**HEARING EXAMINER**
**MEETING AGENDA**

**Online via Zoom and In Person at**
**Tumwater City Hall, Sunset Room, 555**
**Israel Rd. SW, Tumwater, WA 98501**

**Wednesday, June 28, 2023**
**7:00 PM**

The Tumwater Hearing Examiner is an appointed official of the City, and rules upon land use and zoning matters. Within 10 business days of the conclusion of the hearing, the Examiner shall render a decision, including findings and conclusions. Questions on the operation and procedures of the Hearing Examiner may be directed to the Community Development Department at 360-754-4180.

1. Call to Order
2. Public Hearing
   a. Kingswood Commercial TUM-22-1731 and TUM-22-1732
3. Adjourn

**Meeting Information**
The Hearing Examiner will be attending remotely. The public is welcome to attend in person, by telephone or online via Zoom.

**Watch Online**
Go to http://www.zoom.us/join, and enter the Webinar ID 833 5992 4716 and Passcode **655699**

**Listen by Telephone**
Call (253) 215-8782, listen for the prompts and enter the Webinar ID 833 5992 4716 and Passcode **655699**.

The City of Tumwater Hearing Examiner will hear testimony from interested parties in person, via computer audio or by telephone by registering in advance to provide comment.

Public Comment – Register in advance for this webinar:

https://us02web.zoom.us/webinar/register/WN_iUoQoqV5TtKME8QwjD_elg

After registering, you will receive a confirmation email containing information about joining the webinar.

Written comments may be submitted to City of Tumwater, Community Development Department, 555 Israel Road SW, Tumwater, WA 98501, or by email at abaruch@ci.tumwater.wa.us and must be received by 5:00 p.m. on June 28, 2023.

**Post Meeting**
Audio of the meeting will be recorded and later available by request, please email CityClerk@ci.tumwater.wa.us

**Accommodations**

The City of Tumwater takes pride in ensuring that people with disabilities are able to take part in, and benefit from, the range of public programs, services, and activities offered by the City. To request an accommodation or alternate format of communication, please contact the City Clerk by calling (360) 252-5488 or email CityClerk@ci.tumwater.wa.us. For vision or hearing impaired services, please contact the Washington State Relay Services at 7-1-1 or 1-(800)-833-6384. To contact the City's ADA Coordinator directly, call (360) 754-4128 or email ADACoordinator@ci.tumwater.wa.us.

TO: City of Tumwater Hearing Examiner

FROM: Alex Baruch, Associate Planner

DATE: June 28, 2023

SUBJECT: Kingswood Commercial TUM-22-1731 and TUM-22-1732

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1) Recommended Action:
Staff recommends approval of the preliminary binding site plan and variance, subject to the conditions outlined in this staff report.

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2) Background:
Applicant requests approval to construct a seven lot commercial binding site plan with associated landscaping, infrastructure, parking and open space.

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3) Alternatives:
- Approve Case Nos. TUM-22-1731 and TUM-22-1732 with conditions
- Approve Case Nos. TUM-22-1731 and TUM-22-1732 with amended conditions
- Deny Case Nos. TUM-22-1731 and TUM-22-1732
- Remand Case Nos. TUM-22-1731 and TUM-22-1732 to staff for further analysis

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4) Attachments:
Exhibit 1 Staff Report
Exhibit 2 Preliminary Binding Site Plan Preliminary Development Plans
Exhibit 3 Vicinity Map
Exhibit 4 Notice of Application
Exhibit 5 MDNS with SEPA Checklist (TUM-22-1724)
Exhibit 6 Public Hearing Notice 06-16-2023
Exhibit 7 Preliminary Binding Site Plan Application
Exhibit 8 Variance Application
Exhibit 9 Variance Narrative - Applicant
Exhibit 10 Variance Request Exhibit
Exhibit 11 Zoning Map
Exhibit 12 Public Notice Certification
Exhibit 13 Notice of Application Comments
Exhibit 14 MDNS Comments
Exhibit 15 Transportation Concurrency Determination 03-01-2023
Exhibit 16 Drainage Report
Exhibit 17 Geotechnical and Stormwater Evaluation
Exhibit 18 Traffic Impact Analysis with Exhibits 05-25-2022
Exhibit 19 Tumwater Water and Sewer Availability Certificate
Exhibit 20 Mazama Pocket Gopher Studies
Exhibit 21 Foresters Report
Exhibit 22 Preliminary Landscape Plan
Exhibit 23 Formal Site Plan Review Letter (TUM-22-0234)
Exhibit 24 Home Depot Approval Letter
Exhibit 25 Title Report

**EXHIBIT 1**

**CITY OF TUMWATER**
**HEARING EXAMINER STAFF REPORT**
**Hearing Date: May 31, 2023**

**Project Name:** Kingswood Commercial Preliminary Binding Site Plan and Variance

**Case Numbers:** TUM-22-1731 and TUM-22-1732

**Owner:** Kingswood Capital, Inc.
701 W Georgia Street Suite 520 IBM Tower, Vancouver, CA V7Y1A1

**Project Proponent/ Representative:** Tyrell Bradley LDC Corp.
1411 Slate Ave NE, Suite 200, Olympia, WA 98506

**Type of Action Requested:** The project proponent is requesting approvals of a Preliminary Binding Site Plan (TUM-22-1732) and Variance (TUM-22-1731) from required zoning setbacks along a portion of Littlerock Road. The applications would subdivide an approximately 9-acre parcel into a new seven lot commercial binding site plan with associated infrastructure, parking and open space.

**Project Location:** The property is located at 1401 and 1551 Kingswood Drive. SW, Tumwater, WA 98512 at the corner of Littlerock Road and Kingswood Drive further defined as Thurston County Tax Parcel Nos. 12703240404 & 12703240403.

**Project Permit:** The following have been issued for the project:

1. Notice of Application issued on December 15, 2022 (Exhibit 4).

2. Pursuant to the State Environmental Policy Act (SEPA), the City of Tumwater Community Development Department, after review of a SEPA environmental checklist and other information, issued a Mitigated Determination of Non-Significance on March 16, 2023 (TUM-22-1724) (Exhibit 5).

**Public Notification:** Public notification for the June 28, 2023 public hearing was mailed to property owners within 300 feet of the subject property and various agencies, posted on-site and published in *The Olympian* on June 16, 2023, in conformance with Tumwater Municipal Code (TMC) 14.06 (Exhibit 6).

**Staff Recommendation:** Approval, subject to conditions identified at the end of the

staff report in Section IV *Recommendation*.

**Staff Planner:** Alex Baruch, Associate Planner
Phone: (360) 754-4180
E-Mail: abaruch@ci.tumwater.wa.us

## I. BACKGROUND INFORMATION

### A. Application and Review Process

The development application was submitted for Site Plan Review (TUM-22-0234) on February 23, 2022 and reviewed the Feasibility Site Plan on March 3, 2022. Staff and the applicant subsequently reviewed the application two additional times: Preliminary Site Plan Review on June 16, 2022 and Formal Site Plan Review on October 27, 2022.

