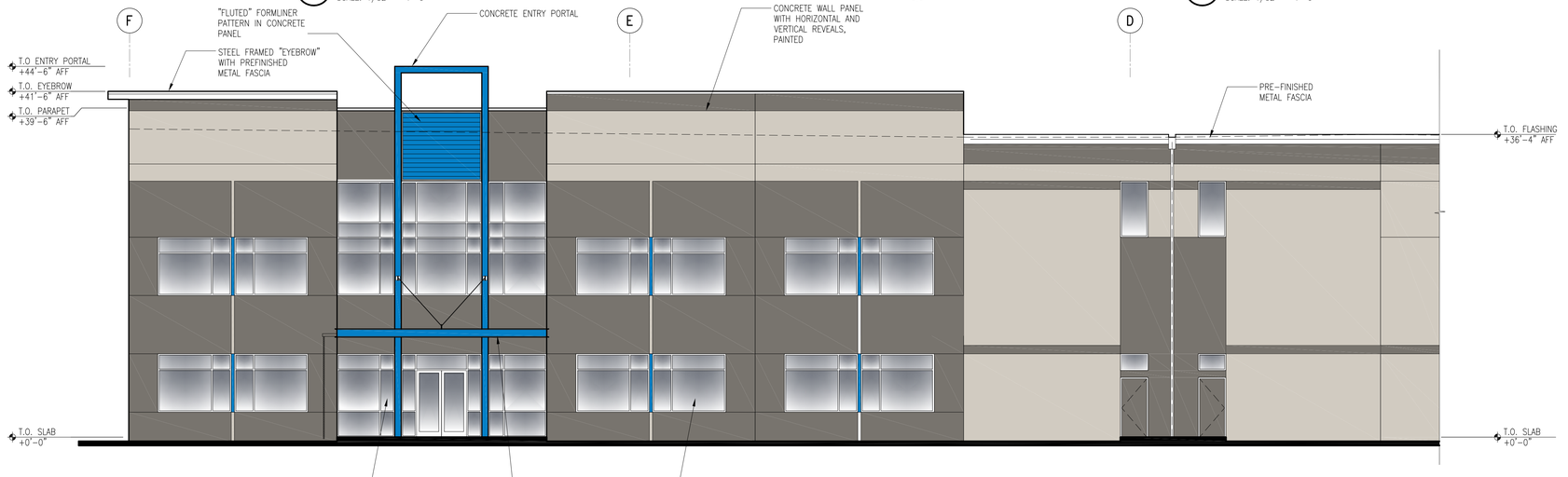
SCALE: 1/32" = 1'-0"



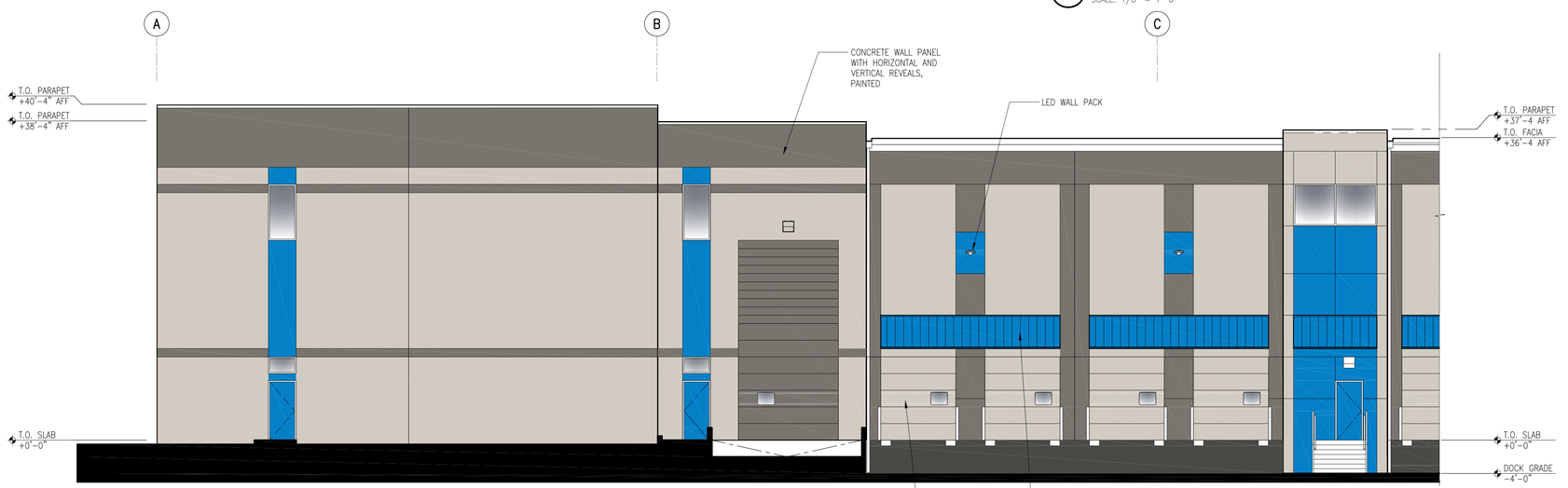
3 SOUTH ELEVATION
SCALE: 1/32" = 1'-0"



4 WEST ELEVATION
SCALE: 1/32" = 1'-0"



5 ENLARGED ELEVATION
SCALE: 1/8" = 1'-0"



6 ENLARGED ELEVATION
SCALE: 1/8" = 1'-0"

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TACOMA, WA 98402

REVISIONS

ISSUE NO.	DATE	ITEM
3	04 08 22	DESIGN REVIEW
2	02 02 22	SEPA RESUBMITTAL
1	10 01 21	SEPA

PROFESSIONAL STAMP

715# REGISTERED ARCHITECT
RANDALL LEE BROWN
STATE OF WASHINGTON

Digitally signed by Randy Brown
Date: 2022.04.08 13:10:35 -07'00'

PROJECT INFORMATION

CAMAS BUSINESS CENTER-BUILDING B
4707 NW Lake Rd
Camas, WA 98607

SHEET INFORMATION

RELEASE FOR: PROGRESS PRINTING
TITLE: ELEVATIONS & ENLARGED ELEVATIONS

DESIGNED BY: DRAWN BY:
REVIEWED BY: APPROVED BY:
DATE: 09-16-2021
SHEET NO: A4.1
PROJECT NO: 200902.24.139

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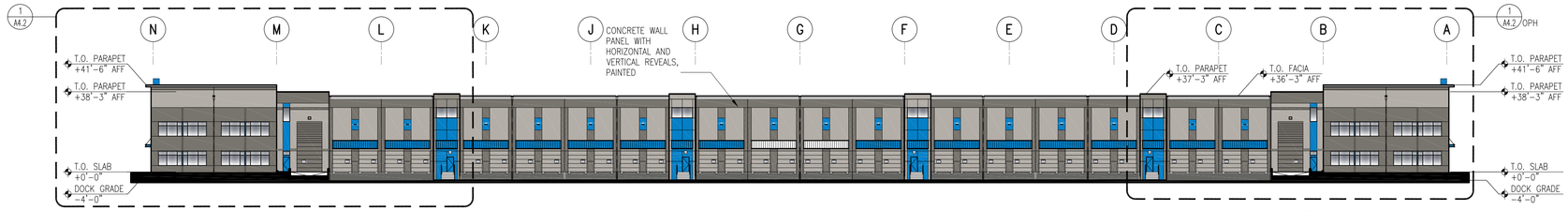
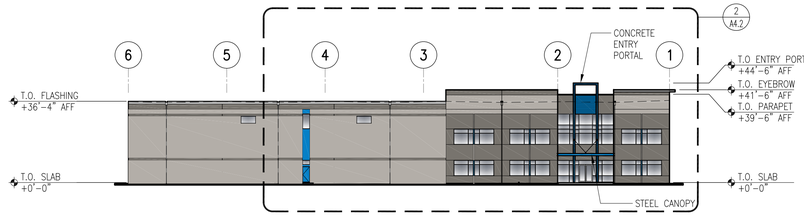
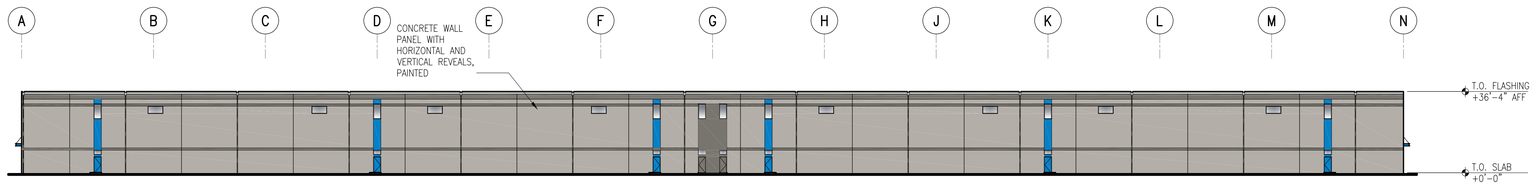


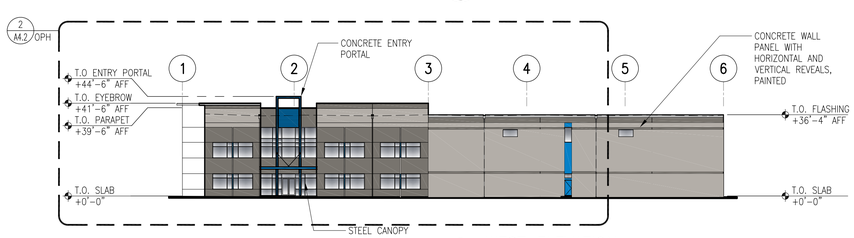
1 NORTH ELEVATION
SCALE: 1/32" = 1'-0"



2 EAST ELEVATION
SCALE: 1/32" = 1'-0"



3 SOUTH ELEVATION
SCALE: 1/32" = 1'-0"



4 WEST ELEVATION
SCALE: 1/32" = 1'-0"

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REVISIONS

ISSUE NO.	DATE	ITEM
3	04 08 2022	DESIGN REVIEW
2	02 02 2022	SEPA RESUBMITTAL
1	10 01 2021	SEPA

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7154 REGISTERED ARCHITECT
RANDALL LEE BROWN
STATE OF WASHINGTON

Digitally signed by Randy Brown
Date: 2022.04.08 13:10:35 -07'00'

PROJECT INFORMATION

EAST VANCOUVER E-COMMERCE CENTER-BUILDLING C
4707 NW Lake Rd
Camas, WA 98607

SHEET INFORMATION

RELEASE FOR: PROGRESS PRINTING
TITLE: ELEVATIONS

DESIGNED BY: DRAWN BY:
REVIEWED BY: APPROVED BY:
DATE: 09-16-2021
SHEET NO: A4.1
PROJECT NO: 200902.24.139

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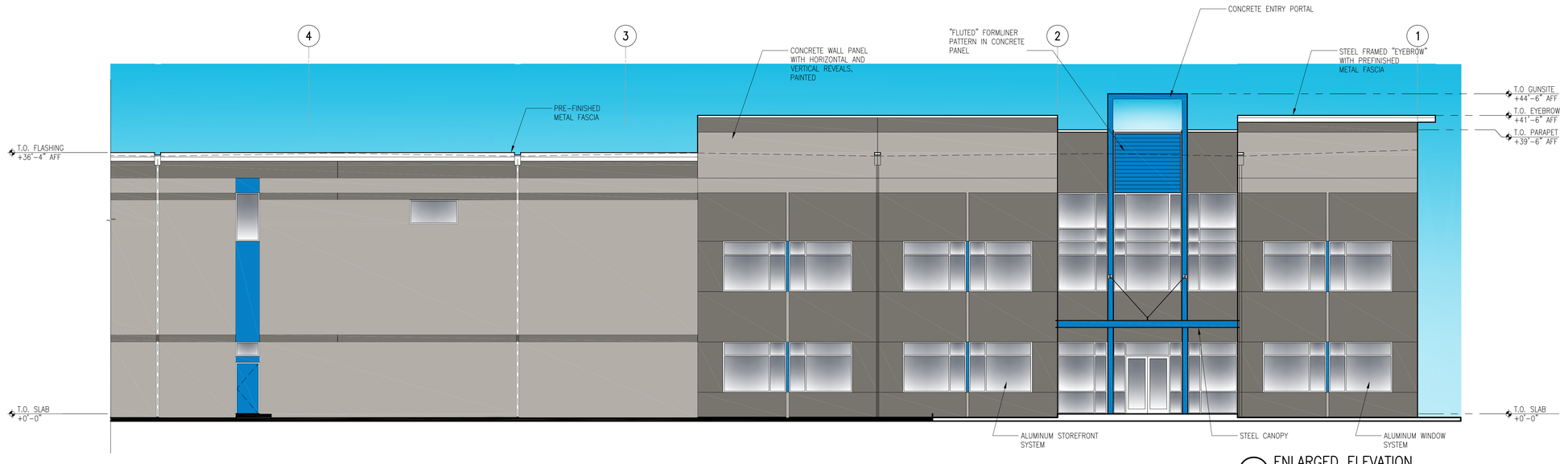
1 ENLARGED ELEVATION
SCALE: 1/8" = 1'-0"



2 ENLARGED ELEVATION
SCALE: 1/8" = 1'-0"

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STATE OF WASHINGTON

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Date: 2022.04.08 13:10:35 -07'00'

PROJECT INFORMATION

EAST VANCOUVER E-COMMERCE CENTER-BUILDLING C
4707 NW Lake Rd
Camas, WA 98607

SHEET INFORMATION

RELEASE FOR: PROGRESS PRINTING
TITLE: ENLARGED ELEVATIONS

DESIGNED BY: DRAWN BY:
REVIEWED BY: APPROVED BY:
DATE: 09-16-2021
SHEET NO: A4.2
PROJECT NO: 200902.24.139

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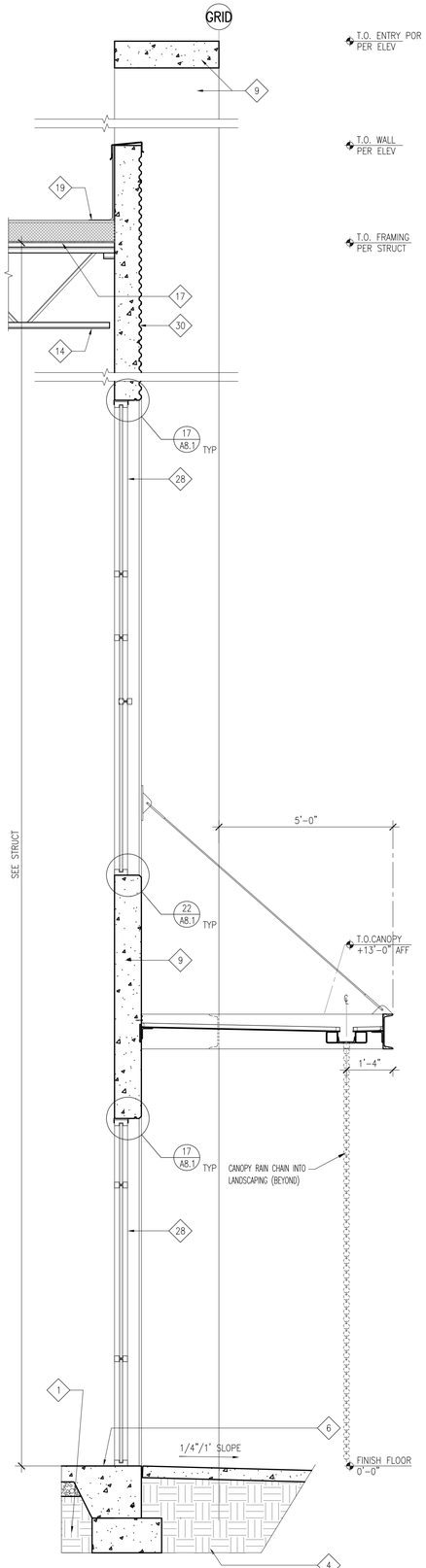
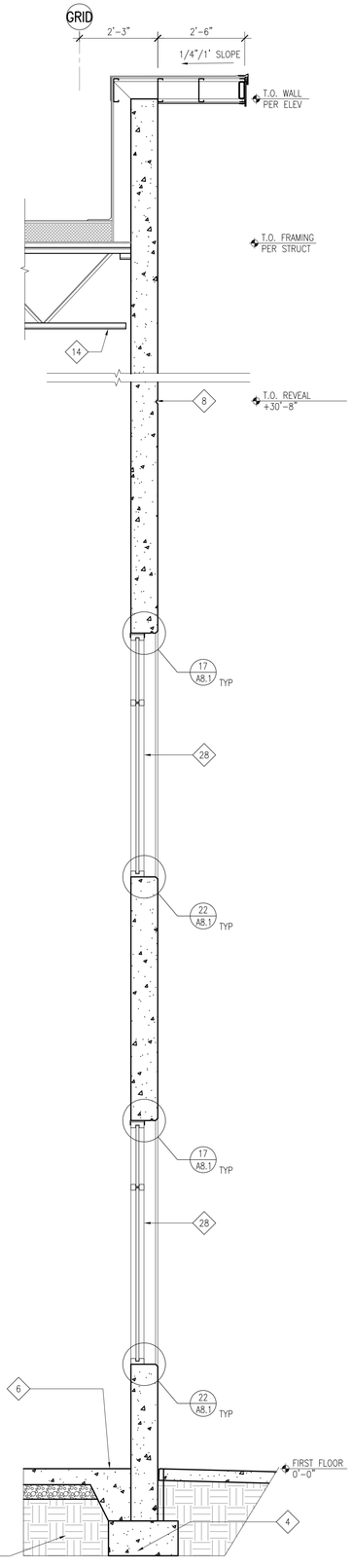
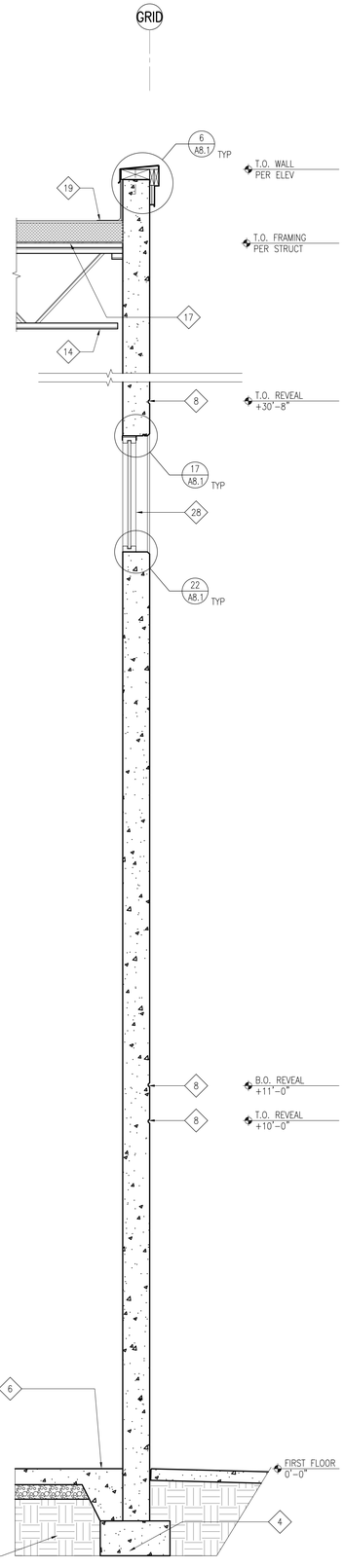


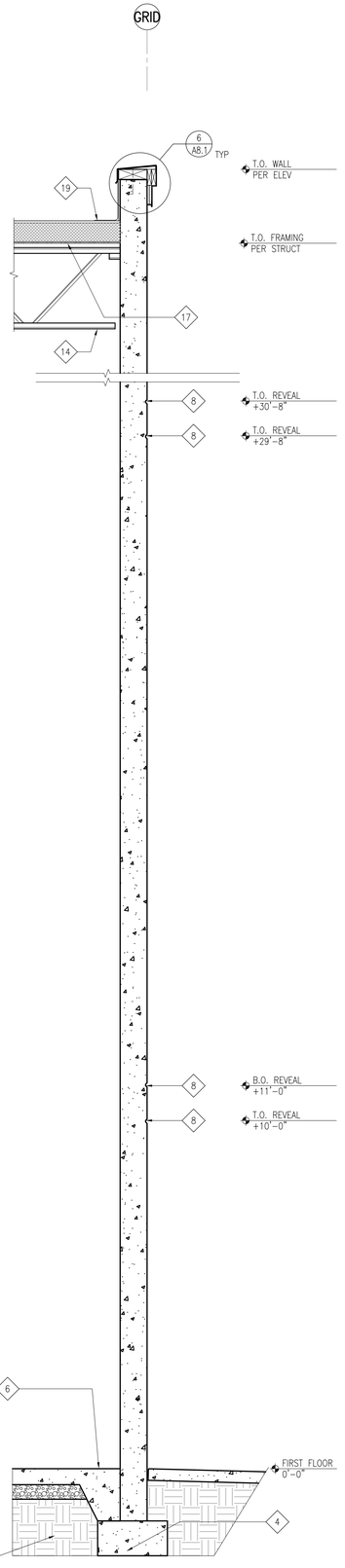
1 WALL SECTION AT ENTRY
SCALE: 1/2" = 1'-0"



2 WALL SECTION AT WINDOW SYSTEM
SCALE: 1/2" = 1'-0"



3 WALL SECTION AT WINDOW SYSTEM
SCALE: 1/2" = 1'-0"



4 TYPICAL WALL SECTION
SCALE: 1/2" = 1'-0"

KEYNOTES – WALL SECTIONS

NOTE: NOT ALL KEYNOTES ARE USED

1. STRUCTURAL FILL
2. CURTAIN BOARD BEYOND
3. CONCRETE PAVING
4. CONC FOOTING, SEE STRUCT DWGS FOR ELEVATION
5. CONC WALK OR LANDING OVER COMPACTED FILL PER SOILS REPORT
6. CONC SLAB-ON-GRADE ON GRAVEL CAPILLARY BREAK ON STRUCTURAL FILL PER SOILS REPORT
7. SEALANT
8. HORIZONTAL REVEAL, SEE DETAIL 13/A8.1, TYP UON
9. SITE CAST CONC WALL PANEL, PAINT
10. CANT
11. STEEL ANGLE, SEE STRUCT DWGS.
12. STEEL GIRDER, SEE STRUCTURAL FRAMING PLAN
13. STEEL BEAM, PAINT. SEE STRUCTURAL FRAMING PLAN
14. STEEL JOIST, SEE STRUCTURAL FRAMING PLAN
15. TUBE STEEL COLUMN OR BEAM, SEE STRUCTURAL DRAWINGS
16. FILTER FABRIC
17. WOOD ROOF DECK, SEE STRUCTURAL DWGS
18. WOOD NAILER AND BLOCKING
19. RIGID INSULATION & PERIMETER WD BLKG AS REQD
20. SINGLE-PLY MEMBRANE ROOF ASSEMBLY, CLASS B, OR HIGHER
21. PREFINISHED METAL FASCIA
22. DRIP FORMED IN CONC PANEL
23. SURFACE REGLET
24. CRUSHED ROCK
25. DOCK BUMPER
26. SECTIONAL OVERHEAD DOOR TRACK
27. ALUMINUM WINDOW SYSTEM
28. ALUMINUM STOREFRONT SYSTEM
29. FOUNDATION DRAIN
30. FORMLINER WITH "FLUTED RIB" PROFILE
31. N/A
32. STEEL CHANNELS, SEE STRUCTURAL DRAWINGS
33. N/A
34. WALL SCONCE LIGHT FIXTURE EA SIDE OF ENTRY DOOR.
35. BELOW GRADE BITUMINOUS DAMP PROOFING

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REVISIONS

ISSUE NO.	DATE	ITEM
3	04 08 2022	DESIGN REVIEW
2	02 02 2022	SEPA RESUBMITTAL
1	10 01 2021	SEPA SUBMITTAL

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7154 REGISTERED ARCHITECT
RANDALL LEE BROWN
STATE OF WASHINGTON

Digitally signed by Randy Brown
Date: 2022.04.08 13:10:35 -07'00'

PROJECT INFORMATION

CAMAS BUSINESS CENTER–BUILDING A
4707 NW Lake Rd
Camas, WA

SHEET INFORMATION

RELEASE FOR: PROGRESS PRINTING
TITLE: WALL SECTIONS

DESIGNED BY:
DRAWN BY:
REVIEWED BY:
APPROVED BY:
DATE: 09–16–2021
SHEET NO: A4.3
PROJECT NO: 200902.24.139

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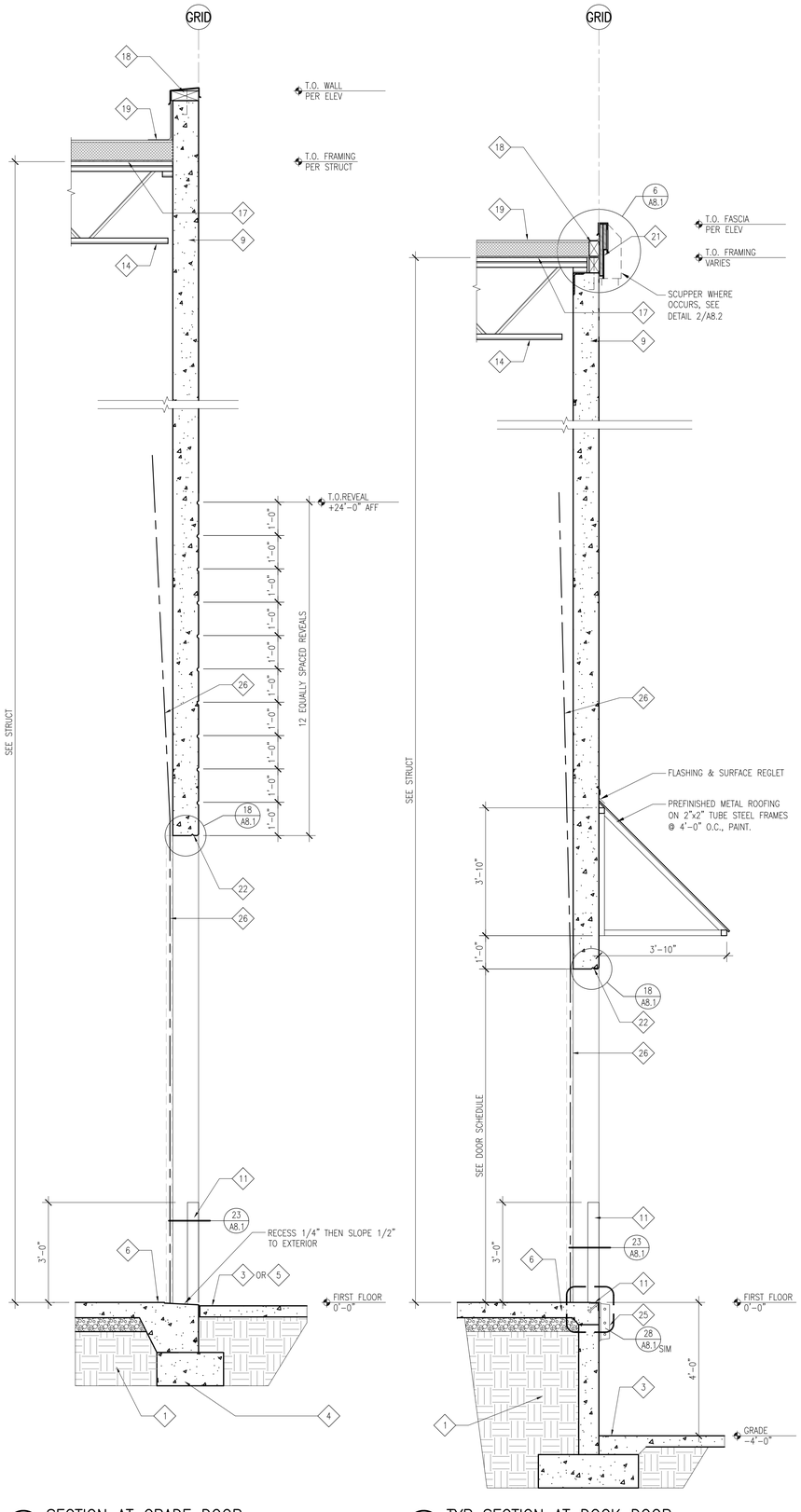

1 SECTION AT GRADE DOOR
SCALE: 1/2" = 1'-0"

2 TYP SECTION AT DOCK DOOR
SCALE: 1/2" = 1'-0"

KEYNOTES – WALL SECTIONS

NOTE: NOT ALL KEYNOTES ARE USED

1. STRUCTURAL FILL
2. CURTAIN BOARD BEYOND
3. CONCRETE PAVING
4. CONC FOOTING, SEE STRUCT DWGS FOR ELEVATION
5. CONC WALK OR LANDING OVER COMPACTED FILL PER SOILS REPORT
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35. BELOW GRADE BITUMINOUS DAMP PROOFING

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STATE OF WASHINGTON

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PROJECT INFORMATION

CAMAS BUSINESS CENTER-BUILDING A
4707 NW Lake Rd
Camas, WA

SHEET INFORMATION

RELEASE FOR: PROGRESS PRINTING
TITLE: WALL SECTIONS

DESIGNED BY: DRAWN BY:
REVIEWED BY: APPROVED BY:
DATE: 09-16-2021
SHEET NO: A4.4
PROJECT NO: 200902.24.139

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DESIGN REVIEW CHECKLIST

The purpose of this sheet is to provide a simplified and expedited review of the design review principles and guidelines using objective review standards. The standards are intended as tool for the decision-maker in making findings that the proposal either achieves compliance with the intent of the principles or reasonably mitigates any conflict. When reviewing the check sheet, the proposal should as a whole "comply" with the standards and thus be generally consistent with the overriding principles. [Yes = In Compliance; No = Not In Compliance; NA = Not Applicable]

Standard Principles and Guidelines

ARCHITECTURE				
Yes	No	NA	Principles and Guidelines	Comments
	X		Corrugated materials, standing seam, T-1 11, or similar siding materials are avoided unless it produces a high visual (or aesthetic) quality.	Standing Seam Metal awnings over Dock Doors to provide weather & sun protection in addition to articulating the long elevation with a change of plane & shadow casting.
X			Buildings walls or fences visible from roadways are articulated in order to avoid a blank look.	Walls are articulated vertically & horizontally to provide scale, offsets, shadow casting & changing color palette thereby delivering relief from blank flat walls.
X			The use of bold colors has been avoided unless used as minor accents.	Overall neutral palette of white & grey has been minutely accentuated with a pleasantly warm orange-yellow accent at points of interest within proposed design.
		X	Higher density/larger structures abutting lower density residential structures have been designed to mitigate size and scale differences.	
LANDSCAPING AND SCREENING				
Yes	No	NA	Principles and Guidelines	Comments
X			Vegetation for landscaping includes native, low maintenance plantings. Significant trees are retained if feasible.	All planting has been selected to be drought tolerant and/or native. Trees are retained in wetland and wetland buffer areas.
		X	Trees planted along streetscapes with overhead power lines include only those trees identified on the City's Tree list.	
X			Landscaping, including trees, shrubs, and vegetative groundcover, is provided to visually screen and buffer the use from adjoining less intense uses including parking.	Landscape Buffers have been proved meeting or exceeding CMC 18.13.055 standard and placed on upper portions of slopes where applicable.
		X	Proposed fencing is incorporated into the landscaping so as to have little or no visual impact.	
	X		Signs located on buildings or incorporated into the landscaping	Signage TBD

			are unobtrusive and vandal resistant. If illuminated they are front lit.	
		X	Landscape lighting - low voltage, non-glare, indirect lighting is directed, hooded or shielded away from neighboring properties.	
X			Street lighting (poles, lamps) is substantially similar or architecturally more significant than other street lighting existing on the same street and do not conflict with any City approved street lighting plans for the street.	
X			Parking and building lighting is directed away from surrounding properties through the use of hooding, shielding, siting and/or landscaping.	
		X	Outdoor furniture samples are consistent with the overall project design.	
X			Existing trees over 6" dbh that are not required to be removed to accommodate the proposed development are retained and incorporated into the landscape plan.	Existing trees are retained in wetland and wetland buffer areas.
X			Rock outcropping's, forested areas and water bodies are retained.	Site includes wetland and wetland buffer.
HISTORIC AND HERITAGE PRESERVATION				
Yes	No	NA	Principles and Guidelines	Comments
		X	The use of Historic Markers, information kiosks, project names, architectural features, or other elements of the project promote the historic heritage of the site or surrounding area.	

Specific Principles and Guidelines

GATEWAYS AND CORRIDORS				
SIGNAGE				
Yes	No	NA	Principles and Guidelines	Comments
X			Gateways are devoid of free-standing signs. Preexisting freestanding signs are proposed for removal at the time of development, redevelopment, or major rehabilitation on the site.	
		X	Permanent signage within a gateway are standardized to create a consistent look in terms of size, color, and materials.	

STREETSCAPE				
Yes	No	NA	Principles and Guidelines	Comments
X			The main public entrance is oriented toward the public right-of-way.	
X			Pedestrian walkways connect each building's front entry with the sidewalk.	
X			Bike lanes are provided and link public areas with neighborhoods and other local and regional bicycle corridors.	
X			Alternative transportation, such as attractive bus stop shelters, bicycle parking, etc. are provided.	Bicycle Parking near public entries shall be provided.
X			Trees, planting strips or bioswales are used for separating vehicles and pedestrian movements.	
X			Street trees no less than two inches in diameter are planted within planter strips or tree wells at a spacing that creates the appearance of a continuous canopy at tree maturation.	Street trees have been provided along new streets. Spaced for a continuous canopy.
	X		The surface of pedestrian walkways within intersections are accentuated with a unique character (i.e. pattern stone, exposed aggregate, stamped concrete, etc.)	Crosswalks are marked with pedestrian striping on concert with Landscape Architect's pedestrian crosswalk meterial.
X			Buildings are placed as close to streets and roads as the zoning code allows.	
	X		On-site parking is located to the rear or the side of the building.	Parking at all sides of proposed building to obtain required quantity of on-site parking.
X			A consistent iconic streetscape lighting scheme is used that portrays the primary development period, architecture characteristics, or predetermined theme as identified in a concept plan, sub-area plan, or master plan recognized by the City.	TBD by lighting designer / engineer consultant with Architect & Developer.
LANDSCAPING				
Yes	No	NA	Principles and Guidelines	Comments
X			Landscaping adjacent to the public right of way provides multiple layers of plantings, including canopy trees, understory trees, shrubs and groundcover.	Predominantly Evergreen Trees and shrubs are accented by deciduous shrubs and evergreen groundcover.
		X	Hanging baskets provided along building frontages add visual interest and the bottom of the basket is a minimum of 80 inches above the finished grade of the sidewalk.	
		X	Median planting design/plant selection create a unique and cohesive streetscape design.	

COMMERCIAL				
ARCHITECTURE				
Yes	No	NA	Principles and Guidelines	Comments
		X	Office and retail buildings provide a minimum solid to void ratio of 60%/40%	Industrial warehouse with minor office component at public entries.
		X	The development is built with a residential feel (i.e. size, scale, and materials compatible with neighboring buildings) if surrounded by residential areas or adjacent to residentially zone properties.	
		X	Buildings over two stories have the third story and above offset from the first two stories, if surrounding developments are less than three stories or land use designations on adjacent sites do not allow more than three story development.	
LANDSCAPING & SCREENING				
Yes	No	NA	Principles and Guidelines	Comments
X			Intersections are illuminated, but not dominated by lighting. Lighting is incorporated into the landscape and illuminates the quality of the natural environment. Street light poles and lamps are compatible with other nearby lighting on the same street.	
		X	Parking spaces are clustered in small groupings and separated by landscaping to create a pedestrian friendly, park like environment.	
STREETSCAPE				
Yes	No	NA	Principles and Guidelines	Comments
X			On-site parking areas are located to the interior of the development unless site development proved prohibitive. Otherwise, parking areas are screened with landscaping.	On-site parking is screened by Landscape Architect's design.
X			Buildings are placed close to streets and roads unless site constraints made it impossible or characteristics of the surrounding properties already developed made it incompatible. Otherwise, retail frontage setbacks do not exceed 25 feet from back of curb.	
X			Window and door placement provides a high degree of transparency at the lower levels of the building and maximize visibility of pedestrian active uses.	Public Entries are storefront glazing visually open to pedestrian entry plaza, sidwalks & landscaping.
X			Each use/activity in a development containing multiple uses/ activities is integrated in a manner that achieves a	

			seamless appearance or creates a cohesive development.	
X			New streets intersecting commercial properties are designed to create a safe environment. “Coving” techniques and “round-a-bouts” were considered for traffic calming when appropriate.	

DESIGN REVIEW CHECKLIST

DR21-07 Camas Business Park

The purpose of this sheet is to provide a simplified and expedited review of the design review principles and guidelines using objective review standards. The standards are intended as tool for the decision-maker in making findings that the proposal either achieves compliance with the intent of the principles or reasonably mitigates any conflict. When reviewing the check sheet, the proposal should as a whole "comply" with the standards and thus be generally consistent with the overriding principles. [Yes = In Compliance; No = Not In Compliance; NA = Not Applicable]

Standard Principles and Guidelines

ARCHITECTURE				
Yes	**No**	**NA**	**Principles and Guidelines**	**Comments**
x			Corrugated materials, standing seam, T-1 11, or similar siding materials are avoided unless it produces a high visual (or aesthetic) quality.	
x			Buildings walls or fences visible from roadways are articulated in order to avoid a blank look.	
x			The use of bold colors has been avoided unless used as minor accents.	
x			Higher density/larger structures abutting lower density residential structures have been designed to mitigate size and scale differences.	
LANDSCAPING AND SCREENING				
Yes	**No**	**NA**	**Principles and Guidelines**	**Comments**
x			Vegetation for landscaping includes native, low maintenance plantings. Significant trees are retained if feasible.	
		x	Trees planted along streetscapes with overhead power lines include only those trees identified on the City's Tree list.	
x			Landscaping, including trees, shrubs, and vegetative groundcover, is provided to visually screen and buffer the use from adjoining less intense uses including parking.	
		x	Proposed fencing is incorporated into the landscaping so as to have little or no visual impact.	
		x	Signs located on buildings or incorporated into the landscaping are unobtrusive and vandal resistant. If illuminated, they are front lit.	

		x	Landscape lighting - low voltage, non-glare, indirect lighting is directed, hooded, or shielded away from neighboring properties.	
x			Street lighting (poles, lamps) is substantially similar or architecturally more significant than other street lighting existing on the same street and do not conflict with any City approved street lighting plans for the street.	COA
x			Parking and building lighting is directed away from surrounding properties through the use of hooding, shielding, siting and/or landscaping.	
		x	Outdoor furniture samples are consistent with the overall project design.	Review in future
x			Existing trees over 6" dbh that are not required to be removed to accommodate the proposed development are retained and incorporated into the landscape plan.	
x			Rock outcropping's, forested areas and water bodies are retained.	
HISTORIC AND HERITAGE PRESERVATION				
Yes	**No**	**NA**	**Principles and Guidelines**	**Comments**
		x	The use of Historic Markers, information kiosks, project names, architectural features, or other elements of the project promote the historic heritage of the site or surrounding area.	

Specific Principles and Guidelines

GATEWAYS AND CORRIDORS				
SIGNAGE				
Yes	**No**	**NA**	**Principles and Guidelines**	**Comments**
		x	Gateways are devoid of free-standing signs. Preexisting freestanding signs are proposed for removal at the time of development, redevelopment, or major rehabilitation on the site.	
		x	Permanent signage within a gateway are standardized to create a consistent look in terms of size, color, and materials.	
STREETSCAPE				
Yes	**No**	**NA**	**Principles and Guidelines**	**Comments**
x			The main public entrance is oriented toward the public right-of-way.	
x			Pedestrian walkways connect each building's front entry with the sidewalk.	

x			Bike lanes are provided and link public areas with neighborhoods and other local and regional bicycle corridors.	
		x	Alternative transportation, such as attractive bus stop shelters, bicycle parking, etc. are provided.	
x			Trees, planting strips or bioswales are used for separating vehicles and pedestrian movements.	
x			Street trees no less than two inches in diameter are planted within planter strips or tree wells at a spacing that creates the appearance of a continuous canopy at tree maturation.	
		x	The surface of pedestrian walkways within intersections are accentuated with a unique character (i.e. pattern stone, exposed aggregate, stamped concrete, etc.)	
x			Buildings are placed as close to streets and roads as the zoning code allows.	
x			On-site parking is located to the rear or the side of the building.	
x			A consistent iconic streetscape lighting scheme is used that portrays the primary development period, architecture characteristics, or predetermined theme as identified in a concept plan, sub-area plan, or master plan recognized by the City.	COA
LANDSCAPING				
Yes	**No**	**NA**	**Principles and Guidelines**	**Comments**
x			Landscaping adjacent to the public right of way provides multiple layers of plantings, including canopy trees, understory trees, shrubs and groundcover.	COA- less linear, more layered
		x	Hanging baskets provided along building frontages add visual interest and the bottom of the basket is a minimum of 80 inches above the finished grade of the sidewalk.	
		x	Median planting design/plant selection create a unique and cohesive streetscape design.	