A Preliminary Binding Site Plan (TUM-22-1732) approval is requested to allow for a seven lot commercial development with associated open space, parking, landscaping and infrastructure. A Variance (TUM-22-1731) is requested from required zoning setbacks along a portion of Littlerock Road.

The Preliminary Binding Site Plan (TUM-22-1732) and Variance (TUM-22-1731) applications were submitted on November 29, 2022.

The Preliminary Binding Site Plan (TUM-22-1732) and Variance (TUM-22-1731) applications were deemed complete on December 8, 2022.

Under TMC 2.58.090, review authority for Variance applications fall under the purview of the Hearing Examiner and under 14.08.020.A the Preliminary Binding Site Plan shall also be considered by the Hearing Examiner.

### B. Existing Conditions

The property is vacant with the exception of BPA stanchions on the western portion of the property and existing vegetation and trees (Exhibit 3).

The topography of the property is mostly flat with some small changes in topography.

### C. Project Description

The proposal is to subdivide two parcels which total approximately 9-acres into a seven lot commercial development with associated open space, parking and infrastructure.

Improvements will include drive aisles, sidewalks, parking, landscaping, stormwater,

open space, related infrastructure on-site and mitigation of impacts as stated within the MDNS.

## II. REGULATORY FRAMEWORK

The proposal is subject to the following policies and regulations:

### A. Tumwater Comprehensive Plan:

The project site is located in the Littlerock Neighborhood as designated by the Land Use Element of the City's Comprehensive Plan. The land use designation for the approximately 9-acre site is General Commercial (GC) and Utilities (UT) (Exhibit 26).

Section 2.6 *General Commercial* in the Land Use Element of the Comprehensive Plan states:

"*The intent of the General Commercial designation is to support and implement the goals of the Tumwater Economic Development Element, which was adopted in 1990. Among these goals are the establishment of a new commercial center for Tumwater, the preservation of areas for commercial facilities, which make use of the close proximity to Interstate 5, and minimizing the undesirable impacts of such uses on the residential neighborhoods, which they serve."*

Section 5.8 *General Commercial (GC*) in the Littlerock Neighborhood section of the Neighborhood Appendix of the Land Use Element of the Comprehensive Plan states:

*"The areas along the west side of I-5 from the vicinity of the Trosper Road/Littlerock Road intersection to south of Tumwater Boulevard are designated General Commercial. These areas are characterized by the exposure to the freeway and the northern portion of this area already has intense commercial development including a Costco, Fred Meyer, Home Depot, Albertsons, Wal-Mart and a number of other smaller businesses."*

*"As commercial uses locate in this neighborhood, they should be designed to create as little impact as possible to residential uses on the west side of Littlerock Road. Please refer to the Littlerock Road Subarea Plan for recommendations regarding mitigation of commercial impacts on residential uses."*

Section 2.12 *Utilities* in the Land Use Element section of the Comprehensive Plan discusses areas where utility corridors and other land uses overlap:

*"The Utilities designation includes those areas of land devoted to the transport*

*and provision of utilities such as electricity, natural gas, telephone, and other utilities. Most of the areas receiving this designation in Tumwater are electrical utility easements. Utilities such as natural gas, telephone, and other utilities can be provided within areas designated for other land uses in ways that are compatible with other land uses. Utilities areas are also often compatible with path and trail connections. The Tumwater Utilities Element should be referenced for specific recommendations and information on utility provision in Tumwater."*

***Staff Response and Recommended Finding:***

*The goals stated in the Comprehensive Plan to encourage the development of a freeway commercial business district consisting of retail/commercial and professional land uses is consistent with the proposed development.*

*The overall commercial development is proposed to be screened by perimeter landscaping with a higher screening requirement applied to any drive-through uses. Impacts to residential zoning should be minimal as the only residential zoned property are located across Littlerock Road adjacent to the southwest portion of the project. The use on that property is Tumwater Middle School, which is currently screened by the trees in the median within Littlerock Road and will be screened with additional perimeter landscaping planted with the development.*

*Other residential uses adjacent to the property include single-family residential uses located adjacent to this proposed development across Littlerock Road and a multifamily apartment building located south of the private access road for this development to the west of the proposed tree tract. Both of those properties are currently zoned General Commercial and the uses are pre-existing uses that were constructed under different zoning designations.*

*Additionally, staff has proposed a condition to ensure the Bonneville Power Administration (BPA), which owns an easement over a portion of the property has an opportunity to review the development plan and requires a land use agreement or approval prior to issuance of site development grading permit.*

*Staff finds that the project is consistent with the Comprehensive Land Use Plan with the proposed conditions.*

**B.** **Tumwater Transportation Plan:** The Transportation Plan includes language speaking to regional consistency and coordination to address both motorized and non-motorized transportation links and corridor.

***Staff Response and Recommended Finding:*** *Goal and policy excerpts from the Transportation Plan relevant to the project are as follows:*

*Goal 9.* *Streets, Roads, and Bridges: Establish a street and road network that provides for the safe and efficient movement of people and goods while supporting adopted land use goals.*

*Policy 9.a:* *Design and construct multimodal, context-sensitive, complete streets and roads.*

*[…]*

*Policy 9.d* *Develop an interconnected grid of local streets and roads to increase individual travel options and neighborhood connectivity, while improving efficient use of the overall transportation system.*

*[…]*

*Policy 9.g:* *Ensure that street, road, and bridge projects are integrated with pedestrian amenities in districts and neighborhoods, and add lasting value to the community.*

*[…]*

*Policy 9.j:* *Meet pm peak Level of Service (LOS) standards:*

- *LOS E or better in Urban Core Areas [where these areas overlap with Strategy Corridors the LOS may exceed adopted standards].*
- *LOS D or better elsewhere inside the City limits.*

*A Transportation Concurrency Application along with a Trip Distribution Diagram was submitted for review by the Transportation Manager and Transportation and Engineering Director and was incorporated as a part of the Transportation Concurrency (Exhibit 15) and SEPA Review Mitigated Determination of Non-Significance (Exhibit 5). The transportation concurrency ruling indicating that traffic generated from the project will cause the level of service at Kingswood Drive and Tyee Drive to fall below the City's level of service standard and required mitigation through the construction of a compact roundabout at that intersection prior to issuance of the first CO within the development (Exhibit 15). Additionally, trips are proposed to be sent through the Tumwater Blvd – I-5 Interchange which will also require payment of mitigation fees or construction of the required interchange improvements and construction of a temporary signal prior to issuance of each building permit (Exhibit 5).*

*Staff finds that with the required mitigation proposed in the Transportation*

*Concurrency and MDNS this project will not adversely affect level of service standards and that the project is consistent with the Tumwater Transportation Plan.*

**C.** **Sustainable Development Plan for Thurston Region:** The Plan indicates that the regional community has set a target to reduce vehicle miles traveled and to preserve sensitive areas, farmland, forestland, prairies, and rural lands.

*To implement the goal in the Plan to reduce vehicle miles traveled strategies are stated including connecting streets, sidewalks and trails to provide multiple safe travel routes and shorter distances for all travel modes and encouraging a multimodal transportation system that includes walk, bike, bus, carpool, vanpool, telework, car, truck, and rail transportation systems.*

*With the extension of sidewalks into the project and by providing bike parking throughout the development the project is contributing to the goal in the Plan of reducing vehicle miles traveled.*

*Staff finds that the project is not in conflict with the Sustainable Development Plan for Thurston Region.*

**D.** **Thurston Regional Trail Plan:** The City of Tumwater is a participating member of the Thurston Regional Planning Council (TRPC). TRPC adopted the Thurston Regional Trail Plan in December 2007.

The Regional Trails Plan defines a trail network blueprint and a set of guidelines and recommendations for all of Thurston County and its cities, towns and communities. The Goals and Policies section of the Plan serves to link local trail planning efforts within the broader context of planning the regional transportation network. The plan charts a systematic path creating interconnected corridors that improve access to community destinations.

***Staff Response and Recommended Finding:*** *The project site is not affected by the regional trail network outlined in the Thurston Regional Trail Plan.*

*Staff finds that approval of the project will not affect implementation of the Thurston Regional Trail Plan.*

**E.** **Hearing Examiner – TMC 2.58.090 and 14.08.020.A:** The Hearing Examiner has authority to review Variance requests.

***Staff Response and Recommended Finding:*** *Variances require a public hearing and decision by the Tumwater Hearing Examiner. The Preliminary Binding Site Plan is being reviewed concurrently so both applications need to be considered by the Hearing Examiner per 14.08.020.A.*

*Final Binding Site Plan approval authority is administrative and will be completed by City of Tumwater staff.*

**F.** **Public Notice Requirements –TMC Chapter 14.06:** TMC Chapter 14.06 requires the City to provide public notification of certain application types by issuing a Notice of Application (TMC 14.06.010) and a Notice of Open Record Hearing (TMC 14.06.070).

***Staff Response and Recommended Finding:*** *The Preliminary Binding Site Plan and Variance applications were deemed complete on December 8, 2022.*

*Public notice for the Preliminary Binding Site Plan and Variance applications indicating that the applications were submitted and deemed complete was mailed to property owners within 300 feet of the subject property, affected agencies and posted on-site December 15, 2022; and published in the Olympian on December 15, 2022 (Exhibit 4).*

**G.** **State Environmental Policy Act – TMC 16.04:** The City of Tumwater Community Development Department reviewed a SEPA Environmental Checklist and other information submitted by the project proponent and issued a Mitigated Determination of Non-Significance on May 19, 2023.

***Staff Response and Recommended Finding:*** *The City of Tumwater Community Development Department, as lead agency, has completed environmental review in accordance with TMC 16.04, RCW 43-21C and WAC 197-11.*

*The City's SEPA threshold determination (TUM-22-1724) was issued on May 19, 2023 (Exhibit 5).*

**H.** **Tree Protection and Replacement Ordinance – TMC 16.08:** TMC Chapter 16.08 regulates the removal and preservation of existing trees on a site to be developed.

***Staff Response and Recommended Finding****: A professional forester's report, tree inventory, and tree protection plan that complied with TMC Chapter 16.08 were submitted. A total of 75 trees were located on site. Of the 75 trees 58 were considered in good health and counted as "trees within the site". Of the 58 trees 31 are proposed to be retained. 16.08.070.R.4 states that in situations where a parcel of land to be developed does not meet the retention standards in an undeveloped state, the applicant shall be required to reforest the site to meet the applicable standard at a 1:1 ration as a condition of project approval. The required amount of tree retention is 12 trees/acre which would require the retention of 108 trees which is more than the amount of trees on site in pre-development conditions. With the proposed development, 31 of the 58 tress are proposed to be retained which will require the replanting of at*

*least 77 trees on site.*

*Staff finds that the proposed preliminary binding site plan and preliminary landscape plan are consistent with TMC 16.08.*

## I. General Binding Site Plan Design Standards – TMC 17.12:

The subdivision is required to comply with the following standards of design and development as required by TMC 17.12.010.

1) TMC 17.12.020 – Future Subdivision and Access: All land divisions shall be designed to accommodate the future land division of adjoining land by providing for adequate future access and utility service. Pedestrian and bicycle access to schools, parks, shorelines, recreation areas, and open space shall be provided by walkway where street access is unsafe or inadequate.

***Staff Response and Recommended Finding:*** *Part of the future access is to create internal vehicle connections so that patrons can get from one business to another without going out onto main roads. A connection is provided to the south that meets this requirement.*

*Pedestrian access elements are required throughout the site and must be connected to the public sidewalk on Kingswood Drive and Littlerock Road.*

*With these conditions, Staff finds that the preliminary binding site plan is consistent with TMC 17.12.020.*

2) TMC 17.12.030 – Blocks: Blocks in non-residential zones shall be dimensioned to accommodate the intended purpose of the land. All blocks shall be arranged so as to minimize the number of intersections and access points on arterial streets.

***Staff Response and Recommended Finding:*** *The proposed subdivision is in the General Commercial (GC) zone district. Three public access points into the project are proposed, one from Kingswood Drive and two limited access points from Littlerock Road.*

*Staff finds that the preliminary binding site plan is consistent with TMC 17.12.030.*

3) TMC 17.12.040 – Minimum Lot Size: Lots or tracts shall conform to the size set forth in the zoning district unless dedicated or restricted by covenant for open space, park, recreational or other community or public use. In subdivisions intended for single family dwelling units or townhouse/row house development, a separate lot or tract shall be provided for each

dwelling unit, not including accessory dwelling units. If the land division is submitted in phases/divisions of development, each phase/division submitted for approval shall meet all provisions of this section.