COMMERCIAL & MIXED USES				
ARCHITECTURE				
Yes	**No**	**NA**	**Principles and Guidelines**	**Comments**
x			Office and retail buildings provide a minimum solid to void ratio of 60%/40%	
		x	The development is built with a residential feel (i.e. size, scale, and materials compatible with neighboring buildings) if surrounded by	

			residential areas or adjacent to residentially zoned properties.	
		x	Buildings over two stories have the third story and above offset from the first two stories, if surrounding developments are less than three stories or land use designations on adjacent zones do not allow more than three story development.	
LANDSCAPING & SCREENING				
Yes	**No**	**NA**	**Principles and Guidelines**	**Comments**
x			Intersections are illuminated, but not dominated by lighting. Lighting is incorporated into the landscape and illuminates the quality of the natural environment. Street light poles and lamps are compatible with other nearby lighting on the same street.	COA
		x	Parking spaces are clustered in small groupings and separated by landscaping to create a pedestrian friendly, park like environment.	
STREETSCAPE				
Yes	**No**	**NA**	**Principles and Guidelines**	**Comments**
x			On-site parking areas are located to the interior of the development unless site development proved prohibitive.	
x			Parking areas are screened with landscaping.	
x			Buildings are placed close to streets and roads unless site constraints made it impossible or characteristics of the surrounding properties already developed made it incompatible. Otherwise, retail frontage setbacks do not exceed 25 feet from back of curb.	
x			Window and door placement provides a high degree of transparency at the lower levels of the building and maximize visibility of pedestrian active uses.	
x			Each use/activity in a development containing multiple uses/activities is integrated in a manner that achieves a seamless appearance or creates a cohesive development.	
x			Watering system will maintain proposed landscaping for a period to ensure that plants are well established.	
x			New streets intersecting commercial properties are designed to create a safe environment. “Coving” techniques and “round-a-bouts” were considered for traffic calming when appropriate.	

STAFF REPORT

Camas Business Park
Major Design Review (DR21-07)
Related File: SPRV21-06

TO	Design Review Committee
FROM	Lauren Hollenbeck, Senior Planner
LOCATION	4707 NW Lake Road Parcel Numbers 176155000 & 176170000
APPLICANT	Bjorn Brynestad Panattoni Development Company, Inc. 206-838-1730

APPLICABLE LAW: This land use application submitted October 26, 2021 is vested to the land use regulations and development standards in effect on the effective date of the Camas Municipal Code (CMC) Title 16 Environment, 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 and Chapter 18.21 Light Industrial/Business Park.

Summary

The applicant is currently seeking design review approval for the construction of three (3) warehouse/office industrial buildings; Building A (725,436sf), Building B (125,590sf) and Building C (93,385sf) with associated parking and landscaping. The site is north of NW Lake Road and east of the Dwyer Creek Business Park. Access is provided from NW Lake Road to south and NW Camas Meadows Drive to the north.

The subject property is zoned Light Industrial/Business Park (LI/BP) including the properties immediately to the north, northwest and across NW Lake Road to the south. Property to the southwest is the zoned Business Park (BP), to the northeast is Multi-Family Residential (MF-18) and to the southeast is Regional Commercial (RC). NW Lake Road at the site's southern boundary is within a city gateway corridor.

The site's topography is relatively flat with a gradual downwards slope from south to north and is primarily actively grazed pasture with partially forested areas. Four (4) wetlands are located on the northern half of the property.

Purpose

Design Review is required for all new developments within a gateway corridor area. Design review is not intended to determine the appropriate use on a parcel but rather review a proposed development for compliance with City codes and plans related to landscaping, architectural elevations, and other elements relative to required improvements. The recommendations from the Design Review Committee (DRC) must consider the design review standards from the Design Review Manual and Camas Municipal Code (CMC). An enclosed checklist is to help guide you in your review but refer to the manual for specific details regarding the standards.

Standard and Specific Commercial & Mixed Use and Gateway & Corridors Design Principles and Guidelines

The standard and specific Commercial & Mixed uses and Gateway & Corridors principles and guidelines are required and must be demonstrated to have been satisfied in overall intent for design review approval. The standard design guidelines are developed to assist a project in meeting the established principles and each guideline should be adequately addressed. If the proposal cannot meet a specific guideline, then an explanation should be provided by the applicant as to why and how it will be mitigated to satisfy the intent of the design principles. The development guidelines include five major categories: 1) Landscaping and Screening, 2) Architecture, 3) Massing and Setbacks, 4) Historic & Heritage Preservation, and 5) Circulation and Connections. **The Design Review Checklist is enclosed to help guide the DRC in reviewing the standard applicable specific design review principles and guidelines.**

Recommendation

That the Design Review Committee reviews the submitted materials, deliberates, and forwards a recommendation to staff for Planning Commission consideration.

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

Date Published: April 28, 2022

To Whom It May Concern:

Please find enclosed a Determination of Non-Significance (DNS) for the **Camas Business Park (SEPA21-12)** 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:

- General application form and fee
- Applicant's narrative
- Site drawings and architectural elevations
- Traffic Study
- Tree Survey
- SEPA checklist
- Preliminary Stormwater Report
- Environmental Report
- Archaeological Predetermination*

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, 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 Interim Community Development Director, Robert Maul
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: SEPA 21-12 Camas Business Park

APPLICANT: Bart Brynestad
AHBL
2215 N. 30th Street, #300
Tacoma, WA 98403

REQUEST: Construction of three (3) warehouse/office buildings totaling approximately 942,393 gross square feet and associated parking, landscaping and roadway improvements.

LOCATION: 4707 & 4723 Northwest Lake Road
Camas, WA 98607

LEGAL DESCRIPTION: The project is located in the City of Camas in the Southeast ¼ of Section 29, Township 2 North, Range 3 East, of the Willamette Meridian; and described as parcels 176155000 and 176170000.

SEPA DETERMINATION: Determination of Non-Significance (DNS)

COMMENT DEADLINE: **May 12, 2022 at 5:00pm**

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).

State Environmental Policy Act
Determination of Non-Significance

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 **April 28, 2022** 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 **May 12, 2022**. 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

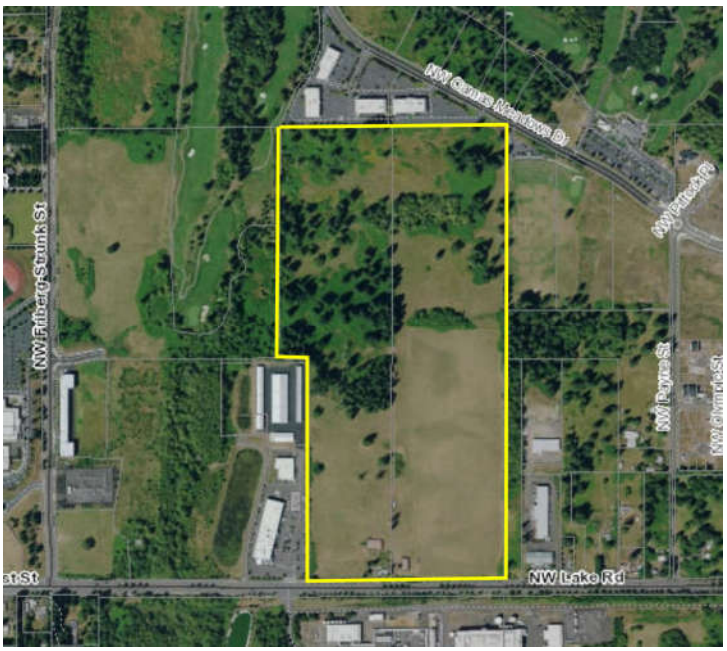
Robert Maul, Interim Community Development Director and SEPA official

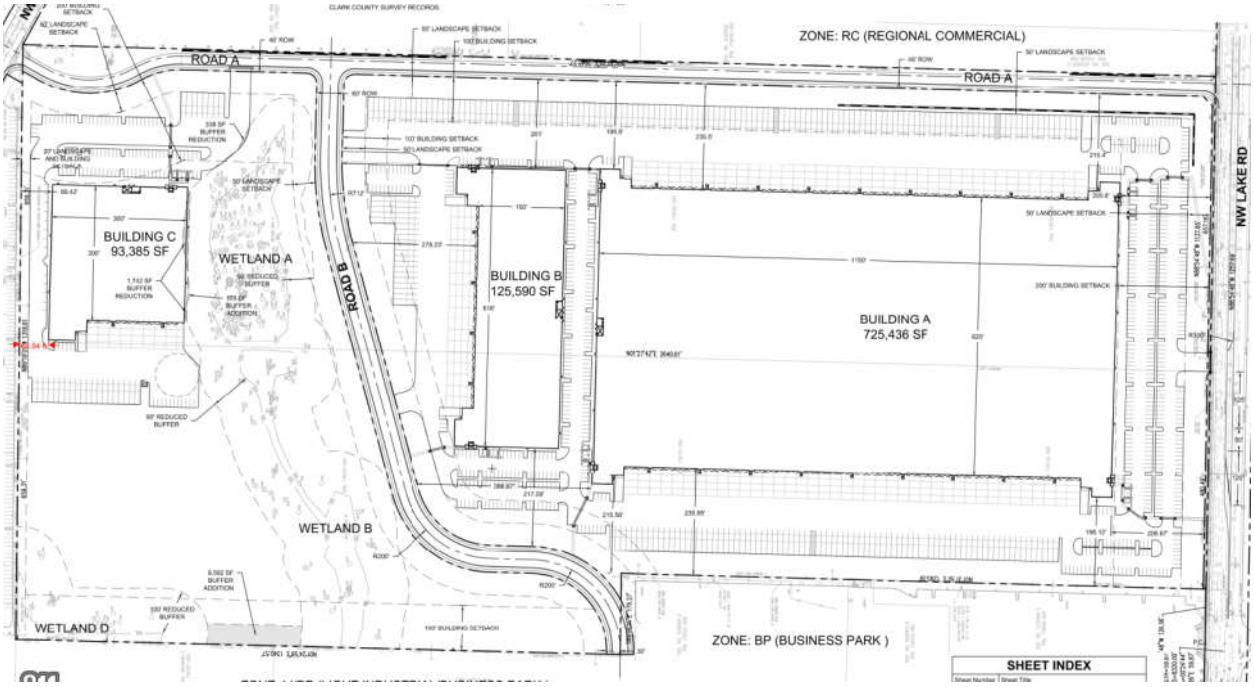
April 28, 2022
Date of publication

City of Camas WASHINGTON

State Environmental Policy Act
Determination of Non-Significance

Camas Business Park (LI/BP21-01)





Published in the Post Record on April 28, 2022 and posted on the City website April 28, 2022
Mailed to property owners within 300-feet of the property on April 27, 2022
Legal Publication No. 684330

A. BACKGROUND

1. Name of proposed project, if applicable:
   Camas Business Center

2. Name of applicant:
   Sheri Greene, AHBL, Inc.

3. Address and phone number of applicant and contact person:
   2215 North 30th Street, Suite 300, Tacoma, WA 98403, (253) 383-2422

4. Date checklist prepared:
   October 6, 2021

5. Agency requesting checklist:
   City of Camas

6. Proposed timing or schedule (including phasing, if applicable):
   Project will be constructed in up to three phases. Phase 1 will include development of Building A, along with all roads and utilities; Phase 2 will be Building B; and Phase 3 will be Building C. Construction of each phase will commence upon issuance of site development permit.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.
   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.
   Traffic Impact Analysis, SEPA Checklist, Critical Areas Study, Geotechnical Report, Archaeological Survey.

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.
   Not to our knowledge.

10. List any government approvals or permits that will be needed for your proposal, if known.
    Site Plan Review, Major Design Review, SEPA Determination, Critical Areas Review, Fire Department approval, Site Development Permit, Building Permits, Demolition Permit, NPDES.

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.)
    Project proposes construction of three industrial buildings totaling 969,073 square feet of warehouse/office facilities with associated parking and drive aisles. The project also includes construction of new onsite public roads with utility improvements.

Reserved for Agency Comments

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.
Project is located at 4707 NW Lake Road on Parcels 176155000 and 176170000 in the city of Camas, Clark County.

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site
(circle one): Flat, **rolling**, hilly, **steep slopes**, mountainous,
other _____

b. What is the steepest slope on the site (approximate percent slope)?
The steepest slope on the site is 2:1.

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.
According to the Geotechnical Report prepared by Terra Associates, Inc. dated July 12, 2021, site soils consist of approximately 1 to 11 inches of organic topsoil overlying 3 to 12 feet of medium stiff to very stiff silt with varying amounts of sand and gravel. The central and south-central portions of the site contained deposits of median dense sands with varying silt and gravel contents. Additionally, Columbia River Basalt was encountered in the north and north-central portions of the site within the upper 3 to 9 feet. Much of the site soils will be graded to support the development elevations. Topsoils will be replaced within landscaped portions of the site.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.
According to the geotechnical report, an erosion hazard exists along the moderate to steep slope in the approximate center of the site.

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.
The project is in preliminary design, but it is anticipated that earthwork will consist of 420,000 cubic yards of cut and 427,000 cubic yards of fill, for a net 7,000 cubic yards of fill.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.
Yes. Some erosion could occur during the course of construction. A TESC plan will be submitted as part of the site development plans, and Best Management Practices (BMPs) recommended by the geotechnical engineer will be used during the course of construction.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?
The project will be covered with approximately 80 percent of impervious surfaces.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:
A temporary erosion control plan will be submitted to the City prior to any site development and it will be implemented accordingly. Erosion potential will be mitigated in accordance with City of Camas regulations.

2. 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.
The proposed project would likely result in a minimal temporary increase in air pollution from engine emissions, dust, and asphalt paving that are common during construction. With adherence to applicable BMPs during construction, no significant air quality impacts from construction are anticipated. Moderate traffic increases resulting from the project would result in a minor increase in carbon monoxide levels beyond what is presently occurring, and significant air quality impacts are not anticipated.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.
None to our knowledge.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:
Watering may be necessary during construction to control dust. Air quality is regulated by three agencies: The US Environmental Protection Agency (EPA), the Washington State Department of Ecology (Ecology) and the Southwest Clean Air Agency. Each agency has established regulations that govern the concentration of pollutants and contaminant emissions from air pollution sources. Proposed construction of the project will be in accordance with these regulations.

3. Water

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**.**
Four wetlands (Wetlands A, B, C, and D), as identified by Soundview Consultants (2021), are located onsite. Wetlands A and D are classified as Category III depressional wetlands, Wetland B is a Category III slope wetland, and Wetland C is a small, locally exempt Category IV slope wetland. One Type F (fish habitat) stream is also located offsite to the west. Refer to the included Wetland and Fish and Wildlife Habitat Assessment Report by Soundview Consultants dated October 2021.

Reserved for Agency Comments

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.
Yes. The development project will require work within 200 feet of the onsite wetlands, including administrative buffer averaging and restoration of temporary buffer impact areas. The complete fill of the small (3,167 square feet), locally exempt, Category IV Wetland C is also proposed. Refer to the included Mitigation Bank Use and Conceptual Mitigation Plan by Soundview Consultants dated October 2021.

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**.**
Yes. The project proposes total fill (approximately 120 cubic yards) of the small, locally exempt Wetland C located on the eastern portion of the site. Refer to the included Mitigation Bank Use and Conceptual Mitigation Plan by Soundview Consultants dated October 2021.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.
No.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.
No. According to FEMA FIRM Map 53011C0414D, the site is outside the 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.
No. the project does not involve discharges of waste materials 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.
The proposed project will not withdraw or discharge to groundwater. The site will connect to the City of Camas water system.

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.
Waste materials will not be discharged into the ground. The project will connect to the City of Camas sewer system.

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.
The primary source of runoff will be stormwater. Stormwater will be conveyed via a pipe network to a combination detention pond and wetpond, and then discharged to the onsite wetland at a controlled rate.

2) Could waste materials enter ground or surface waters? If so, generally describe.
Minimal waste material (i.e., petroleum or other road fuel waste) will be generated from use of the proposed parking areas. The project design will include a surface water collection system intended to capture potential contaminates and runoff. Standard construction BMPs will include erosion and sediment control, and spill prevention countermeasures.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.
No.

4) Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:
Stormwater will be treated prior to discharge in accordance with the *Camas Stormwater Design Standards Manual* and the 2019 Ecology *Stormwater Management Manual for Western Washington*. Stormwater quality and quantity measures will be provided onsite. In addition, through the implementation of BMPs for this type of improvement work, the applicant will ensure that potential erosion resulting from construction activities is prevented. All catch basins will be protected with barriers to prevent sediment from entering the storm drainage system.

4. Plants

a. Check the types of vegetation found on the site:
_X_deciduous tree: alder, maple, aspen, other
_X_evergreen tree: fir, cedar, pine, other
_X_shrubs
_X_grass
_X_pasture
_____crop or grain
_____Orchards, vineyards, or other permanent crops.
_X_wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____water plants: water lily, eelgrass, milfoil, other
____other types of vegetation

b. What kind and amount of vegetation will be removed or altered?
Vegetation, including shrubs and trees, within the project clearing limits will be removed.

c. List threatened and endangered species known to be on or near the site.
There are no known threatened or endangered species on or near the site.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:
Perimeter and parking lot landscaping will be provided per guidelines from the City of Camas Municipal Code. Native vegetation within the wetland/wetland buffer will remain undisturbed or will be mitigated for any temporary impacts.

e. List all noxious weeds and invasive species known to be on or near the site.
Himalayan blackberry and reed canarygrass.

5. Animals

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. Examples include:

birds: hawk, heron, eagle, songbirds, other: **Crows**
mammals: deer, bear, elk, beaver, other: **Squirrels, rodents**
fish: bass, salmon, trout, herring, shellfish, other:

b. List any threatened and endangered species known to be on or near the site.
None.

c. Is the site part of a migration route? If so, explain.
The site is within the Pacific Flyway for Migratory Birds.

d. Proposed measures to preserve or enhance wildlife, if any:
No special measures are proposed.

e. List any invasive animal species known to be on or near the site.
None to our knowledge.

6. Energy and Natural Resources

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.
Electrical – lighting and general power.
Gas-Heating.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.
No, not to our knowledge.

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:
The project will be in compliance with the Washington State Energy Code and will use energy conservation features, where possible.

7. Environmental Health

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.
No.

1) Describe any known or possible contamination at the site from present or past uses.
None.

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.
None.

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.
None.

4) Describe special emergency services that might be required.
None.

5) Proposed measures to reduce or control environmental health hazards, if any:
In the event hazardous material is stored at the site, the project will comply with all health and safety codes.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?
Noise exists from adjacent industrial developments and the adjacent roadway, but it will not affect the project.

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)? Indicate what hours noise would come from the site.
Short-term noise will be typical of construction activity. Long-term noise will be truck and passenger vehicles entering and leaving the site.

3) Proposed measures to reduce or control noise impacts, if any:
No special measures are proposed.

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.
A single-family residence with outbuildings is currently located on the site. Industrial developments are located to the west, east, and north, and NW Lakes Road is located to the south.

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?
Yes. The site has been used as a farm. The site is currently taxed as Farm and Agricultural Land. The tax status will be converted to Light Industrial at time of development.

c. 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:
No.

d. Describe any structures on the site.
There are a single-family residence and several outbuildings located on the site.

e. Will any structures be demolished? If so, what?
Yes. All structures will be demolished.

f. What is the current zoning classification of the site?
Light Industrial/Business Park (LI/BP).

g. What is the current comprehensive plan designation of the site?
Industrial.

h. If applicable, what is the current shoreline master program designation of the site?
Not applicable.

i. Has any part of the site been classified as a critical area by the city or county? If so, specify.
Yes. There are four wetlands on the site.

j. Approximately how many people would reside or work in the completed project?
Approximately 1,000 people will work at the site.

k. Approximately how many people would the completed project displace?
None.

l. Proposed measures to avoid or reduce displacement impacts, if any:
No special measures are proposed.

m. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:
The proposed project is compliant with the allowed uses and surrounding area.

n. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:
No special measures are proposed.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.
None.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.
One unit would be eliminated (middle-income).

c. Proposed measures to reduce or control housing impacts, if any:
No special measures are proposed.

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?
The buildings will be up to 45 feet tall. The buildings will be concrete tilt-up construction.

b. What views in the immediate vicinity would be altered or obstructed?
The view will transition from a single-family residence to an industrial business park. No views of the water or mountains will be obstructed.

c. Proposed measures to reduce or control aesthetic impacts, if any:
Perimeter landscaping will be provided and native vegetation within the wetland/wetland buffer will remain undisturbed.

11. Light and glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?
The proposal will produce night lighting for security and for safety of operations. Primary lighting will be building mounted and poles will provide parking lot lighting. All lighting will be downcast to prevent light spillage beyond the property lines.

b. Could light or glare from the finished project be a safety hazard or interfere with views?
No.

c. What existing off-site sources of light or glare may affect your proposal?
None anticipated.

d. Proposed measures to reduce or control light and glare impacts, if any:
All lighting will be downcast with necessary cutoffs.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?
Union High School is approximately 0.30 mile west of the project site and has ballfields and a track available for public use after school hours. Lacamas Lake is less than a mile east of the site and is popular for fishing and water skiing.

b. Would the proposed project displace any existing recreational uses? If so, describe.
No.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:
No special measures are proposed.

13. Historic and cultural preservation

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 located on or near the site? If so, specifically describe.
A house and two barns that were constructed by 1955 are in the project area. They are not listed in any registers.

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.
AINW conducted an archaeological survey of the project area (AINW Report No. 4672). The archaeological survey revealed that a nearby archaeological site extends into the project area. Following the City's archaeological ordinance, areas where ground disturbance cannot be avoided during construction will be evaluated to determine the significance of the site. Another resource was found (three artifacts found during shovel testing). AINW recommended that this site was not significant and avoidance would not be needed.

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.
An archeological survey has been performed for this site. The study included a records search, pedestrian survey of the project area, and excavation of shovel tests to determine if an archaeological resource is present. The report was sent to eight Tribes, as is needed to meet the City's ordinance. Coordination with the Tribes and the Washington State Department of Archaeology and Historic Preservation (DAHP) will be done during the archaeological site excavation phase, which will be done to determine if portions of the nearby archaeological resource will need to be avoided or mitigated.

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.
Additional testing of one of the archaeological sites will be performed and avoidance measures will be considered for areas of the resource that are significant. The additional archaeological excavations will be done under a permit from DAHP.

If human remains are encountered during construction of the commercial project, all ground disturbing activities will be promptly halted and the DAHP, the City of Camas Police Department, and the Clark County Medical Examiner's Office will be informed.

14. Transportation

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.
The project proposes access driveways off NW Camas Meadows Drive and NW Lake Road. A new north-south public road and a new east-west public road will be constructed as part of the project. Driveway access will be provided to NW Lake Road and the new onsite public roads.

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?
The nearest C-Tran transit stop is at SE 192nd Avenue and Mill Plain, approximately 1.09 miles away from the site.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?
The finished project will provide 994 standard and 224 trailer parking stalls.

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).
Future Street A and Street B, as shown in the City's six-year Transportation Comprehensive Plan, are over and across the proposed development.
The developer will be required to dedicate sufficient right-of-way for Street A to accommodate half-width street improvements for the length of Street A, from NW Lake Road north to NW Camas Meadows Drive. The developer will be required to construct the full half-width street improvements for Street A along the easterly property line from NW Lake Road north to NW Camas Meadows Drive. Street A shall consist of curb and gutter, planter strip, sidewalk, bike lane, and a minimum 24-foot paved surface.

The project developer will be required to dedicate 60 feet of right-of-way for Street B. The developer will also be required to construct the full width street improvements for the segment of Street B traversing east to west through the property. This includes curbs and gutters, planter strips, sidewalks, bike lanes, and a 36-foot paved surface.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.
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?
Per the Traffic Impact Analysis, the proposed development is anticipated to generate 1,656 average weekday daily trips, with 132 AM (101 in/31 out) and 155 PM (45 in/110 out) peak hour trips. Heavy vehicles will comprise approximately 20 to 25 percent of the daily trip estimates.

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.
No.

h. Proposed measures to reduce or control transportation impacts, if any:
The project will construct half street frontage improvements to Street A and full width improvements to Street B. The project will also pay Traffic Impact Fees less any credits from the proposed road improvements.

Reserved for Agency Comments

15. Public Services

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.
The proposed buildings are within the service area of fire and police protection. It is not anticipated that the need for these services will be beyond what is standard.

b. Proposed measures to reduce or control direct impacts on public services, if any.
No special measures are proposed.

16. Utilities

a. Circle utilities currently available at the site:
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other _____
Public water, storm and sanitary sewer, gas, power, and telephone are located along the boundaries of the project in Lake Road NW.

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.
Proposed utilities include the following:
Gas – NW Natural
Electric – Clark County PUD
Water – City of Camas
Sewer – City of Camas

C. SIGNATURE

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: _____

Name of signee: Sheri Greene

Position and Agency/Organization: Assistant Project Manager - AHBL

Date Submitted: 10/19/2021

SEPA Master Distribution List

SEPA 21-12 Camas Business Park
Submittals sent on: 04/27/2022

	Applicant/Requesting Party	
X	Bart Brynestad	bbrynestad@AHBL.com
	Department of Ecology, Environmental Review (SEPA Register)	~~separegister@ecy.wa.gov~~
X	Lead agencies are now **required** to enter records directly into the SEPA register through our new SEPA Record Submittal (SRS) online portal instead of emailing them to Ecology**.**	See 'SEPA Record Submittal (SRS) Portal' on how to use SRS portal.
X	Bureau of Indian Affairs	brian.haug@bia.gov
X	Clark County Concurrency Engineer	David.Jardin@clark.wa.gov
X	C-Tran Analyst	devrev@c-tran.org
X	Camas Washougal Post Record	kelly.moyer@camaspostrecord.com
X	Chinook Indian Nation	Office@ChinookNation.org
X	Dept. of Fish & Wildlife	R5Planning@dfw.wa.gov
X	Dept. of Natural Resources SEPA Center	sepacenter@dnr.wa.gov
X	Cowlitz Indian Tribe, Cultural Resources	permitreview@cowlitz.org
X	Cowlitz Indian Tribe, Cultural Resources	NRDpermit@cowlitz.org
X	Clark County Natural Resources, John S. Karpinski	karpjd@comcast.net
X	Clark PUD, Construction Design Manager, David Tetz	dtetz@clarkpud.com
X	Clark PUD, Senior ROW Agent, Vera Anderson	vanderson@clarkpud.com
X	Camas School District, Laura Nowland	laura.nowland@camas.wednet.edu
	Camas School District, Sherman Davis	sherman.davis@camas.wednet.edu
X	Dept. of Archeological & Historic Preservation	sepa@dahp.wa.gov
X	Clark County, Environmental Services, Kevin Tyler	kevin.tyler@clark.wa.gov
X	Southwest Clean Air Agency, Duane Johnson	Duane@swcleanair.org
X	US Army Corps of Engineers	james.h.carsner@usace.army.mil
X	Vancouver-Clark Parks & Recreation	parksrec@cityofvancouver.us
X	Yakama Indian Nation, Environmental Resources, Elizabeth Sanchey	esanchey@yakama.com
X	Yakama Indian Nation, Environmental Resources	enviroreview@yakama.com
X	Washington Parks & Recreation Commission, Environmental Program Manager	sepa@parks.wa.gov
X	WSDOT, Engineering Services, Jeff Barsness	barsnej@wsdot.wa.gov
X	Lorie Clark, Lower Columbia Fish Recovery Board	lclark@lcfrb.gen.wa.us
	City Council	
X	Mayor - Steve Hogan	shogan@cityofcamas.us
X	Greg Anderson	ganderson@cityofcamas.us
X	Marilyn Boerke	mboerke@cityofcamas.us
X	Bonnie Carter	bcarter@cityofcamas.us
X	Don Chaney	dchaney@cityofcamas.us
X	Tim Hein	thein@cityofcamas.us
X	Leslie Lewallen	llewallen@cityofcamas.us
X	Shannon Roberts	sroberts@cityofcamas.us
	City Staff	

SEPA Master Distribution List

X	Jeff Swanson, City Administrator	jswanson@cityofcamas.us
X	Curleigh Carothers, Engineering Manager	jcarothers@cityofcamas.us
X	Anita Ashton, Engineering Project Manager (Development)	aashton@cityofcamas.us
	Vacant, Community Development Director	
X	Trang Lim, Parks & Recreation Director	tlam@cityofcamas.us
X	Brian Smith, Building Official	bsmith@cityofcamas.us
X	Cathy Huber Nickerson, Finance Director	chuber@cityofcamas.us
X	Mitch Lackey, Police Chief	mlackey@cityofcamas.us
X	Connie Urquhart, Library Director	curquhart@cityofcamas.us
X	Steve Wall, Public Works Director	swall@cityofcamas.us
X	Jim Hodges, Engineering Project Manager (Capital)	jhodges@cityofcamas.us
X	Allen Westersund, Engineering (Capital)	awestersund@cityofcamas.us
X	Randy Miller, Fire	rmiller@cityofcamas.us
X	Steve Durspek, Engineering (Capital)	sdurspek@cityofcamas.us
X	Robert Maul, Planning Manager	rmaul@cityofcamas.us
	Vacant, Senior Planner	
X	Lauren Hollenbeck, Senior Planner	lhollenbeck@cityofcamas.us
X	Madeline Sutherland, Assistant Planner	msutherland@cityofcamas.us
X	Community Development Email	communitydevelopment@cityofcamas.us
X	Building Department	permits@cityofcamas.us
	Add the following to the distribution when applicable	
	Camas Hearings Examiner	
	Joe Turner, AICP	jtpc@frontier.com
	Planning Commission	
X	Warren Montgomery	mw669M@aol.com
X	Tim Hein	cthein89@comcast.net
X	Troy Hull	hullteam@comcast.net
X	Joe Walsh	jwalsh.m@gmail.com
X	Geoerl Niles	geoerl@mac.com
X	Shawn High	shawnhigh@hotmail.com
X	Masha Eshghi	masha.esh@gmail.com
	Shoreline Management Review Committee (SMRC)	Council Member, Chairs of Planning Commission & Parks & Recreation
	Use when needing to send to adjoining cities, Clark County, the Port & Airport	
	Clark County Community Development, Susan Ellinger	susan.ellinger@clark.wa.gov
	Port of Camas Washougal, David Ripp	david@portcw.com
	City of Washougal, Community Development	Mitch.Kneipp@cityofwashougal.us
	City of Vancouver, Planning	cddplanning@cityofvancouver.us

Notice of Application and Public Hearing

Camas Business Park

File No. Light Industrial/Business Park (LI/BP21-01)
(consolidated files: Boundary Line Adjustment (BLA21-09), Site Plan Review (SPRV21-06), Design Review (DR21-07), Critical Areas Review (CA21-02), State Environmental Policy Act (SEPA 21-12) and Archaeological Review (ARCH21-05))

"NOTICE IS HEREBY GIVEN" that an application for "Camas Business Park" a land development requesting site plan review approval for the construction of three (3) warehouse/office industrial buildings: Building A (722,397sf), Building B (93,351sf) and Building C (127,191sf) with associated parking and landscaping. The Camas Business Park Development was submitted by the Panattoni Development Company, on October 26, 2021, resubmitted December 13, 2021, and deemed technically complete on December 20, 2021. The proposed project is located at 4707 and 4723 NW Lake Road 74.51-acres [Tax Parcels: 176170-000 and 176155-000]. The project area is zoned light industrial/business park (LI/BP).

A public hearing for the "Camas Business Park" will be held remotely via Zoom on Tuesday, May 17, 2022, at 7:00 p.m. or soon thereafter before the Planning Commission.

Questions/Comments: The public hearing will follow the quasi-judicial process described within Camas Municipal Code §18.55.180. Public comments and questions are encouraged, and there are several opportunities available to interested citizens Comments related to this proposal may be submitted as follows: (1) In person by testifying at the public hearing held remotely via Zoom; (2) by regular mail to Planning Division staff, Lauren Hollenbeck, Senior Planner, at the Camas City Hall, 616 NE 4th Avenue, Camas, WA 98607; (3) by phone (360) 817-7253 or by email to: communitydevelopment@cityofcamas.us.

It is preferable that written comments be received at least five (5) working days prior to the public hearing, 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 (12:00pm) the day of the hearing to be included in deliberations. During the hearing, oral comments may also be submitted as well as written comments via email to communitydevelopment@cityofcamas.us.

Application Materials: The Camas Business Park development application included the following: Project Narratives; Preliminary Plans; Pre-Application meeting notes; SEPA checklist, Preliminary Stormwater Report; Traffic Study; Tree Survey; Environmental Reports; and Archaeological Predetermination* and other required submittal documents. These documents are available upon request to the City by phone (360) 817-7253 or by email communitydevelopment@cityofcamas.us.

Participate: The public hearing will be held remotely via Zoom. 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.

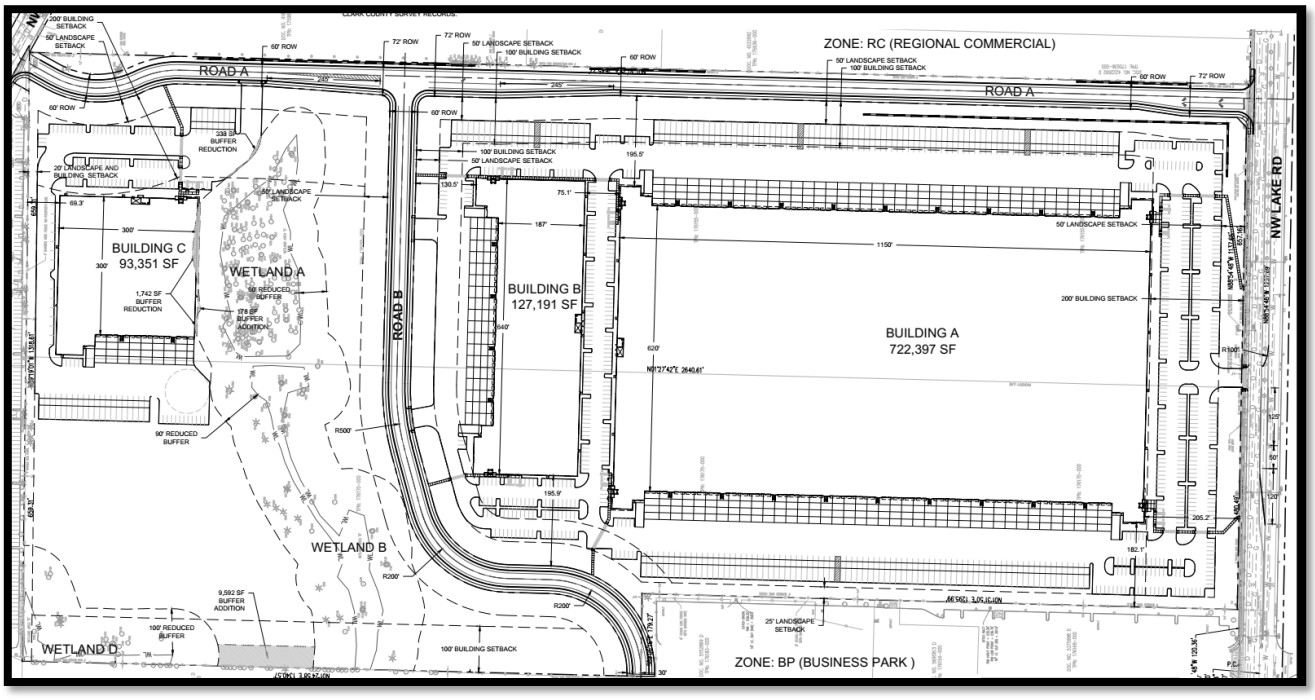
More Information: The public hearing agenda and supporting documents will be available for review on the City's website at the Public Meeting Portal "Agenda, Minutes & Videos" link within the drop-down menu that is labeled "Community" or follow this link: www.cityofcamas.us/meetings.

*Consistent with RCW 42.56.300, Archaeological information is exempt from public disclosure.

Camas Business Park Development (LI/BP21-01)

Vicinity map

Site Plan



COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

November 22, 2021

Bart Brynestad
AHBL
4707 NW Lake Road
Camas, WA 98607
Sent via email bbrynestad@ahbl.com

RE: Camas Business Park (SPRV21-06)

Dear Mr. Brynestad,

Thank you for your application submittal for the Camas Business Park. There are items that remain to be addressed with your application. The purpose of this letter is to inform you that the above application submitted on October 26, 2021 has been deemed incomplete in accordance with Camas Municipal Code (CMC) Section 18.55.130. You have 180 days from the date of application to submit the missing information pursuant to CMC 18.55.130.C. If the below requested information is submitted, staff will again verify whether the application is complete.

Items necessary for completeness:

1. Per the pre-application notes, provide a complete list of permit approvals sought by the applicant per CMC 18.55.110.B.
2. Per the pre-application notes, the mailing labels shall be certified by Clark County assessor per CMC 18.55.110.C.

Site Plan Review:

3. Per the pre-application notes, a development sign must be posted per CMC 18.55.1100.H(1-5) and as such provide proof of posting of the sign.
4. Per the pre-application notes, an application for site plan review shall also include a written narrative addressing the criteria of approval in CMC 18.18.060 (A-F).
5. Per CMC 18.18.040.A, identify the total amount of square footage to be covered by impervious surfaces.
6. Per CMC 18.18.040.B, a vicinity map showing site boundaries, and existing roads and accesses within the bounding site.
7. Per CMC 18.18.040.E, a circulation plan should be provided consistent with CMC 17.19.040.B.10. A circulation plan needs to be provided for onsite circulation and offsite circulation to/from the proposed access roads and driveways.

Design Review:

8. Per CMC 18.19.070, the application for design review shall also include a written narrative that demonstrates compliance with applicable Design Review principles and guidelines per CMC 18.19.050 and the Design Review Manual in addition to the architectural design and landscape standards in CMC Chapter 18.37 *Business Park*.

SEPA:

9. Sign the current SEPA checklist signature page that includes the "penalty of perjury" language. The current SEPA checklist is on the City website.

Archaeological Review:

10. Per CMC 16.31.160.A.3, provide proof of mailing or emailing the archaeological predetermination report to the tribes.

Other preliminary project issues noted by staff to be addressed but are not completeness review items:

Boundary line adjustment:

1. Application requirements for Boundary Line Adjustments are found in CMC 17.07.030. A narrative is required addressing the approval criteria in CMC 17.07.040.

Once the application is deemed complete, the City will begin its review of the project application and provide subsequent comments. If you have any questions, please contact me at lhollenbeck@cityofcamas.us.

Respectfully,

Lauren Hollenbeck

Lauren Hollenbeck
Senior Planner

November 29, 2021

Lauren Hollenbeck, Senior Planner
City of Camas
Community Development Department
616 NE 4th Avenue
Camas, WA 98607

Project: East Vancouver E-Commerce Center, AHBL No. 2200867.10
Subject: Response to Comments dated November 22, 2021
Camas Business Park (SPRV21-06)

Dear Lauren Hollenbeck:

This letter is in response to your comments dated November 22, 2021, regarding the above referenced project. The comments are included below (verbatim) for your reference. Our responses are shown in **bold** after each comment.

Items necessary for completeness:

1. Per the pre-application notes, provide a complete list of permit approvals sought by the applicant per CMC 18.55.110.B.

   Response: A memorandum with a list of all land use permits for the project has been included in this resubmittal.

2. Per the pre-application notes, the mailing labels shall be certified by Clark County assessor per CMC 18.55.110.C.

   Response: The certification information is provided with this resubmittal.

Site Plan Review

3. Per the pre-application notes, a development sign must be posted per CMC 18.55.1100.H(1-5) and as such provide proof of posting of the sign.

   Response: Proof of posting of the sign is included with this resubmittal.

4. Per the pre-application notes, an application for site plan review shall also include a written narrative addressing the criteria of approval in CMC 18.18.060 (A-F).

   Response: The narrative has been revised to directly address all approval criteria from CMC 18.18.060 (A-F).

Civil Engineers
Structural Engineers
Landscape Architects
Community Planners
Land Surveyors
Neighbors

TACOMA
2215 North 30th Street
Suite 300
Tacoma, WA 98403-3350
253.383.2422 TEL
www.ahbl.

5. Per CMC 18.18.040.A, identify the total amount of square footage to be covered by impervious surfaces.

   Response: The amount of impervious surface for the project has been added to the site plan and to the narrative.

6. Per CMC 18.18.040.B, a vicinity map showing site boundaries, and existing roads and accesses within the bounding site.

   Response: A vicinity map is provided with this resubmittal.

7. Per CMC 18.18.040.E, a circulation plan should be provided consistent with CMC 17.19.040.B.10. A circulation plan needs to be provided for onsite circulation and offsite circulation to/from the proposed access roads and driveways.

   Response: A circulation plan is provided with this resubmittal.

Design Review

8. Per CMC 18.19.070, the application for design review shall also include a written narrative that demonstrates compliance with applicable Design Review principles and guidelines per CMC 18.19.050 and the Design Review Manual in addition to the architectural design and landscape standards in CMC Chapter 18.37 *Business Park*.

   Response: A Design Review checklist with narrative comments is provided with this resubmittal.

SEPA

9. Sign the current SEPA checklist signature page that includes the “penalty of perjury” language. The current SEPA checklist is on the City website.

   Response: A revised SEPA checklist, which includes the “penalty of perjury” language, is included with this resubmittal.

Archaeological Review

10. Per CMC 16.31.160.A.3, provide proof of mailing or emailing the archaeological predetermination report to the tribes.

    Response: A copy of the email is provided with this resubmittal.

Other preliminary project issues noted by staff to be addressed but are not completeness review items:

Boundary Line Adjustment

1. Application requirements for Boundary Line Adjustments are found in CMC 17.07.030. A narrative is required addressing the approval criteria in CMC 17.07.040.

   Response: A complete BLA submittal package is included with this resubmittal. The package includes a separate application, preliminary BLA map, and narrative to address the approval criteria in CMC 17.07.040.

If you have any questions, please call me at (253) 383-2422.

Sincerely,

Bart Brynestad, PE
Project Manager

BB/lsk

Q:\2020\2200867\WORDPROC\Letters\20211201 Ltr (Resp-Camas-SPR) 2200867.10.docx

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

December 20, 2021

Bart Brynestad
AHBL
4707 NW Lake Road
Camas, WA 98607
Sent via email bbrynestad@ahbl.com

RE: Camas Business Park (SPRV21-07) technically complete letter

Dear Mr. Copenhaver,

The purpose of this letter is to inform you that the above application submitted on October 26, 2021 and resubmitted December 13, 2021 has been **deemed complete** in accordance with the Camas Municipal Code (CMC) Section 18.55.130. Staff will begin reviewing the application and contact you if we have review comments and/or questions.

Do not hesitate to reach out should you have any questions.

Respectfully,

Lauren Hollenbeck

Lauren Hollenbeck, Senior Planner

Item 14.

Exhibit 34
LI/BP21-01

DJT PROPERTIES LLC
2315 SE 149TH AVE
VANCOUVER, WA 98683

LAKE ROAD STORAGE LLC
3809 SE 184TH CT
VANCOUVER, WA 98683

MASON SPORTS LLC
4327 NW LAKE RD
CAMAS, WA 98607

GRIMM CAROLYN M TRUSTEE
JOSEPH D GRIMM DECEDENT'S
TRUST A 38.08% INT
VANCOUVER, WA 98661
CORRECTED + DUP

KNOPP GARY R
6201 NW PAYNE ST
CAMAS, WA 98607

WAFERTECH LLC
5509 NW PARKER ST
CAMAS, WA 98607

CM#3 LLC
4857 NW LAKE ROAD, SUITE 320
CAMAS, WA 98607

LOFTS AT CAMAS MEADOWS PHASE I LLC
2370 E 3RD LOOP STE 100
VANCOUVER, WA 98661

FAR FROM PAR LLC
504 NE 5TH AVE
CAMAS, WA 98607

OLIVA STEVEN J & OLIVA JANICE D
915 W 11TH ST
VANCOUVER, WA 98660

LOFTS AT CAMAS MEADOWS PHASE I LLC
2370 E 3RD LOOP STE 100
VANCOUVER, WA 98661
DUP

VANPORT MANUFACTURING INC & HERTRICH ADOLF
PO BOX 97
BORING, OR 97009

LOFTS AT CAMAS MEADOWS PHASE II LLC
2370 E 3RD LP STE 100
VANCOUVER, WA 98661

LOFTS AT CAMAS MEADOWS PHASE II LLC
2370 E 3RD LP STE 100
VANCOUVER, WA 98661
DUP

COUNTY PROPERTIES EAST LLC
4857 NW LAKE RD #320
CAMAS, WA 98607

VANPORT MANUFACTURING INC & HERTRICH ADOLF
PO BOX 97
BORING, OR 97009
DUP

GRIMM JOSEPH D & GRIMM CAROLYN M TRUSTEES
6315 NE 63RD ST
VANCOUVER, WA 98661

DWYER CREEK BUSINESS PARK LLC
4857 NW LAKE ROAD, SUITE 320
CAMAS, WA 98607

ALMAR TOOL & CUTTER GRINDERS CO INC
4859 NW LAKE RD
CAMAS, WA 98607

DWYER CREEK INVESTORS LLC
915 W 11TH ST
VANCOUVER, WA 98660

CITY OF CAMAS
616 NE 4TH AVE
CAMAS, WA 98607
NO CITY

CM#3 LLC
4857 NW LAKE ROAD, SUITE 320
CAMAS, WA 98607

PLEXSYS INTERFACE PRODUCTS INC
4900 NW CAMAS MEADOWS DR
CAMAS, WA 98607

HERTRICH LLC (C/B)
PO BOX 97
BORING, OR 97009

COUNTY PROPERTIES EAST LLC
4857 NW LAKE RD #320
CAMAS, WA 98607
DUP

WAFERTECH LLC
5509 NW PARKER ST
CAMAS, WA 98607
DUP

18 letters sent

MAILED
*4/27 mailed to Home[illegible]rs

Bart Brynestad

From: Bjorn Brynestad <BJorn@panattoni.com>
Sent: Tuesday, December 07, 2021 2:05 PM
To: 'Lauren Hollenbeck'
Cc: Bart Brynestad
Subject: FW: [EXTERNAL] Re: Sign order Camas, WA EVECC
Attachments: 20211207_104227_HDR.jpg; 20211207_095725.jpg

Lauren,

Here are the signs that have been posted.

Please let me know if you need anything else.

Thanks,

Bjorn Brynestad | Development Manager
Panattoni Development Company, Inc.
1821 Dock St.
Suite 100 | Tacoma, WA 98402
Office: 206.838.1730 | Cell: 253-444-8478
BJorn@panattoni.com

From: Casey Reich | Columbia Signs <casey@columbiasigns.com>
Sent: Tuesday, December 7, 2021 1:55 PM
To: Bjorn Brynestad <BJorn@panattoni.com>
Cc: Bart Brynestad <bbrynestad@ahbl.com>; Abby Viasner <AViasner@panattoni.com>
Subject: Re: [EXTERNAL] Re: Sign order Camas, WA EVECC

Please see attached! Thank you and have a great day.

~Casey

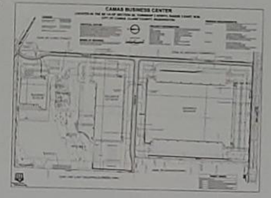
CASEY REICH
P:360-696-1919 / F:360-696-9797
columbia Signs
4700 E. Fourth Plain Blvd. ~ Vancouver, WA 98661

Notice of Proposed Development
"Camas Business Center"

An application is on file with the City of Camas for review of a (3) building development and SEPA to establish proposed use. For information regarding this project contact:

Applicant Contact:
Bart Brynestad
(253) 383-2422

City Contact:
Lauren Hollenbeck
(360) 817-7253



Public Hearing Schedule:

Hearing
Date/Time: _____

Hearing
Location: _____

Notice of Proposed Development
"Camas Business Center"

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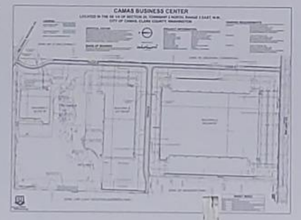

Public Hearing Schedule:

Hearing
Date/Time: _____

Hearing
Location: _____

First American

Commitment

ALTA Commitment for Title Insurance

ISSUED BY

First American Title Insurance Company

File No: NCS-1040430-WA1

COMMITMENT FOR TITLE INSURANCE

Issued By

FIRST AMERICAN TITLE INSURANCE COMPANY

NOTICE

IMPORTANT-READ CAREFULLY: THIS COMMITMENT IS AN OFFER TO ISSUE ONE OR MORE TITLE INSURANCE POLICIES. ALL CLAIMS OR REMEDIES SOUGHT AGAINST THE COMPANY INVOLVING THE CONTENT OF THIS COMMITMENT OR THE POLICY MUST BE BASED SOLELY IN CONTRACT.

THIS COMMITMENT IS NOT AN ABSTRACT OF TITLE, REPORT OF THE CONDITION OF TITLE, LEGAL OPINION, OPINION OF TITLE, OR OTHER REPRESENTATION OF THE STATUS OF TITLE. THE PROCEDURES USED BY THE COMPANY TO DETERMINE INSURABILITY OF THE TITLE, INCLUDING ANY SEARCH AND EXAMINATION, ARE PROPRIETARY TO THE COMPANY, WERE PERFORMED SOLELY FOR THE BENEFIT OF THE COMPANY, AND CREATE NO EXTRACONTRACTUAL LIABILITY TO ANY PERSON, INCLUDING A PROPOSED INSURED.

THE COMPANY'S OBLIGATION UNDER THIS COMMITMENT IS TO ISSUE A POLICY TO A PROPOSED INSURED IDENTIFIED IN SCHEDULE A IN ACCORDANCE WITH THE TERMS AND PROVISIONS OF THIS COMMITMENT. THE COMPANY HAS NO LIABILITY OR OBLIGATION INVOLVING THE CONTENT OF THIS COMMITMENT TO ANY OTHER PERSON.

COMMITMENT TO ISSUE POLICY

Subject to the Notice; Schedule B, Part I-Requirements; Schedule B, Part II-Exceptions; and the Commitment Conditions, ***First American Title Insurance Company***, a Nebraska Corporation (the "Company"), commits to issue the Policy according to the terms and provisions of this Commitment. This Commitment is effective as of the Commitment Date shown in Schedule A for each Policy described in Schedule A, only when the Company has entered in Schedule A both the specified dollar amount as the Proposed Policy Amount and the name of the Proposed Insured.

If all of the Schedule B, Part I-Requirements have not been met within six months after the Commitment Date, this Commitment terminates and the Company's liability and obligation end.

First American Title Insurance Company

Dennis J. Gilmore, President

Greg L. Smith, Secretary

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COMMITMENT CONDITIONS

1. DEFINITIONS

(a) "Knowledge" or "Known": Actual or imputed knowledge, but not constructive notice imparted by the Public Records.
(b) "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 to be insured by the Policy.
(c) "Mortgage": A mortgage, deed of trust, or other security instrument, including one evidenced by electronic means authorized by law.
(d) "Policy": Each contract of title insurance, in a form adopted by the American Land Title Association, issued or to be issued by the Company pursuant to this Commitment.
(e) "Proposed Insured": Each person identified in Schedule A as the Proposed Insured of each Policy to be issued pursuant to this Commitment.
(f) "Proposed Policy Amount": Each dollar amount specified in Schedule A as the Proposed Policy Amount of each Policy to be issued pursuant to this Commitment.
(g) "Public Records": Records established under state statutes at the Commitment Date for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without Knowledge.
(h) "Title": The estate or interest described in Schedule A.

2. If all of the Schedule B, Part I—Requirements have not been met within the time period specified in the Commitment to Issue Policy, this Commitment terminates and the Company's liability and obligation end.

3. The Company's liability and obligation is limited by and this Commitment is not valid without:
(a) the Notice;
(b) the Commitment to Issue Policy;
(c) the Commitment Conditions;
(d) Schedule A;
(e) Schedule B, Part I—Requirements; and
(f) Schedule B, Part II—Exceptions.

4. COMPANY'S RIGHT TO AMEND

The Company may amend this Commitment at any time. If the Company amends this Commitment to add a defect, lien, encumbrance, adverse claim, or other matter recorded in the Public Records prior to the Commitment Date, any liability of the Company is limited by Commitment Condition 5. The Company shall not be liable for any other amendment to this Commitment.

5. LIMITATIONS OF LIABILITY

(a) The Company's liability under Commitment Condition 4 is limited to the Proposed Insured's actual expense incurred in the interval between the Company's delivery to the Proposed Insured of the Commitment and the delivery of the amended Commitment, resulting from the Proposed Insured's good faith reliance to:
  (i) comply with the Schedule B, Part I—Requirements;
  (ii) eliminate, with the Company's written consent, any Schedule B, Part II—Exceptions; or
  (iii) acquire the Title or create the Mortgage covered by this Commitment.
(b) The Company shall not be liable under Commitment Condition 5(a) if the Proposed Insured requested the amendment or had Knowledge of the matter and did not notify the Company about it in writing.
(c) The Company will only have liability under Commitment Condition 4 if the Proposed Insured would not have incurred the expense had the Commitment included the added matter when the Commitment was first delivered to the Proposed Insured.
(d) The Company's liability shall not exceed the lesser of the Proposed Insured's actual expense incurred in good faith and described in Commitment Conditions 5(a)(i) through 5(a)(iii) or the Proposed Policy Amount.
(e) The Company shall not be liable for the content of the Transaction Identification Data, if any.
(f) In no event shall the Company be obligated to issue the Policy referred to in this Commitment unless all of the Schedule B, Part I—Requirements have been met to the satisfaction of the Company.
(g) In any event, the Company's liability is limited by the terms and provisions of the Policy.

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6. LIABILITY OF THE COMPANY MUST BE BASED ON THIS COMMITMENT

(a) Only a Proposed Insured identified in Schedule A, and no other person, may make a claim under this Commitment.
(b) Any claim must be based in contract and must be restricted solely to the terms and provisions of this Commitment.
(c) Until the Policy is issued, this Commitment, as last revised, is the exclusive and entire agreement between the parties with respect to the subject matter of this Commitment and supersedes all prior commitment negotiations, representations, and proposals of any kind, whether written or oral, express or implied, relating to the subject matter of this Commitment.
(d) The deletion or modification of any Schedule B, Part II—Exception does not constitute an agreement or obligation to provide coverage beyond the terms and provisions of this Commitment or the Policy.
(e) Any amendment or endorsement to this Commitment must be in writing and authenticated by a person authorized by the Company.
(f) When the Policy is issued, all liability and obligation under this Commitment will end and the Company's only liability will be under the Policy.

7. IF THIS COMMITMENT HAS BEEN ISSUED BY AN ISSUING AGENT

The issuing agent is the Company's agent only for the limited purpose of issuing title insurance commitments and policies. The issuing agent is not the Company's agent for the purpose of providing closing or settlement services.

8. PRO-FORMA POLICY

The Company may provide, at the request of a Proposed Insured, a pro-forma policy illustrating the coverage that the Company may provide. A pro-forma policy neither reflects the status of Title at the time that the pro-forma policy is delivered to a Proposed Insured, nor is it a commitment to insure.

9. ARBITRATION

The Policy contains an arbitration clause. All arbitrable matters when the Proposed Policy Amount is $2,000,000 or less shall be arbitrated at the option of either the Company or the Proposed Insured as the exclusive remedy of the parties. A Proposed Insured may review a copy of the arbitration rules at http://www.alta.org/arbitration.

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First American

Schedule A

ALTA Commitment for Title Insurance

ISSUED BY

First American Title Insurance Company

File No: NCS-1040430-WA1

Transaction Identification Data for reference only:

Issuing Agent: First American Title Insurance Company National Commercial Services
Issuing Office's ALTA® Registry ID:
Commitment No.: NCS-1040430-WA1
Property Address: 4707 & 4723 Northwest Lake Road, Camas, WA 98607
Revision No.:

Issuing Office: 920 Fifth Avenue, Suite 1200, Seattle, WA 98104
Reference No.: 4707 & 4723 Northwest Lake Road
Issuing Office File No.: NCS-1040430-WA1
Escrow Officer Name: Jean Couch

Escrow Officer Number: (206)615-3118
Escrow Officer Email: jcouch@firstam.com
Escrow Assistant Name: Willa Sweeney
Escrow Assistant Number: (206)615-2812
Escrow Assistant Email: wsweeney@firstam.com
Title Officer Name: Jen Modjeska
Title Officer Number: (206)615-3270
Title Officer Email: jmodjeska@firstam.com

SCHEDULE A

1. Commitment Date: November 18, 2020 at 7:30 AM

2. Policy to be Issued:

		Amount	Premium	Tax
(a)	☒ 2006 ALTA® Standard Owner's Policy	$TBD	$TBD	$TBD
	Proposed Insured: PDC Seattle LPIV BB/TH, LLC			
(b)	☒ 2006 ALTA® Extended Loan Policy Proposed Insured: TBD	$TBD	$TBD	$TBD
(c)	☐ ALTA® Policy Proposed Insured:	$		

3. The estate or interest in the Land described or referred to in this Commitment is Fee Simple

4. The Title is, at the Commitment Date, vested in:

   Carolyn M. Grimm, Surviving Trustee of the Grimm Living Trust dated November 11, 2008, as to Parcel I and Carolyn M. Grimm, Trustee of the Joseph D. Grimm Decedent's Trust A dated November 19, 2010, as to an undivided 38.08% interest and Carolyn M. Grimm, Trustee of the Joseph D. Grimm Decedent's Trust B dated November 19, 2010 as to an undivided 57.12% interest, as to Parcel II

5. The Land is described as follows:

   See Exhibit "A" attached hereto and made a part hereof

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First American

Schedule BI & BII

ALTA Commitment for Title Insurance

ISSUED BY

First American Title Insurance Company

File No: NCS-1040430-WA1

SCHEDULE B, PART I

Requirements

All of the following Requirements must be met:

1. The Proposed Insured must notify the Company in writing of the name of any party not referred to in this Commitment who will obtain an interest in the Land or who will make a loan on the Land. The Company may then make additional Requirements or Exceptions.

2. Pay the agreed amount for the estate or interest to be insured.

3. Pay the premiums, fees, and charges for the Policy to the Company.

4. Documents satisfactory to the Company that convey the Title or create the Mortgage to be insured, or both, must be properly authorized, executed, delivered, and recorded in the Public Records.

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SCHEDULE B, PART II

Exceptions

THIS COMMITMENT DOES NOT REPUBLISH ANY COVENANT, CONDITION, RESTRICTION, OR LIMITATION CONTAINED IN ANY DOCUMENT REFERRED TO IN THIS COMMITMENT TO THE EXTENT THAT THE SPECIFIC COVENANT, CONDITION, RESTRICTION, OR LIMITATION VIOLATES STATE OR FEDERAL LAW BASED ON RACE, COLOR, RELIGION, SEX, SEXUAL ORIENTATION, GENDER IDENTITY, HANDICAP, FAMILIAL STATUS, OR NATIONAL ORIGIN.

The Policy will not insure against loss or damage resulting from the terms and provisions of any lease or easement identified in Schedule A, and will include the following Exceptions unless cleared to the satisfaction of the Company:

1. Any defect, lien, encumbrance, adverse claim, or other matter that appears for the first time in the Public Records or is created, attaches, or is disclosed between the Commitment Date and the date on which all of the Schedule B, Part I-Requirements are met.

2. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records.

3. Any facts, rights, interests, or claims which are not shown by the Public Records but which could be ascertained by an inspection of the Land or by making inquiry of persons in possession thereof.

4. Easements, claims of easement or encumbrances which are not shown by the Public Records.

5. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the Public Records.

6. (A) Unpatented mining claims; (B) Reservations or exceptions in patents or in Acts authorizing the issuance thereof; (C) Water rights, claims or title to water; whether or not the matters excepted under (A), (B) or (C) are shown by the Public Records; (D) Indian Tribal Codes or Regulations, Indian Treaty or Aboriginal Rights, including easements or equitable servitudes.

7. Any lien or right to a lien for services, labor, material or equipment, unless such lien is shown by the Public Records at Date of Policy and not otherwise excepted from coverage herein.

8. Any service, installation, connection, maintenance, construction, tap or reimbursement charges/costs for sewer, water, garbage or electricity.

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SCHEDULE B - SECTION 2
(continued)
SPECIAL EXCEPTIONS

9. Lien of Real Estate Excise Tax upon sale of said premises, or transfer of a controlling interest, if unpaid. As of the date herein, the excise tax rates are as follows:
Levy/Area Code:117.023

   State Excise Tax for real property classified as Timberland (RCW 84.34 or RCW 84.33) or Agricultural land (RCW 84.34.020):

   1.28% of the selling price

   All other State Excise Tax:
   1.10% of the selling price less than or equal to $500,000.00
   1.28% of the selling price from $500,000.01 to $1,500,000.00
   2.75% of the selling price from $1,500,000.01 to $ 3,000,000.00
   3.00% of the selling price over $3,000,000.00

   Local Excise Tax for City of Camas
   .50% of the selling price

   In additional to Excise Tax due, a fee of $5.00 will be charged on all taxable transactions ($10.00 on all exempt transactions)

10. The lands described herein have been classified as Farm and Agricultural Land for tax purposes. They will be subject to further taxation and interest thereupon as provided by RCW 84.33 and 84.34 upon withdrawal from such classification or change in use. If the new owners wish to continue the classification or designation of said lands, it will be necessary that said new owners sign the Notice of Continuance section in the State Excise Tax Affidavit. If the new owners do not desire to continue such classification or designation, all compensating or additional tax shall be due and payable at the time of sale. For determination of any compensating or additional tax due, the County Assessor must be consulted prior to sale.

11. City liens, if any, for the city of Camas.

12. Easement, including terms and provisions contained therein:

Recording Date:	July 1, 2004
Recording Information:	3850072
In Favor of:	Public Utility District No. 1 of Clark County, a municipal cororaton
For:	Electic system, facilities and appurtenances
Affects:	Parcel II

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13. Terms, provisions, conditions of the Trust Agreement of the Grimm Living Trust dated dated November 11, 2008, and any subsequent modifications, a copy of which should be submitted to this office for inspection.

14. Terms, provisions, conditions of the Trust Agreement of the Joseph D. Grimm Decedent's Trust A dated November 19, 2010, and any subsequent modifications, a copy of which should be submitted to this office for inspection.

15. Terms, provisions, conditions of the Trust Agreement of the Joseph D. Grimm Decedent's Trust B dated November 19, 2010, and any subsequent modifications, a copy of which should be submitted to this office for inspection.

16. Evidence of the authority of the individual(s) to execute the forthcoming document for PDC Seattle LPIV BB/TH, LLC, copies of the current operating agreement should be submitted prior to closing.

17. Prior to issuance of an extended coverage policy, the Company will require an Owner's Affidavit be completed and submitted to the Company for approval prior to closing. The Company reserves the right to make any additional requirement as warranted.

18. Matters of extended owner/purchaser coverage which are dependent upon an inspection and an ALTA survey of the property for determination of insurability.

    Please submit a copy of the ALTA Survey at your earliest convenience for review. Our inspection will be held pending our review of the ALTA Survey and the result of said inspection will be furnished by supplemental report.

19. Unrecorded leaseholds, if any, rights of vendors and security agreement on personal property and rights of tenants, and secured parties to remove trade fixtures at the expiration of the term.

20. Any claim that the Title is subject to a trust or lien created under The Perishable Agricultural Commodities Act (7 U.S.C. §§499a, et seq.) and/or the Packers and Stockyards Act (7 U.S.C. §§181 et seq.) or under similar state laws.

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INFORMATION NOTES

A. Effective January 1, 1997, and pursuant to amendment of Washington State Statutes relating to standardization of recorded documents, the following format and content requirements must be met. Failure to comply may result in rejection of the document by the recorder.

B. Any sketch attached hereto is done so as a courtesy only and is not part of any Title Commitment or Policy. It is furnished solely for the purpose of assisting in locating the Land and First American expressly disclaims any liability which may result from reliance made upon it.

C. The description can be abbreviated as suggested below if necessary to meet standard requirements. The full text of the description must appear in the document (s) to be insured.

Ptn E½SE¼ Sec 29, T2N, R3E

APN: 176170000 and 176155000

D. General taxes for the year 2020 which have been paid.

Tax Account No.	176170000
Amount:	$3,097.45
Assessed Land Value:	$3,340,590.00
Assessed Improvement Value:	$0.00

(Affects Parcel I)

E. General taxes for the year 2020, which have been paid.

Tax Account No.:	176155000
Amount:	$246.71
Assessed Land Value:	$4,038,375.00
Assessed Improvement Value:	$0.00

(Affects Parcel II)

F. A fee will be charged upon the cancellation of this Commitment pursuant to the Washington State Insurance Code and the filed Rate Schedule of the Company.

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First American	ISSUED BY **First American Title Insurance Company**
Exhibit A	File No: NCS-1040430-WA1

The Land referred to herein below is situated in the County of Clark, State of Washington, and is described as follows:

PARCEL I:

That portion of the Southeast quarter of Section 29, Township 2 North, Range 3 East of the Willamette Meridian, in Clark County, Washington, described as follows:

Beginning at a point on the North line of SE 1st Street that 658.95 feet West of the East line of said Section 29, said point being the Southwest corner of that certain tract of land conveyed to Joseph D. Grimm, et ux, by deed recorded November 5, 1965 as Recording No. G 432981; thence North 0°25'30" East, along the West line of said Grimm tract, a distance of 2,653.94 feet to the North line of the Southeast quarter of said Section 29; thence South 89°32' West, along said North line, a distance of 658.62 feet to the Northeast corner of the S. Lorenzo Strunk tract, as described in instrument recorded December 13, 1966 as Recording No. G 471795; thence South 0°26' West, along the East line of said Strunk tract, a distance of 1,339.30 feet to a stone monument marking the Northeast corner of that certain tract conveyed to Fred Schick et ux by deed recorded February 17, 1953 as Recording No. G 120226; thence North 89°46' East, along the Easterly prolongation of the North line of said Schick tract, a distance of 180 feet; thence South 0°26' West, parallel with the East line of said Schick tract, a distance of 1,309.30 feet to the North line of Southeast 1st Street; thence East, along said North, line a distance of 478.95 feet to the point of beginning.

EXCEPTING THEREFROM that portion conveyed to the City of Camas by Warranty Deed recorded September 26, 2005 as Recording No. 4055960.

PARCEL II:

The East half of the Southeast quarter of Section 29, Township 2 North, Range 3 East of the Willamette Meridian, in Clark County, Washington.

EXCEPTING THEREFROM that portion conveyed to the City of Camas by Warranty Deed recorded September 26, 2005 as Recording No. 4055960.

ALSO EXCEPTING THEREFROM any portion lying within the boundaries of NE 1st Street.

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3850072
Page: 1 of 5
07/01/2004 03:04P
PUD 1 EAS 23.00 Clark County, WA

RETURN ADDRESS:

Clark Public Utilities
P.O. Box 8900
Vancouver, WA 98668

Document:	Utility Easement
Grantor:	Joseph D. Grimm
Grantee:	PUD No. 1 of Clark County
Legal Desc.:	Ptn. TL#9 in Sec. 29-2-3 EWM
Serial No.	176155-000
Geo No.	2329212
Engineer:	Hinkle
WO:	#03-13204 RIO #201390

EASEMENT AND RIGHT OF WAY
UTILITY EASEMENT

The GRANTOR(S), **JOSEPH D. GRIMM,** for and in consideration of mutual benefits hereby acknowledged, does grant and convey to **PUBLIC UTILITY DISTRICT NO. 1 OF CLARK COUNTY, a municipal corporation of the state of Washington,** GRANTEES, its successors and assigns, including joint users, a non-exclusive, perpetual easement and right of way, ten (10 feet in width), together with the right of ingress and egress for the purpose of installing, constructing, erecting, altering, repairing, maintaining and operating thereon and therein an electric system, facilities and appurtenances including communication and service conductors with surface-mounted transformer(s), pole(s), anchor(s), and appurtenances necessary thereto, together with the right and easement to tap into said facilities to serve adjacent and/or adjoining lands, in, on, over, under and across the lands in Clark County, Washington, described as follows:

As of this date being a portion of Tax Serial No. 176155-000, being Tax Lot #9 in Section 29, Township 2 North, Range 3 East of the Willamette Meridian.

More particularly described and shown on the attached Exhibits "A" and "B", by reference made a part hereof.

3850072
Page: 2 of 5
07/01/2004 03:04P
PUD 1 EAS 23.00 Clark County, WA

PROVIDED, that upon completion of installation of all facilities required to serve all land above-described, THE EASEMENT HEREIN GRANTED SHALL BECOME LIMITED TO THE ACTUAL LOCATIONS OF THE FACILITIES AS INSTALLED WITH REASONABLE RIGHTS OF INGRESS AND EGRESS FOR THE PURPOSES ABOVE STATED. IT IS UNDERSTOOD AND AGREED THAT ALL ABOVE GROUND EQUIPMENT WILL BE LIMITED TO A HEIGHT OF 48" (as measured from the top of the curb or sidewalk) AND THAT THE GRANTEES SHALL LANDSCAPE THE EASEMENT AREA TO BLEND IN WITH THE SURROUNDING PROPERTY.

The Grantor covenants for itself successors and assigns that it will not build or place, or allow to be built or placed, any structure of any kind over the easement granted herein without written approval of Clark PUD. (PUBLIC UTILITY DISTRICT NO. 1 OF CLARK COUNTY has the right at all times to cut and/or trim all brush, trees or other growth standing or growing upon the lands of the Grantor which, in the opinion of the Grantee, constitute a menace or danger to said electric system facilities.

The Grantor also covenants to and with the Grantee that Grantor has the right and power to convey an Easement and Right of Way over the tract of land described herein.

DATED this 14 day of May, 2004.

Joseph D. Grimm

STATE OF WASHINGTON)
:ss
County of CLARK)

I certify that I know or have satisfactory evidence that Joseph D. Grimm, is/are the persons who appeared before me, and said persons acknowledged that he/she/they signed this instrument and acknowledged it to be his/her/their free and voluntary act for the uses and purposes mentioned in the instrument.

Dated: May 14, 2004.

SHARON D. HYLAND NOTARY PUBLIC STATE OF WASHINGTON COMMISSION EXPIRES MARCH 31, 2005

Notary Public in and for said County and State of Washington, residing at Ridgefield
My Appointment Expires 3-31-05

3850072
Page: 3 of 5
07/01/2004 03:04P
PUD 1 EAS 23.00 Clark County, WA

EXHIBIT "A"

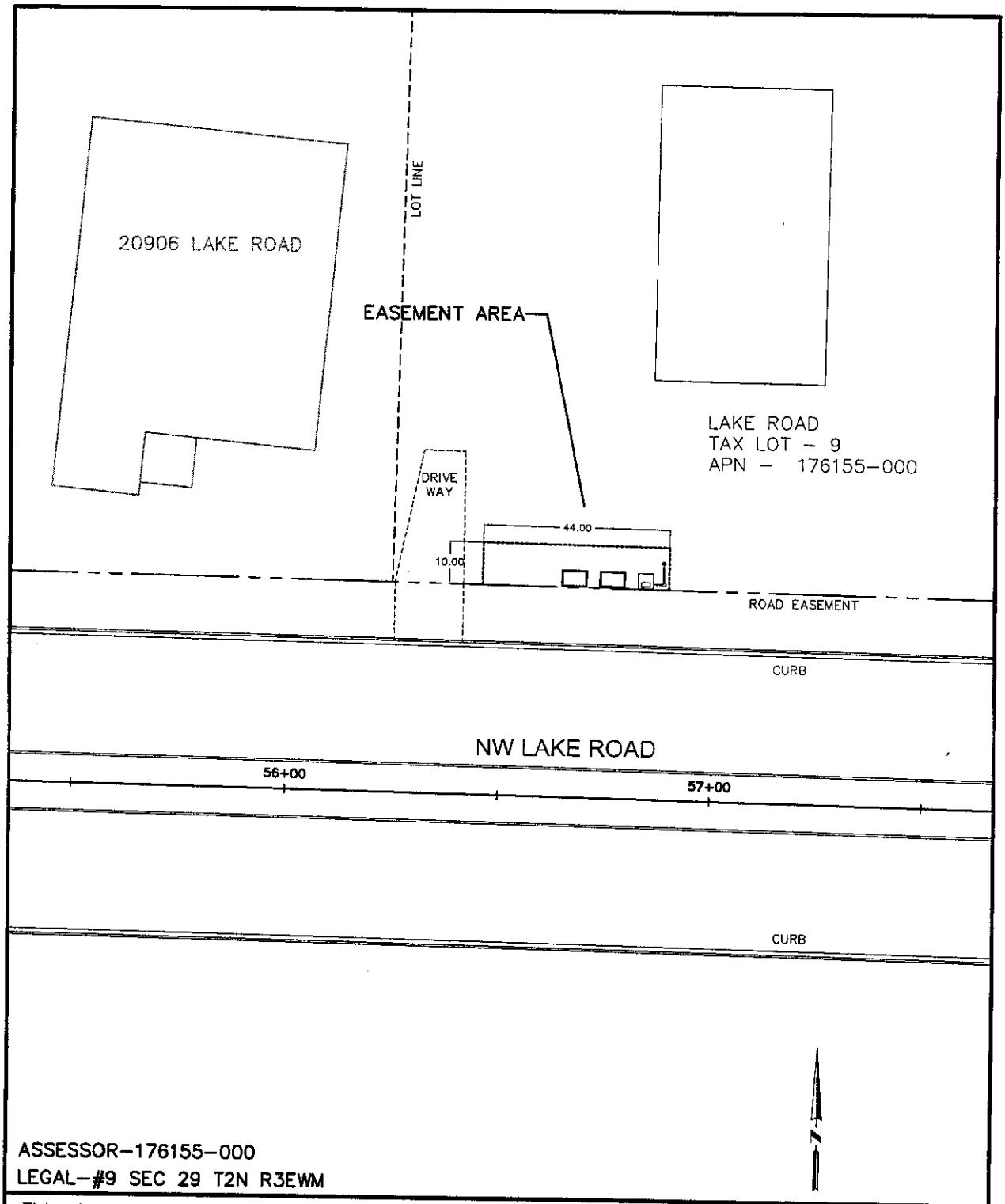
Portion of Serial No. 176155-000 Tax Lot #9 Sec. 29-2-3- EWM

A ten (10) foot by 44 foot easement lying North (as measured at right angles) of the North line of NW Lake Road opposite Engineer's Station 56+45 and 56+89 left, as shown on City of Camas – NW Lake Road/SE 1st Street Right-of-Way Plans, City Project No. S-356, and;

A five (5) foot by ten (10) foot easement lying North (as measured at right angles) of the North line of NW Lake Road opposite Engineer's Station 60+95 to 61+05 left, as shown on City of Camas – NW Lake Road/SE 1st Street Right-of-Way Plans, City Project No. S-356, over the following described property;

A portion of the Southeast quarter of Section 29, Township 2 North, Range 3 East, of the Willamette Meridian, described as follows:

> The East half of the East half of the Southeast quarter of Section 29, Township 2 North, Range 3 East of the Willamette Meridian.



ASSESSOR–176155–000
LEGAL–#9 SEC 29 T2N R3EWM

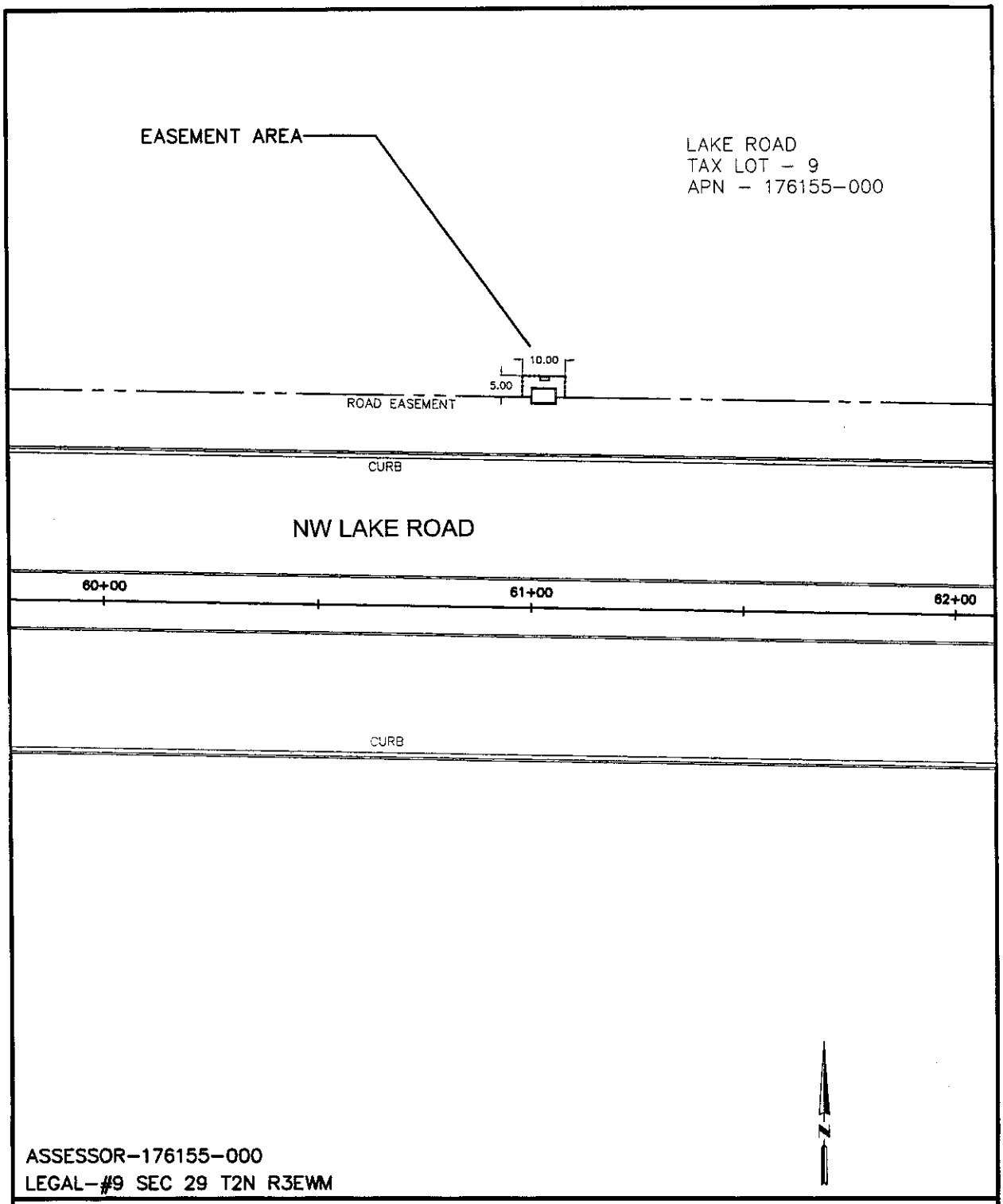
This drawing should be used only as a representation of the location of the easement being conveyed. The exact location of all structures, lines or appurtanenances is subject to change.

CLARK PUBLIC UTILITIES
RIO# 201390
W.O. #03–13204

NOT TO SCALE

EXHIBIT "B"

PAGE 1 OF 2



ASSESSOR–176155–000
LEGAL–#9 SEC 29 T2N R3EWM

This drawing should be used only as a representation of the location of the easement being conveyed. The exact location of all structures, lines or appurtanenances is subject to change.

CLARK PUBLIC UTILITIES
RIO# 201390
W.O. #03–13204

NOT TO SCALE

EXHIBIT "B"

PAGE 2 OF 2

Real Estate Excise Tax
Ch. 11 Rev. Laws 1951
$ 230.00 has been paid
Rcpt. # 57805 Date 11/5/65
Eva King Burgett
Clark County Treasurer
By Marie McKim
Deputy

633984

EXECUTOR'S DEED AFTER ENTRY OF ORDER OF SOLVENCY

THE GRANTORS, ORVILLE B. MAXWELL and IRWIN C. LANDERHOLM, co-executors of the will of J. D. MAXWELL, otherwise known as JACOB D. MAXWELL, deceased, for and in consideration of Twenty-three Thousand and No/100 ($23,000.00) Dollars, in hand paid, convey and warrant to JOSEPH D. GRIMM and MYTRON O. GRIMM, the following real estate situated in Clark County, Washington:

The East half of the East half of the Southeast quarter of Section Twenty-nine (29), Township Two (2) North, Range Three (3) East of the Willamette Meridian.

J. D. Maxwell died on January 6, 1965, and Orville B. Maxwell and Irwin C. Landerholm were confirmed as co-executors of his last will and testament on January 22, 1965, and ever since have been and are now the duly appointed, qualified and acting co-executors thereof. This deed is given for a full monetary consideration and is made pursuant to an Order of Solvency entered in the Matter of the Estate of J. D. Maxwell, also known as Jacob D. Maxwell, deceased, being probate cause No. 18728 in the Superior Court of Clark County, Washington on August 31, 1965.

DATED this day of , 1965.

Orville B. Maxwell

Co-executors of the Estate of
J. D. Maxwell

STATE OF WASHINGTON)
) ss.
County of Clark)

This certifies that on this 30th day of October, 1965, personally appeared before me Orville B. Maxwell and Irwin C. Landerholm, co-executors of the will of J. D. Maxwell, deceased, to me known to be the individuals who executed the foregoing instrument, and acknowledged the same as their free act and deed for the uses and purposes therein mentioned.