***Staff Response and Recommended Finding:*** *There is not a minimum or maximum lot size in the General Commercial (GC) zone district.*

*There is one separate open space/stormwater tract located on the property intended to serve as the project storm drainage and open space requirements. The storm drainage and open space tracts must be restricted by covenant to tie maintenance responsibilities to the commercial association (Exhibit 2). There is also an access/utility easement connecting all of the lots throughout the site along with on-lot stormwater infrastructure that will connect to the larger storm tract (Exhibit 2).*

*The intended use for the lots within the proposed subdivision is as follows: Lot 1: Fast Food Restaurant, Lot 2: Oil Change Service Station; Lot 3: Fast Food Restaurant and Seated Restaurant; Lot 4: Retail/Office; Lot 5: Fast Food Restaurant; Lot 6: Hotel and Lot 7: Car Charging Station. The intended use for the open space tract is to meet the project storm drainage and open space requirements.*

*The proposed preliminary binding site plan is not large enough to qualify for phasing as allowed for by TMC 17.14.090.*

*Staff finds that the preliminary binding site plan is consistent with TMC 17.12.040.*

4) TMC 17.12.060 – Residential Lot Building Sites: Each residential lot in low density residential zones shall have a building site no less than 1,600 square feet in area within which a suitable building can be built and served by utilities and vehicular access unless dedicated or restricted by covenant for open space, park, recreation or other public use. The building site area herein required shall not exceed a 25% cross slope or include any very severe development limitation areas. Such building sites shall be indicated on the face of the preliminary land division.

***Staff Response and Recommended Finding:*** *The proposed project is not in a low-density residential zone.*

*Staff finds this section is not applicable to the project.*

5) TMC 17.12.070 – Natural Vegetation and Features: Natural vegetation and features such as trees, streams, wetlands, and wildlife habitat shall be preserved to the greatest extent possible and in accordance with the requirements of Title 16 TMC and Chapter 18.47 TMC.

***Staff Response and Recommended Finding:*** *A professional forester's report, tree inventory, and tree protection plan that complies with TMC Chapter 16.08 was submitted, reviewed, and is recommended for approval with the proposed preliminary binding site plan.*

*Staff finds that the preliminary binding site plan is consistent with TMC 17.12.070.*

6) TMC 17.12.080 – Clearing and Grading: Proposed clearing and grading should be minimized by the use of shared access driveways and careful location of streets and building sites.

***Staff Response and Recommended Finding:*** *The proposed development shows trees #19-47 being retained in the tree tract within the southern portion of the project retaining the larger accumulation of trees that exist on the site in pre-developed conditions.*

*Staff finds that the preliminary binding site plan is consistent with TMC 17.12.080.*

7) TMC 17.12.090 – Wetlands and Drainage: Wetlands and natural drainage ways shall be subject to review under Chapters 16.28 (Wetlands) and 16.32 (Fish and Wildlife Conservation Areas), of this code.

***Staff Response and Recommended Finding:*** *There are no wetlands or natural drainage ways on the property regulated by TMC Chapter 16 (Environment)*

*Staff finds that the preliminary binding site plan is consistent with TMC 17.12.090.*

8) TMC 17.12.100 – Hazards: Where land division and development of land may pose a hazard to the land division and nearby properties because of steep slopes, unstable soils, excessive stormwater runoff or soil erosion, the land divider shall have the burden of presenting the evidence satisfactory to the City of hazard mitigation. In the absence of such evidence, division of such land shall be denied.

***Staff Response and Recommended Finding:*** *A preliminary geotechnical report addressing all the applicable requirements in TMC 16.20.050 was reviewed as part of this project and final versions will be approved concurrent with the site development grading permits.*

*Staff finds that the preliminary binding site plan is consistent with TMC 17.12.100.*

9) TMC 17.12.110 – Streets: The size of streets and their associated rights-of-way shall be as shown on the street standards chart for the class of street, which is appropriate to serve the land division, and anticipated community

traffic, existing and potential. In areas where the division is adjacent to an existing street, right-of-way dedications shall be made to the existing street centerline.

***Staff Response and Recommended Finding:*** *The proposed internal driveways will be built to private road standards and provide access through an access easement to each lot. The internal driveways shall be maintained by the commercial association to the standards approved during site development grading permit review. The internal driveways and related infrastructure shall be constructed as shown within the shaded limits (Proposed Site Development Grading Pavement) of Exhibit 2 prior to the issuance of any building permit within the development.*

*With these conditions, Staff finds that the preliminary binding site plan is consistent with TMC 17.12.110.*

10) TMC 17.12.120 – Driving Surfaces and Rights-of-Ways: All roads shall be designed and constructed in accordance with the adopted "Development Standards for the City of Tumwater" in effect at the date of acceptance of the preliminary land division.

***Staff Response and Recommended Finding:*** *As part of the site development/grading permit review, all roads shall be constructed pursuant to the specifications outlined in the City of Tumwater Development Guide. Approval of the Preliminary Binding Site Plan application (TUM-22-1732) is required for the internal driveway.*

*Staff finds that the preliminary binding site plan is consistent with TMC 17.12.120 with the proposed conditions.*

11) TMC 17.12.130 – Cul-de-sacs: All cul-de-sacs shall be designed in accordance with the adopted "Development Standards for the City of Tumwater" in effect at the date of acceptance of the preliminary land division. Parking is prohibited in the cul-de-sac turnarounds and shall be posted. An improved pathway for pedestrian and bicycle use shall be dedicated to the public to connect cul-de-sac streets to nearby areas where such a pathway is necessary to provide convenient access to schools, parks, public transit stops, shopping centers, other cul-de-sacs or pathways, and other community services, or as otherwise necessary for public convenience and safety. Such pathways shall be designed to maintain the safety of pedestrians and bicyclists and owners of properties adjacent to the pathway.

***Staff Response and Recommended Finding:*** *The proposed project does not include cul-de-sacs.*

*Staff finds this section is not applicable to the project.*

12) TMC 17.12.140 – Street Signs: Street signs shall be installed by the subdivider as specified by the Community Development Department.

***Staff Response and Recommended Finding:*** *No street signs are anticipated to be required with this development as the internal driveway will not be named. The development is anticipated to include commercial signage as permitted by the sign code (18.44).*

*Staff finds that the preliminary binding site plan is consistent with TMC 17.12.140.*

13) TMC 17.12.150 – Topography: All streets should be designed to conform to the topography of the site, in order to reduce street grades and minimize the need for cuts and fills.

***Staff Response and Recommended Finding:*** *Streets are proposed to be designed to conform to the topography of the site which is generally level with a few mounds proposed to be graded flat.*

*Staff finds that the preliminary binding site plan is consistent with TMC 17.12.150.*

14) TMC 17.12.160 – Maximum street grades: Maximum street grades shall be in accordance with the adopted "Development Standards for the City of Tumwater".

***Staff Response and Recommended Finding:*** *All proposed street grades shall be designed in accordance with the adopted standards.*

*Staff finds that the preliminary binding site plan is consistent with TMC 17.12.160.*

15) TMC 17.12.170 – Street Names: All streets shall be named or numbered as specified by the City. The land divider is encouraged to submit requested street names to the City for its consideration.

***Staff Response and Recommended Finding:*** *The street names and addresses for the preliminary binding site plan have been assigned by the City of Tumwater Building Official. Staff finds that the plat is consistent with TMC 17.12.170.*

16) TMC 17.12.180 – Lot Access: Each lot shall have a minimum of 10 feet of unobstructed access to a street, directly or by access easement.