WITNESS my hand and official seal the day and year in this certificate first above written.

Lorene M. Lamphiear
Notary Public in and for the State of Washington, residing at Vancouver.

LORENE M. LAMPHIEAR * NOTARY PUBLIC * COMMISSION EXPIRES SEPT. 27, 1969 * STATE OF WASHINGTON

MAIL TO FIRST FEDERAL SAVINGS AND LOAN ASSOCIATION VANCOUVER, WASHINGTON

LAW OFFICES OF
Robinson,
Landerholm, Memovich
& Lansverk
1111 Broadway
Vancouver, Washington 98660
59754

Recorded Nov. 5, 1965 at 3:55 P.M. by Fletcher-Daniels Title Co.
Bruce Worthington, County Auditor

Form FCA 405—Rev. 12-65
Spokane

C 471795

659426

REAL ESTATE MORTGAGE

KNOW ALL MEN BY THESE PRESENTS, That on this 6th day of December, 1966,

S. Lorenzo Strunk and Edith M. Strunk, husband and wife

hereinafter called the MORTGAGORS, hereby grant, bargain, sell, convey and mortgage to

Southwest Washington PRODUCTION CREDIT ASSOCIATION,

a corporation organized and existing under the Farm Credit Act of the Congress of the United States, as amended, with its principal place of business in the City of Chehalis, Washington,

State of Washington, hereinafter called the MORTGAGEE, the following described real estate in the County of Clark, State of Washington, to-wit:

The Southeast quarter of the Southwest quarter of Section 29, twp. 2 North, Range 3 #. W.M. Except: Beginning at the Southeast corner of the SE¼ of the SW¼ of said Section 29, thence North along the quarter section line 209 feet; thence West and parallel with the South line of said Section, 209 feet; thence South 209 feet to the South line of said section; thence East along said section line 209 feet to the point of beginning. Also except county roads.

The Northwest quarter of the Southeast quarter of Section 29, Twp. 2 North, Range 3 East, W.M. Except on county roads.

together with all the tenements, hereditaments, rights, privileges, appurtenances, and fixtures, including all irrigating and watering apparatus, now or hereafter belonging to, located on, or used in connection with the above described premises, and together with all waters and water rights of every kind and description and however evidenced, and all ditches or other conduits and rights of way thereof, appurtenant to said premises or used in connection therewith; and together with all range and grazing rights (including rights under the Taylor Grazing Act and Federal Forest Grazing privileges), now or hereafter issued in connection with or appurtenant to the said real property; and the mortgagors covenant that they will comply with all rules, regulations and laws pertaining thereto and will in good faith endeavor to keep the same in good standing and will execute all waivers and other documents required to give effect to these covenants, and that they will not sell, transfer, assign or otherwise dispose of said rights or privileges without the prior written consent of the mortgagee.

SUBJECT TO Mortgage held by Federal Land Bank

This conveyance is intended as a mortgage securing the performance of the covenants and agreements hereinafter contained, and the payment of the debt represented by promissory note(s) made by one or more of the Mortgagors (unless otherwise indicated) to the order of the Mortgagee, as follows:

MATURITY DATE	DATE OF NOTE	AMOUNT OF NOTE
January 5, 1968	December 8, 1966	$19,154.00

This mortgage is intended to secure not only the note(s) hereinbefore specifically described, but also any outstanding balance of indebtedness, not exceeding $20,000.00, plus interest from the date of such indebtedness at the current rate then existing on loans by mortgagee, due from Mortgagors to Mortgagee, or its assigns or successors, whether now existing or contracted for within a period of five years from and after the date of filing of this mortgage; and this mortgage shall not be discharged nor shall its effectiveness as security for advances thereafter made be affected, by the fact that at certain times there may exist no indebtedness due from Mortgagors to Mortgagee; but the lien of this mortgage shall continue as security for any loans or advances made to Mortgagors by Mortgagee or its assigns, until it has been intentionally released.

MORTGAGORS COVENANT AND AGREE:

That they are lawfully seized of said premises in fee simple, have good right and lawful authority to convey and mortgage the same, and that said premises are free from encumbrances except as stated above; and each of the Mortgagors will warrant and defend the same forever against the lawful claims and demands of all persons whomsoever except as stated above, hereby relinquishing all dower and homestead rights in the premises; and these covenants shall not be extinguished by any foreclosure hereof, but shall run with the land;

659427

To pay when due all debts and money secured hereby;

To keep the buildings and other improvements now or hereafter existing on said premises in good repair and not to remove or demolish or permit the removal or demolishment of any thereof; not to commit or suffer waste of any kind upon said premises; not to use or permit the use of said premises for any unlawful or objectionable purpose; and to do all acts and things necessary to preserve all water rights now or hereafter appurtenant to or used in connection with said premises;

To pay when due all taxes and assessments upon said premises; and to suffer no other lien or encumbrance prior to the lien of this mortgage to exist at any time against said premises, except as stated above;

To keep all buildings insured against loss or damage by fire in manner and form and in such company or companies and in such amount as shall be satisfactory to the Mortgagee; to pay when due all premiums and charges on all such insurance; to deposit with the Mortgagee, upon request, all insurance policies affecting the mortgaged premises, all of which said insurance shall be made payable, in case of loss, to the Mortgagee, with a mortgagee clause satisfactory to the Mortgagee;

To keep in good standing and free from delinquencies all obligations under any mortgage or other lien which is prior to this mortgage.

Should the Mortgagors be or become in default in any of the covenants or agreements herein contained, then the Mortgagee may, at its option, perform the same in whole or in part, and all expenditures made by the Mortgagee in so doing shall bear interest at the rate borne by the principal debt hereby secured, and shall be immediately repayable by the Mortgagors without demand, and, together with interest and costs accruing thereon, shall be secured by this mortgage.

Time is material and of the essence hereof; and in case of breach of any of the covenants or agreements hereof, or if default be made in the payment of any of the sums hereby secured, then, in any such case, all indebtedness hereby secured shall, at the election of the Mortgagee, become immediately due without notice, and this mortgage may be foreclosed; but the failure of the Mortgagee, to exercise such option in any one or more instances shall not be considered as a waiver or relinquishment of the right to exercise such option upon or during the continuance of the same or any other default.

In case of any suit to foreclose this mortgage or to collect any charge growing out of the debt hereby secured, or of any suit which the Mortgagee may deem it necessary to prosecute or defend to effect or protect the lien hereof, the Mortgagors agree to pay a reasonable sum as attorney's fees and all costs and legal expenses in connection with said suit, and further agree to pay the reasonable costs of searching the records and abstracting or insuring the title, and such sums and costs and expenses shall be secured hereby and be included in the decree of foreclosure.

Upon or during the continuance of any default hereunder, the Mortgagee shall have the right forthwith to enter into and upon the mortgaged premises and take possession thereof, except under circumstances where such taking is expressly prohibited by law, and collect the rents, issues and profits thereof, and apply the same, less reasonable costs of collection, upon the indebtedness hereby secured; and the Mortgagee shall have the right to the appointment of a receiver to collect the rents, issues and profits of the mortgaged premises and/or to manage the property during the pendency of legal proceedings. The rents, issues and profits of said premises after default shall accrue to Mortgagee's benefit and are hereby assigned and mortgaged to Mortgagee as additional security for the indebtedness herein described.

All rights and remedies conferred on Mortgagee by this mortgage are cumulative and additional to any and all other rights and remedies conferred by law, and are not exclusive. If any provision of this mortgage be found invalid or unenforceable, such invalidity or unenforceability shall not affect any other provision hereof; and the mortgage shall be construed as though the invalid or unenforceable provision had been omitted.

The covenants and agreements herein contained shall extend to and be binding upon the heirs, executors, administrators, successors and assigns of the respective parties hereto.

IN WITNESS WHEREOF, The Mortgagors have hereunto set their hands the day and year first above written.

/s/ S Lorenzo Strunk

/s/ Edith M Strunk

(Leave this space blank for filing data)

FILED FOR RECORD
CLARK CO., WASH.
BY S. W. WASH. PROD. CR. ASSN.
FEE 310
DEC 13 10 42 AM '66
DOCUMENT
AUDITOR Bruce Washington
PO Bx 830
Chehalis, Wn 98532

ACKNOWLEDGMENT.

STATE OF WASHINGTON)
County of CLARK) ss.

I, the undersigned, a Notary Public in and for said County and State, duly commissioned and sworn, do hereby certify that on this 9TH day of DECEMBER, 1966, before me personally appeared S. LORENZO STRUNK AND EDITH M. STRUNK and husband and wife, to me known to be the individuals described in and who executed the within and foregoing instrument, and acknowledged to me that they signed and sealed the same as their free and voluntary act and deed for the uses and purposes therein mentioned individually. IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.

Ralph D. Williams
Notary Public in and for the State of Washington,
Residing at RIDGEFIELD, WASH.

584

Bk.568,Pg.584

G120226

Statutory Warranty Deed

P. A. BJELDE
TO
FRED SCHICK & HAZEL MAY SCHICK

FILED FOR RECORD
CLARK CO., WASH.
BY CLARK COUNTY ABSTRACT & TITLE CO.
FEE 12.

1953 FEB 17 PM 3:56

REGISTERED INDEXED
VOL. 568 PAGE 584
AUDITOR

WASHINGTON TITLE INSURANCE COMPANY
SEATTLE WASHINGTON

Mail to Columbia National Farm Loan Association - P.O. Box 799 Vancouver, Wash

Send Tax Statement to Fred Schick Rt 2, Box 135 Camas Washington

FORM L58

Statutory Warranty Deed

THE GRANTOR P. A. BJELDE, also known of record as Peter A. Bjelde, and Lucretia Bjelde, husband and wife.

for and in consideration of Four Thousand Two Hundred and no/100- - -($4200.00)- - -Dollars

in hand paid, conveys and warrants to FRED SCHICK and HAZEL MAY SCHICK, husband and wife, Rt. 2, Box 135, Camas, Washington

the following described real estate, situated in the County of Clark, State of Washington:

The Southwest Quarter (SW¼) of the Southeast Quarter (SE¼) of Section Twenty-Nine (29), Township Two (2) North, Range Three (3) East of the Willamette Meridian, containing Forty (40) acres more or less.

Real Estate Excise Tax
Ch. 11 Rev. Laws 1961
EXEMPT
Affd.# E183 Date 2-18-53
Eva Meg Burgett
Clark County Treasurer
By Dorothy Carlson

Dated this 14th day of February, 1953

Peter A. Bjelde (SEAL)
Lucretia Bjelde (SEAL)

STATE OF WASHINGTON, } ss.
County of Clark

On this day personally appeared before me P. A. BJELDE, also known of record as Peter A. Bjelde, and Lucretia Bjelde, husband and wife. to me known to be the individual described in and who executed the within and foregoing instrument, and acknowledged that they signed the same as their free and voluntary act and deed, for the uses and purposes therein mentioned.

GIVEN under my hand and official seal this 17th day of February, 1953.

C. C. Calavan
Notary Public in and for the State of Washington, residing at Vancouver therein

61271

4055
Page: 1 of 5
09/26/2005 04:31P
KNAPP ODELL ETAL D 36.00 Clark County, WA

After recording return to:

Roger D. Knapp
430 N.E. Everett Street
Camas, WA 98607

Ch. 11 ... 1951
Affd. # 576431 Date 9-26-05
For details of tax paid see
Affd. #
Doug Lasher
Clark County Treasurer
By
Deputy

WARRANTY DEED

Grantor: Joseph D. Grimm, as his separate estate
Grantee: City of Camas, a municipal corporation of the State of Washington
Legal Desc. (Abbrev.): Sec. 29, T2N, R3E
Tax Parcel Identification No(s).: 176155-000; 176170-000

THE GRANTOR, JOSEPH D. GRIMM, as his separate estate, for and in consideration of TEN AND NO/100 DOLLARS ($10.00) and other valuable consideration in hand paid, conveys and warrants to the CITY OF CAMAS, a municipal corporation of the State of Washington, the following described real property, situate in the County of Clark, State of Washington:

See Exhibit "A" attached hereto and by this reference incorporated herein.

DATED this 20th day of August, 2005.

Joseph D. Grimm

STATE OF WASHINGTON)
) ss.
COUNTY OF ~~CLARK~~ SKAGIT)

On this 20th day of August, 2005, personally appeared before me JOSEPH D. GRIMM, to me known to be the individual described herein and who executed the within and foregoing instrument, and acknowledged that he signed the same as his free and voluntary act and deed, for the uses and purposes therein mentioned.

GIVEN under my hand and official seal this 20th day of August, 2005.

KIMBERLY ANN KANE
Commission Expires
NOTARY
PUBLIC
JULY 19, 2006
STATE OF WASHINGTON

Notary Public in and for the State of Washington, Residing at Anacortes WA
My appointment expires: July 19, 2006

MINISTER-GLAESER SURVEYING INC.
(360) 694-3313
FAX (360) 694-8410
2200 E. EVERGREEN
VANCOUVER, WA 98661

January 23, 2002

A tract of land lying in the Southeast quarter of Section 29, Township 2 North, Range 3 East, of the Willamette Meridian in Clark County, Washington, more particularly described as follows:

All of that parcel described by deed, recorded under Auditor's File No. G 432981, records of Clark County, Washington that lies South of the line described below;

Beginning at a point 44.00 feet Northerly (when measured at right angles) of engineers station 51+45.39 as shown on City of Camas – NW Lake Road/SE 1st Street Right-of-Way plan, City Project No. S – 356;

Thence Easterly to a point 44.00 feet Northerly (when measured at right angles) of engineers station 56+24.24, there ending said line;

Contains 6703.9 square feet, more or less.

End of Description.

DANIEL ADOLPH RENTON
STATE OF WASHINGTON
17535
REGISTERED
PROFESSIONAL LAND SURVEYOR
EXPIRES: JANUARY 10, 2002

03/10/02

EXHIBIT 1
PAGE 1 OF 4

EXHIBIT "B"

JOB NO:00-287 SEPTEMBER 11, 2001

NOT TO SCALE

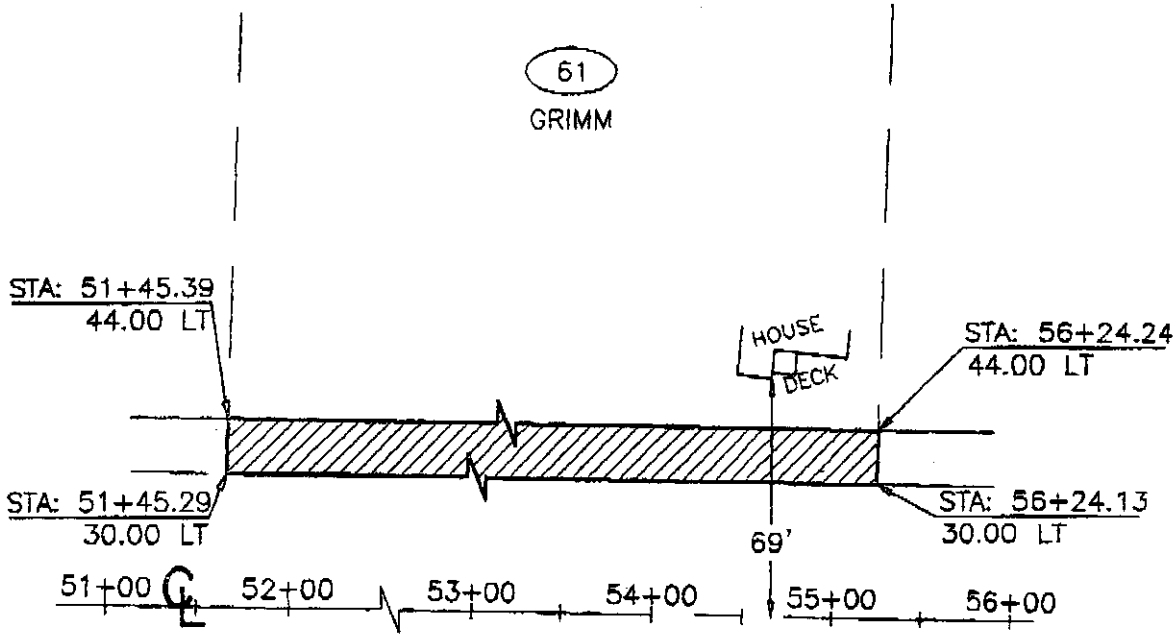


EXHIBIT A

PAGE 2 OF 4

40559
Page: 4 of 5
09/26/2005 04:31P
KNAPP ODELL ETAL D 36.00 Clark County, WA

MINISTER-GLAESER
SURVEYING INC.

(360) 694-3313
FAX (360) 694-8410
2200 E. EVERGREEN
VANCOUVER, WA 98661

January 23, 2002

A tract of land lying in the Southeast quarter of Section 29, Township 2 North, Range 3 East, of the Willamette Meridian in Clark County, Washington, more particularly described as follows:

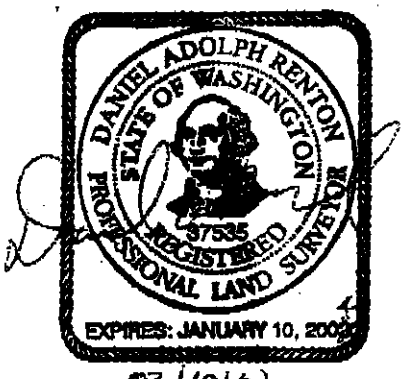
All of that parcel described by deed, recorded under Auditor's File No. G 432981, records of Clark County, Washington, that lies South of the line described below;

Beginning at a point 44.00 feet Northerly (when measured at right angles) of engineers station 56+24.24 as shown on City of Camas – NW Lake Road/SE 1st Street Right-of-Way plan, City Project No. S – 356;

> Thence Easterly to a point 44.00 feet Northerly (when measured at right angles) of engineers station 62+83.10, there ending said line;

Contains 9222.4 square feet, more or less.

End of Description.



03/10/02

EXHIBIT A
PAGE 3 OF 4

4055960
Page: 5 of
09/26/2005 04:31P
KNAPP ODELL ETAL D 36.00 Clark County, WA

EXHIBIT "B"

JOB NO:00-287 SEPTEMBER 11, 2001

NOT TO SCALE

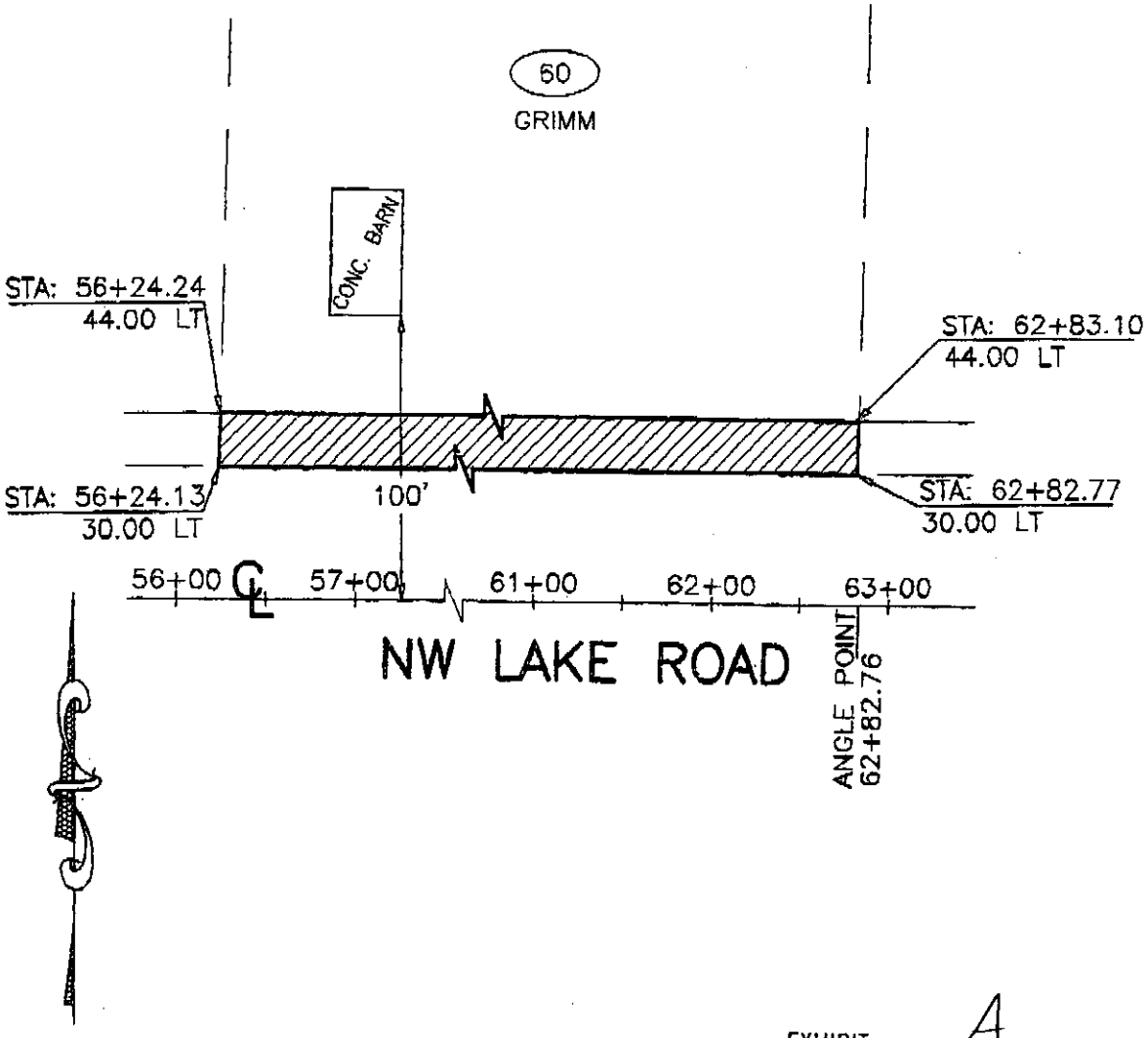


EXHIBIT A

PAGE 4 OF 4

Printed: February 13, 2020
Scale - 1:3600
1" = 300'

Information shown on this map was collected from several sources. Clark County accepts no responsibility for any inaccuracies that may be present.

Clark County
Geographic Information System

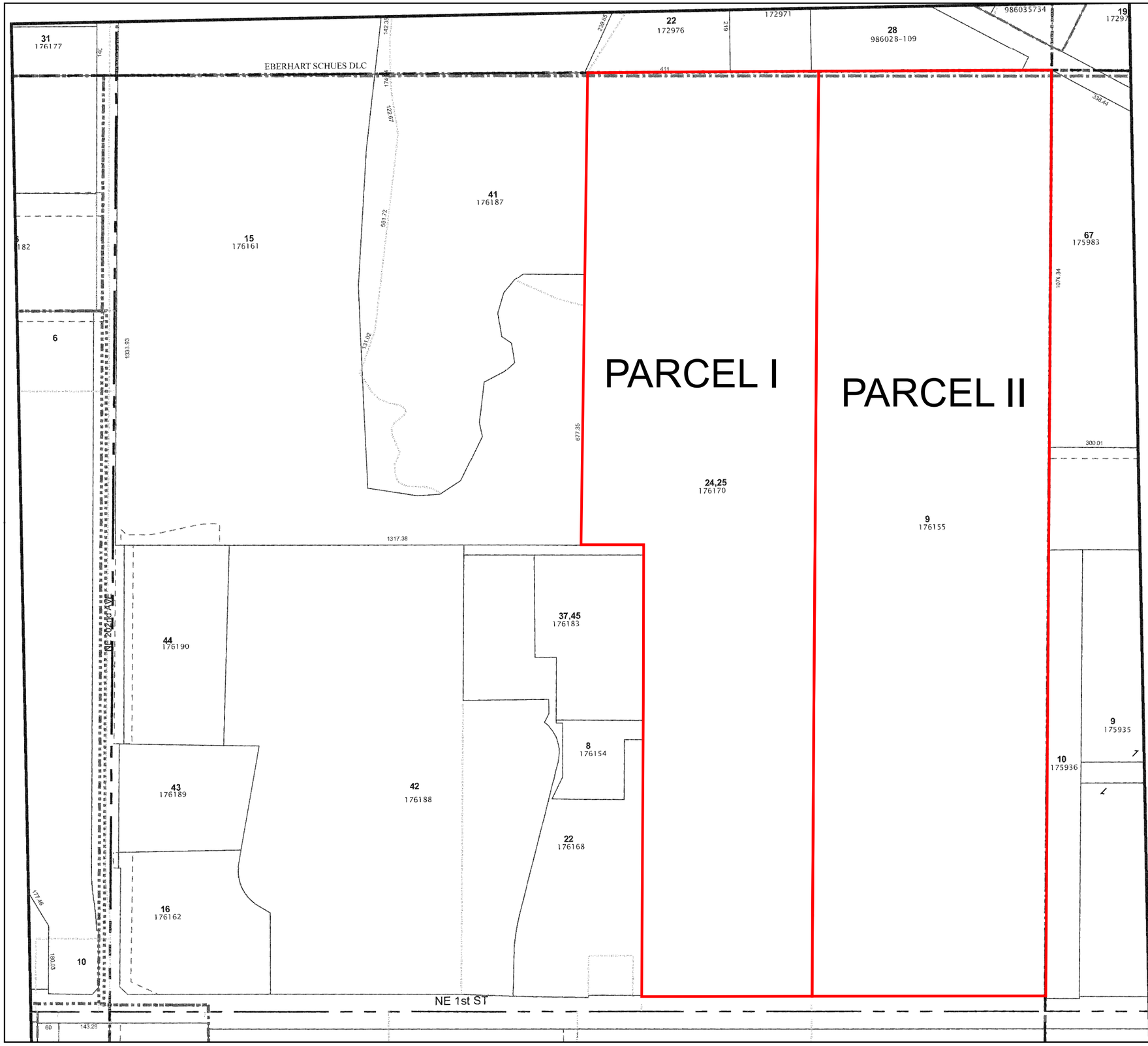
SE Qtr of Section 29 T2N R3E W

First American Title Insurance Company

File No.: 1040430
Location: Clark County, WA

Legend

- PARCEL I
- PARCEL II



NOT TO SCALE

This map may or may not be an accurate description or identification of the land and is not intended nor may be it relied upon as a survey of the land depicted hereon. This map is solely intended to provide orientation as to the general location of the parcel or parcels depicted herein. First American Title Com subsidiaries and affiliates, expressly disclaim any and all lia all loss or damage which may result from reliance or use of t

PROPERTY INFORMATION CENTER

Account Summary

Property Identification Number: 176170000 MapsOnline
Property Type: Real
Property Status: Active
Site Address: 4723 NW LAKE RD, CAMAS, WA 98607 (Situs Addresses)
Abbreviated Description: #24 & #25 SEC 29 T2N R3EWM 34.27A

Tax Status: Regular
Current Use Classification: Farm and Agricultural Land

Property Owner	Owner Mailing Address	Property Site Address
GRIMM JOSEPH D & GRIMM CAROLYN M TRUSTEES	GRIMM LIVING TRUST 6315 NE 63RD ST VANCOUVER WA , 98661	4723 NW LAKE RD, CAMAS, WA 98607 Google Maps Street View

Administrative Data Info...

Zoning Designation - Codes	Light Industrial/Business Park (LI/BP)
Zoning Overlay(s)	Gateway Corridor
Comprehensive Plan	IND
Comp. Plan Overlay(s)	none
Census Tract	406.08
Jurisdiction	Camas
Fire District	Camas Washougal FD
Park District	n/a
School District	Camas
Elementary	Grass Valley
Middle School	Skyridge Middle
High School	Camas
Sewer District	Camas
Water District	Camas
Neighborhood	n/a
Section-Township-Range	SE 1/4,S29,T2N,R3E PDF
Urban Growth Area	Camas
C-Tran Benefit Area	Yes
School Impact Fee	Camas
Transportation Impact Fee	Camas
Transportation Analysis Zone	425
Waste Collection	Waste Connections
Service Provider	Thursday
Garbage Collection Day	
Last Street Sweeping	n/a
CPU Lighting Utility District	0
Burning Allowed	No
Increased Wildfire Danger Area	No
Public Health Food Inspector District	District 2
Public Health WRAP Inspector District	District 1
Councilor District	4
Drainage District	none

Land Data

Clark County Road Atlas	Page 11
Approximate Area Info...	1,492,801 sq. ft. 34.27 acres
Subdivision	no data
Survey	No Records

Sales History

Sale Date	04/27/2010
Document Type	D-SWD
Excise Number	658680
Document Number	
Sale Amount	$0.00

Sale Date	08/20/2005
Document Type	D-QCD
Excise Number	576431
Document Number	
Sale Amount	$0.00

Sale Date	03/10/2004
Document Type	D-QCD
Excise Number	537658
Document Number	
Sale Amount	$0.00

COVID-19 update - Attention property owners

2020 assessed values were established as of January 1, 2020 per state law. Potential impacts to your property's assessed value attributed to the pandemic will be reflected on 2021 assessed valuations.

Assessment Data Info...

2020 Values for 2021 Taxes

Market Value as of January 1, 2020

Land Value	$3,340,590.00
Building Value	$0.00
Total Property	$3,340,590.00

Taxable Value Info...

Total	$237,684.00

2019 Values for 2020 Taxes

Market Value as of January 1, 2019

Land Value	$3,340,590.00
Building Value	$0.00
Total Property	$3,340,590.00

Taxable Value Info...

Total	$237,824.00

General

Re-valuation Cycle	4
Assessor Neighborhood	7470
Notice of Value	2020 2019 2018 2017 2016 2015 2014

Property assessment value is valid as of the date printed on the linked notice of value. The notice of value will not reflect any updates to property

		value that occurred after the notice mail date. Please contact the Assessor's office if you have a question about your assessed value.

If you have questions concerning the data on this page, please contact the Clark County Assessor's Office. Main Phone: (564) 397-2391, Email: assessor@clark.wa.gov

PROPERTY INFORMATION CENTER

Tax Summary

Property Identification Number: 176170000 **MapsOnline**
Property Type: Real
Property Status: Active
Site Address: 4723 NW LAKE RD, CAMAS, WA 98607 (Situs Addresses)
Abbreviated Description: #24 & #25 SEC 29 T2N R3EWM 34.27A

Tax Status: Regular
Current Use Classification: Farm and Agricultural Land

Property Owner	**Owner Mailing Address**	**Property Location Address**
GRIMM JOSEPH D & GRIMM CAROLYN M TRUSTEES	GRIMM LIVING TRUST 6315 NE 63RD ST VANCOUVER WA, 98661	4723 NW LAKE RD, CAMAS, WA 98607 **Google Maps Street View** **Bing Maps Birds Eye**

2020 Tax Information

$ Pay Online **Payment service fees:** Free E-Check, 2.39% Credit Card, $3.95 Debit Card

Other Payment Options

Tax Code Area:	117023
Millage Rate:	12.9303471527

Tax Distribution

Tax Statements

Tax Bill Summary	
Taxable Value	$237,824.00
Tax Amount	$3,097.45
Tax Paid	$3,097.45

1st Half	
1st Half Amount Billed	$1,548.53
Payment Due Date	Jun. 30, 2020

2nd Half	
2nd Half Amount Billed	$1,548.42
Payment Due Date	Oct. 31, 2020

2nd Half	
2nd Half Amount Billed	$0.50
Payment Due Date	Nov. 16, 2020

Tax Years Owing

*Interest & Penalty calculates on delinquent taxes

Tax Year	Statement ID	Amount Billed	Calc Date*	Interest	Penalty	Total Due

Tax History

Tax Year	Statement ID	Billed	Paid	Interest Paid	Penalty Paid
2020	115745	$3,097.45	$3,097.45	$0.00	$0.00
2019	115887	$2,664.41	$2,664.41	$0.00	$0.00
2018	115989	$3,184.09	$3,184.09	$0.00	$0.00
2017	116074	$3,318.18	$3,318.18	$0.00	$0.00
2016	116142	$3,257.61	$3,257.61	$0.00	$0.00
2015	116441	$3,400.64	$3,400.64	$0.00	$0.00
2014	116543	$3,631.79	$3,631.79	$0.00	$0.00
2013	116634	$3,737.86	$3,737.86	$0.00	$0.00
2012	116755	$3,600.77	$3,600.77	$0.00	$0.00
2011	116846	$3,532.20	$3,532.20	$0.00	$0.00
2010	116917	$3,271.70	$3,271.70	$0.00	$0.00
2009	117034	$2,656.67	$2,656.67	$0.00	$0.00
2008	440937	$2,624.24	$2,624.24	$0.00	$0.00
2007	279089	$2,514.08	$2,514.08	$0.00	$0.00

2006	121240	$2,401.92	$2,401.92	$0.00	$0.00

If you have any questions concerning the data on this page, please contact Clark County Treasurer's Office.
Main Phone: (564) 397-2252, Email: treasoff@clark.wa.gov

Item 14.

PROPERTY INFORMATION CENTER

Account Summary

Property Identification Number: 176155000 MapsOnline
Property Type: Real
Property Status: Active
Site Address: 4707 NW LAKE RD, CAMAS, WA 98607 (Situs Addresses)
Abbreviated Description: #9 SEC 29 T2NR3EWM 39.79A

Tax Status: Regular
Current Use Classification: Farm and Agricultural Land

Property Owner	Owner Mailing Address	Property Site Address
GRIMM CAROLYN M TRUSTEE Additional Owners	JOSEPH D GRIMM DECEDENT'S TRUST A 38.08% INT 6315 NE 63RD ST VANCOUVER WA , 98661	4707 NW LAKE RD, CAMAS, WA 98607 Google Maps Street View

Administrative Data Info...

Zoning Designation - Codes	Light Industrial/Business Park (LI/BP)
Zoning Overlay(s)	Gateway Corridor
Comprehensive Plan	IND
Comp. Plan Overlay(s)	none
Census Tract	406.08
Jurisdiction	Camas
Fire District	Camas Washougal FD
Park District	n/a
School District	Camas
Elementary	Grass Valley
Middle School	Skyridge Middle
High School	Camas
Sewer District	Camas
Water District	Camas
Neighborhood	n/a
Section-Township-Range	SE 1/4,S29,T2N,R3E PDF
Urban Growth Area	Camas
C-Tran Benefit Area	Yes
School Impact Fee	Camas
Transportation Impact Fee	Camas
Transportation Analysis Zone	425
Waste Collection Service Provider	Waste Connections
Garbage Collection Day	Thursday
Last Street Sweeping	n/a
CPU Lighting Utility District	0
Burning Allowed	No
Increased Wildfire Danger Area	No
Public Health Food Inspector District	District 2
Public Health WRAP Inspector District	District 1
Councilor District	4
Drainage District	none

Land Data

Clark County Road Atlas	Page 11
Approximate Area Info...	1,733,252 sq. ft. 39.79 acres
Subdivision	no data
Survey	No Records

Sales History

Sale Date	10/16/2012
Document Type	D-SWD
Excise Number	686235
Document Number	
Sale Amount	$0.00
Sale Date	04/27/2010
Document Type	D-SWD
Excise Number	658682
Document Number	
Sale Amount	$0.00
Sale Date	08/20/2005
Document Type	D-QCD
Excise Number	576431
Document Number	
Sale Amount	$0.00
Sale Date	05/06/2005
Document Type	D-QCD
Excise Number	570119
Document Number	
Sale Amount	$0.00
Sale Date	03/10/2004
Document Type	D-QCD
Excise Number	537775
Document Number	
Sale Amount	$0.00

COVID-19 update - Attention property owners

2020 assessed values were established as of January 1, 2020 per state law. Potential impacts to your property's assessed value attributed to the pandemic will be reflected on 2021 assessed valuations.

Assessment Data Info...

2020 Values for 2021 Taxes

Market Value as of January 1, 2020

Land Value	$4,038,375.00
Building Value	$0.00
Total Property	$4,038,375.00

Taxable Value Info...

Total	$17,487.00

2019 Values for 2020 Taxes

Market Value as of January 1, 2019

Land Value	$4,038,375.00
Building Value	$0.00
Total Property	$4,038,375.00

Taxable Value Info...

Total	$17,657.00

General

Re-valuation Cycle	4
Assessor Neighborhood	7470
Notice of Value	2020 2019 2018 2017 2016 2015 2014

Property assessment value is valid as of the date

		printed on the linked notice of value. The notice of value will not reflect any updates to property value that occurred after the notice mail date. Please contact the Assessor's office if you have a question about your assessed value.

If you have questions concerning the data on this page, please contact the Clark County Assessor's Office. Main Phone: (564) 397-2391, Email: assessor@clark.wa.gov

PROPERTY INFORMATION CENTER

Tax Summary

Property Identification Number: 176155000 **MapsOnline**
Property Type: Real
Property Status: Active
Site Address: 4707 NW LAKE RD, CAMAS, WA 98607 (Situs Addresses)
Abbreviated Description: #9 SEC 29 T2NR3EWM 39.79A

Tax Status: Regular
Current Use Classification: Farm and Agricultural Land

Property Owner	**Owner Mailing Address**	**Property Location Address**
GRIMM CAROLYN M TRUSTEE **More Owner Info**	JOSEPH D GRIMM DECEDENT'S TRUST A 38.08% INT 6315 NE 63RD ST VANCOUVER WA, 98661	4707 NW LAKE RD, CAMAS, WA 98607 **Google Maps Street View** **Bing Maps Birds Eye**

2020 Tax Information

$ Pay Online **Payment service fees:** Free E-Check, 2.39% Credit Card, $3.95 Debit Card

Other Payment Options

Tax Code Area:	117023	Tax Distribution	Tax Statements
Millage Rate:	12.9303471527		

Tax Bill Summary		1st Half		2nd Half		2nd Half	
Taxable Value	$17,657.00	1st Half Amount Billed	$123.15	2nd Half Amount Billed	$123.06	2nd Half Amount Billed	$0.50
Tax Amount	$246.71	Payment Due Date	Jun. 30, 2020	Payment Due Date	Oct. 31, 2020	Payment Due Date	Nov. 16, 2020
Tax Paid	$246.71						

Tax Years Owing

*Interest & Penalty calculates on delinquent taxes

Tax Year	Statement ID	Amount Billed	Calc Date*	Interest	Penalty	Total Due

Tax History

Tax Year	Statement ID	Billed	Paid	Interest Paid	Penalty Paid
2020	115730	$246.71	$246.71	$0.00	$0.00
2019	115872	$246.25	$246.25	$0.00	$0.00
2018	115974	$307.92	$307.92	$0.00	$0.00
2017	116059	$279.42	$279.42	$0.00	$0.00
2016	116127	$265.57	$265.57	$0.00	$0.00
2015	116426	$255.50	$255.50	$0.00	$0.00
2014	116528	$266.34	$266.34	$0.00	$0.00
2013	116619	$249.51	$249.51	$0.00	$0.00
2012	116740	$256.68	$256.68	$0.00	$0.00
2011	116831	$221.16	$221.16	$0.00	$0.00
2010	116902	$226.72	$226.72	$0.00	$0.00
2009	117019	$134.42	$134.42	$0.00	$0.00
2008	440926	$125.23	$125.23	$0.00	$0.00

2007	279078	$120.31	$120.31	$0.00	$0.00
2006	121229	$127.07	$127.07	$0.00	$0.00

If you have any questions concerning the data on this page, please contact Clark County Treasurer's Office.
Main Phone: (564) 397-2252, Email: treasoff@clark.wa.gov

4718681 D
RecFee - $63.00 Pages: 2 - PABST HOLLAND & REYNOLDS
Clark County, WA 11/18/2010 03:13

RECORDING REQUESTED BY AND WHEN RECORDED RETURN TO:

MARILYN K. REYNOLDS, Attorney at Law
900 Washington Street, Suite 820
Vancouver, WA 98660

Real Estate Excise Tax
Ch. 11 Rev. Laws 1951
EXEMPT
Affd. # 65868 Date 11-18-10
For details of tax paid see
Affd. #
Doug Lasher
Clark County Treasurer
By
Deputy

STATUTORY WARRANTY DEED

Grantors (Sellers): JOSEPH D. GRIMM

Grantees (Buyers): JOSEPH D. GRIMM and CAROLYN M. GRIMM, Trustees of the GRIMM LIVING TRUST dated November 11, 2008

Abbreviated Legal: #9 SEC 29 T2NR3EWM 39.79A
Assessor's Tax Parcel # 176170-000
Other Reference Nos:

Documentary transfer tax is none. No consideration.