***Staff Response and Recommended Finding:*** *An access easement is proposed throughout the site that provides a minimum of 10' of access. Staff finds that the*

*preliminary binding site plan is consistent with TMC 17.12.180.*

17) TMC 17.12.190 – Private Streets: Private streets shall be constructed to meet or exceed the design standards established on the street standards chart for the City. Public access to developments or parts of developments containing private streets shall not be limited by the use of gates or other measures.

***Staff Response and Recommended Finding:*** *The proposed drive aisles shall be built to private road standards in accordance with the requirements outlined in the Tumwater Development Guide. The requirement is shown on the preliminary binding site plan (Exhibit 2) and varies in different portions of the development.*

*With these conditions, Staff finds that the preliminary binding site plan is consistent with TMC 17.12.190.*

18) TMC 17.12.200 – Underground Utilities: Electrical power, telephone, cable television, fiber optics and other transmission lines shall be installed underground.

***Staff Response and Recommended Finding:*** *In accordance with TMC 17.12.200 and Section 3.14 of the Tumwater Development Guide, all utilities associated with this project shall be underground.*

*With these conditions, Staff finds that the preliminary binding site plan is consistent with TMC 17.12.200.*

19) TMC 17.12.210 –Park and open space area standards for divisions of land.

[…]

D. For new commercial or industrial binding site plans, short plats, and subdivisions of ten acres or more, a minimum of five percent of the gross site area shall be set aside for park and open space area. A commercial or industrial binding site plan, short plat, or subdivision that includes a master plan that provides for a park or open space area meeting the intent of this provision shall be considered to have fulfilled this requirement.

[…]

E. For the purpose of calculation of the park and open space area, the park and open space area shall be separate and distinct from required yards, setbacks, and landscaped areas.

[…]

L. Maintenance of park and open space areas shall be provided for as described in TMC Chapter 17.22.

***Staff Response and Recommended Finding:*** *The preliminary binding site plan is 8.96 acres. Section D only requires that new commercial binding site plans of 10 acres or more provide open space. The commercial design guidelines still require open space totaling 1% of the ground floor non-residential building footprint plus 1% of the site area.*

*Staff finds that the requirement of 17.12.210.D does not apply to this preliminary binding site plan. The design guideline open space requirements still apply and shall be shown on the site development grading permit.*

**J. Preliminary Land Division – TMC 17.14 and RCW 58.17:** TMC 17.14 and RCW 58.17 regulate the submission, review criteria, and consideration of proposed divisions of land.

***Staff Response and Recommended Finding:*** *The project proponent completed the pre-submission process described in TMC 17.14.020.*

*The application submission requirements listed in TMC 17.14.030 have been met.*

*TMC 17.14.040 and RCW 58.17.110 require the Hearing Examiner to inquire into the public use and interest proposed to be served by the establishment of the proposed land division and any public dedications associated with a project.*

*Criteria to be considered include if appropriate provisions are made for, but not limited to, the public health, safety and general welfare, for open spaces, drainage ways, streets or roads, alleys, other public ways, other grounds, transit stops, potable water supplies, sanitary wastes, parks and recreation playgrounds, schools and school grounds, fire protection and other public facilities, and shall consider all other relevant facts, including the physical characteristics of the site, and determine whether the public interest will be served by the land division and dedication. Further, consideration shall be given for sidewalks and other planning features that assure safe walking conditions for students who only walk to and from school.*

*Staff concludes that adequate provisions will be made for public health, safety, and general welfare as follows:*

1. *New private drive aisles that comply with the City's current Development Guide are proposed to be constructed and maintained by the commercial association. In addition, fee-in-lieu payments will be paid for work that has*

*been completed by the City along Littlerock Road.*

2. *A storm drainage system complying with the City of Tumwater's 2021 Drainage Design and Erosion Control Manual will be constructed for the site. A preliminary storm drainage report, including a geotechnical investigation was submitted to support the preliminary design and will be approved as a part of the Site Development/Grading Permit.*

3. *The City of Tumwater Water Resources and Sustainability Department has issued a water and sewer availability ruling indicating that the City has the ability to serve the preliminary binding site plan with water and sewer connections (Exhibit 19).*

4. *Intercity Transit currently has a route that serves the site.*

5. *The site is not currently being considered by the Tumwater School District for their future needs.*

6. *Current City of Tumwater Fire Department facilities are adequate to service the proposed project.*

## K. Tumwater Zoning Code – TMC Title 18:

### 1. GC General Commercial Zone District TMC 18.22 – Permitted Uses and Development Standards

***Staff Response and Recommended Finding:*** *The project site is located in the General Commercial (GC) zone district (Exhibit 11).*

*TMC 18.22.020 lists general retail sales (B), general offices (C), restaurants (H), automobile service stations including car washes (I), motels, hotels (K) and electric vehicle infrastructure (HH) as permitted uses in the General Commercial (GC) zone district.*

*The maximum impervious surface in the General Commercial (GC) zone district according to TMC 18.22.050(B) is 85% of the lot area.*

*The maximum building height in the General Commercial (GC) zone district according to TMC 18.22.050(C) is 65 feet.*

*The minimum required setbacks for the General Commercial (GC) zone district for the perimeter of the property and the proposed lots according to TMC 18.22.050(D) are provided below.*

*The minimum required setbacks for the General Commercial (GC) zone district around the perimeter of the property are as follows:*

a. *Zero feet along all public street frontages except where any structures or portions of structures are adjacent to any residential zoning district, the minimum structural setback shall be 20'. Where structures are constructed over one story, the setback of the structure from the adjacent property line or lines shall be increased by ten feet for every story above the ground level story of the proposed new building, and shall be screened from view in accordance with TMC Chapter 18.47.*

b. *0 feet along the other boundaries.*

*The project proponent filed a Variance application (TUM-22-1731) from the Single-Family Low-Density Residential (SFL) zone district setback requirements that necessitate that the project provide a 20-foot minimum setback along the portion of the boundary that abuts a Single-Family Low-Density Residential (SFL) zone district.*

*The project site is in the General Commercial (GC) zone district with the adjacent Tumwater Middle School, a Tumwater School District property, in the Single-Family Low-Density Residential (SFL) zone district. The school property borders the subject property to the southwest of the site across Littlerock Road. The current use of the school property land is a parking lot and it is not used for single-family residences. Littlerock Road separates the parcels with over 60' of right-of-way which includes a landscaped median in the middle of the road (Exhibit 10).*

*The project proponent has applied for a variance to reduce the required setback adjacent to the Single-Family Low-Density Residential (SFL) zone district. See the discussion in Section II.K.4 Tumwater Zoning Code – TMC Title 18, Variances – TMC 18.58 below.*

*With the approval of the Variance, Staff finds that the preliminary binding site plan is consistent with the external property setback requirements of TMC 18.22.050(D).*

**2. Aquifer Protection Overlay (AQP) zone district - TMC 18.39 – Restricted Land Uses**

***Staff Response and Recommended Finding:*** *The intent of the aquifer protection (AQP) overlay zone district is to identify, classify, and protect vulnerable and/or critical aquifer recharge areas within the City and urban growth area. Protection is to be accomplished by controlling the use and handling of hazardous substances.*

*The uses proposed with the preliminary binding site plan are not restricted land uses in the aquifer protection (AQP) overlay zone district.*

### 3. Binding Site Plans – TMC 17.08

***Staff Response and Recommended Finding:*** *A Preliminary Binding Site Plan application accompanied the Variance application for this project on November 29, 2022. The application was submitted to provide for a more flexible method for subdividing commercial zoned property. The application was deemed complete on December 8, 2022 (Exhibit 4).*

*17.08.010 states that the intent of the binding site plan section is to provide an alternative method of land division for the sale or lease of commercial or industrial zoned properties, condominiums and manufactured home parks that is more flexible than traditional land division procedures. Binding site plans allow for shared access, parking, streets and other required aspects of development such as park and open space areas. Binding site plans promote orderly and efficient growth and expedite the land use review process.*

*Elements of this project that utilize the more flexible nature of a preliminary binding site plan process include drive aisles built to private road standards, shared parking, shared infrastructure and uses approved on each lot.*

*Under TMC 14.08.020.A, review authority for projects being reviewed concurrently with a variance shall be considered by the Hearing Examiner.*

*As discussed above, Staff finds that:*

- *This proposal is in conformance with the Tumwater Comprehensive Plan.*
- *This proposal is consistent with the surrounding area.*
- *This proposal complies with the uses allowed in the General Commercial (GC) zone district.*

### 4. Variances – TMC 18.58:

***Staff Response and Recommended Finding:*** *An application for a Variance accompanied the Preliminary Binding Site Plan application for this project and the application was submitted on November 29, 2022 (Exhibit 8). The application was deemed complete on December 8, 2022 (Exhibits 4). Under TMC 2.58.090, review authority for Variance applications fall under the purview of the Hearing Examiner.*

*The project proponent is requesting approval of a Variance (TUM-22-1731) from zoning setbacks (TMC 18.22.050(D)).*

*In accordance with TMC 18.58.040, a variance may be granted, after investigation, provided all of the following findings of fact exist:*

1. *That special conditions exist which are peculiar to the land, such as size, shape, topography, or location, not applicable to other lands in the same district, and that literal interpretation of the provisions of this title would deprive the property owners of rights commonly enjoyed by other properties similarly situated in the same district under the terms of this title;*

2. *That the special conditions and circumstances are not the result of actions of the applicant;*

3. *That the granting of the variance requested will not confer a special privilege to the property that is denied other lands in the same district;*

4. *That the granting of the variance will not be materially detrimental to the public welfare or injurious to the property of improvements of the vicinity and zone in which the subject property is situated; and*

5. *That the reasons set forth in the application justify the granting of the variance, and that the variance, if granted, would be the minimum variance that will make possible the reasonable use of the land.*

*In no event may a variance be granted if it would permit a use that would not be permitted as a primary, accessory or conditional use in the district involved.*

*Staff findings:*

1. *That special conditions exist which are peculiar to the land, such as size, shape, topography, or location, not applicable to other lands in the same district, and that literal interpretation of the provisions of this title would deprive the property owners of rights commonly enjoyed by other properties similarly situated in the same district under the terms of this title.*

   *<u>Setbacks:</u>*
   *The intent of the code regarding setbacks (TMC 18.22.050(D)) is to provide additional separation between single-family residences and commercial buildings that are taller. In this case, proposed Lots 3 through 5 of the Preliminary Binding Site Plan are adjacent to the Single Family Low Density Residential (SFL) zone district to the west. This property is owned by the Tumwater School District and it contains a parking lot for the Tumwater Middle School, but has no single-family residences.*

   *In addition, Littlerock Road separates the properties with at least 60' of right-of-way*

*which provides ample setback from the proposed commercial uses as the maximum permitted height in the General Commercial (GC) zone district is 65'. If a building were proposed at the maximum height, the required setback from a residential district would be 80' (20' for the initial story and 60' for the remaining 55' in height). Lot 3 is proposed to be closest to the property line and achieves approximately 70' from the proposed building footprint to the back of sidewalk on the west side of Littlerock Road adjacent to the SFL zone district.*

*Due to the special conditions of this project, staff finds that allowing for this variance is justified.*

*2. That the special conditions and circumstances are not the result of actions of the applicant.*

*<u>Setbacks:</u>*
*The special circumstances regarding the proximity of the General Commercial property adjacent to the Single Family Low Density zone district is not the result of actions by the applicant. The 20-foot setback from residential zone districts is achieved through the right-of-way and is not necessary on the subject property.*

*Due to the special conditions of this project, staff finds that allowing for this variance is justified.*

*3. That the granting of the variance requested will not confer a special privilege to the property that is denied other lands in the same district.*

*<u>Setbacks:</u>*
*Based on previous statements about the project, the intent of the code is met regarding setbacks complying with City standards, therefore not conferring any special privilege on this property.*

*4. That the granting of the variance will not be materially detrimental to the public welfare or injurious to the property of improvements of the vicinity and zone in which the subject property is situated.*

*<u>Setbacks:</u>*
*The intent of the code is met with this proposal and granting this variance will not be materially detrimental to the public welfare or injurious to the surrounding properties.*

*5. That the reasons set forth in the application justify the granting of the variance, and that the variance, if granted, would be the minimum variance that will make possible the reasonable use of the land.*

*The issues as stated above relating to setback is the only item that needs to be addressed for the Preliminary Binding Site Plan to make reasonable use of the land. If the variance is granted, the proposal can continue forward through the development process.*

*Staff recommends approval of this Variance for the project. If approved, Staff finds that the Preliminary Binding Site Plan development is consistent with the Tumwater Municipal Code with the attached conditions.*

**5. Signs – TMC 18.44**

***Staff Response and Recommended Finding:*** *The project intends to use the provisions in 18.44.155 to allow for additional signage within a multiple building complex/multiple tenant building. Permits are required and height restrictions apply depending on the location of the sign(s).*

## III. PUBLIC COMMENT

Three emails were received during the public noticing for the project application: one email from the Washington State Department of Ecology, Nisqually Indian Tribe and the Squaxin Island Tribe (Exhibits 13 and 14).