THE GRANTOR, JOSEPH D. GRIMM,

hereby **CONVEYS AND WARRANTS TITLE** to

JOSEPH D. GRIMM and CAROLYN M. GRIMM, Trustees of the GRIMM LIVING TRUST dated November 11, 2008,

the following-described real estate situated in the County of Clark, State of Washington, including any interest therein which Grantor may hereafter acquire:

That portion of the Southeast quarter of Section 29, Township 2 North, Range 3 East of the Willamette Meridian, described as follows:

Beginning at a point on the North line of Southeast 1st Street that is 658.95 feet West of the East line of said Section 29; said point being the Southwest corner of that certain tract conveyed to Joseph D. Grimm, et ux, by deed recorded under Auditor's File No. G 432981; thence North 0°25'30" East along the West line of

PABST HOLLAND & REYNOLDS, PLLC
ATTORNEYS AT LAW
900 Washington Street, Suite 820
Vancouver, Washington 98660
(360) 693-1910 • (503) 222-9201

said Grimm Tract a distance of 2,653.94 feet to the North line of the Southeast quarter of said section; thence South 89°32' West along said North line a distance of 658.62 feet to the Northeast corner of the S. Lorenzo Strunk Tract, as described in instrument recorded under Auditor's File No. G 471795; thence South 0°26' West along the East line of said Strunk Tract a distance of 1,339.30 feet to a stone monument marking the Northeast corner of that certain tract conveyed to Fred Schick et ux by deed recorded under Auditor's File No. G 120226; thence North 89°46' East along the Easterly prolongation of the North line of said Schick Tract a distance of 180 feet, thence South 0°26' West, parallel with the East line of said Schick Tract, a distance of 1,309.30 feet to the North line of Southeast 1st Street; thence East along said North line a distance of 478.95 feet to the point of beginning.

Together with and subject to covenants, restrictions, easements, conditions, and reservations of record.

Real Estate Excise Tax No: _____.

DATED: 4-27-10, 2010.

Joseph D. Grimm
JOSEPH D. GRIMM

STATE OF WASHINGTON)
: ss.
County of Skagit)

I certify that JOSEPH D. GRIMM appeared personally before me and that I know or have satisfactory evidence that he signed this instrument and acknowledged it to be his free and voluntary act for the uses and purposes mentioned in the instrument.

DATED this 27th day of April, 2010.

Notary Public
State of Washington
KATRINA J MOENA
My Appointment Expires Dec 12, 2011

Katrina J. Moena
NOTARY PUBLIC FOR WASHINGTON
My Commission Expires: 12/12/2011

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Clark Auditor Thu Nov 18 15:13:51 PST 2010 4718681 Page 2

4918092 D
RecFee - $73.00 Pages: 2 - MARILYN K REYNOLDS ATT
Clark County, WA 12/04/2012 02:53

RECORDING REQUESTED BY
AND WHEN RECORDED RETURN TO:

MARILYN K. REYNOLDS, Attorney at Law
900 Washington Street, Suite 820
Vancouver, WA 98660

Real Estate Excise Tax
Ch. 11 Rev. Laws 1951
EXEMPT
Affd. # 686235 Date 12-4-12
For details of tax paid see
Affd. #
Doug Lasher
Clark County Treasurer
By RZ
Deputy

STATUTORY WARRANTY DEED

Grantors (Sellers):	CAROLYN M. GRIMM, Surviving Trustee of the GRIMM LIVING TRUST dated November 11, 2008
Grantees (Buyers):	CAROLYN M. GRIMM, Trustee of the Joseph D. Grimm Decedent's Trust A dated November 19, 2010, as to an undivided 38.08 percent interest, and CAROLYN M. GRIMM, Trustee of the Joseph D. Grimm Decedent's Trust B dated November 19, 2010, as to an undivided 57.12 percent interest
Abbreviated Legal:	#9 SEC 29 T2NR3EWM 39.79A
Assessor's Tax Parcel #	176155-000
Other Reference Nos:	4718682

Documentary transfer tax is none. No consideration.

THE GRANTOR, CAROLYN M. GRIMM, Surviving Trustee of the GRIMM LIVING TRUST dated November 11, 2008,

hereby **CONVEYS AND WARRANTS TITLE** to

CAROLYN M. GRIMM, Trustee of the Joseph D. Grimm Decedent's Trust A dated November 19, 2010, as to an undivided 38.08 percent interest, and CAROLYN M. GRIMM, Trustee of the Joseph D. Grimm Decedent's Trust B dated November 19, 2010, as to an undivided 57.12 percent interest,

in the following-described real estate situated in the County of Clark, State of Washington, including any interest therein which Grantor may hereafter acquire:

The East half of the East half of the Southeast quarter of Section Twenty-nine (29), Township Two (2) North, Range Three (3) East of the Willamette Meridian.

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ATTORNEYS AT LAW
900 Washington Street, Suite 820
Vancouver, Washington 98660
(360) 693-1910 • (503) 222-9201

Together with and subject to covenants, restrictions, easements, conditions, and reservations of record.

Real Estate Excise Tax Exemption No: 658682.

DATED: October 16, 2012.

Carolyn M. Grimm
CAROLYN M. GRIMM, Surviving Trustee of the
Grimm Living Trust dated November 11, 2008

STATE OF WASHINGTON)
: ss.
County of Clark)

I certify that CAROLYN M. GRIMM, the Surviving Trustee of the Grimm Living Trust dated November 11, 2008, appeared personally before me and that I know or have satisfactory evidence that she signed this instrument and acknowledged it as her free and voluntary act for the uses and purposes mentioned in the instrument.

DATED this 16th day of October, 2012.

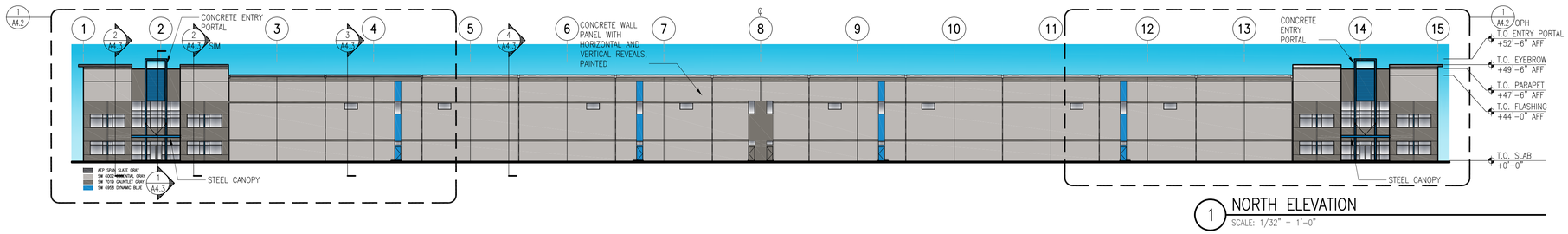
Marilyn K Reynolds
NOTARY PUBLIC FOR WASHINGTON
My Commission Expires: 5/17/2016

MARILYN K. REYNOLDS
NOTARY PUBLIC
STATE OF WASHINGTON
COMMISSION EXPIRES
MAY 17, 2016

PABST HOLLAND & REYNOLDS, PLLC
ATTORNEYS AT LAW
900 Washington Street, Suite 820
Vancouver, Washington 98660
(360) 693-1910 • (503) 222-9201

Clark Auditor Tue Dec 04 14:53:03 PST 2012 4918092 Page 2

Exhibit 37
LI/BP21-01



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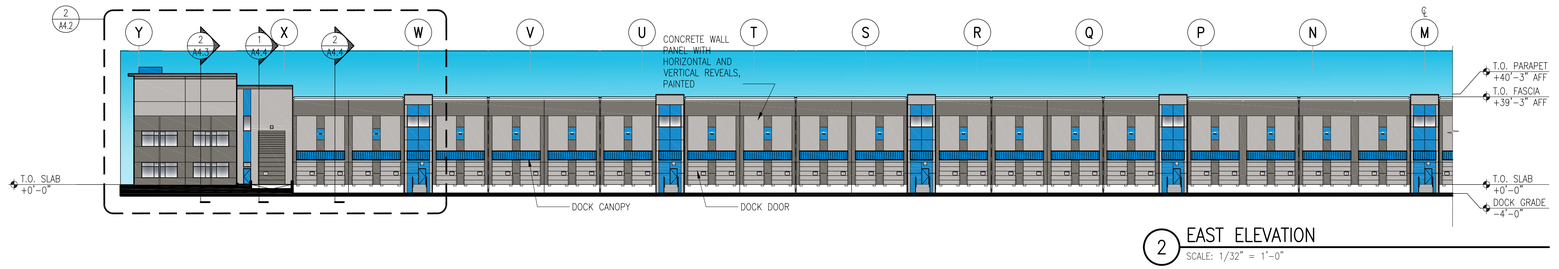
SCALE: 1/32" = 1'-0"



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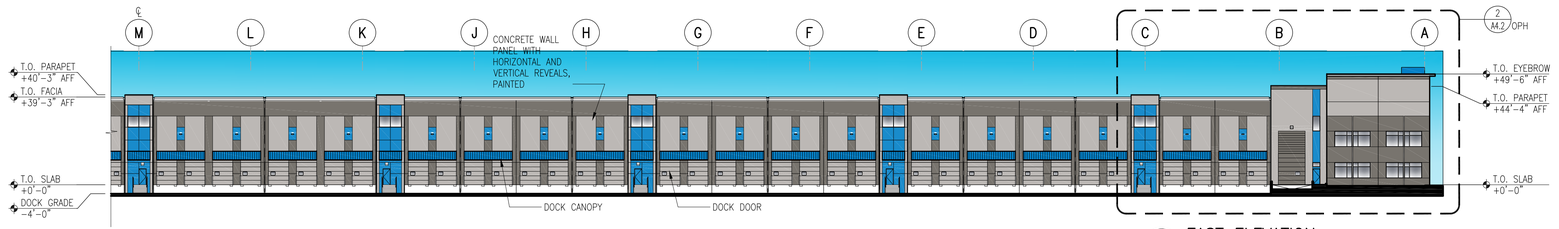

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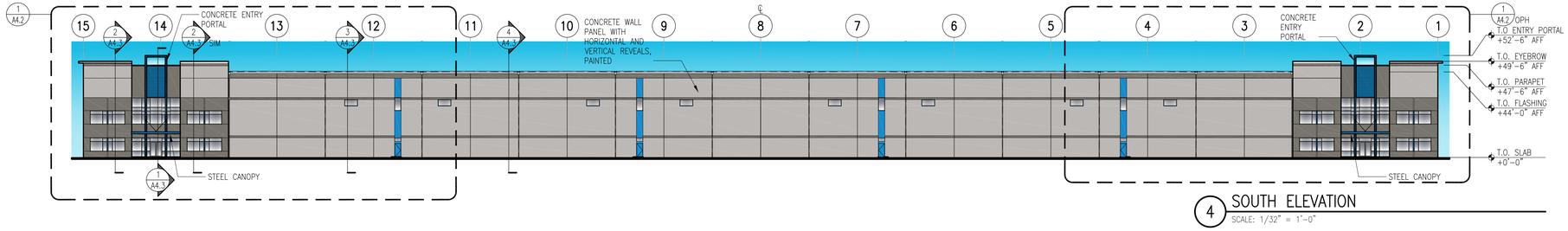

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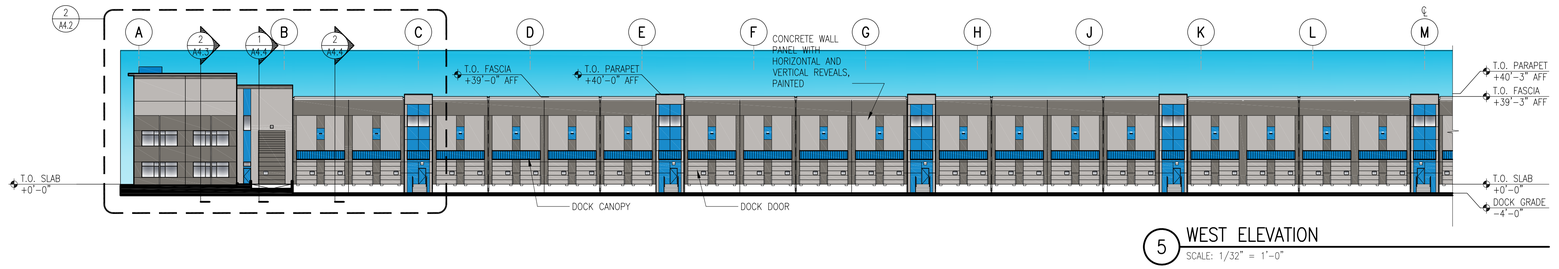

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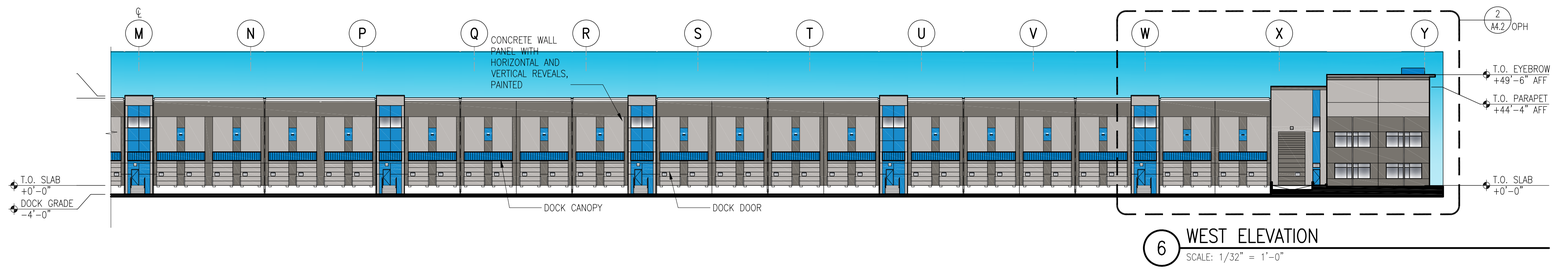

6 WEST ELEVATION
SCALE: 1/32" = 1'-0"

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Bellevue, WA 98005
p 425 646 1818 f 425 646 4141

PANATTONI DEVELOPMENT, LLC
1821 DOCK ST, SUITE 100
TACOMA, WA 98402

REVISIONS

ISSUE NO.	DATE	ITEM
3	04 08 2022	DESIGN REVIEW
2	02 02 2022	SEPA RESUBMITTAL
1	10 01 2021	SEPA SUBMITTAL

PROFESSIONAL STAMP

7154 REGISTERED ARCHITECT
RANDALL LEE BROWN
STATE OF WASHINGTON

Digitally signed by Randy Brown
Date: 2022.04.08 13:10:35 -07'00'

PROJECT INFORMATION

CAMAS BUSINESS CENTER-BUILDING A
4707 NW Lake Rd
Camas, WA

SHEET INFORMATION

RELEASE FOR: PROGRESS PRINTING
TITLE: ELEVATIONS

DESIGNED BY: DRAWN BY:
REVIEWED BY: APPROVED BY:
DATE: 09-16-2021
SHEET NO: A4.1
PROJECT NO: 200902.24.139

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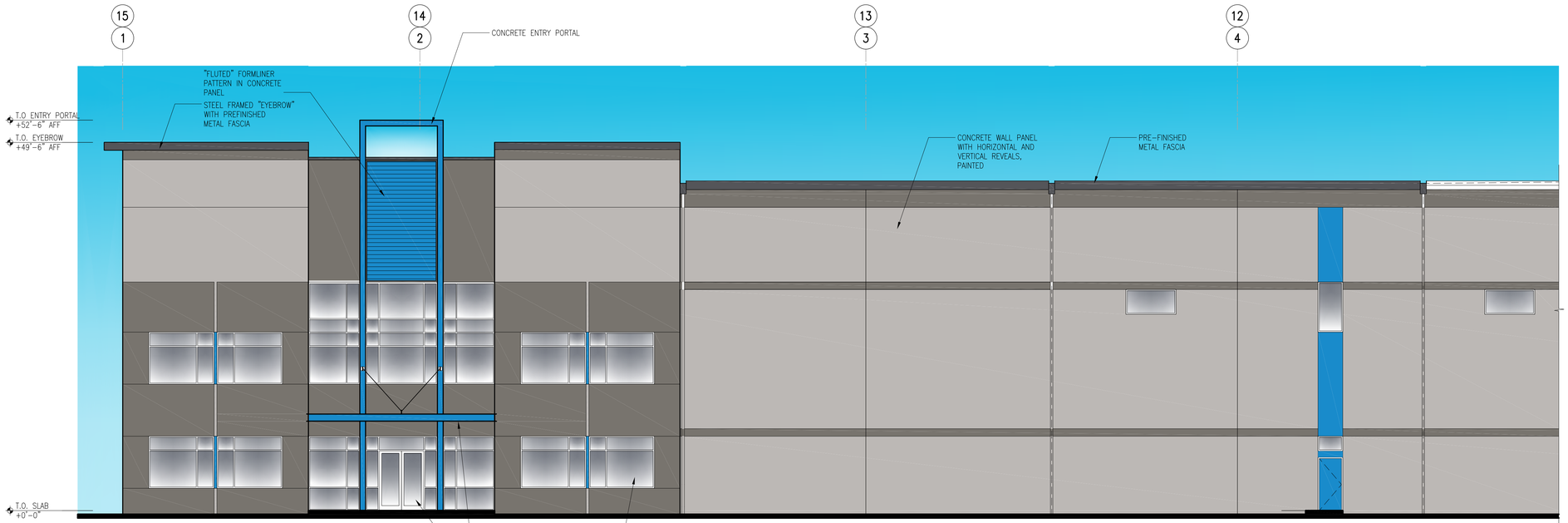
P:\200902 - PANATTONI\24 - Camas\CD - EXECV-CAMAS-Cam Proj_4/5/2022 2:02 PM



AEP SPAN SLATE GRAY
SW 6002 ESSENTIAL GRAY
SW 7019 GAUNTLET GRAY
SW 6958 DYNAMIC BLUE

1 ENLARGED ELEVATION
SCALE: 1/8" = 1'-0"

2 ENLARGED ELEVATION
SCALE: 1/8" = 1'-0"

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REVISIONS

ISSUE NO.	DATE	ITEM
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1	10 01 2021	SEPA SUBMITTAL

PROFESSIONAL STAMP

7154 REGISTERED ARCHITECT
RANDALL LEE BROWN
STATE OF WASHINGTON

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Date: 2022.04.08 13:10:35 -07'00'

PROJECT INFORMATION

CAMAS BUSINESS CENTER–BUILDING A
4707 NW Lake Rd
Camas, WA

SHEET INFORMATION

RELEASE FOR: PROGRESS PRINTING
TITLE: ENLARGED ELEVATIONS

DESIGNED BY: DRAWN BY:
REVIEWED BY: APPROVED BY:
DATE: 09–16–2021
SHEET NO: A4.2
PROJECT NO: 200902.24.139

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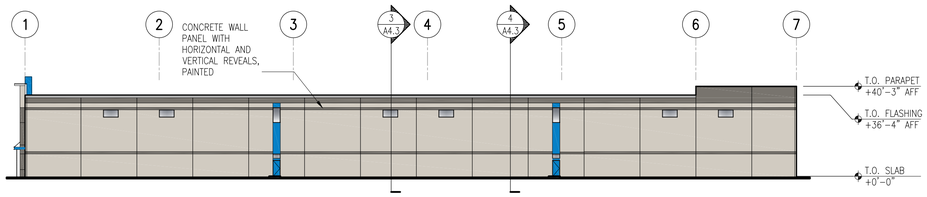

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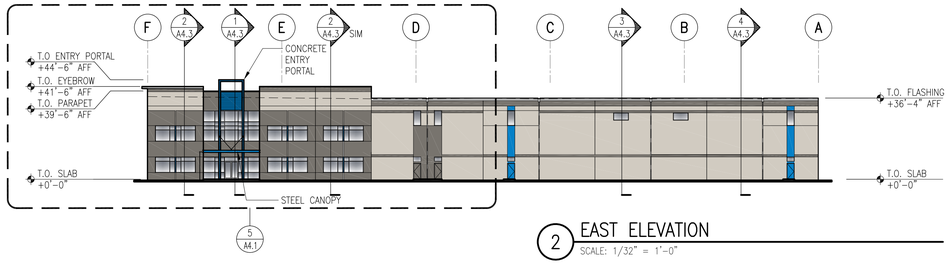

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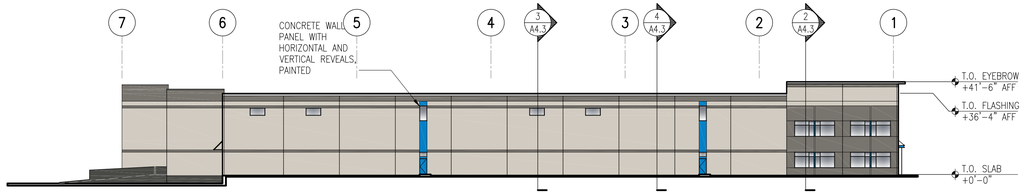

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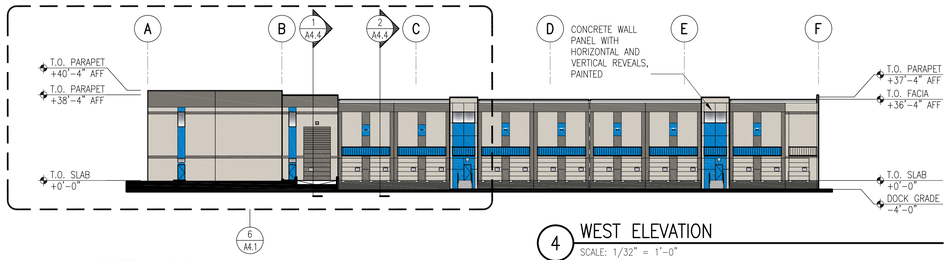

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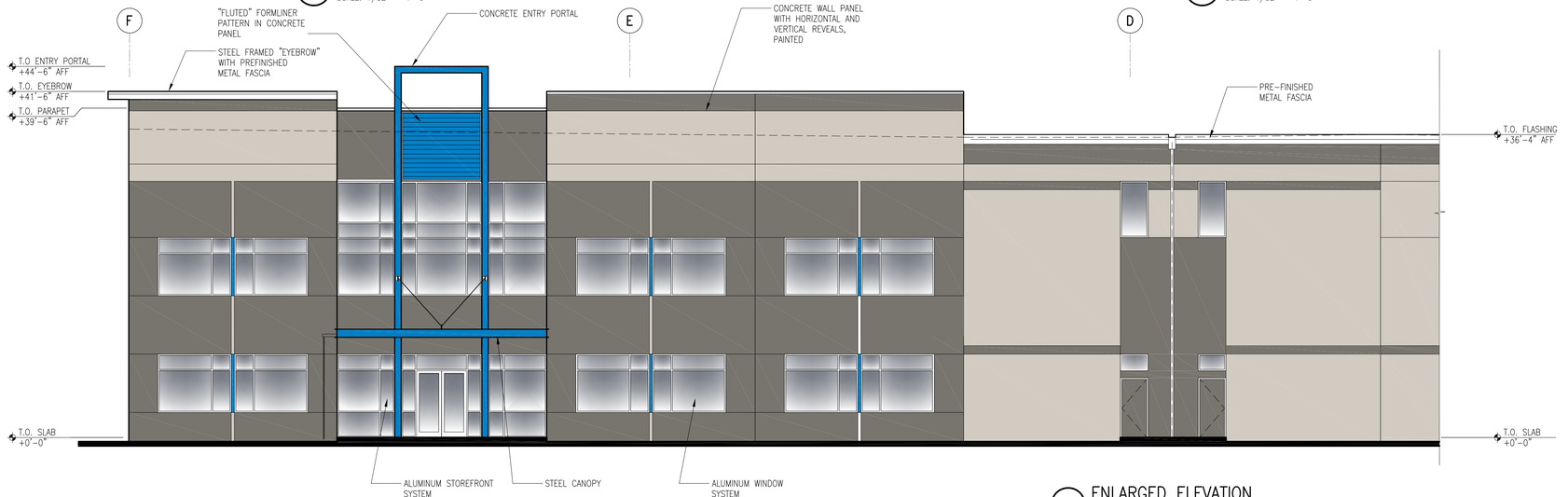

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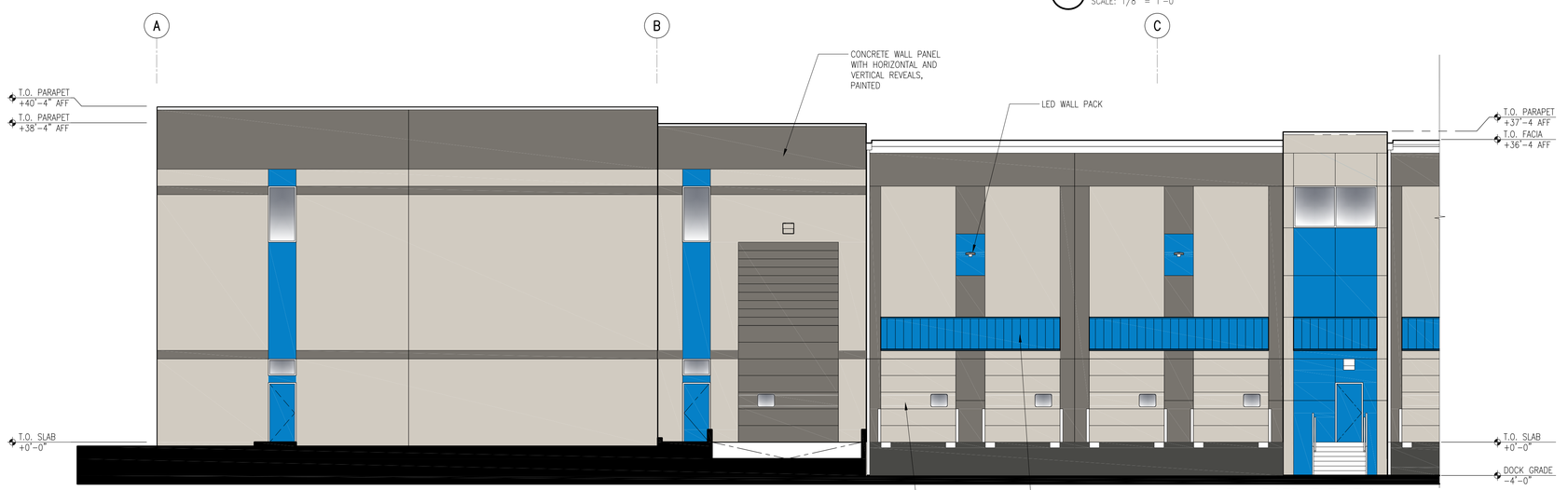

6 ENLARGED ELEVATION
SCALE: 1/8" = 1'-0"

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TACOMA, WA 98402

REVISIONS

ISSUE NO.	DATE	ITEM
3	04 08 22	DESIGN REVIEW
2	02 02 22	SEPA RESUBMITTAL
1	10 01 21	SEPA

PROFESSIONAL STAMP

715# REGISTERED ARCHITECT
RANDALL LEE BROWN
STATE OF WASHINGTON

Digitally signed by Randy Brown
Date: 2022.04.08 13:10:35 -07'00'

PROJECT INFORMATION

CAMAS BUSINESS CENTER-BUILDING B
4707 NW Lake Rd
Camas, WA 98607

SHEET INFORMATION

RELEASE FOR: PROGRESS PRINTING
TITLE: ELEVATIONS & ENLARGED ELEVATIONS

DESIGNED BY: DRAWN BY:
REVIEWED BY: APPROVED BY:
DATE: 09-16-2021
SHEET NO: A4.1
PROJECT NO: 200902.24.139

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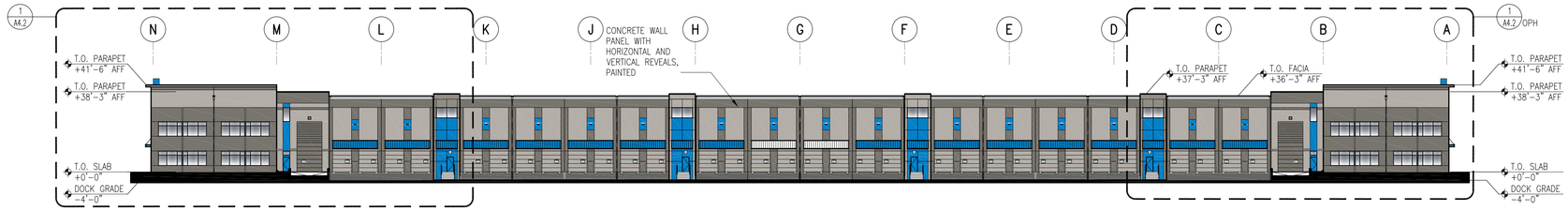
P:\200902 - PANATTONI\4 - Camas\19 - 200219-18x24 Dwg, 4/8/2022 2:07 PM



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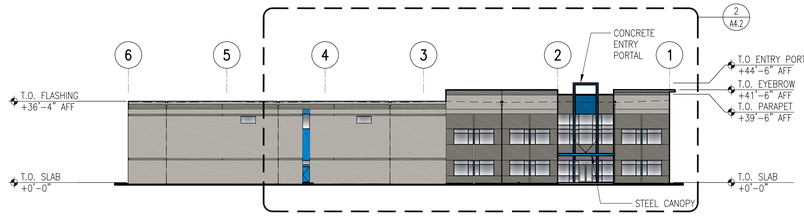
SCALE: 1/32" = 1'-0"



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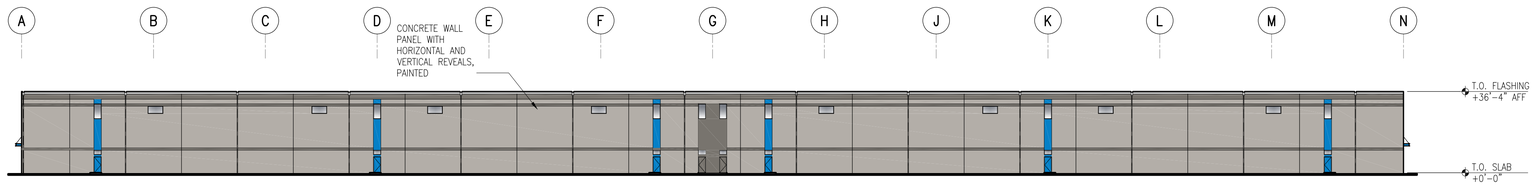

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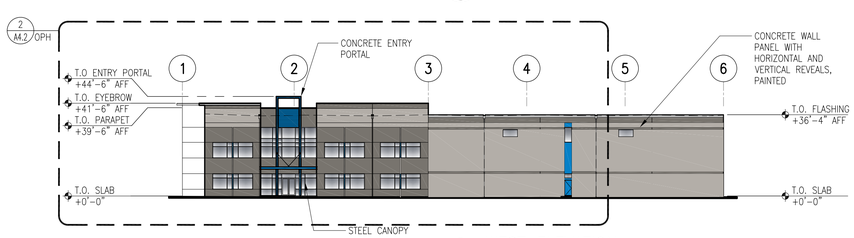

4 WEST ELEVATION
SCALE: 1/32" = 1'-0"

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Bellevue, WA 98005
p 425 646 1818 f 425 646 4141

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1821 DOCK ST, SUITE 100
TACOMA, WA 98402

REVISIONS

ISSUE NO.	DATE	ITEM
3	04 08 2022	DESIGN REVIEW
2	02 02 2022	SEPA RESUBMITTAL
1	10 01 2021	SEPA

PROFESSIONAL STAMP

7154 REGISTERED ARCHITECT
RANDALL LEE BROWN
STATE OF WASHINGTON

Digitally signed by Randy Brown
Date: 2022.04.08 13:10:35 -07'00'

PROJECT INFORMATION

EAST VANCOUVER E-COMMERCE CENTER-BUILDLING C
4707 NW Lake Rd
Camas, WA 98607

SHEET INFORMATION

RELEASE FOR: PROGRESS PRINTING
TITLE: ELEVATIONS

DESIGNED BY: DRAWN BY:
REVIEWED BY: APPROVED BY:
DATE: 09-16-2021
SHEET NO: A4.1
PROJECT NO: 200902.24.139

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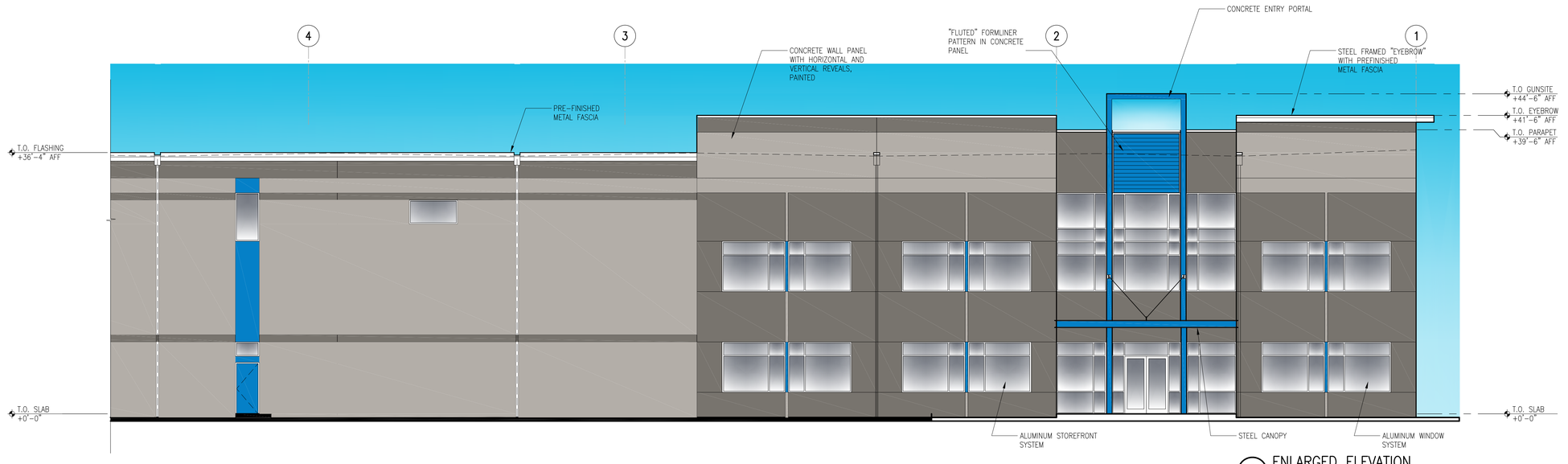
1 ENLARGED ELEVATION
SCALE: 1/8" = 1'-0"



2 ENLARGED ELEVATION
SCALE: 1/8" = 1'-0"

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ISSUE NO.	DATE	ITEM
3	04 08 2022	DESIGN REVIEW
2	02 02 2022	SEPA RESUBMITTAL
1	10 01 2021	SEPA

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RANDALL LEE BROWN
STATE OF WASHINGTON

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Date: 2022.04.08 13:10:35 -07'00'

PROJECT INFORMATION

EAST VANCOUVER E-COMMERCE CENTER-BUILDLING C
4707 NW Lake Rd
Camas, WA 98607

SHEET INFORMATION

RELEASE FOR: PROGRESS PRINTING
TITLE: ENLARGED ELEVATIONS

DESIGNED BY: DRAWN BY:
REVIEWED BY: APPROVED BY:
DATE: 09-16-2021
SHEET NO: A4.2
PROJECT NO: 200902.24.139

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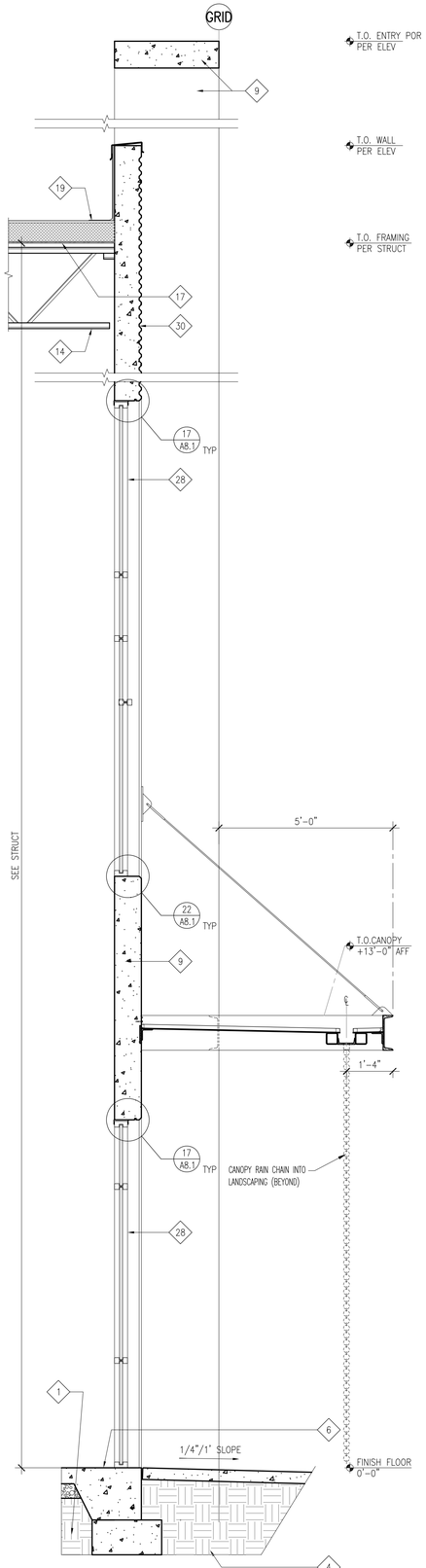
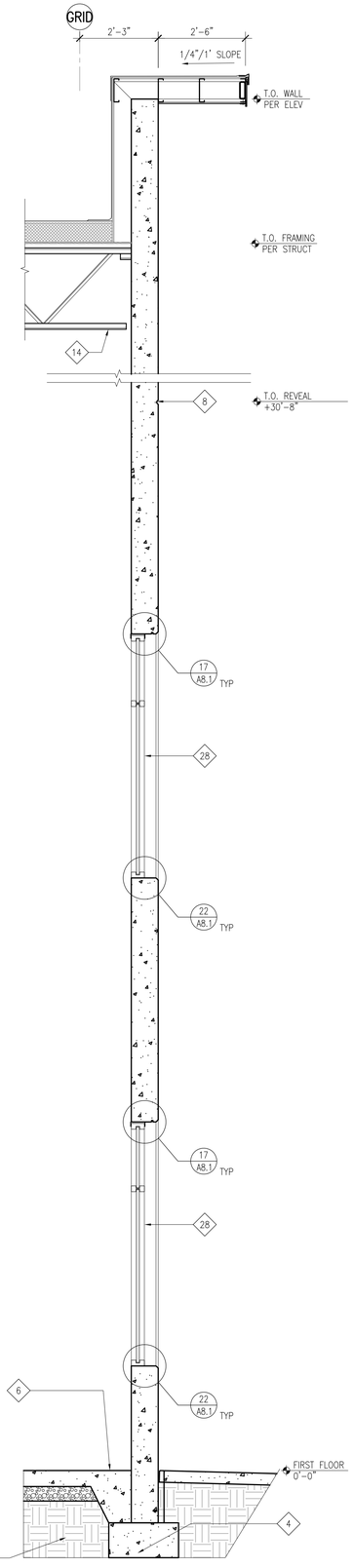
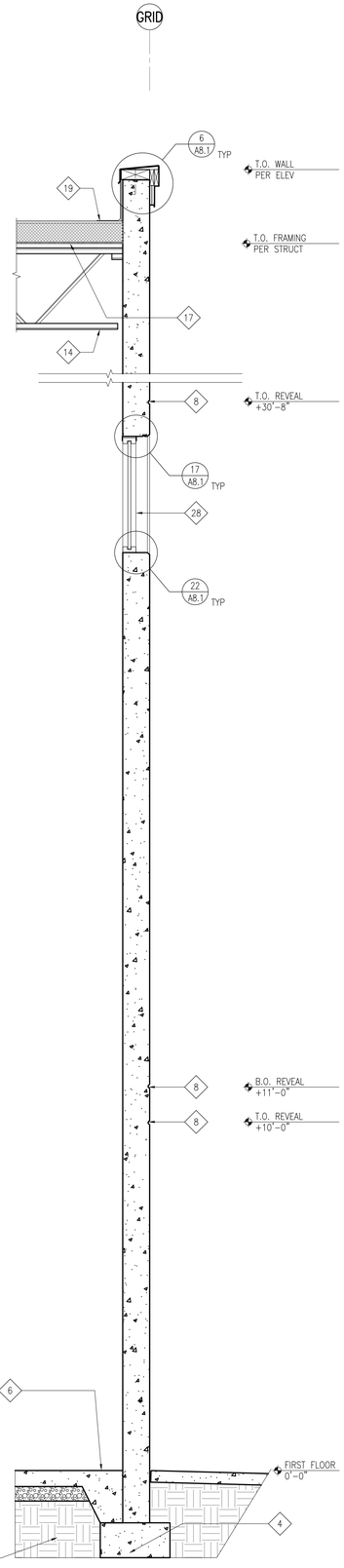