Exhibit 13. Nisqually Indian Tribe Comments, dated December 13, 2022

Exhibit 13. Squaxin Island Tribe Comments, dated December 14, 2022

Exhibit 14. Washington State Department of Ecology Comments, dated March 30, 2022

## IV. RECOMMENDATION

Pursuant to TMC 2.58.110, staff recommends approval of the Preliminary Binding Site Plan and Variance requests described herein with the following conditions:

1. Conditions listed in the DRC Formal Site Plan Review Letter dated November 22, 2022 (Exhibit 23).

2. Prior to any ground disturbance work or site development grading permit issuance a cultural resource study shall be reviewed and approved by the Department Archeological and Historic Preservation, Squaxin Island Tribe and Nisqually Indian Tribe.

    A. The project proponent shall follow the procedures in the City of Tumwater Standard Inadvertent Archaeological and Historic

Resources Discovery Plan.

B. If any archaeological or cultural resources are uncovered during construction, the project proponent shall stop work in the area of discovery; follow the procedures in TMC 18.40.065 *Inadvertent Discovery of Archaeological and Cultural Resources*; and contact the City of Tumwater, the Washington State Department of Archaeology and Historic Preservation, and the Squaxin Island Tribe's Archaeologist, Shaun Dinubilo via email at sdinubilo@squaxin.us.

C. Should archeological artifacts be encountered during construction, all of the following shall apply:

i. Construction activity shall be immediately suspended;

ii. The contractor shall immediately notify the City of Tumwater Community Development Department;

iii. The contractor shall immediately notify the Washington State Department of Archeology and Historic Preservation; and

iv. The contractor shall immediately notify potentially affected tribal nations including, but not limited, to the Squaxin Island Tribe, Chehalis Tribe, and Nisqually Tribe.

3. Conditions listed in the Mitigated Determination of Non-Significance dated March 16, 2023 (Exhibit 5).

4. Should contaminated soils be encountered during construction, all of the following shall apply:

A. Construction activity shall be immediately suspended;

B. The contractor shall immediately notify the Washington State Department of Ecology;

C. Contaminated materials shall be properly handled, characterized, and disposed of consistent with applicable regulations.

5. 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 the local jurisdictional health department prior to filling. All removed debris resulting from this project must be disposed of at an approved site. Contact the

Thurston County Health Department for proper management of these materials.

6. If contamination is suspected, discovered, or occurs during construction of the proposed project, testing of the potentially contaminated media must be conducted. If contamination of soil or groundwater is readily apparent, or is revealed by testing, Ecology must be notified. Contact the Environmental Report Tracking System Coordinator for the Southwest Regional Office (SWRO) for the Washington State Department of Ecology at (360) 407-6300. For assistance and information about subsequent cleanup and to identify the type of testing that will be required, contact Thomas Middleton with the SWRO, Toxics Cleanup Program at (360) 407-7263.

7. Disposal of construction debris and overburden associated with construction and grading activity that is not suitable for fill is required to be disposed of at an approved location.

8. The project proponent shall follow the requirements of the National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit issued for the project by the Washington State Department of Ecology.

9. The City's water and sewer utilities shall be extended to serve the needs of the development. The utility extensions shall be in accordance with the Tumwater Development Guide requirements in place at the time the preliminary binding site plan application was vested. All necessary right-of-way and/or easement will need to be dedicated to the City of Tumwater.

10. The project proponent shall be responsible for providing the City with all costs associated with the installation of water, sewer, street, and storm drainage systems that are dedicated to the City of Tumwater.

11. The engineering plans shall show all existing and proposed utilities and easements including streetlights, street trees, water, sewer, storm, gas, cable, power, telephone, signage, and striping. Provide street sections showing dimensions of existing and proposed improvements. Include the line sizes on the water and sewer mains and services.

12. All engineering designs and construction shall be in accordance with the City of Tumwater's Development Guide and WSDOT standards.

13. All street construction, utility installation and storm drainage work requires engineered plans certified by a professional engineer licensed to practice in the State of Washington. The plans shall be submitted for review and approval by the City.

14. The project proponent shall be responsible for all plan check, inspection, and connection fees.

15. Any public or private utility relocation necessary to construct the project shall be the sole responsibility of the project proponent.

16. The project proponent shall be responsible for the maintenance and timely repair of all public improvements for a period of 30 months following final certification by the City and shall submit a surety for maintenance equal in value to fifteen (15) percent of the total value of the required public improvements certified by the Transportation and Engineering Director. Please refer to Chapter 3 of the Development Guide for further clarification.

17. All legal descriptions on documents submitted to the City must be accompanied with an appropriate drawing that the City can use to verify the legal description. All engineered drawings and legal exhibits shall be made available in PDF format with 300 DPI or greater. The documents shall conform to requirements for proper recording as established by Thurston County and the City of Tumwater.

18. The owner or owner's representative is also responsible for furnishing the City with electronic files, compatible with release 2017 or newer Auto-CAD format. Provide individual drawings independent of x-refs. Include all non-standard font files and plot files. Also, please furnish PDF files printed from the Auto-CAD files 300 DPI or greater. A storm water maintenance agreement, utility maintenance agreement, easements and bills-of-sale will also be required.

19. The City vertical and horizontal control datum is NGVD 29 and NAD 83(HARN) / Washington South U.S. Survey Feet respectively.

20. A note shall be added on the site plan that the Professional Land Surveyor responsible for the surveying of the project must obtain a permit from the Washington State Department of Natural Resources before any existing survey monuments are disturbed.

21. The project proponent shall provide a cover page with all dedication and easement language.

22. Any water main extension will require a minimum of an eight-inch system. The main size will depend on the fire flow requirements for this project. The system shall be designed for a maximum velocity of eight feet per second.

23. All sanitary sewer mains must be TV'd. The project proponent shall provide a

tape of the sanitary sewer line prior to recording the final binding site plan.

24. A drainage design and erosion control plan will be required according to City of Tumwater's 2021 Drainage Design and Erosion Manual.

25. Maintenance of the on-site stormwater system will be the responsibility of the project proponent, their successors, or assigns. A stormwater maintenance agreement must be recorded against the property prior to recording the Final Binding Site Plan.

26. Fire hydrants shall be provided as shown on the preliminary binding site plan.

27. All water wells on site shall be abandoned in accordance with the Washington State Department of Ecology requirements. A permit from the Washington State Department of Ecology shall be obtained for each well to be abandoned.

28. If applicable, on and off-site well locations within 200 feet of the proposed development shall be shown on the Final Binding Site Plan with the associated 100-foot protective radii.

29. All septic systems on the property shall be abandoned in accordance with the Thurston County Environmental Health requirements. A permit shall be obtained from Thurston County Environmental Health for each separate system to be abandoned.

30. Impact fees for traffic will be assessed to each lot in the preliminary binding site plan as Building Permits are issued. The impact fees will be in accordance with the most current fee resolution adopted by the City at the time of vesting of the Building Permit applications.