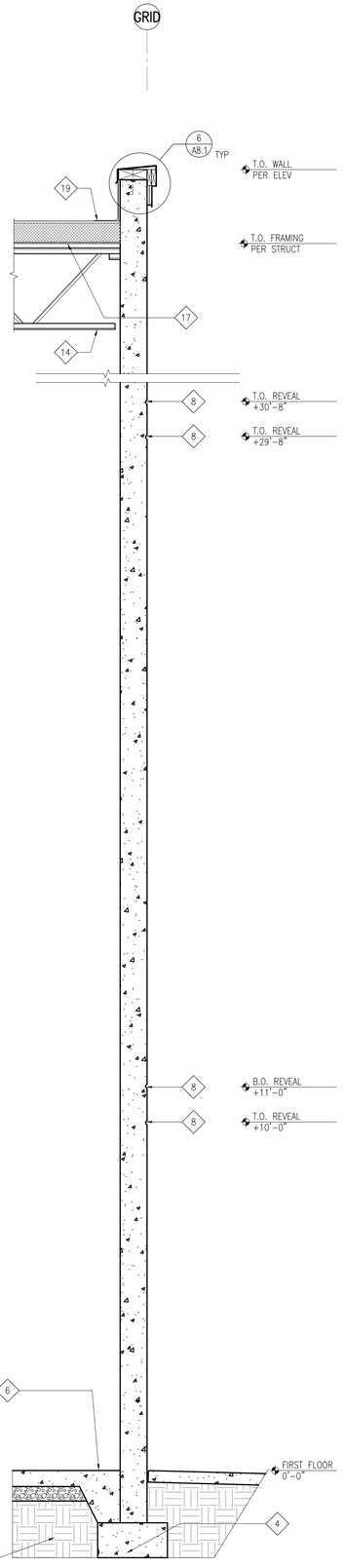
1 WALL SECTION AT ENTRY
SCALE: 1/2" = 1'-0"



2 WALL SECTION AT WINDOW SYSTEM
SCALE: 1/2" = 1'-0"



3 WALL SECTION AT WINDOW SYSTEM
SCALE: 1/2" = 1'-0"



4 TYPICAL WALL SECTION
SCALE: 1/2" = 1'-0"

KEYNOTES – WALL SECTIONS

NOTE: NOT ALL KEYNOTES ARE USED

1. STRUCTURAL FILL
2. CURTAIN BOARD BEYOND
3. CONCRETE PAVING
4. CONC FOOTING, SEE STRUCT DWGS FOR ELEVATION
5. CONC WALK OR LANDING OVER COMPACTED FILL PER SOILS REPORT
6. CONC SLAB-ON-GRADE ON GRAVEL CAPILLARY BREAK ON STRUCTURAL FILL PER SOILS REPORT
7. SEALANT
8. HORIZONTAL REVEAL, SEE DETAIL 13/A8.1, TYP UON
9. SITE CAST CONC WALL PANEL, PAINT
10. CANT
11. STEEL ANGLE, SEE STRUCT DWGS.
12. STEEL GIRDER, SEE STRUCTURAL FRAMING PLAN
13. STEEL BEAM, PAINT. SEE STRUCTURAL FRAMING PLAN
14. STEEL JOIST, SEE STRUCTURAL FRAMING PLAN
15. TUBE STEEL COLUMN OR BEAM, SEE STRUCTURAL DRAWINGS
16. FILTER FABRIC
17. WOOD ROOF DECK, SEE STRUCTURAL DWGS
18. WOOD NAILER AND BLOCKING
19. RIGID INSULATION & PERIMETER WD BLKG AS REQD
20. SINGLE-PLY MEMBRANE ROOF ASSEMBLY, CLASS B, OR HIGHER
21. PREFINISHED METAL FASCIA
22. DRIP FORMED IN CONC PANEL
23. SURFACE REGLET
24. CRUSHED ROCK
25. DOCK BUMPER
26. SECTIONAL OVERHEAD DOOR TRACK
27. ALUMINUM WINDOW SYSTEM
28. ALUMINUM STOREFRONT SYSTEM
29. FOUNDATION DRAIN
30. FORMLINER WITH "FLUTED RIB" PROFILE
31. N/A
32. STEEL CHANNELS, SEE STRUCTURAL DRAWINGS
33. N/A
34. WALL SCONCE LIGHT FIXTURE EA SIDE OF ENTRY DOOR.
35. BELOW GRADE BITUMINOUS DAMP PROOFING

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STATE OF WASHINGTON

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PROJECT INFORMATION

CAMAS BUSINESS CENTER–BUILDING A
4707 NW Lake Rd
Camas, WA

SHEET INFORMATION

RELEASE FOR: PROGRESS PRINTING
TITLE: WALL SECTIONS

DESIGNED BY: DRAWN BY:
REVIEWED BY: APPROVED BY:
DATE: 09–16–2021
PROJECT NO: 200902.24.139
SHEET NO: A4.3

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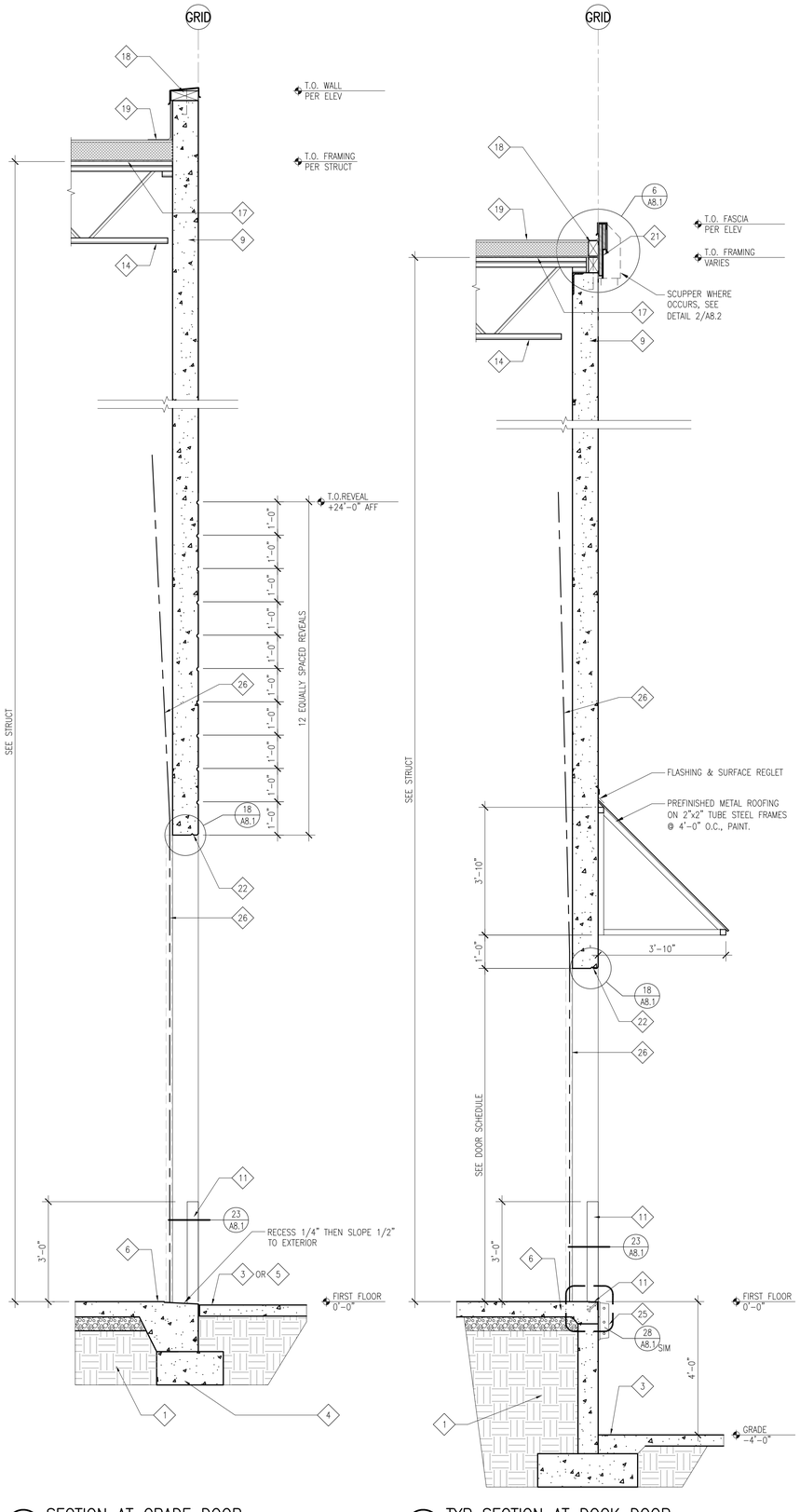

1 SECTION AT GRADE DOOR
SCALE: 1/2" = 1'-0"

2 TYP SECTION AT DOCK DOOR
SCALE: 1/2" = 1'-0"

KEYNOTES – WALL SECTIONS

NOTE: NOT ALL KEYNOTES ARE USED

1. STRUCTURAL FILL
2. CURTAIN BOARD BEYOND
3. CONCRETE PAVING
4. CONC FOOTING, SEE STRUCT DWGS FOR ELEVATION
5. CONC WALK OR LANDING OVER COMPACTED FILL PER SOILS REPORT
6. CONC SLAB-ON-GRADE ON GRAVEL CAPILLARY BREAK ON STRUCTURAL FILL PER SOILS REPORT
7. SEALANT
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9. SITE CAST CONC WALL PANEL, PAINT
10. CANT
11. STEEL ANGLE, SEE STRUCT DWGS.
12. STEEL GIRDER, SEE STRUCTURAL FRAMING PLAN
13. STEEL BEAM, PAINT. SEE STRUCTURAL FRAMING PLAN
14. STEEL JOIST, SEE STRUCTURAL FRAMING PLAN
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19. RIGID INSULATION & PERIMETER WD BLKG AS REQD
20. SINGLE-PLY MEMBRANE ROOF ASSEMBLY, CLASS B, OR HIGHER
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23. SURFACE REGLET
24. CRUSHED ROCK
25. DOCK BUMPER
26. SECTIONAL OVERHEAD DOOR TRACK
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28. ALUMINUM STOREFRONT SYSTEM
29. FOUNDATION DRAIN
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31. N/A
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33. N/A
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STATE OF WASHINGTON

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PROJECT INFORMATION

CAMAS BUSINESS CENTER-BUILDING A
4707 NW Lake Rd
Camas, WA

SHEET INFORMATION

RELEASE FOR: PROGRESS PRINTING
TITLE: WALL SECTIONS

DESIGNED BY: DRAWN BY:
REVIEWED BY: APPROVED BY:
DATE: 09-16-2021
SHEET NO: A4.4
PROJECT NO: 200902.24.139

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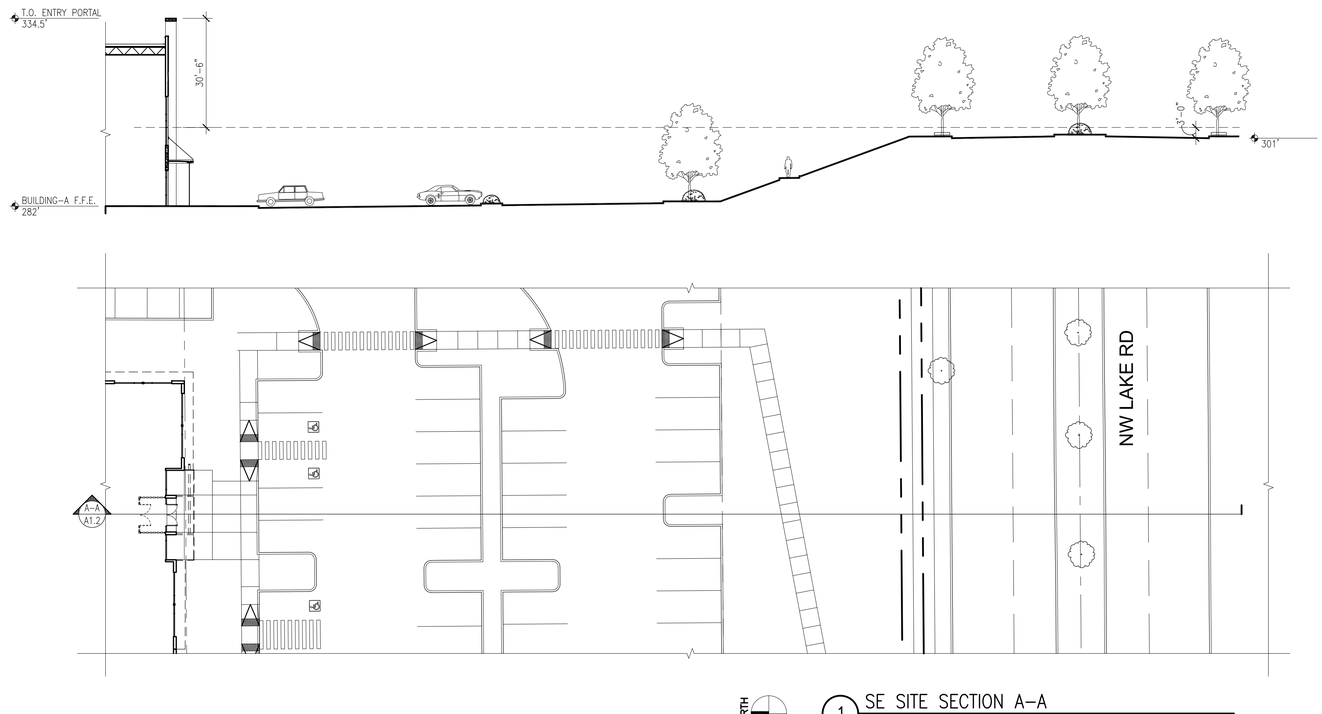
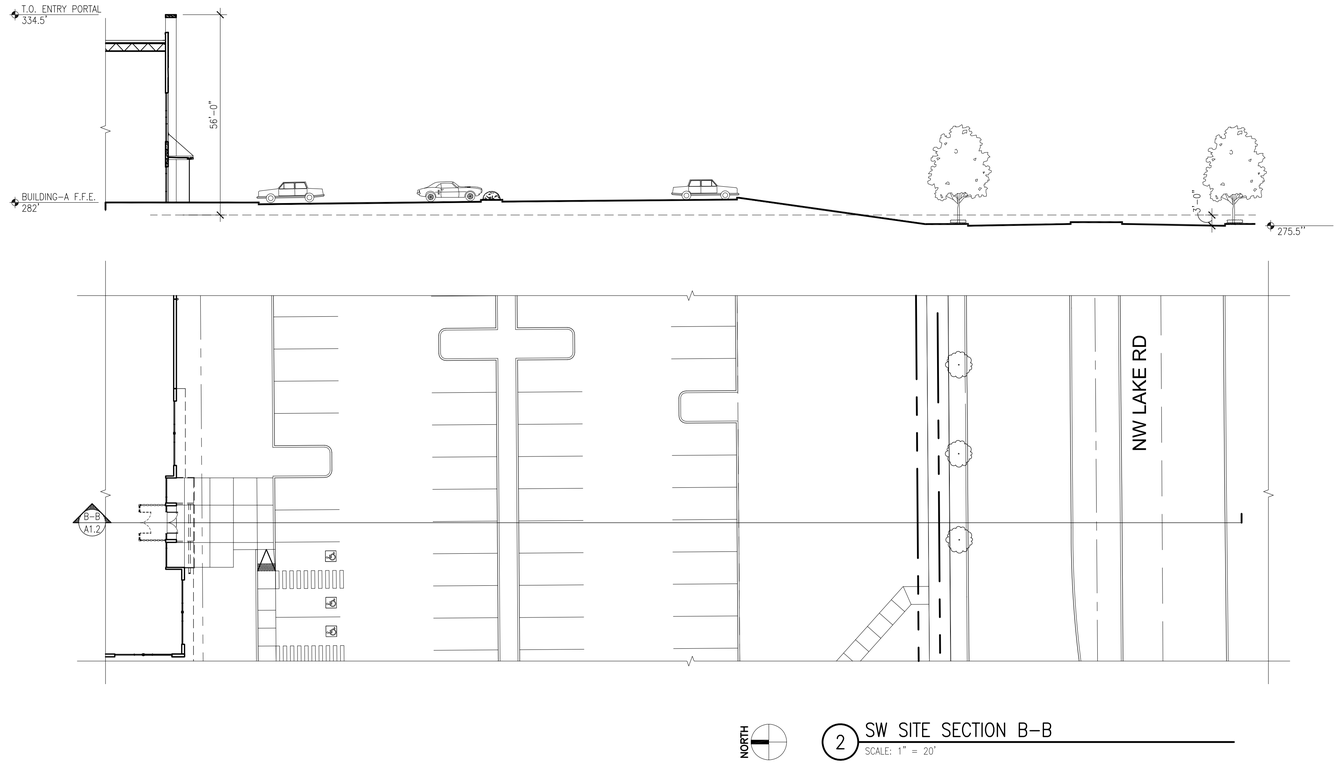
Exhibit 38
LI/BP21-01



1 SE SITE SECTION A-A
SCALE: 1" = 20'



2 SW SITE SECTION B-B
SCALE: 1" = 20'

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TACOMA, WA 98402

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ISSUE NO.	DATE	ITEM
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2	02 02 2022	SEPA RESUBMITTAL
1	10 01 2021	SEPA SUBMITTAL

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7154 REGISTERED ARCHITECT
RANDALL LEE BROWN
STATE OF WASHINGTON

Digitally signed by Randy Brown
Date: 2022.04.08 13:10:35 -07'00'

PROJECT INFORMATION

CAMAS BUSINESS CENTER
4707 NW Lake Rd
Camas, WA

SHEET INFORMATION

RELEASE FOR: PROGRESS PRINTING
TITLE: SITE SECTIONS

DESIGNED BY: DRAWN BY:
REVIEWED BY: APPROVED BY:
DATE: 09-16-2021
SHEET NO: A1.2
PROJECT NO: 200902.24.139

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Looking WEST on NW Lake Road

Exhibit 39
LI/BP21-01

Looking EAST on NW Lake Road

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

May 12, 2022

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 Camas Business Park Project (SEPA21-12, SPRV21-06) located at 4707 and 4723 Northwest Lake Road as proposed by Bart Brynestad. The Department of Ecology (Ecology) reviewed the environmental checklist and has the following comment(s):

HAZARDOUS WASTE & TOXICS REDUCTION: Tara Davis (360) 407-6275

Demolition
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. Also, be aware that PCBs are increasingly being found in caulking and paint. 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," on Ecology's website at: https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Dangerous-waste-guidance/Common-dangerous-waste/Construction-and-demolition. The applicant may also contact Robert Rieck with Ecology's Hazardous Waste and Toxics Reduction program (HWTR) at (360) 407-6751 for more information about safely handling dangerous wastes and demolition debris

SOLID WASTE MANAGEMENT: Derek Rockett (360) 407-6287

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 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," on Ecology's website at: Construction & Demolition Guidance. All removed debris resulting from this project must be disposed of at an approved site. All grading and filling of land must utilize only clean fill. All other materials may be considered solid waste and permit approval may be required from your local jurisdictional health department prior to filling. Contact the local jurisdictional health department for proper management of these materials.

WATER QUALITY/WATERSHED RESOURCES UNIT:
Brian Johnson (360) 624-5741

Erosion control measures must be in place prior to any clearing, grading, or construction. These control measures must be effective to prevent stormwater runoff from carrying soil and other pollutants into surface water or stormdrains that lead to waters of the state. Sand, silt, clay particles, and soil will damage aquatic habitat and are considered to be pollutants.

Any discharge of sediment-laden runoff or other pollutants to waters of the state is in violation of Chapter 90.48 RCW, Water Pollution Control, and WAC 173-201A, Water Quality Standards for Surface Waters of the State of Washington, and is subject to enforcement action.

Construction Stormwater General Permit:
The following construction activities require coverage under the Construction Stormwater General Permit:

1. Clearing, grading and/or excavation that results in the disturbance of one or more acres **and** discharges stormwater to surface waters of the State; and
2. Clearing, grading and/or excavation on sites smaller than one acre that are part of a larger common plan of development or sale, if the common plan of development or sale will ultimately disturb one acre or more **and** discharge stormwater to surface waters of the State.
    a) This includes forest practices (including, but not limited to, class IV conversions) that are part of a construction activity that will result in the disturbance of one or more acres, **and** discharge to surface waters of the State; and
3. Any size construction activity discharging stormwater to waters of the State that Ecology:
    a) Determines to be a significant contributor of pollutants to waters of the State of Washington.
    b) Reasonably expects to cause a violation of any water quality standard.

If there are known soil/ground water contaminants present on-site, additional information (including, but not limited to: temporary erosion and sediment control plans; stormwater pollution prevention plan; list of known contaminants with concentrations and depths found; a site map depicting the sample location(s); and additional studies/reports regarding contaminant(s)) will be required to be submitted. For additional information on contaminated construction sites, please contact Carol Serdar at Carol.Serdar@ecy.wa.gov, or by phone at (360) 742-9751.

Additionally, sites that discharge to segments of waterbodies listed as impaired by the State of Washington under Section 303(d) of the Clean Water Act for turbidity, fine sediment, high pH, or phosphorous, or to waterbodies covered by a TMDL may need to meet additional

sampling and record keeping requirements. See condition S8 of the Construction Stormwater General Permit for a description of these requirements. To see if your site discharges to a TMDL or 303(d)-listed waterbody, use Ecology's Water Quality Atlas at: https://fortress.wa.gov/ecy/waterqualityatlas/StartPage.aspx.

The applicant may apply online or obtain an application from Ecology's website at: http://www.ecy.wa.gov/programs/wq/stormwater/construction/ - Application. Construction site operators must apply for a permit at least 60 days prior to discharging stormwater from construction activities and must submit it on or before the date of the first public notice.

WATER RESOURCES: Charlotte Lattimore (360) 407-6066

Under RCW 90.03.350, a Dam Safety construction permit is required for those dams or ponds that can impound a volume of 10 acre-feet or more of water or other liquids above ground level. The Camas Business Park project references the construction of a stormwater detention pond. If the impoundment meets or exceeds the above referenced criteria; you will need to apply for a dam construction permit. To determine if a Dam Safety construction permit is required for your project, the applicant must submit a set of construction plans to:

WA Department of Ecology
Dam Safety Office
P.O. Box 47600
Olympia, WA 98504-7600

For more information, please contact Charlotte Lattimore by e-mail at clat461@ecy.wa.gov or by telephone at (360) 407-6066.

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

(GMP:202202005)

cc: Tara Davis, HWTR
Derek Rockett, SWM
Brian Johnson, WQ
Charlotte Lattimore, WR

Lauren Hollenbeck

From: Community Development Email
Sent: Monday, May 16, 2022 8:10 AM
To: Lauren Hollenbeck
Subject: FW: Comments on Camas Business Park proposal (LI/BP21-01) 4707 and 4723 NW Lake Road

Follow Up Flag: Follow up
Flag Status: Flagged

Madeline Sutherland, AICP
Planner
Desk 360-817-7237
Cell 360-326-5524
www.cityofcamas.us | msutherland@cityofcamas.us

From: Dave Miller <davem98607@yahoo.com>
Sent: Friday, May 13, 2022 6:39 PM
To: Community Development Email <communitydevelopment@cityofcamas.us>
Subject: Comments on Camas Business Park proposal (LI/BP21-01) 4707 and 4723 NW Lake Road

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 are unsure, click the Phish Alert button to redirect the email for ITD review.

My name is Dave Miller and I live at 3509 NW 3rd Ave, Camas, WA 98607

I have several comments on the project:

- Landscape plan (starting on page 63)

  If Camas is ever going to be sustainable in the long term, most of the plants used in its developments need to be native. Native plants are adapted to our local climate and thus need minimal to no irrigation, fertilization, pesticides, etc. And of course the native wildlife and insects are dependent on these plants -- they have given life to each other for thousands of years. I plead with you to require that the majority of landscape plants across the entire site be native. I would be happy to help the applicant to find equivalent native plants for each non-native species that they are proposing.

- Living snags

  Many native creatures require dead or dying trees for nesting, roosting, food, etc. If at all possible in the wetland areas, instead of completely removing a dead or dying tree, consider cutting off the top 1/3 of the tree, leaving some live branches (if there are any). This will creates a "living snag" which will last much longer than a completely dead tree. Also by cutting off the

top 1/3 it is less likely to harm something/someone when it does finally fall. See page 5 in WDFW document:
https://wdfw.wa.gov/sites/default/files/2020-07/snags-the_wildlife_tree-1.pdf

- Eco roof

  There are many advantages to having an eco/living/green roof on a building - reduced runoff, better insulation, longer roof life, etc. Also with a wetland nearby, many birds will visit a green roof. If you don't already have some, the city should provide incentives for building owners to build buildings with green roofs. With 22 acres of flat roof, this project would be ideal for an eco roof design. The city of Portland has been doing this for many years and has some good resources:
  https://www.portlandoregon.gov/bes/44422

Regards,

Dave Miller
3509 NW 3rd Ave
Camas, WA 98607

Lauren Hollenbeck

From: Lauren Hollenbeck
Sent: Tuesday, May 17, 2022 1:14 PM
To: David Toyer; Barty Brynestad Jr. AHBL; Curleigh (Jim) Carothers; 'Bjorn Brynestad'
Cc: Robert Maul; Anita Ashton
Subject: RE: Camas Business Center Staff Report

Bjorn,
See responses below from Planning and Engineering,

Lauren Hollenbeck
Senior Planner
Desk 360-817-7253
Cell 360-314-7537
www.cityofcamas.us | lhollenbeck@cityofcamas.us

From: Bjorn Brynestad <BJorn@panattoni.com>
Sent: Tuesday, May 17, 2022 8:59 AM
To: Lauren Hollenbeck <LHollenbeck@cityofcamas.us>
Cc: David Toyer <david@toyerstrategic.com>; Robert Maul <RMaul@cityofcamas.us>; Anita Ashton <AAshton@cityofcamas.us>; Barty Brynestad Jr. AHBL <bbrynestad@ahbl.com>; Curleigh (Jim) Carothers <jcarothers@cityofcamas.us>
Subject: RE: Camas Business Center Staff Report

Lauren,

Our comprehensive list of questions is below. We would like to have some sort of clarification, if possible, before our meeting tonight.

1. On page 7 of 37, it notes that we have a building height of 60ft and we are meeting the minimum of 200 ft front yard setback. However our building height is 52 feet and it would be required to have a 260 ft front yard setback. We have requested a deviation to reduce the front yard setback to 200 ft, this is not mentioned. What is noted is the density and dimensional requirements, which includes the maximum building height of 60-feet. It does not state that your building height is 60-ft. For clarification in respect to the front yard setback, staff finds the proposed deviation request per the applicant's narrative to reduce the front yard setback to a minimum of 200-ft. per code is acceptable due to the berms and landscape buffers provided at the property lines.
2. On page 9 of 37, it notes that we are conditioned to have a maximum retaining wall height of 6 ft, but we are requesting 10 ft. This wasn't previously brought up as a concern by the city and we need this height in certain locations for the road, etc. Code indicates higher walls are allowed per Director approval. Is staff recommending denial of our request? No, staff is not recommending denial of your request. Retaining walls need to comply with CMC 18.17.060, which states "retaining walls shall not exceed six feet, unless otherwise approved by the director." The director has indicated support. Staff will recommend a revised the condition to include "unless otherwise approved by the director".
3. On page 10 of 37, our driveways are being identified as intersections and left turn lanes requested. Please explain (Barty will also be reaching out to Curly). A driveway is synonymous with a private road, per CMC 18.03.040 and is subject to CDSM Table 2 of the CDSM and is therefore an intersection. Staff will revise the condition to eliminate the left-turn pocket from Road A to Building C.

4. On page 10 & 11 of 37 you mention minimum centerline radius for the intersections as 300' for Road A/L[illegible] Road and 200' for Road A/Road B. Can you explain what this dimension means for intersections? All intersections are standard 90 degree intersections with 35' curb radii. The curb radii for the intersections are 35-foot minimum. As stated 'minimum centerline radius' refers to the 'horizontal centerline curve radius', which is 200-feet for Roads A and B. NW Lake Road is an existing road, thus the 300-foot 'horizontal centerline curve radius' aka 'minimum centerline radius' from NW Lake Road onto future Road A would not apply.
5. On page 10 of 37, The conditions request a left turn lane at Road A and NW Camas Meadows Drive. No condition, just discussion. This is a new request that hasn't come up before. There is insufficient right of way at the driving range. Does this incorrectly identify NW Camas Meadows Dr? There is not a condition for a left-turn lane at this location. Per the discussion, the city engineer supports the deviation from CDSM for the left-turn lane at Road A and Camas Meadows Drive.
6. On page 18 of 37, clarify that we can put storm drainage and critical areas in an easement instead of a tract. The storm facility can be placed in the same easement, along with the wetlands, instead of a tract. Staff will recommend a revised condition.
   CMC 16.51.240.A also allows for a protective easement for the critical area. Staff will recommend a revised condition.
7. On page 21 of 37, clarify that this not limiting our use of walls in other parts of the development (we have other walls on the western property line) That is not limiting the use of walls. In fact, there is no condition that references the limitation of the use of walls.
8. On page 24 of 37 under F, clarify that more than one phase can be constructed at a time. Correct. Also, there is no condition regarding phasing.
9. On Page 7 or 37, it does not specifically state that we meet the 30% max building coverage. We made a request to calculate the max coverage based on the whole project (including the wetlands), rather than calculating based on each lot. We need to request confirmation that we meet the standard. Yes, this standard is met as stated in the last paragraph under Section B, Density and Dimensions. Lot coverage applies to the project in totality.
10. On Page 26 of 37, we need to clarify the location of the additional Berm. The condition says Southwest and West property line. It seems appropriate only along the Southwest portion along Lake Road. Site grades on the west side would prohibit any berm. This is a condition of approval recommended by the Design Review Committee to address massing and scale of Building A from Lake Road and the condition remains as is.
11. On Page 31 of 37 condition 13, we need to request that the building permit be released with the civil site permit, not after civil site completion. General Condition #13 allows the Director to approve release of building permits ahead of civil site completion.
12. On Page 32 of 37 condition 34, we need to ask why we cannot grade in this area. This area is not existing buffer, and it will be restored as mitigated buffer after grading of the area is complete. I believe you mean Condition 31? Please refer to the finding on page 4. The clearing and grading plans show the stormwater pond within the proposed wetland mitigation area. The wetland mitigation area cannot be located on the stormwater pond slopes.
13. On Page 33 of 37 condition 35b, we need to ask why 129 more planter islands are required. Do adjacent trees within the landscape buffers not count towards the parking area tree requirement? An additional 129 planter islands are not required. Based on the 775 stalls, a total of 129 planter islands are required.

Thank you,

Bjorn Brynestad | Development Manager
Panattoni Development Company, Inc.
1821 Dock St.
Suite 100 | Tacoma, WA 98402
Office: 206.838.1730 | Cell: 253-444-8478
BJorn@panattoni.com

From: Lauren Hollenbeck <LHollenbeck@cityofcamas.us>
Sent: Monday, May 16, 2022 4:20 PM
To: Bjorn Brynestad <BJorn@panattoni.com>
Cc: David Toyer <david@toyerstrategic.com>; Robert Maul <RMaul@cityofcamas.us>; Anita Ashton <AAshton@cityofcamas.us>
Subject: [EXTERNAL] RE: Camas Business Center Staff Report

Yes, please.

Lauren Hollenbeck
Senior Planner
Desk 360-817-7253
Cell 360-314-7537
www.cityofcamas.us | lhollenbeck@cityofcamas.us

From: Bjorn Brynestad <BJorn@panattoni.com>
Sent: Monday, May 16, 2022 4:19 PM
To: Lauren Hollenbeck <LHollenbeck@cityofcamas.us>
Cc: David Toyer <david@toyerstrategic.com>; Robert Maul <RMaul@cityofcamas.us>; Anita Ashton <AAshton@cityofcamas.us>
Subject: RE: Camas Business Center Staff Report

Lauren,

Would it be helpful if we just sent over a list of questions we wanted clarification?

Bjorn Brynestad | Development Manager
Panattoni Development Company, Inc.
1821 Dock St.
Suite 100 | Tacoma, WA 98402
Office: 206.838.1730 | Cell: 253-444-8478
BJorn@panattoni.com

From: Lauren Hollenbeck <LHollenbeck@cityofcamas.us>
Sent: Monday, May 16, 2022 4:15 PM
To: Bjorn Brynestad <BJorn@panattoni.com>
Cc: David Toyer <david@toyerstrategic.com>; Robert Maul <RMaul@cityofcamas.us>; Anita Ashton <AAshton@cityofcamas.us>
Subject: [EXTERNAL] RE: Camas Business Center Staff Report

Bjorn,

Staff does not have the capacity to meet to review the staff report tomorrow. It you have any concerns or questi
please email to us and we'll try to address before the public hearing tomorrow night.
Respectfully,

Lauren Hollenbeck
Senior Planner
Desk 360-817-7253
Cell 360-314-7537
www.cityofcamas.us | lhollenbeck@cityofcamas.us

From: Bjorn Brynestad <BJorn@panattoni.com>
Sent: Monday, May 16, 2022 3:56 PM
To: Lauren Hollenbeck <LHollenbeck@cityofcamas.us>
Cc: David Toyer <david@toyerstrategic.com>
Subject: Camas Business Center Staff Report

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Lauren,

Can we review the staff report tomorrow via zoom?

Thanks,

Bjorn Brynestad | Development Manager
Panattoni Development Company, Inc.
1821 Dock St.
Suite 100 | Tacoma, WA 98402
Office: 206.838.1730 | Cell: 253-444-8478
BJorn@panattoni.com

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Memorandum

Date: May 17, 2022

To: Planning Commission

From: Lauren Hollenbeck, Senior Planner

RE: Staff Report recommended revisions

For clarification, staff recommends the following proposed revisions to the staff report:

1. Condition 29- The applicant shall submit to the City for review and approval a revised *Mitigation Bank Use and Conceptual Mitigation Plan* that addresses the updated site development changes to include placing the critical areas in a separate tract or protective easement per CMC 16.51.240.A. The plan shall also address the mitigation strategy and goals for the Wetland buffer addition areas.
2. Condition 36- Proposed retaining walls shall not exceed a height of 6-feet, unless otherwise approved by the director per CMC 18.17.060.~~C.1~~ and specifications for the retaining wall shall be submitted to City for review prior to engineering plan approval. If fencing or walls are proposed for screening, specifications shall be submitted ~~to the~~ consistent with CMC 18.21.060.F.
3. Condition 40- The applicant shall revise the site plan and road section plans for Future Road A to provide for the following:
    a. ~~A centerline radius of 300-feet from NW Lake Road onto future Road A with a minimum curb radii of 35-feet and ADA accessible curb ramps on both sides of future Road A.~~ A minimum curb radii of 35-feet and ADA accessible curb ramps on both sides of future Road A onto NW Lake Road.

    b. ~~A centerline radius of 200-feet from future Road A onto future Road B with a minimum curb radii of 35-feet and ADA accessible curb ramps on both sides of the intersection onto Road B.~~ A minimum curb radii of 35-feet and ADA accessible curb ramps on both sides of future Road B.

    c. ~~A left-turn pocket from future Road A at the access to Building C, in accordance with the CDSM Table 2. Additionally, both sides of the access road to Building C is to consist of a minimum curb radii of 35-feet with ADA accessible curb ramps on both sides of the access road.~~ Both sides of the access road to Building C is to consist of a minimum curb radii of 35-feet with ADA accessible curb ramps on both sides of the access road.

d. Per the applicant, the final engineering plans will be revised to show the currently shown Building C to be “Building B”.

e. The curb radii on both sides of the intersection of future Road A and the existing NW Camas Meadows Drive is to be as close to a 35-foot radius as physically possible with ADA accessible curb ramps on both sides.

4. Condition 51- The applicant is to submit revised stormwater and grading plans that have the storm facility placed ~~in its own~~ within an easement, tract or open space. Additionally, a note is to be included on the engineering plans indicating that all the components of the onsite private stormwater system shall be owned and maintained by the property owners with right-of entry granted to the City for inspection purposes.
5. Page 21, Section B- The use of retaining walls is ~~limited~~ proposed at the eastern property line for the construction of Road A and the landscape buffer.

STAFF REPORT
Camas Business Park

File No. Light Industrial/Business Park (LI/BP21-01)

CONSOLIDATED FILES: Boundary Line Adjustment (BLA21-09); Site Plan Review (SPRV21-06); Design Review (DR21-07); State Environmental Policy Act (SEPA21-12); Critical Areas Review (CA21-02); Archaeological Review (ARCH21-05).

Type III

Staff Report Date: May 27, 2022

TO	City Council	**CLOSED RECORD MEETING DATE**	June 6, 2022
PROPOSAL	The proposal includes the construction of three (3) warehouse/office industrial buildings totaling approximately 942,939 square feet in the Light Industrial/Business Park (LI/BP) zone.		
LOCATION	The property is located at 4707 and 4723 NW Lake Road. The existing parcels are 176170-000 and 176155-000 in the NE ¼ of Section 29, Township 2 North, Range 3 East of the Willamette Meridian, Clark County.		
APPLICANT/ OWNER	Bjorn Byrnestad Panattoni Development Company, Inc. 1821 Dock Street, Suite 100 Tacoma, WA 98402 (206) 838-1730		
APPLICATION SUBMITTED	October 26, 2021; Resubmitted December 13, 2021, April 8 and 20, 2022	**APPLICATION COMPLETE**	December 20, 2021
SEPA	The City issued a SEPA Determination of Non-Significance (DNS) April 28, 2022, with a comment period that ends on May 12, 2022. The SEPA DNS was mailed to property owners April 27, 2022 and published in the Post Record on April 28, 2022. Legal publication #684330.		
PUBLIC NOTICES	Notice of Application and Public Hearing was mailed to property owners within 300 feet of the site on April 27, 2022 and published in the Post Record on April 28, 2022. Legal publication #684340.		
PUBLIC HEARING	A public hearing was held before the Planning Commission on May 17, 2022.		

APPLICABLE LAW: The application was submitted on October 26, 2021 and the applicable codes are those codes that were in effect at the date of application. Camas Municipal Code (CMC) Title 16 Environment, Title 17 Land Development and Title 18 Zoning 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 18.21 - Light Industrial/Business Park and Chapter 18.55 - Administrative Procedures.

Type III applications are quasi-judicial and the decision maker shall disclose any ex parte contacts, conflicts of interest or bias before the beginning of each hearing item and provide an opportunity for challenge per CMC 18.55.180.D.5.

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SUMMARY

The applicant is currently seeking site plan review approval for the construction of three (3) warehouse/office industrial buildings totaling approximately 942,939 square feet on 74.06-acres across two (2) lots within the Light Industrial/Business Park (BP) zone. The proposed development will be constructed in 3 phases: Phase 1 includes building A (722,397 square feet) including all roads and utilities, Phase 2 includes building C (127,191 square feet) and Phase 3 includes building B (93,351 square feet). Phase 1 will be constructed first with Phases 2 and 3 to follow. Buildings A and C will be located on the southern lot and Building B on the northern lot. The site fronts NW Lake Road and is accessed via a separate driveway off this road. Proposed access will also be provided from the north via NW Camas Meadows Drive. Much of the landscaping is focused on the property boundary lines with parking generally surrounding all sides of each building.

NW Lake Road abuts the subject property to the south, which is located within a city gateway corridor overlay zone. Properties immediately to the north include office buildings, to the northwest is the Camas Meadows golf course as well as vacant property and across NW Lake Road to the south is Wafertech all zoned Light Industrial/Business Park (LI/BP). Property immediately to the southwest include RV storage and commercial/office buildings known as the Dwyer Creek Business Park zoned Business Park (BP), to the northeast is the Camas Meadows golf course driving range and a single-family residence zoned Multi-Family Residential (MF-18) and to the southeast is a single-family residence zoned Regional Commercial (RC).

The site's topography is generally flat with a slight downwards slope from south to north and is primarily actively grazed pasture with scattered forested areas. Four (4) wetlands are located on the northern half of the property. An existing residence on site will be removed.

The project requires permits and approvals from the City, which include a boundary line adjustment, site plan review, design review, light industrial/business park review, SEPA, critical areas review, archaeological review, engineering site construction approvals and building permits. Development within the Light Industrial/Business Park zone is a Type III review approval process, which requires a public hearing before Planning Commission and final decision approval by City Council per CMC 18.55.030- Table 1, Note 4.

DISCUSSION AND FINDINGS

Title 16 Environment

STATE ENVIRONMENTAL POLICY ACT (SEPA21-12) CMC CHAPTER 16.07

A SEPA checklist was submitted, and a Determination of Non-Significance (DNS) was issued April 28, 2022, as the project site contains environmentally sensitive areas per CMC 16.07.025 (Exhibit 28). The comment period ends May 12, 2022. At the writing of this staff report, SEPA comments from Ecology concerning demolition procedures and erosion control measures (Exhibit 40) and Clark County transportation concurrency review (Exhibit 22)

> **FINDING:** Staff finds the Ecology SEPA comments concerning fill and erosion control measures should be complied with and conditioned as such.

ARCHAEOLOGICAL RESOURCE PRESERVATION (ARCH21-05) CMC CHAPTER 16.31

An Archaeological Survey dated September 17, 2021, was prepared by Archaeological Investigations Northwest, Inc for the subject property. An Archaeological Site Alteration, Excavation, and Monitoring Permit was obtained from the Department of Archaeology and Historic Preservation (DAHP) based on the recommendations of the predetermination survey. The report, findings and permit are not subject to the open public records act and as such, the City cannot disclose the results.

> **FINDING:** If any additional artifacts are discovered during construction, work must immediately cease and both State Department of Archaeological and Historic Preservation and the City shall be notified.

CRITICAL AREAS (CA21-02) CMC CHAPTER 16.51

CMC Chapter 16.53 - Wetlands

Clark County GIS mapping identified the subject property with wetlands. As such, the applicant submitted a *Wetland and Fish and Wildlife Habitat Assessment Report* dated October 2021 prepared by Soundview Consultants (Exhibit 14), which identified three (3) Category III on-site wetlands as Wetland A (1.30-acres) located at the northern portion of the site, Wetland B (0.74-acres) located at the western portion of the site, Wetland D (0.21-acres) located in the northwestern corner of the site and one Category IV on-site wetland as Wetland C (0.07-acres). Per the report, Wetlands A, B and D are largely degraded by non-native Himalayan blackberry and Wetland C is primarily actively grazed pasture.

As a result of the anticipated high intensity land use impact of the proposed development, Wetland A requires an 80-foot buffer due to a habitat score of (4), Wetland B requires a 120-foot buffer due to a habitat score of (5), and Wetland D requires a 135-foot buffer due to a habitat score of (6) per CMC 16.53.040.B.2. Wetland C is a low functioning wetland and is exempt from the buffer regulations per CMC 16.53.010.C.2.a due to its isolated location and small size of less than 0.09-acres (4,350sq.ft.).

Soundview Consultants also prepared a *Mitigation Bank Use and Conceptual Mitigation Plan* dated October 2021 (Exhibit 15) addressing the proposed impacts to the wetlands and associated buffers. Since the writing of this staff report, the applicant has revised the original site plan thereby modifying the proposed impacts to the wetland buffers only, which is discussed below and shown on the revised mitigation plan Exhibit 16. Staff recommends a condition of approval that prior to engineering plan approval, the applicant should submit to the City for review and approval a revised *Mitigation Bank Use and Conceptual Mitigation Plan* that addresses the proposed site development changes to include

placing the critical areas in a separate tract or protective easement per CMC 16.51.240.A. The plan should also address the mitigation strategy and goals for the Wetland buffer addition areas.

Wetland C

The *Mitigation Bank Use and Conceptual Mitigation Plan* indicated that the proposed development will unavoidably impact Wetland C, resulting in the filling of the wetland. As such, the applicant will be required to obtain a Nationwide permit from the US Army Corps of Engineers prior to engineering plan approval and conditioned as such. Proposed mitigation is provided through the purchase of credits at the Terrace Mitigation bank as allowed per CMC 16.53.050.D.2.b.

Wetlands A, B and D

The applicant is proposing to reduce the required buffer width of Wetland A from 80-ft. to 60-ft., Wetland B from 120-ft. to 90-ft. and Wetland D from 135-ft. to 100-ft. as permitted per CMC 16.53.050.C.1.a where high intensity land uses can be reduced to those for moderate intensity land uses if 1) an undisturbed vegetation corridor at least 100-ft. wide is protected between the wetland and other priority habitats and 2) measures to minimize impacts of the land use adjacent to the wetlands are applied such as infiltration of stormwater, retention of as much native vegetation and soils as possible, direction of noise and light away from the wetland, and other measures that may be suggested by a qualified wetland professional.

Per the mitigation plan (Exhibit 15), a relatively undisturbed vegetated corridor of more than 100-ft. wide is provided through the preservation of Wetlands A and B. A vegetation corridor is also proposed to connect between Wetland B and Wetland D via wetland buffer mitigation. However, the clearing and grading plans (Exhibit 5) appear to show this area graded for the stormwater pond and should be revised to not conflict with the proposed mitigation in this area and conditioned as such. In general, the stormwater detention pond, the preservation of existing trees within the wetlands and their associated buffers, and light pollution directed away from the wetland are measures that minimize impacts of the proposed development in compliance with this requirement.

Buffer Averaging

Buffer averaging is also proposed by the applicant, which is permitted per CMC 16.53.050.C.2. The northern edge of the 60-ft. wetland buffer of Wetland A is proposed to be reduced approximately 0.05-acres for permanent impacts due to Building B and its associated parking. As such, approximately 0.22 acres of buffer addition is provided as a contiguous vegetative buffer corridor between Wetland B and D in compliance with this requirement.

Buffer Impact

Approximately 1.26-acres of the outer edges of Wetland buffers A, B and D will be temporarily impacted due to site grading as allowed per CMC 16.53.050.C.5 and replanted with native vegetation.

CMC Chapter 16.59 – Geologically Hazardous Areas

Clark County GIS mapping identified geologically hazardous areas (i.e. steep slopes) within the project site. As such, the applicant submitted a *Geotechnical Report* dated July 2021 prepared Terra Associates, Inc. (Exhibit 17), which confirmed an erosion hazard exists along the moderate to steep slope at the center of the site and identified Best Management Practices for mitigation of that hazard at page 4 of the report. The geotechnical report concluded that the development as proposed is feasible based on the recommendations in the report. Staff recommends a condition of approval that the recommendations in the *Geotechnical Report* dated July 2021 prepared by Terra Associates, Inc. be complied with to minimize any potential hazards associated with construction.

CMC Chapter 16.61 - Fish and Wildlife Habitat Conservation Areas

Habitats of Local Importance- Oregon White Oak

Per CMC 16.61.010.A.3.i, Individual Oregon White Oak trees with a 20-inch diameter breast height (dbh) are considered habitats of local importance. The *Tree Survey* prepared by Teragon & Associates, Inc. dated October 2021 (Exhibit 13) identified one (1) 50-inch Oregon White Oak within Wetland A's buffer and is proposed for preservation within the wetland buffer.

Stream

The *Wetland and Fish and Wildlife Habitat Assessment Report* prepared by Soundview Consultants dated October 2021 identified an off-site Type F stream to the west of the subject property but determined no presence of potential salmonids. The report indicated that the 75-foot stream buffer as required per CMC 16.61.040.D is not anticipated to encroach onto the subject property and thereby not be impacted by the proposed development.

CMC Chapter 16.51 – General Provisions for Critical Areas

Staff recommends a condition of approval for the installation of temporary construction fencing prior to construction that clearly marks in the field critical area buffers and fencing should remain throughout permitted construction activities. In addition, prior to final engineering plan approval, permanent signs and fencing should be installed at the edge of the critical area buffers per CMC 16.51.210.B and C. Sign and fencing specifications should be submitted to the City for review and approval prior to installation.

Prior to final acceptance, a conservation covenant should be recorded with the County to ensure long-term preservation of all the critical areas and any associated buffers, including maintenance of any mitigation actions, per CMC 16.51.240 and conditioned as such. Further, a copy of the recorded conservation covenant document must be submitted to the City prior to final acceptance.

The applicant will be required to post a mitigation bond in an amount deemed acceptable by the City to ensure the wetland mitigation is fully functional per CMC 16.51.250.

Staff finds a condition of approval is required that detailed construction drawings per CMC 16.53.050.E.3 be submitted to the City for review and approval prior to final engineering plan approval.

> **FINDING:** Staff finds the proposal, as conditioned, can or will comply with the applicable provision of CMC Title 16 Environment as discussed above.

Title 17 Land Development

BOUNDARY LINE ADJUSTMENT (BLA21-09)	CMC CHAPTER 17.07

CMC Section 17.07.040 Approval Criteria.

A. No additional lots, sites, parcels, tracts, or divisions are created.

The proposed boundary line adjustment will not add any additional lots, sites, parcels, tracts, or divisions.

B. The adjustment will not create nonconforming lots, with respect to zoning dimension and area standards, zoning setbacks and lot area coverage standards identified in CMC Chapter 18.09 or to fire, building, and other applicable codes.

The proposed boundary line adjustment is between the existing two parcels, which will remain in compliance with the minimum 10-acre lot size requirement of the LI/BP zone following the adjustment thereby not creating nonconforming lots (Exhibit 12).

C. The degree of nonconformance on existing nonconforming lots with respect to zoning dimension and area standards, zoning setbacks, and floor area ratio are not increased, except that a onetime exception may be allowed to create a lot that exceeds the maximum lot size permitted in the underlying zone. Any future partitioning/reduction of the oversized lot must comply with the lot size requirements of the underlying zone.

Both lots are conforming with respect to zoning dimensions and area standards.

D. All lots have legal access to a public road. Existing required private road improvements and easements are not diminished below city street standards for lots that are served by a private road and shall not create unreasonably restrictive or hazardous access to a property.

Lot 1 will have direct legal access to, and front proposed Road A. Lot 2 will have direct legal access to and front proposed Road B and NW Lake Road. The proposal does not impact access or easements on either lot.

E. The boundary line adjustment will not result in a lot that contains area in two zone designations.

Both lots will remain in the LI/BP zone.

F. Boundary line adjustments that are used to circumvent subdivision or short subdivision procedures set forth in this title are not allowed. Factors which indicate that the boundary line adjustment process is being used in a manner inconsistent with statutory intent include: numerous and frequent adjustment to existing contiguous lot boundaries, and/or a large number of contiguous lots being proposed for boundary line adjustments at the same time.

The boundary line adjustment does not appear to be circumventing short subdivision procedures.

G. Approval of a boundary line adjustment shall not result in the need for a reasonable use exception as defined in CMC 16.51.

The boundary line adjustment will not result in a need for a reasonable use exception; therefore, this criterion is not applicable.

H. Existing easements for utilities conform to adopted standards for their intended function, or they are extended, moved, or otherwise altered to an approved location. The applicant shall be responsible for the relocation of any installed utilities.

The boundary line adjustment will not affect any existing easements for utilities on the properties.

> **FINDING:** Staff finds the proposed boundary line adjustment complies with City approval criteria requirements for boundary line adjustments. Staff recommends a condition of approval that the final drawing and new legal descriptions for each lot be submitted per CMC 17.07.050 to the City for review and approval, prior to recording the documents with Clark County.

Title 18 Zoning

SITE PLAN REVIEW (SPRV21-06)	CMC CHAPTER 18.18

CMC Section 18.18.060 Criteria of approval.
A. Compatibility with the city's comprehensive plan;
The business park proposal is consistent with the following comprehensive plan polices:

- 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.
- Land Use Policy LU-1.6: Ensure adequate public facilities (including roads, emergency services, utilities, and schools) exist to serve new development, and mitigate potential impacts to current residents.
- 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.
- Employment Land Use Policy LU-2.7: Protect employment land from conversion to residential uses in order to ensure an adequate supply of commercial and industrial land to meet 20-year employment projections.
- Natural Environment Land Use Policy NE-2.8: Ensure that development throughout the City meets or exceeds standards and practices for long-term wetland protection and mitigation.
- Transportation Land Use Policy T-1.1: Maintain the livability of Camas through proper location and design of transportation facilities, consistent with the Camas Transportation Plan map and 6-year street plan.

FINDING: The proposed business park provides local employment and can be compatible in site design and architecture with the surrounding area as conditioned. 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 site plan, utility plan, grading plan, landscape plan and tree survey that are adequate for Site Plan Review.

Density and Dimensions
Per CMC 18.09.030 Table 1, the Light Industrial/Business Park (LI/BP) zone is unrestricted with density, lot width, and lot depth, but requires a minimum lot area of 10 acres, a maximum lot coverage of 30% for one-story buildings and a maximum building height of 60-feet. The applicable development setback standards in the LI/BP zone are as follows: 1) minimum front yard is 200-feet and 2) minimum side and rear yards are 100-feet for building and 25-feet for parking.

The applicant's narrative at page 3 (Exhibit 3) is proposing a deviation request as allowed per CMC 18.21.090 to reduce the side yard setback to 64-feet for Building B along the northern property line in order to avoid further impacting the existing wetland buffer to the south. To mitigate for this setback reduction, the applicant is proposing a 20-foot wide landscape buffer from the existing office/industrial development to the north, which is a larger landscape buffer than what is required as discussed under the landscape buffer section below.

As proposed, staff finds the applicant complies with the density and dimensional standards of the LI/BP zone and the deviation request to reduce the side yard setback to 64-feet for Building B acceptable.

Parking
New and expanded industrial uses must provide adequate off-street parking pursuant to CMC Chapter 18.11.130 *Standards.* A *"Warehouse, storage"* use requires 1 space per 1,000 square feet of gross floor

area and a *"General Office"* use requires 1 space per 250 of gross floor area. Although a specific user has not been identified for the warehouse buildings at this time, the applicant's narrative at page 2 (Exhibit 3) indicates 5% of each building (or 47,145 square feet) is reserved for office space and therefore would require 188 parking stalls. The remaining 895,794 square feet of warehouse space would require 895 parking stalls, for a total of approximately 1,084 required parking spaces. The applicant is proposing 775 vehicular parking spaces and intends to convert the truck trailer parking stalls to vehicular parking stalls if necessitated by a future tenant.

Based on the number of proposed vehicular trips per the traffic analysis as discussed in Section C below, staff finds the proposed 775 vehicular parking spaces satisfies this requirement. Staff recommends a condition of approval that if a future tenant requires additional parking, the applicant should submit a site plan amendment per CMC 18.18.090 prior to building permit approval.

Per Camas Design Standards Manual (CDSM) Design Standards, Table 1 Guidelines for Geometry of Private Roadway, note 2, Off-street parking requires two-way drive aisle widths to be a minimum of 24-feet wide for passenger vehicles. Drive aisles widths dimensions are not shown on the preliminary site plans for passenger vehicles or truck trailer vehicles.

> Staff recommends a condition of approval that prior to final engineering plan approval, the applicant is to submit revised site plans that show the drive aisles dimensions of the parking areas for both passenger vehicles and truck trailer vehicles.

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 18.21.070 *Light Industrial/Business Park* as discussed in further detail under the Light Industrial/Business Park section below of this staff report. The applicant has focused the planting areas immediately adjacent the buildings, at the site's perimeter and within the parking areas per the preliminary landscape plans (Exhibit 6).

[Landscape buffers]:
Per CMC 18.13.055(A) Table 1- *Landscape Buffers*, a 10-foot (L2) low screen landscape buffer is required for industrial uses abutting property zoned commercial and residential that is separated by a street, which applies to the eastern property line. For compliance with this requirement, a minimum 10-ft. (L2) low screen landscape buffer planter strip within a 50-wide landscape buffer is proposed along the eastern property line as shown on the preliminary landscape plan.

A 5-foot (L2) low screen landscape buffer is required abutting property zoned industrial, which applies to the north, northwest and south property lines of the project site. A minimum 10-foot (L2) low screen landscape buffer strip within a 50-wide landscape buffer along the southern property line adjacent to NW Lake Road is provided for compliance with this requirement. A 20-foot (L2) landscape buffer is provided at the northern property line between the proposed development and the business park to the north in compliance with this requirement, with the exception along the storm pond. As such, staff recommends a condition of approval that the final landscape plan include a 5-ft. (L2) landscape buffer along the segment of the northern property line adjacent to the storm pond.

A 10-foot (L3) high screen landscape buffer abutting property zoned business park applies to the southwest property line adjacent to the existing Dwyer Creek business park, which has been addressed with a 25 to 35-foot (L3) landscape buffer.

[Parking lot landscaping]:
The purpose of landscaping within parking areas is to not only minimize the visual impact of paved areas but also provide for shade and relief per CMC 18.13.060.B. With 775 proposed parking stalls, 129 parking lot planter islands are required per CMC 18.13.060.C and will be conditioned as such. The

required parking lot planter islands are found to comply with the minimum 8x8 planter area requirement. Wheel stops are required adjacent to planter areas to protect landscaping from car overhangs per CMC 18.13.060.F and should be conditioned as such.

[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. There are approximately 800 trees per the arborist report and tree survey, with a total TU value of 1,068 (Exhibit 13). Based on the 71.74 net acreage, 1,434 TUs are required. The applicant is proposing to retain approximately 476 TUs in addition to providing 837 TUs with the proposed landscape plan. As such, the development proposes a final TU value post construction of 1,313 TUs and therefore will require to provide an additional 121 TUs. The TUs can also be met with the trees proposed for wetland buffer mitigation per CMC 18.13.052.B.1. Staff recommends a condition of approval that the applicant provide an additional 121 TUs per CMC 18.13.052.C. Trees proposed for retention should comply with the preservation measures outlined in the October 6, 2021 *Arborist Report* prepared by Teragan & Associates, Inc. and conditioned as such.

Staff recommends a condition of approval that prior to final engineering plan approval, the applicant submit to the city for review and approval a final landscape plan consistent with the landscaping standards in CMC Chapter 18.13 and CMC Section 18.21.070. Plants utilized will need to be per the approved City's Landscape list and per the Camas Design Manual planting specifications and landscape notes. For plants not on the approved City list, a characteristic card should be submitted to the City for review and approval. Irrigation and landscaping improvements should be installed or bonded for prior to final acceptance of each phase.

Retaining wall
The preliminary grading and drainage plan (Exhibit 5) identifies retaining walls up to 10-feet in height. Per CMC 18.17.060.B, retaining walls cannot exceed six feet in height, unless otherwise approved by the director. As such, staff recommends a condition of approval that the applicant submit revised grading plans to show retaining walls to not exceed six feet in height, unless otherwise approved by the director pursuant to CMC 18.17.060 prior to engineering plan approval.

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 signage was not provided and therefore a separate building permit will be required if signage is 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.

The most current civil plans were submitted by the applicant on April 20, 2022. The latest plans proposed to construct future Roads A and B. Future Road A is shown to traverse from NW Lake Road north to NW Camas Meadows Drive. Future Road B is shown to traverse from the intersection of future Road A west to the westernmost limits of the applicant's proposed development. Both future Roads A

and B are shown on the city's 2035 Transportation Plan Map, adopted in 2016, and are designated as proposed 2 or 3 lane collectors.

Per CMC 17.19.040.B.1 half-width street improvements are required along abutting a proposed development. Construction of the access roads for the proposed development, along the east side and bisecting the development site are the responsibility of the applicant. As the roads are designated 'future' roads, the applicant is required to construct the full width road sections.

Per the Camas Design Standards Manual (CDSM) Table 2 and CMC Table 17.19.040-2 Minimum Public Road Standards B, a 2-lane arterial or collector shall meet the following minimum requirements:

- 60-foot right-of-way width, left-turn lanes at intersections, 36-feet paved surface, sidewalks & planter strips on both sides, 5-foot bike lanes, no parking either side, 200-foot horizontal centerline curve radius (previously referred to as 'centerline radius'), street lighting, 35-foot curb radius or larger radii at direction of City Engineer, and ingress drive aisles 40-feet from back of sidewalk.

[Future Road A]:
The preliminary site plan sheet SPR1 and the road section plan sheet SPR3 dated April 8, 2022, show future construction of Road A. The applicant has agreed to build the full width roadway, including the east curb line minus the easternmost planter strip and sidewalk.

- The proposed road section improvements meet the minimum requirements noted in Table 2 of the Camas Design Standards Manual (CDSM) and as noted above for a 2-lane collector.
    - Construction of the easternmost planter strip and sidewalk will be the responsibility of future developments to the east.
- Per the CDSM, left-turn lanes are required at intersections; therefore the paved surface width varies from 36-feet to 48-feet along future Road A at the following locations:
    - The intersection of future Road A and NW Lake Road to allow for the dedicated left-turn and right-turn lanes onto NW Lake Road.
        - The minimum curb radii dimensions on both sides of future Road A are not shown on the preliminary plans. The curb radii on both sides of the future Road A are to be a minimum of 35-feet with ADA accessible curb ramps on both sides.
        - NW Lake Road is an existing roadway, therefore, a change to the existing horizontal centerline curve radius would not be warranted.
    - The intersection of Road A and Road B with a left-turn lane onto Road B.
        - Neither the horizontal centerline curve radius (centerline radius) nor curb radii are show on the preliminary plans. The horizontal centerline curve radius on a 2-lane collector is to be a minimum of 200-feet, with curb radii on both sides of the future Road B to be a minimum of 35-feet with ADA accessible curb ramps on both sides.
    - The intersection of Road A at the access road to future Building B does not show a left-turn lane.
        - Per CDSM Table 2, a left-turn lane would be required at this location with curb radii on both sides of the access road to be a minimum of 35-feet with ADA accessible curb ramps on both sides.
        - An access road/drive (driveway) is synonymous with a private road, per CMC 18.03.040 and is subject to Table 2 of the CDSM and is therefore an intersection. However, based on the number of PM Peak Hour trips at the drive access to Building B, a deviation from the CDSM for a left-turn lane is supported by the city engineer.
        - The curb radii on both sides of the access drive are to be a minimum of 35-feet with ADA accessible curb ramps on both sides.
    - The intersection of Road A at NW Camas Meadows Drive does not show a left-turn lane.

- Per CDSM Table 2, a left-turn lane would be required at this location with curb radii on both sides of the access road to be a minimum of 35-feet.
- There are existing improvements on both sides of the future intersection of Road A at NW Camas Meadows Drive that would restrict road widening to allow for a dedicated left-turn lane at this location, therefore a deviation from the CDSM for road standards is supported by the city engineer.
- However, the curb radii on both sides of the intersection should be as close to a 35-foot radius as physically possible.
- Curb ramps on both sides of intersections and access drives are to meet ADA accessibility requirements.

Therefore, staff recommends a condition of approval that prior to final engineering plan approval, the applicant shall be required to revise the site plan and road section plans for Future Road A to provide for the following:

- Per the applicant, the final engineering plans will be revised to show the currently shown Building 'C' to be Building 'B'.
- The curb radii on both sides of future Road A are to be a minimum of 35-feet with ADA accessible curb ramps on both sides.
- A minimum curb radii of 35-feet with ADA accessible curb ramps on both sides of future Road B.
- The access road to Building B is to consist of a minimum curb radii of 35-feet with ADA accessible curb ramps on both sides of the access road.
- The curb radii on both sides of the intersection of future Road A and the existing NW Camas Meadows Drive is to be as close to a 35-foot radius as physically possible with ADA accessible curb ramps on both sides.

[Future Road B]:
The preliminary site plan sheet SPR1 and the road section plan sheet SPR3 dated April 8, 2022, show future Road B meeting the minimum requirements noted above for a 2-lane collector with the following exceptions:

- Per the applicant, the final engineering plans will be revised to show the currently shown Building B as Building 'C'. Building A remains as shown.
- The intersections of Road B at both access roads to future Building C and Building A does not show a left-turn lane.
  - Per CDSM Table 2, a left-turn lane would be required at this location. However, as future Road B is shown to dead-end at the westernmost property line for the near future left-turn lanes are not warranted, a deviation from the CDSM for a left-turn lane is supported by the city engineer.
  - Per the CDSM Table 2, the access roads to Building C and Building A require a minimum 35-foot curb radii on both sides of the access roads with ADA accessible curb ramp on both sides.

Therefore, staff recommends a condition of approval that prior to final engineering plan approval, the applicant shall be required to revise the site plans and road section plans for future Road B to provide for the following:

- The access roads to Building C and Building A require a minimum 35-foot curb radii with ADA accessible curb ramps on both sides of the access roads.
- Per the applicant, the final engineering plans will be revised to show the currently shown Building B as Building 'C'. Building A remains as shown.

[NW Lake Road]:

- The preliminary site plan sheet SPR1 show two future access on NW Lake Road.
    - The future intersection of NW Lake Road onto future Road A;
    - The future access road, at Building A onto NW Lake Road.
- Both locations will allow for ingress and egress movements and will require removal of existing landscape islands to allow for construction of the required left-turn lanes on NW Lake Road.

Staff recommends a condition of approval that prior to final engineering plan approval, the applicant shall be required to submit revised site plans and road section plans for NW Lake Road to provide for the following:

- The landscape islands are to be replaced with full depth road sections, curb, and gutter.
- The left-turn lane to future Building A parking area from NW Lake Road is to be signed as 'No Truck Traffic Permitted'.
- The access road to and from the parking area for Building A onto NW Lake Road is to be constructed with a minimum 25-foot curb radii and ADA accessible curb ramps on each side of the access road.

Per CMC 17.19.040.B.5 Dedication of additional right-of-way may be required for a development when it is necessary to meet the minimum street width standards or when lack of such dedication would cause or contribute to an unsafe road or intersection. As such, the applicant is required to dedicate sufficient right-of-way for the construction of future Road A and future Road B.

[Future Road A]:
On preliminary site plan sheet SPR1 dated April 8, 2022, future Road A is shown to consist of a right-of-way width that varies from 72-feet wide to 60-feet wide depending on the location along the frontage. The right-of-way widths are as follows:

- The portion of the road, at the intersection with NW Lake Road is shown with a 72-foot wide right-of-way that allows for a dedicated right-turn and left-turn pockets onto NW Lake Road.
- The portion of the road, at the intersection of future Road A and future Road B is shown with a 72-foot wide right-of-way width on the south and north sides of the intersection. This allows for a northbound through lane, a left-turn pocket onto Road B, a southbound through lane, and a right-turn lane from future Road B onto future Road A.
- All other portions of the road, outside of those noted above on future Road A, from the intersection with NW Camas Meadows Drive south to NW Lake Road are shown with a 60-foot right-of-way width.

Future Road A right-of-way widths meet, or exceed, the minimum right-of-way widths for a 2-lane collector and is supported by the city engineer.

[Future Road B]:
On preliminary site plan sheet SPR1 dated April 8, 2022, future Road B is shown to consist of a 60-foot right-of-way width from the eastern intersection with future Road A to the westernmost property line.

- Future Road B right-of-way widths meet the minimum right-of-way widths for a 2-lane collector.

[NW Lake Road]:
NW Lake Road is a fully improved 5-lane roadway that is classified as an existing arterial. Additional right-of-way dedication will not be required.

Per CMC 17.19.040.10.b.ii block lengths shall not exceed the maximum access spacing for the roadway class per the city's design standards manual (CDSM). Per Table 3 of the CDSM Access Spacing Standards, roads classified as collectors shall meet a minimum access spacing of 330-feet and a maximum access spacing of 600-feet. Future Road A is classified as a collector, with a maximum block length of 600-feet,

[Future Road A]:
The block length on future Road A, between NW Lake Road and future Road B is 1,900-feet in length, which exceeds the maximum 600-foot block length on a collector.

Staff recommends a condition of approval that prior to final engineering plan approval, the applicant shall be required to submit revised site plans that provide a minimum of one pedestrian/bicycle connection from Building A to future Road A.

Per Table 3 of the CDSM Access Spacing Standards, roads classified as collectors shall meet a minimum access spacing of 330-feet and a maximum access spacing of 600-feet.

With the exception of the block length on future Road A between NW Lake Road and future Road B, the minimum access spacing standards on future Road A and future Road for the access roads to Building B and Building C meet the minimum 330-foot access spacing on a collector.

FINDING: Staff finds that the development, as conditioned, can and will meet the requirements of CMC 17.19.040. B Streets and 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). Per the preliminary TIA, the proposed development will generate an excess of 200 ADTs, therefore a TIA was required.

A transportation impact analysis (TIA) dated November 11, 2021, was prepared by Heath & Associates. Per the submitted TIA, the number of ADTs and AM & PM Peak Hour trips were based on the following land-uses:

- Buildings A & C – LUC 154 High-Cube Warehouse at 871,594 sf = 1,220 ADTs, 70 AM Peak Hour trips & 87 PM Peak Hour trips
- Building B – LUC 140 Manufacturing at 91,885 sf = 436 ADTs, 62 AM Peak Hour trips & 68 PM Peak Hour trips
- Total for Both Uses = 1,656 ADTs, 132 AM Peak Hour trips & 155 PM Peak Hour trips

Per discussions between staff and the applicant there are not currently any tenants slated for the proposed development. Depending on ultimate tenants and actual land-use, the number of ADTs and PM Peak Hour trips could increase from the 1,656 ADTs, 132 AM Peak Hour trips, and 155 PM Peak Hour trips originally noted in the TIA.

Staff recommends a condition of approval that prior to building permit approval a revised traffic memorandum report is to be submitted addressing the actual land-use and, if the ultimate tenant's average daily trips (ADTs) is higher than originally shown in the November 11, 2021 TIA, an updated TIA will be required to address potential additional mitigation measures.

[Trip Distribution]
The TIA references both City of Camas' Transportation Improvement Projects (page 9) and City of Vancouver Transportation Improvement Projects (page 10), there was no reference to any Clark County Transportation Improvement projects. The November 11, 2021 TIA, was sent to both the City of Vancouver and Clark County for review comments. The city received comments from both Clark County and City of Vancouver. Their review comments are as follows:

Per Clark County's review (Exhibit 22):

- "The proposed development is "required to meet the standards established in CCC 40.350.020(G) for corridors and intersections of regional significance within 2-miles of the proposed development."
- "Staff's review of the applicant's traffic study found that the proposed land use is not expected to send 5, or more, peak hour trips to the county's regionally significant intersections and/or corridors. Because of this, county concurrency has no further comments and requires no further county concurrency related analysis."

Per City of Vancouver's review (Exhibit 21):

- "Pursuant to VMC 11.70.090, 192nd Avenue is designated as a Category 1 Concurrency corridor, which stipulates that the corridor is operating at or above the City of Vancouver's adopted level of service standards. Based on the trip distribution information contained in the study, the new PM peak hour trips generated to this corridor by the proposed development are not anticipated to cause the corridor to drop below the adopted level of service standard."
- "The applicant's traffic analysis provides distribution of trips used to establish the proportionate share contribution towards off-site traffic mitigation projects within the City of Vancouver. A list of the intersection(s) slated for proportionate share contributions is as follows:

Proportionate Share Project Name	Fee Rate	Number of Trips	Proportionate Share Cost
NE 192nd Ave & NE 13th St	$400 per PM peak hour trip	15	$6,000
SE 192nd Ave & SE 34th St	$150 per PM peak hour trip	24	$3,600
192nd Ave & SR-14 ramps	$2,000 per PM peak hour trip	15	$30,000
Total Proportionate Share Cost			**$39,600**

Based on the above table, **prior to the issuance of civil plan approval, the applicant shall pay proportionate share fees to the City of Vancouver totaling $39,600.00."**

Staff recommends a condition of approval that prior to final engineering plan approval, the applicant is required to pay the proportionate share amount of $39,600.00 to the City of Vancouver. The applicant is to provide Camas staff with documentation of payment of said proportionate share amount.

[Left-turn Lane Warrants]:
The existing frontage along the proposed development consists of a center raised landscape median on NW Lake Road. The applicant was required to analysis the length of a proposed left-turn pocket on NW Lake Road onto future Road A. The original application also proposed two western access drives west of future Road A, to allow for vehicular traffic from Buildings A & C parking areas onto NW Lake Road. These would have been restricted to right-in / right-out movements only. Following discussions with city staff, the applicant's April 20, 2022 preliminary site plans were revised to show one full access drive, for passenger vehicles only located 610-feet west of the intersection of NW Lake Road and future Road A. This centrally located access drive was supported by staff with the following:

- The applicant was to analyze the length of a left-turn pocket for this location.

    - The length of the left-turn pocket was address in the TIA and shown on the preliminary plans.
- The proposed left-turn pocket was to be located sufficient distance east of the WaferTech's westbound left-turn pocket, so as not to impact the existing WaferTech left-turn pocket.
    - The location as shown on the preliminary plans does not impact the WaferTech left-turn pocket.

Per the preliminary site plans and the TIA, section 4.5, while the requirement for a left-turn pocket was addressed at the western access drive, the required left-turn pocket at the intersection of NW Lake Road onto future Road A was not fully addressed. In the TIA, Section 4.5 and Section 5, there are statements to the effect that there is an existing center median that allows for left-turns at future Road A. However, there is not an existing center turn lane at this location. The existing center raised center landscape median is to be removed and replaced with a full-depth road section to allow for the new left-turn pocket at the intersection of NW Lake Road and future Road A.

Staff recommends a condition of approval that prior to final engineering plan approval that the TIA is to be revised and resubmitted addressing the length of the left-turn pocket and the requirement to construct a full depth street section at the intersection of NW Lake Road and future Road A. Additionally, the preliminary site plans are to be revised to include the left-turn pocket in this location.

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.

The preliminary water and sewer plan, dated April 8, 2022, propose the construction of a 6-inch public sanitary sewer force main as follows:

- In future Road A, from existing sanitary sewer stub at NW Lake Road to the exiting 10-inch sanitary STEP main NW Camas Meadows Drive;
- In future Road B, from the intersection with future Road A to the westernmost dead-end of future Road B.
- Onsite sanitary sewer mains and STEP tanks, to serve the private sanitary sewer system are shown to be stubbed from the public sanitary sewer mains from future Roads A and B.

[Onsite Private Sanitary Sewer System]:

The preliminary onsite private STEP sewer system plans, indicate that each of the sanitary sewer mains and the STEP tanks for future Buildings A, B, and C are located within landscape and bermed areas adjacent to future Roads A and B. Staff does not support the locations as shown.

The sanitary sewer mains are to be located within the access drives to Buildings A, B, and C with a minimum 10-foot separation between the sewer and water within the right-of-way. STEP tanks are to be accessible for maintenance, pumping, and inspections.

Per CMC 13.62.080 The riser lid to the access chamber shall be accessible at all times to insure proper and timely emergency and/or maintenance response to the system. Locations of STEP tanks within landscaped areas consisting of trees, shrubs, and other vegetation hinders maintenance, pumping, and inspections. Therefore, the STEP tanks for each building are to be located within a paved surface with traffic rated lids. Each of the STEP tanks are to be sized for the proposed use at each building. Additionally, the onsite private sanitary sewer system, including STEP tanks are to be owned and maintained by the owners.

Staff recommends a condition of approval that prior to final engineering plan approval, the applicant is to submit sanitary sewer utility plans with the following revisions to the private onsite sanitary sewer system:

- Future Building A: The sanitary sewer main, stubbed off future Road B to serve future Building A, is to be located within the westernmost drive access to said building and the sewer STEP tank is to be located within the paved surface with a traffic rated lid. Locations within the right-of-way require a minimum of 10-foot separation between sewer and the water.
- Future Building C: The sanitary sewer main, stubbed off future Road B to serve future Building C, is to be located within the easternmost drive access to said building and the sewer STEP tank is to be located within the paved surface with a traffic rated lid. Locations within the right-of-way require a minimum of 10-foot separation between sewer and the water.
- Future Building B: The sanitary sewer main, stubbed off future Road A to serve future Building B, is to be located within the drive access to said building and the sewer STEP tank is to be located within the paved surface with a traffic rated lid when located within the right-of-way. Locations within the right-of-way require a minimum of 10-foot separation between sewer and the water.
- Specifications, design, and calculations for sizing the STEP tanks at future Building A, Building B, and Building C are to be submitted for review and approval by the city, prior to installation.

Per CMC 13.62.B "All STEP systems 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 final engineering plan approval a note is to be on the engineering plans indicating that all components of the onsite private sanitary sewer system, including the STEP tanks shall be privately owned and maintained by the property owners, with a right-of-entry granted to the city for inspection purposes.

Staff recommends a condition of approval that prior to building permit approval, building applications for a land-use that involves manufacturing processes, which consist of high suspended solids (SS) and/or biochemical oxygen demand (BOD), as noted in CMC 13.72.070 will be required to be submitted to the city for review and approval for potential mitigation measures and calculation of SDCs.

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 14.02 Stormwater Control and the requirements the most current edition of Ecology's *Stormwater Management Manual for Western Washington* (2019 SWMMWW).

The proposed development consists of two parcels with an overall size of approximately 74 acres (3,223,440 sf). The preliminary storm drainage report (TIR), dated October 2021, was prepared by AHBL, and submitted with the application. Per the preliminary TIR, the southern half of the site consists of pastureland that was used for livestock grazing with an existing single-family residence, barns, and other outbuildings. The northern half of the site contain "scattered stands of fir, ash, and oak trees, as well as large thickets of blackberries." Additionally, there are four wetland areas that have been identified;

"one in the east-central portion and three in the northern portion" of the site. The wetland areas, buffers, and mitigation requirements are discussed in other sections of the staff report. The existing site slopes from east-to-west and south-to-north with "generally moderate slopes in the southern and northern portions and steep south-north slopes along the central portion of the site."

Ecology's *Stormwater Management Manual for Western Washington* (2019 SWMMWW), states 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.

- MR #1 stormwater site plans submittal as not been met; therefore the preliminary stormwater plans have not currently been reviewed. Per the preliminary TIR, Section J, the conveyance analysis and design will be submitted at a later date.

Staff recommends a condition of approval that prior to final engineering plan approval, the applicant is to submit the stormwater utility and storm facility plans for review and approval in accordance with CMC 14.02, CDSM, and Ecology's SWMMWW.

- MR #2 *Stormwater Pollution Prevention Plan* (SWPPP) submittal has not been met at this time. The SWPPP is a component of Ecology's *NPDES General Construction Stormwater Permit* (GCSWP), which is issued by the Washington State Dept. of Ecology. Submittal of both the GCSWP permit and the SWPPP are required prior to any land-disturbing activities.

Staff recommends a condition of approval that prior to start of construction, the applicant is to submit copies of the GCSWP and the SWPPP prior to any land-disturbing activities.

- MR #3 Source control has been sufficiently addressed in Section D of the preliminary TIR.
- MR #4 Preservation of natural drainage systems, Section K of the preliminary TIR states that the site has been evaluated for both run on from adjacent sites and that the discharge location from the storm facility is consistent with the existing outfall location. Additionally, Ecology's SWMMWW requires that the post-development discharge rate meets the pre-developed conditions.
- MR #5 On-site stormwater management has been addressed in Section E of the preliminary TIR. Per the report, the project will implement BMPs from List #2 of the SWMMWW. The site consists of a high water table and soils that are not feasible for infiltration.
- MR #6 Runoff treatment is addressed in Section F of the preliminary TIR. The report states that stormwater treatment will be met with a combination of a wetpond in the northern portion of the site and via treatment vaults in those portions of the site that will not be conveyed to the wetpond. The wetpond and treatment vaults will be designed to discharge to the adjacent wetland buffer and wetlands. Additionally, the preliminary TIR states that both the wetpond and treatment vaults will provide for basin and phosphorous treatment due to the project being located within the Lacamas watershed. The stormwater treatment, detention, and conveyance systems were not included with the preliminary plans. Submittal of stormwater plans, prior to final engineering plan approval are addressed and conditioned in MR #1 above.
- MR #7 Flow control analysis and design is addressed in Section G of the preliminary TIR. Flow control is to be provided by a combination wetpond/detention pond that will be located in the north section of the project, on the west side of future Building B adjacent to and proposed to discharge to "Wetland A." The stormwater treatment, detention, and conveyance systems were not included with the preliminary plans. Submittal of stormwater plans, prior to final engineering plan approval are addressed and conditioned in MR #1 above.

- MR #8 Wetland protection is addressed in Section H of the preliminary TIR. Per the report, four wetlands have been identified on-site. Wetlands A, B, and D will remain with Wetland C being filled. Per the Critical Areas report, the project will comply with the requirements of SWMMWW that requires wetland projects to the maximum extent feasible. Wetland permitting and mitigation are discussed in other sections of the staff report.
- MR #9 Maintenance and operation are addressed in Section N of the preliminary TIR. Per the report an operation and maintenance (O&M) manual was not included in the preliminary TIR.

Staff recommends a condition of approval that prior to final engineering plan approval, the applicant is to submit a final TIR that includes the operation and maintenance manual for the on-site stormwater system.

Per CMC 17.19.040.C.3.a Storm drainage systems are to be placed in their own tract or within an open space tract and are to be owned and maintained by the property owner. As shown on the preliminary grading and drainage plans, the storm facility is no located within its own tract or open space.

Staff recommends a condition of approval that prior to final engineering plan approval, the applicant is to submit revised stormwater and grading plans that have the storm facility placed within an easement, tract, or open space. Additionally, a note is to be included on the engineering plans indicating that all the components of the onsite private stormwater system shall be owned and maintained by the property owners with right-of entry granted to the City for inspection purposes.

Per Ecology's SWMMWW, Volume V, access roads are required for maintenance and inspections of inlet structures, outlet flow control structures, and vegetation management. The preliminary grading and drainage plans do not provide for access to the proposed wetpond/detention pond from the parking lot at future Building B.

Staff recommends a condition of approval that prior to final engineering plan approval, the applicant is to submit revised stormwater plans that provide the required access roads for maintenance and inspection of the proposed stormwater facility's inlet and outlet flow control structures.

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.

[Public Water System]:
The preliminary water and sewer plan, dated April 8, 2022, propose the construction of a 12-inch public water main in the following locations:

- In future Road A, from the existing 12-inch water main in NW Lake Road to the existing 12-inch water main in NW Camas Meadows Drive;
- In future Road B, from the intersection with future Road A to the westernmost dead-end of future Road B.
- The onsite private water systems are shown to be stubbed from the future public water mains located in Road A and Road B.

The preliminary water utility plans do not currently propose any public fire hydrants along future Roads A and B. Staff recommends a condition of approval that prior to final engineering plan approval, the applicant is to submit revised water utility plans that provide for public fire hydrants along future Roads A and B in accordance with the CDSM.

Additionally, the preliminary utility plans and the landscape plans do not show the locations and sizes of either the potable water meters or the irrigation meters with backflow prevention devices.

Staff recommends a condition of approval that prior to final engineering plan approval, the applicant is to submit revised water utility plans and landscape plans to include the locations and sizes of both the potable meters and the irrigation meters 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.

[Onsite Private Water System]:
The preliminary onsite private water system is proposed as an 8-inch water main to serve future Buildings A, B, and C. Per the preliminary plans, the water services are shown to be stubbed through landscaping and bermed areas adjacent to future Roads A and B. Staff does not support the locations of the 8-inch water mains as shown.

The water mains are to be located within the access drives to Buildings A, B, and C, with a 10-foot separation between the water and sanitary sewer mains within the right-of-way. Location of vaults within landscaped areas consisting of trees, shrubs, and other vegetation hinders maintenance and inspections. Therefore, the double check detector valve (DCDV) assembly vaults for each building are to be located within a paved surface with traffic rated lids.

Staff recommends a condition of approval that prior to final engineering plan approval, the applicant is to submit water utility plans with the following revisions to the private onsite water system:

- Future Building A: The 8-inch private water main stubbed off future Road B to serve future Building A is to be located within the westernmost drive access to said building and the water DCDV assembly vault is to be located within the paved surface with a traffic rated lid. Locations within the right-of-way require a minimum 10-foot separation between the water and sanitary sewer mains.
- Future Building C: The 8-inch private water main stubbed off future Road B to serve future Building C is to be located within the easternmost drive access to said building and the water DCDV assembly vault is to be located within the paved surface with a traffic rated lid. Locations within the right-of-way require a minimum 10-foot separation between the water and sanitary sewer mains.
- Future Building B: The 8-inch private water main stubbed off future Road A to serve future Building B is to be located within the drive access to said building and the water DCDV assembly vault is to be located within the paved surface with a traffic rated lid. Locations within the right-of-way require a minimum 10-foot separation between the water and sanitary sewer mains.
- The applicant is to provide a note on the engineering plans indicating that all components of the onsite private water system and fire line, including fire hydrants shall be privately owned and maintained by the property owners with right-of-entry granted to the city for inspection purposes.
- The applicant is to provide a note on the engineering plans indicating that all private fire hydrants are to be ordered direct from the factory and factory painted powder coated red.
- Plans for the fire line are to be submitted to the Fire Marshall's office for the NFPA24 Fire Main Underground Permit prior to any fire line installation beyond the right-of-way.

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 proposed development consists of two parcels with an overall size of approximately 74 acres (3,223,440 sf). As the proposed development consists of land-disturbing activities of more than an acre, the applicant is required to obtain an *NPDES General Construction Stormwater Permit (GCSWP*), which is issued by the Washington State Department of Ecology. Prior to any land-disturbing activities, the applicant is to submit a copy of the *NPDES General Construction Stormwater Permit (GCSWP)* and the *Stormwater Pollution Prevention Plan (SWPPP)*, which is a required component of the *NPDES GCSWP* permit.

Additionally, per CMC 17.21.050.B.3, land-disturbing activities of more than an acre require the applicant is 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.

The applicant submitted proposed site and utility plans with the original applicant and revised plans on April 20, 2022. Neither submittal included erosion and sediment control plans.

> Staff recommends a condition of approval that prior to final engineering plan approval, the applicant is to submit Erosion Sediment Control (ESC) plans to the City for review and approval.

A critical component of erosion control and sediment prevention is the clearing, grubbing, and removal of all existing vegetation, including ground cover and trees. Per *BMP C162 Scheduling*: *"Sequencing a construction project reduces the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking"*, as described in Ecology's current 2019 *Stormwater Management Manual for Western Washington (SWMMWW)*, Volume II, Chapter 3, pages 328-329. Based on the size and scope of the proposed project, i.e. two new roads, public and private utilities, significantly sized building pads, stormwater treatment and detention, wetlands, and wetland buffers, sequencing the construction is necessary in order to meet the requirements of *BMP C162*.

> As such, staff recommends a condition of approval that prior to final engineering plan approval, the applicant is to include a construction sequencing plan, in accordance with BMP C162 of Ecology's SWMMWW, as a component of the erosion and sediment control plans.

> **FINDINGS:** 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 and Private Utilities
Per CMC 17.19.040.C Utilities. All utilities designed to serve the proposed development shall be placed under ground.

[Public Utilities]:
Street lighting currently exists along the frontage on NW Lake Road. The preliminary utility plans do not include street lighting along future Roads A and B. Future Roads A and B will require street lighting in accordance with the CDSM.

Therefore, staff recommends a condition of approval that prior to final engineering plan approval, the applicant is to provide a street lighting plan and illumination analysis for the installation of street lights along future Roads A and B. Street lighting plans require review and approval prior to submittal to Clark Public Utility (CUP).

[Private Services and Utilities]:
The on-site private sanitary sewer systems, including STEP tanks; the on-site private water distribution systems including DCDV vaults, irrigation systems, backflow prevention devices, and fire hydrants; and all components of the on-site private stormwater system are to be owned and maintained by the owner or a property management company, with right-of-entry granted to the city for inspection purposes.

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 can or will make provisions for adequate maintenance of the private improvements as conditioned.

E. Adequate provisions are made for maintenance of public utilities;

The applicant is required to construct the public utilities, including roads, required to serve the proposed development. After issuance of final acceptance of the public improvements, maintenance will be the responsibility of the city.

> **FINDING:** Staff concurs that adequate provisions will or can 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.

LIGHT INDUSTRIAL/BUSINESS PARK — CMC CHAPTER 18.21

A deviation from strict compliance with the development regulations of the LI/BP zone may be granted by the approval authority if the deviation is not inconsistent with the purpose of LI/BP and not adversely impact public health, safety, and welfare per CMC 18.21.090.

CMC Section 18.21.060 Site development criteria;

A. Site improvements are to be designed to result in a natural appearance that will blend with surroundings and be compatible with neighboring developments.

The Camas Business Park proposed development is designed with robust landscaping, preservation of a natural area and aesthetically pleasing architectural elevations to be compatible with the surrounding 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.

The preliminary landscape plans show groundcover and erosion control seed mix on the sloped 50-foot wide landscape buffers in compliance with this requirement. The use of retaining walls is propsed at the eastern property line for the construction of Road A and the landscape buffer.

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.

All paving areas will be in conformance with the Camas Design Standards manual.

2. No public parking is to be allowed on public streets within this zone.

Staff finds a condition of approval is required that no public parking is allowed on future Road A and B.

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.

Truck loading dock areas are minimized from public view with landscaped buffers or setback more than 200-feet.

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.

Truck loading dock areas are located at the side or rear yards and screened from view with landscape buffers.

D. Refuse/Storage. Refuse areas and service/storage areas are to be located under cover.

Refuse/Storage areas should be located under cover and conditioned as such.

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.

Any visible utility equipment should be carefully located to minimize appearance and appropriately screened and conditioned as such.

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 alongside 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.

Per the applicant, no walls or fencing are proposed other than retaining walls for grading within the 50-foot landscaped buffer setback at the eastern property line. However, if fencing or walls are proposed for screening, specifications should be provided consistent with CMC 18.21.060.F prior to final engineering plan approval.

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.

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 engineering plan approval.

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.

The design of light industrial facilities in the light industrial/business park district will be "campus-style," with ample landscaping, effective buffers, and architectural features compatible with the surrounding uses.

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.**

The secondary commercial use are office spaces to serve the warehouse use, which comprises of approximately 5% of each building and is subordinate to the primary use.

CMC Section 18.21.070 Landscaping standards.

In addition to the landscaping requirements of CMC Chapter 18.13 Landscaping of this title, all proposed development in this zone shall generally comply with the following standards. Variations may be authorized by the approval authority where reasonable factors such as topography, other site constraints, or proposed improvements offset the need for strict compliance.

A. The entire street frontage will receive street trees/landscaping that will create a unifying effect throughout the area. Tree groupings shall be located for interest and variety. Plantings shall conform to the approved selection list available from the city, if available.

Street trees exist at the site's frontage along NW Lake Road and proposed at Roads A and B. In addition, a combination of trees, shrubs and groundcover are proposed along the street frontages that creates a unifying effect throughout the area.

B. Entry areas and driveways shall be landscaped to create a feeling of identification and continuity of plant materials related to the foundation plantings around the buildings and parking areas. The entry areas shall be landscaped for a minimum distance of fifty feet on either side of the curb breaks and landscaped a minimum of twenty-five feet in width on either side of drives for

their full length. Long drives would benefit from landscaped divider islands ten to fifteen feet wide.

The entry areas/driveways on average are approximately 50-feet in length but do not propose landscaping along the sides of the drive. Staff recommends a condition of approval that entry areas/driveways should be landscaped with trees, shrubs and/or groundcover on either side of the curb breaks for compliance with this requirement and shown on the final landscape plan prior to engineering plan approval.

C. Temporary parking areas shall have twenty-five feet of landscaping at all perimeters. Permanent parking areas are to have horizontal sight screening from streets and adjacent properties and shall have fifty feet of landscaping on street sides, and twenty-five feet of landscape otherwise.

A 50-foot wide landscape buffer is provided at the property lines adjacent to streets and minimum 25-foot landscape buffers adjacent to properties except to the north, which is 20-feet wide and fully landscaped. These landscape buffers are comprised of a minimum 10-foot L2 landscape strip to include a combination of evergreen and deciduous trees, shrubs, and groundcover at the top of the slopes with the remainder of the buffer covered in grass.

D. A fifty-foot minimum landscaped planting strip shall be required adjacent to building facades facing any street, and a twenty-five foot minimum planting strip shall be required elsewhere. Curvilinear design is encouraged to create interest and variety.

The applicant has requested a deviation to reduce the required minimum landscape planter strips adjacent to the building facades as follows: 1) a 25-ft. wide landscape strip adjacent to Building A façade facing Lake Road, 2) no landscape planter strips adjacent to the building facades with the truck loading docks and 3) 3-20 ft. wide landscape strips with foundation plantings adjacent to all remaining building facades.

Due to the proposed parking lot landscaping and landscape buffers provided at the property lines as described in the landscape sections of this staff report and as conditioned, staff finds the foundation plantings adjacent to the building facades as proposed satisfy this requirement. Foundation plantings at the dock areas are not feasible due to the truck loading and unloading.

E. Areas used for storage, loading, etc., which would make landscaping inappropriate or superfluous will not require landscaping. Those areas have their own requirements for screening. Walls and fences that extend out from the main structure for purposes of screening shall also have a minimum of twenty-five feet of landscape strip adjacent to the exterior facing side of the wall.

Landscaping is not proposed adjacent to truck loading dock areas. The building facades with the truck loading docks are setback from and therefore screened by the modulated building façades. The perimeter buffer landscaping also provides for screening the loading dock areas.

F. Site development plans shall be submitted showing the final intended, maximum development. Areas reserved for future expansion beyond the foundation planting described above may be allowed to remain natural growth native to the area but shall be maintained in conformance with local requirements for fire control. Areas between any wall of a building and any street may be landscaped or maintained to create an appearance of a controlled natural state. Native species of plants should be maintained where possible.

The proposed development will be developed in 3 phases, one building per phase. Future undeveloped phases should be landscaped or maintained in a controlled natural state and conditioned as such.

G. Large site areas that are intended to remain undeveloped shall be improved with landscape materials that relate to the natural environment and the particular site. Tree clusters, mounding and native undergrowth, combined with employee recreational uses should result in an esthetically pleasing effect.

The entire site is intended to be developed, except for those wetlands planned for preservation. Employee recreational uses are not proposed with this development. For an aesthetically pleasing effect, tree clusters should be provided in the landscape buffers and open space areas where feasible and conditioned as such.

H. Large, more mature plant materials are encouraged to ensure that some immediate effect on the project's appearance will be attained within two years of planting. The following minimum sizes and spacing are recommended for plant materials at time of installation. Exceptions can be made to these standards when areas are not visible to the general public, and installation and maintenance specifications ensure successful establishment of introduced plantings.

Due to the high public visibility of the buildings from NW Lake Road at the south and west portions of the site, staff recommends a condition of approval that large, more mature plant materials should be installed that results in an immediate impact on the project's appearance within two years of planting. Per the proposed landscape detail sheet L9, all the evergreen trees within these buffer areas will be planted at a minimum 5-feet in height, consistent with CMC 18.13.050.C.3.

I. Notwithstanding Section 18.13.050(G) and (H), street trees shall have a minimum caliper size of two inches. Trees located along drives and in the street side of planting areas adjacent to parking areas or buildings shall have a minimum caliper size of one and one-half inches. Trees located elsewhere are to have a minimum caliper size of one inch and equivalent to a fifteen-gallon container size.

Per the proposed landscape plan detail sheet L9, all the deciduous street trees are 2 - 2 ½ inches in diameter. Staff finds a condition of approval is required that applicant submit a final landscape plan showing a 15-gallon container size consistent with CMC 18.13.050.C.2 prior to final engineering plan approval.

J. Shrubs should be a minimum of five-gallon pot size, and upright shrubs should have a minimum height of eighteen inches, with a minimum spread of eighteen inches. Spreading shrubs should have a minimum of eighteen to twenty-four inches. Smaller shrub sizes may be approved where it is more appropriate within the particular landscape plan.

Per the proposed landscape plan detail sheet L9, shrubs are 5-gallon size with an 18-inch height and spread in compliance with this requirement.

K. Ground covers planted from flats should have a maximum spacing of twelve inches on center or, when planted from one gallon cans, a maximum spacing of twenty-four inches on center.

Per the proposed landscape plan detail sheet L9, groundcover is 1 gallon and spaces 24-inches on center in compliance with this requirement.

L. Preservation of existing stands of mature, native, and naturalized vegetation should be a primary goal in site plan development and site preparation. Special techniques, such as fencing, should be used to protect trees from grading and other construction period activities. A tree protection program should be submitted for projects in areas with substantial amounts of existing tree growth.

Trees are proposed for preservation within the wetlands and their associated buffers. Trees proposed for retention should be protected from grading with tree protection fencing on the outer perimeter of the critical root zone during construction. Staff recommends a condition of approval that the required trees identified for preservation comply with the tree protection recommendations of the *Arborist Report* prepared by Teragan & Associates, Inc.

M. Earth berms are convenient devices for providing variation in the ground plane, and for screening interior portions of the site. Care must be taken in their construction to avoid creating an artificial appearing landscape. The bermed areas should 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 should be three is to one for turf areas, and two is to one for groundcover areas. Earth berms shall comply with vision clearance standards in CMC Chapter 18.17 Supplemental Development Standards of this title.

Building A fronting Lake Road is approximately 52-feet in height. The massing and scale of the southeast and east portion of Building A as viewed by passerby is reduced as the building sits approximately 19-feet below the adjacent grade of proposed Road A and NW Lake Road. However, the entire 52-tall façade of building A is exposed from the west and southwest from public view as the grading slopes away from the building (Exhibit 38). As discussed in the Design Review section of this staff report, the Design Review Committee recommended a landscape earth berm at the southwest and west property lines for screening, similar to the existing berm on the southside of Lake Road that currently buffers the Wafertech buildings.

N. All landscaped areas shall have an automated irrigation system to ensure that plantings are adequately watered. Irrigation systems shall be designed to minimize water runoff onto sidewalks or streets.

Per the proposed landscape plan detail sheet L9, an automatic irrigation system will be provided. Staff recommends a condition of approval that prior to engineering plan approval, the applicant submit a final landscape plan that includes the Camas Design Manual irrigation details.

O. Large land parcels may be developed in phases over time, resulting in large areas that will not justify final landscaping installation of portion(s) of the parcel, commensurate with the proposed development in the early phase(s).

The proposed development will be constructed in 3 phases and required landscaping will be completed with each phase.

> **FINDING:** Staff finds that the development, as conditioned, can and will meet the LI/BP landscaping development standards.

CMC 18.21.080 Building design

A. All structures should be designed to be harmonious with the local setting and with neighboring developments, while contributing to the overall architectural character of the area. The building design should appear as an integrated part of the design concept. All facilities should be designed by a Washington licensed architect and reflect a high standard of architectural design. Buildings should be either reinforced concrete and steel, masonry, or wood frame construction. Prefabricated metal buildings or sheet metal-sided structures are not permitted, unless an exception is made by the staff review, based upon meritorious design.

All three warehouse/office industrial buildings are designed to complement one another and be harmonious with the neighboring industrial, commercial and office business park buildings currently

located within the vicinity. Design includes color, texture, and architectural elements such as parapets and awnings to reduce scale and monotony typical of warehouse buildings. Although metal is proposed for the truck loading dock doors and their associated canopies, most of the building material consist of concrete wall panels in compliance with this requirement.

B. Building design should consider existing views and vistas from the site and from adjacent roadways; solar orientation; orientation toward major streets and thoroughfares; vehicular and pedestrian flow patterns; the character of neighboring development; expression of the facilities functional organization and individual character; and the satisfaction of the physical, psychological, social, and functional needs of facility users.

Building design takes into consideration views from public streets and adjacent properties. All three building facades are designed with the main pedestrian entrances oriented towards a public street and include enhanced architectural elements that provide visual interest as discussed in the following section. Earth berms are recommended as discussed in this staff report to help mitigate the size and scale of Building A visible from adjacent roadways.

C. Design features that can contribute to the design character of a project include entrance drives, enhanced visitor parking areas, highlighted visitor entrances and entry plazas, decorative pedestrian plazas and walkways, focal landscape treatments and site sculptures, employee lunch areas (with amenities such as outdoor seating, garden areas, etc.), atriums and interior courts, dynamic building and roof forms, distinctive window patterns, shade and shadow patterns, surface treatments, and accent lighting and landscaping.

Design features that contribute to the character of the project include highlighted building entrances that exhibit a concrete entry portal with a “fluted” formliner pattern in a concrete panel above an aluminum storefront window system, enhanced pedestrian walkways connecting the building entrances to the sidewalk including robust landscaping at the perimeter boundaries, parking lot landscape islands and building foundation plantings.

D. Long, straight building facades are generally uninviting and visually uninteresting. Building setbacks shall be varied, and all facades articulated to add visual variety, distinctiveness, and human scale. Space created by the varied setbacks of the building facades can accommodate landscaping and pedestrian/employee areas that contribute visual interest.

All building facades are articulated with varying parapet elevations and concrete wall panels with horizontal and vertical reveals painted in two shades of grey and accents of blue. The building facades with the loading areas exhibit several metal dock doors with blue metal canopy covers and blue fire doors are pulled forward 5-feet for building modulation.

E. Exterior building colors shall be compatible with the surrounding man-made and natural environments, and not in competition with surrounding elements for attention (i.e., building color should not, in any way, become signing for the site). Generally, building colors should be subdued. Primary colors or other bright colors should generally be used only as accents to enliven the architecture. Repetition and overuse of a single approach to the use of color, such as horizontal stripes/bands, can result in the treatment losing its effectiveness. Brighter, more distinctive color palettes may be approved by the city design review, based upon meritorious design.

The primary proposed building colors are muted earth tone colors in grey with accents of blue to enliven the architecture.

F. Reflective glass is not permitted for windows.

Staff recommends a condition of approval that prior to building permit approval, the building elevations should not exhibit reflective glass for the windows.

G. Roof-mounted equipment that is visible from adjacent, elevated property should be painted a compatible color with the roof screen.

There are no adjacent, elevated properties to view roof-mounted equipment and therefore this requirement is not applicable.

H. All rooftop or outdoor mechanical equipment shall be fully screened from public view in a manner which is architecturally integrated with the structure. Screening shall be constructed to a finished standard using materials and finishes consistent with the rest of the building. Building designs should consider potential visibility of equipment from elevated rights-of-way or adjoining property.

If any rooftop or outdoor mechanical equipment is visible from public view, the equipment should be fully screened in compliance with the requirement and conditioned as such.

I. 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.

Vents, flues other protrusions less than 16-inches should be painted to blend with structure and greater than 16-inches should be screened from view and conditioned as such.

FINDING: Staff finds that the development, as conditioned, can and will meet the LI/BP building design development standards.

DESIGN REVIEW (DR21-07) CMC CHAPTER 18.19

Design Review Committee member attendees: Whitney Henion, Dawn Redmond, Heather Vo, and Kevin Breuner, Planning Commissioner Geoerl Niles and Council members Greg Anderson and Leslie Lewallen. Casey Wycoff absent.

Design Review is required for new developments within a gateway corridor area per CMC 18.19.020 and therefore the proposal is subject to the applicable design review standards in CMC 18.19.050.A *Standard Principles*, B.1 *Gateways,* B.2 *Specific Principles for Commercial and Mixed Uses* and the guidelines in the Camas Design Review Manual "DRM". As such, a Design Review Committee (DRC) public meeting was held April 14, 2022 to review the proposal for overall general compliance with the Design Review Manual.

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.

Design of business park facilities should be a "campus-style" setting with landscape buffers. A minimum 50-foot wide landscape buffer is provided adjacent to public roads, including landscape buffers at property lines, and tree groupings are provided through the preservation of existing trees that incorporates the development with the existing surrounding environment. Planter islands are provided throughout the parking areas for shade and relief.

The Design Review Committee recommended a condition of approval that the landscape buffers at the property lines be less linear and more layered with multiple plantings.

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.

Significant natural features, such as wetlands and trees, are integrated into the overall site plan and set aside in a critical areas tract for preservation.

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 buildings are up to 50-feet tall structures displaying varying materials that achieve a seamless appearance. All front building facades are articulated with varying parapet elevations and concrete wall panels with horizonal and vertical reveals painted in two shades of grey and accents of blue. The building facades with the loading areas exhibit several metal dock doors with blue metal canopy covers and blue fire doors, which are pulled forward 5-feet for building modulation.

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:

1. Gateways

- **a. Gateways shall be devoid of freestanding signs.**
- **b. Business signage not placed on buildings shall be integrated into the landscaping/streetscaping of the subject property.**
- **c. Permanent signage within a gateway shall be standardized in a manner that creates a consistent look within the gateway in question.**
- **d. The surface of pedestrian walkways within intersections shall be accentuated with a unique character.**
- **e. A consistent streetscape lighting scheme shall be used.**

Freestanding signs, permanent signs and pedestrian walkways within intersections are not proposed within the gateway and therefore those provisions are not applicable. Business signage should be integrated into the landscaping or streetscape if not proposed on the building and conditioned as such. Staff finds a condition of approval is required that a consistent street lighting scheme for proposed Roads A and B should be provided and a street lighting plan and specifications should be submitted to City staff for review and approval prior to final engineering plan approval.

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. Downtown commercial and mixed-use areas shall not be required to provide on-site parking.**

Due to the nature of the use and size of the buildings, vehicular and/or trailer truck parking surrounds all sides of the buildings. Trailer truck parking is primarily located near the dock loading areas. A 50-foot sloped landscape buffer is provided at the site's street frontages to include a 10-foot planter strip of trees and shrubs at the stop of the slope to screen the parking adjacent to the roadways.

b. Buildings shall be used to define the streetscape unless site conditions prove prohibitive.

Although the buildings are required to be setback 100 to 200 feet per the LI/BP development standards, are separated by parking and screened with landscape buffers and berms, the proposed design of the buildings help define the streetscape with articulated pedestrian building entrances to include windows, glass doors and awnings with walkways that connect the building entrances to the nearby sidewalk.

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.

The project site is surrounded by property zoned for industrial, commercial, and multi-family uses and existing business park developments, warehouses, and industrial buildings. To help mitigate size and scale differences with the adjacent single-family residences and multi-family zones, the buildings are setback several feet from the property lines and some cases sit below the adjacent street grade, are screened from view with a 50-foot wide sloped landscape buffer and have modulated facades.

The Design Review Committee expressed concern with the scale and massing of the south and southwest portions of Building A from Lake Road as the entire 52-ft tall façade is exposed from passerby, whereas the southeast and east portions of the building sit 19-feet below Lake Road. As such, the Design Review Committee recommended a condition of approval that a landscaped earth berm be provided along the southwest and west property lines similar to the existing berm on the southside of Lake Road that currently buffers the WaterTech buildings.

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.

All three buildings are cohesive in design to accommodate a variety of uses that may be proposed in this development as allowed in the LI/BP zone.

e. Mixed-use development that place 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 buildings 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.

Outdoor parking and building lighting is proposed. Staff recommends a condition of approval that lighting is directed, hooded and shielded away from surrounding properties.

> **FINDING**: The Design Review Committee and staff found the proposed Camas Business Park design is generally in compliance with the Design Review Manual, the applicable design principles and guidelines of CMC Chapter 18.19 as conditioned.

PUBLIC COMMENTS

Public comments were submitted by Mr. Dave Miller and are included as Exhibit 41. The summary of Mr. Millers comments includes 1) requiring the majority of the landscape plants used on site to be native, 2) provide “living snags” if dead or dying trees are removed from the wetlands, and 3) the City should provide incentives for building owners to building with green roofs.

Staff presented the following responses concerning Mr. Miller's comments to Planning Commission at the public hearing: 1) 60% of the landscaping is required to be native per CMC 18.13.050.C.1, 2) Trees are not allowed to be removed from the wetland. However, trees removed from the wetland buffer (if proposed) are only removed due to accommodate development impacts, and 3) Per CMC 18.26.090.C.2, a reduction of parking spaces may be reduced if a green roof is proposed, and vegetated roofs are an option (not a requirement) for meeting LID performance for flow control per the Ecology stormwater manual.

CONCLUSION

Based on the above findings and discussion provided in this staff report, staff concludes that the Camas Business Park (LI/BP 21-01) should be approved, because it does comply with the applicable standards if all of the following conditions of approval are met.

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.
    a. Per CMC 17.19.040.C and 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.
2. 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. Submittal requirements for first review are as follows:
    a. Submit four (4) full size sets and one (1) half size set of plans;
    b. One (1) hard copy of (TIR) stormwater report;
    c. Stamped preliminary engineer's estimate.
3. 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.
    b. Payment of the 2% construction inspection (CI) fee shall be due prior to construction plan approval and release of approved plans to the applicant's consultant.
    c. Under no circumstances will the applicant be allowed to begin construction prior to construction plan approval.
4. 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.
5. Installation of public improvements shall be in accordance with CMC 17.21 Procedures for Public Improvements.
6. 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.

7. 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.
8. 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).
9. A separate new construction permit shall be required from the Fire Marshall's office. Two sets of plan specifications, and other information as may be necessary to determine compliance with fire and life safety code and standards.
10. Permit forms and submittal instructions are available online or can be picked up at the Fire Marshal's office at 605 NE 3rd Avenue.
11. Permit(s) and inspections are required by the Fire Marshal's Office for this project. Please contact the Fire Marshal's office at 360-834-6191, or rmiller@ci.camas.wa.us for submittal information.
12. A building permit shall be required prior to commencement of construction of a structure.
13. A building permit shall not be issued prior to completion of site improvements, unless otherwise approved by the Director.
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. 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. Final as-built construction drawing submittals shall meet the requirements of the Camas Design Standards Manual (CDSM).
    a. As-builts are to be submitted as PDFs and in either AutoCad or Carlson formats. The cover sheet for the as-builts is to include the originally approved and signed cover sheet.
17. Per CMC 17.21.070.A Upon final acceptance of the development improvements a 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.
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, pedestrian structures, the retaining wall and fencing, 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:

Planning:

22. The SEPA DNS (SEPA file no. 21-12) agency comments concerning fill and erosion control measure shall be complied with.
23. The recommendations in the Geotechnical Report dated July 2021 prepared by Terra Associates, Inc. shall be complied with to minimize any potential hazards associated with construction.

24. The boundary line adjustment final drawing and new legal descriptions for each lot shall be submitted per CMC 17.07.050 to the City for review and approval, prior to recording the documents with Clark County.
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. No public parking is allowed on future Road A and B.
27. Any proposed refuse areas shall be located under cover.
28. Any visible utility equipment shall be carefully located to minimize appearance and appropriately screened

Prior to Final Engineering Plan Approval:

Planning:

29. The applicant shall submit to the City for review and approval a revised *Mitigation Bank Use and Conceptual Mitigation Plan* that addresses the updated site development changes to include placing the critical areas in a separate tract or protective easement per CMC 16.51.240.A. The plan shall also address the mitigation strategy and goals for the Wetland buffer addition areas.
30. The applicant shall obtain a Nationwide permit from the US Army Corps of Engineers for the filling of Wetland C.
31. The applicant shall submit a revised clearing and grading plan to show the grading for the stormwater pond to not impact the proposed wetland buffer mitigation between Wetland B and D.
32. Signs and fencing shall be installed at the edge of the critical area buffers per CMC 16.51.210.B and C. Signage and fencing specifications shall be submitted to the City for review and approval prior to installation.
33. Detailed construction drawings per CMC 16.53.050.E.3 shall be submitted to the City for review and approval prior to final engineering plan approval.
34. Trees proposed for retention shall comply with the tree preservation measures outlined in the October 6, 2021 *Arborist Report* prepared by Teragan & Associates, Inc.
35. Prior to Engineering Plan approval, a final landscape, tree, and vegetation plan consistent with the landscaping standards in CMC 18.13 and CMC 18.21.070 shall be submitted to the city for review and approval to include the following but not limited to:
    a. A 5-ft. L2 landscape buffer shall be provided along the segment of northern property line adjacent to the stormwater pond.
    b. Based on the 775 proposed parking stalls, 129 parking lot planter islands shall be provided per CMC 18.13.060.C.
    c. Wheel stops shall be installed adjacent to planter areas per CMC 18.13.060.F.
    d. An additional 121 tree units shall be provided per CMC 18.13.052.C.
    e. Entry areas/driveways shall be landscaped with trees, shrubs and/or groundcover on either side of the curb breaks.
    f. Future undeveloped phases shall be landscaped or maintained in a controlled natural state.
    g. Tree clusters shall be provided in the landscape buffers and open space areas where feasible.

h. Large, more mature plant materials shall be installed that results in an immediate impact on the project's appearance within two years of planting.

i. The planting legend shall identify the 15-gallon container size for the deciduous trees consistent with CMC 18.13.050.C.2.

j. The landscape buffers at the property lines shall be less linear and more layered with multiple plantings.

k. Business signage shall be integrated into the landscaping or streetscape if not proposed on the building.

l. A landscaped earth berm shall be provided along the southwest and west property lines similar to the existing berm on the southside of Lake Road that currently buffers the WaterTech buildings.

m. Plants utilized shall be per the approved City's landscape list in the Camas Design Manual. Plants not on the approved City list, a characteristic card shall be submitted to the City for review and approval.

n. The planting specifications and landscape notes in the Camas Design Manual shall be included on the final landscape plan.

o. Irrigation specifications in the Camas Design Manual shall be noted on the final landscape plan.

p. Locations and size of irrigation meters are to be shown on the final landscape plans and on the water utility plans.

36. Proposed retaining walls shall not exceed a height of 6-feet, unless otherwise approved by the director per CMC 18.17.060 and specifications for the retaining wall shall be submitted to City for review prior to engineering plan approval. If fencing or walls are proposed for screening, specifications shall be submitted consistent with CMC 18.21.060.F.

37. Any landscape, parking lot or building lighting shall be directed, hooded, or shielded away from surrounding properties and lighting specifications shall be provided for city review and approval.

38. A consistent street lighting scheme for proposed Roads A and B shall be provided and a street lighting plan and specifications shall be submitted to City staff for review and approval.

Engineering:

39. The applicant is to submit revised site plans that show the drive aisles dimensions of the parking areas for both passenger vehicles and truck trailer vehicles.

[Roads]

40. The applicant shall revise the site plan and road section plans for Future Road A to provide for the following:
    a. A minimum curb radii of 35-feet and ADA accessible curb ramps on both sides of future Road A.
    b. A minimum curb radii of 35-feet and ADA accessible curb ramps on both sides of the intersection onto Road B.
    c. Both sides of the access road to Building B is to consist of a minimum curb radii of 35-feet with ADA accessible curb ramps on both sides of the access road.
    d. Per the applicant, the final engineering plans will be revised to show the currently shown Building C to be Building 'B'.

e. The curb radii on both sides of the intersection of future Road A and the existing NW Camas Meadows Drive is to be as close to a 35-foot radius as physically possible with ADA accessible curb ramps on both sides.

41. The applicant shall revise the site plan and road section plans for future Road B to provide for the following:
    a. The access roads to Building C and Building A require a minimum 35-foot curb radii with ADA accessible curb ramps on both sides of the access roads.
    b. Per the applicant, the final engineering plans will be revised to show the currently shown Building B as Building 'C'. Building A remains as shown.
42. The applicant shall revise site plans and road section plans for NW Lake Road to provide for the following:
    a. The landscape islands are to be replaced with full depth road sections, curb, and gutter.
    b. The left-turn lane to future Building A parking area from NW Lake Road is to be signed as 'No Truck Traffic Permitted'.
    c. The access road to and from the parking area for Building A onto NW Lake Road is to be constructed with a minimum 25-foot curb radii and ADA accessible curb ramps on each side of the access road.
43. The applicant revise site plans that provide a minimum of one pedestrian/bicycle connection from Building A to future Road A.

[Transportation]

44. The applicant is required to pay the proportionate share amount of $39,600.00 to the City of Vancouver. The applicant is to provide Camas staff with documentation of payment of said proportionate share amount.
45. The TIA is to be revised and resubmitted addressing the length of the left-turn pocket and the requirement to construct a full depth street section at the intersection of NW Lake Road and future Road A. Additionally, the preliminary site plans are to be revised to include the left-turn pocket in this location.

[Sanitary Sewage]

46. The applicant shall submit sewer utility plans with the following revisions to the private onsite sanitary sewer system:
    a. Future Building A: The sanitary sewer main, stubbed off future Road B to serve future Building A, is to be located within the westernmost drive access to said building and the sewer STEP tank is to be located within the paved surface with a traffic rated lid. Locations within the right-of-way require a minimum of 10-foot separation between sewer and the water.
    b. Future Building C: The sanitary sewer main, stubbed off future Road B to serve future Building C, is to be located within the easternmost drive access to said building and the sewer STEP tank is to be located within the paved surface with a traffic rated lid. Locations within the right-of-way require a minimum of 10-foot separation between sewer and the water.
    c. Future Building B: The sanitary sewer main, stubbed off future Road A to serve future Building B, is to be located within the drive access to said building and the sewer STEP tank is to be located within the paved surface with a traffic rated lid when located within the right-of-way. Locations within the right-of-way require a minimum of 10-foot separation between sewer and the water.

47. Specifications, design, and calculations for sizing the STEP tanks at future Building A, Building B, and Building C are to be submitted for review and approval by the city, prior to installation.

48. A note is to be on the engineering plans indicating that all components of the onsite private sanitary sewer system, including the STEP tanks shall be privately owned and maintained by the property owners with right-of-entry granted to the city for inspection purposes.

[Stormwater]

49. The applicant is to submit the stormwater utility and storm facility plans for review and approval in accordance with CMC 14.02, CDSM, and Ecology's SWMMWW.

50. The final stormwater report (TIR) shall be submitted to the City for review and approval. The final TIR shall include and/or address the following:
    a. MR #1: Stormwater site plans.
    b. MR #2: Stormwater Pollution Prevention Plan (SWPPP).
    c. MR #9: The operation and maintenance (O&M) manual for the on-site stormwater system.

51. The applicant is to submit revised stormwater and grading plans that have the storm facility placed within an easement, tract, or open space. Additionally, a note is to be included on the engineering plans indicating that all the components of the onsite private stormwater system shall be owned and maintained by the property owners with right-of entry granted to the City for inspection purposes.

52. The applicant is to submit revised stormwater plans that provide the required access roads for maintenance and inspection of the proposed stormwater facility's inlet and outlet flow control structures.

[Water]

53. The applicant is to submit revised water utility plans that provide for public fire hydrants along future Roads A and B in accordance with the CDSM.

54. The applicant is to submit revised water utility plans and landscape plans to include the locations and sizes of both the potable meters and the irrigation meters with backflow prevention devices.

55. The applicant is to submit water utility plans with the following revisions to the private onsite water system:

    a. Future Building A: The 8-inch private water main stubbed off future Road B to serve future Building A is to be located within the westernmost drive access to said building and the water DCDV assembly vault is to be located within the paved surface with a traffic rated lid. Locations within the right-of-way require a minimum 10-foot separation between the water and sanitary sewer mains.

    b. Future Building C: The 8-inch private water main stubbed off future Road B to serve future Building C is to be located within the easternmost drive access to said building and the water DCDV assembly vault is to be located within the paved surface with a traffic rated lid. Locations within the right-of-way require a minimum 10-foot separation between the water and sanitary sewer mains.

    c. Future Building B: The 8-inch private water main stubbed off future Road A to serve future Building B is to be located within the drive access to said building and the water DCDV assembly vault is to be located within the paved surface with a traffic rated lid. Locations within the right-of-way require a minimum 10-foot separation between the water and sanitary sewer mains.

56. The applicant is to provide a note on the engineering plans indicating that all components of the onsite private water system and fire line, including fire hydrants shall be privately owned and maintained by the property owners. Right-of-entry is to be granted to the city for inspection purposes.
57. The applicant is to provide a note on the engineering plans indicating that all private fire hydrants are to be ordered direct from the factory and factory painted powder coated red.
58. Plans for the fire line are to be submitted to the Fire Marshall's office for the NFPA24 Fire Main Underground Permit prior to any fire line installation beyond the right-of-way.

[Erosion Control]

59. The applicant is to submit Erosion Sediment Control (ESC) plans to the City for review and approval.
60. The applicant is to include a construction sequencing plan, in accordance with BMP C162 of Ecology's SWMMWW, as a component of the erosion and sediment control plans.

[Public Utilities]

61. The applicant is to provide a street lighting plan and illumination analysis for the installation of street lights along future Roads A and B. Street lighting plans require review and approval prior to submittal to Clark Public Utility (CUP).

Prior to construction:

62. The installation of temporary construction shall be installed that clearly marks in the field critical area buffers and fencing should remain throughout permitted construction activities.
63. The applicant is to submit copies of the GCSWP and the SWPPP prior to any land-disturbing activities.

Prior to Final Acceptance:

64. A conservation covenant shall be recorded with the County to ensure long-term preservation of all the critical areas and any associated buffers, including maintenance of any mitigation actions, per CMC 16.51.240. Further, a copy of the recorded conservation covenant document shall be submitted to the City prior to final acceptance.
65. The applicant shall post a mitigation bond in an amount deemed acceptable by the City to ensure the wetland mitigation is fully functional per CMC 16.51.250.
66. Landscaping and irrigation shall be installed or bonded for prior to final acceptance.

Prior to Building Permit Approval:

Planning:

67. If a future tenant requires additional parking, the applicant shall submit a site plan amendment per CMC 18.18.090 prior to building permit approval.
68. Detailed construction plans for any proposed signage shall be submitted to the City for review and approval.
69. The building elevations should not exhibit reflective glass for the windows.
70. If any rooftop or outdoor mechanical equipment is visible from public view, the equipment should be fully screened per 18.21.080.H.
71. Vents, flues, or other protrusions less than 16-inches shall be painted to blend with structure and greater than 16-inches should be screened from view.

72. Building materials and colors shall be in conformance with the design review approval.

Engineering:

73. A revised traffic memorandum report is to be submitted addressing the actual land-use and, if the ultimate tenant's average daily trips (ADTs) is higher than originally shown in the November 11, 2021 TIA, an updated TIA will be required to address potential additional mitigation measures, per CMC 18.18.090.
74. Building applications for a land-use that involves manufacturing processes, which consist of high suspended solids (SS) and/or biochemical oxygen demand (BOD), as noted in CMC 13.72.070, will be required to be submitted to the city for review and approval for potential mitigation measures and calculation of SDCs.

RECOMMENDATION

Following an open record hearing, the Planning Commission recommended APPROVAL of the consolidated application for the Camas Business Park (LI/BP 21-01) subject to the conditions of approval. The City Council in a closed record meeting shall review the public record, deliberate and provide a final decision that could include the following:

1. Approve with conditions contained herein
2. Approved with modified and/or additional conditions
3. Deny
4. Remand back to the Planning Commission

Recommended Motion:

> "To approve the Camas Business Park and the conditions of approval based on the recommendation of the Planning Commission and instruct the City Attorney to prepare findings and conclusions to accompany the Notice of Decision".