31. Dumpsters are required to be gated and screened with masonry walls and/or sight-obscuring fence with landscaping.

32. Dumpsters and containers with an individual capacity of 1.5 cubic yards or more shall not be stored in buildings or placed within five feet of combustible walls, openings or combustible roof eaves lines unless the area is protected by an approved automatic sprinkler system per IFC Section 304.3.3.

33. The project proponent must maintain a current Plat Name Reservation Certificate approved by the Thurston County Auditor.

34. If required by the Thurston County, property taxes must be paid in full for the current year, including any advance and delinquent taxes, before a Final Binding Site Plan can be recorded.

35. A Commercial Association is required to be formed for the project. Prior to recording the Final Binding Site Plan, the project proponent shall supply the City with copies of the grantee organization's articles of incorporation and bylaws, and with evidence of a binding commitment to convey. The articles of incorporation shall provide that membership in the organization shall be appurtenant to ownership of land in the land division; that the corporation is empowered to assess such land for costs of construction and maintenance of the improvements and property owned by the corporation, and that such assessments shall be a lien upon the land.

36. If required by USPS, consolidated postal drop off facilities shall be provided for the site. The location of the facilities must be coordinated and approved by the U.S. Postal Service.

37. The building designs shall conform to the City of Tumwater's Citywide Design Guidelines. Architectural elevation drawings of each building-type and narrative description stating how the design guideline requirements are being met shall be submitted for review and approval prior to issuance of Building Permits.

38. Exterior walls are required to be of one-hour fire-rated construction when less than ten feet to the property line. Protected openings are required when less than five feet to the property line. No openings are permitted less than three feet to the property line.

39. Water cross connection control shall be provided in accordance with the provision of the Plumbing Code. Cross connection control devices or assemblies must be models approved under WAC 246-290-490.

40. If water pressure at the meter exceeds 80 psi, a pressure-reducing valve will be required to be installed on the private side of the water line.

41. Backwater valves shall be installed for each structure when the sewer is lower than the street manhole.

42. Automatic sprinkler systems shall be provided throughout all buildings in this project.

43. Fire alarm systems shall be required to be installed in all buildings in this project.

44. The project proponent must coordinate with the City of Tumwater Building Safety Official on the location of the City of Tumwater Fire Department connection, post indicator valve, remote annunciator panel, and Knox box's. The locations of the fire suppression equipment must be approved by the City of

Tumwater Building Safety Official.

45. Any dead-end fire access roads that are in excess of 150 feet in length shall be provided with an approved turnaround.

46. Fire lane signs and yellow striping shall be provided on-site to identify the City of Tumwater Fire Department access roads and prohibit the obstruction thereof.

47. When any portion of a building constructed on the site is in excess of 150 feet from a water supply on a public street, as measured by an approved route around the exterior of the building, there shall be provided on the site fire hydrants capable of supplying the required fire flow. Placement of the hydrants shall be coordinated with the City of Tumwater Building Safety Official.

48. The water main shall be looped around the entire site, extend to adjacent properties for future connection, and connect to existing stubs on adjacent properties extended by previous projects.

49. Building plans and specifications shall be prepared and stamped by an architect or an engineer licensed to practice in the State of Washington.

50. Building Permit applications shall include architectural, structural, plumbing, mechanical, and energy plans, and specifications. Fire sprinkler and fire alarm permit applications and plans may be submitted separately from the main permit application.

51. All new building projects are required to provide for the storage of recycled materials and solid waste. The storage area shall be designed to meet the needs of the occupancy, efficiency of pick-up, and shall be available to occupants and haulers.

52. The Development Plan shall be reviewed by Bonneville Power Administration (BPA). A Letter of Approval from BPA, or a Land Use Agreement which assures the right to construct and maintain the improvements shown on the Development Plans shall be submitted to the City of Tumwater prior to site development grading permit issuance.

**Submitted on Behalf Of the City of Tumwater Community Development Department by/**
**Staff Contact:** Alex Baruch, Associate Planner
Phone: (360) 754-4180
E-mail: abaruch@ci.tumwater.wa.us
**Report Issue Date:** June 16, 2023
**List of Exhibits:**

1. Staff Report
2. Preliminary Binding Site Plan Preliminary Development Plans
3. Vicinity Map
4. Notice of Application
5. MDNS with SEPA Checklist (TUM-22-1724)
6. Public Hearing Notice 06-16-2023
7. Preliminary Binding Site Plan Application
8. Variance Application
9. Variance Narrative - Applicant
10. Variance Request Exhibit
11. Zoning Map
12. Public Notice Certification
13. Notice of Application Comments
14. MDNS Comments
15. Transportation Concurrency Determination 03-01-2023
16. Drainage Report
17. Geotechnical and Stormwater Evaluation
18. Traffic Impact Analysis with Exhibits 05-25-2022
19. Tumwater Water and Sewer Availability Certificate
20. Mazama Pocket Gopher Studies
21. Foresters Report
22. Preliminary Landscape Plan
23. Formal Site Plan Review Letter (TUM-22-0234)
24. Home Depot Approval Letter
25. Title Report

Item 2a.

Exhibit 2

A PORTION OF SEC 03, TWN 17, RGE 2W, W.M., CITY OF TUMWATER, THURSTON COUNTY, WASHINGTON

# KINGSWOOD COMMERCIAL

## PRELIMINARY BINDING SITE PLAN AND FORMAL SITE PLAN REVIEW SUBMITTAL

### LEGEND AND ABBREVIATIONS

**EXISTING SYMBOLS**

| SYMBOL | DESCRIPTION |
|---|---|
| | BRASS CAP |
| | PK NAIL |
| | POWER POLE |
| | GUY POLE |
| J | JUNCTION BOX |
| | LUMINAIRE |
| | LUMINAIRE WITH SHORT ARM |
| | TELEPHONE RISER |
| T | TELEPHONE VAULT/MANHOLE |
| | CABLE RISER/PEDESTAL |
| | NATURAL GAS VALVE |
| S | SEWER MANHOLE |
| | STORM MANHOLE |
| | STORM CATCH BASIN |
| | CULVERT |
| | WATER VALVE |
| | WATER METER |
| | IRRIGATION CONTROL VALVE |
| | STREET SIGNS |
| | DECIDUOUS TREE |
| | DOUGLAS FIR TREE |

**PROPOSED WATER SYMBOLS**

| SYMBOL | DESCRIPTION |
|---|---|
| | WATER CAP |
| | CONCRETE BLOCKING |
| | BUTTERFLY VALVE |
| | 11° BEND |
| | 45° BEND |
| | 90° BEND |
| | 22° BEND |
| | VALVE |
| | HYDRANT ASSEMBLY |
| | BLOW-OFF VALVE |
| | REDUCER |
| | AIR-VAC ASSEMBLY |
| | WATER METER |
| | WATER PIPE |

**ABBREVIATIONS**

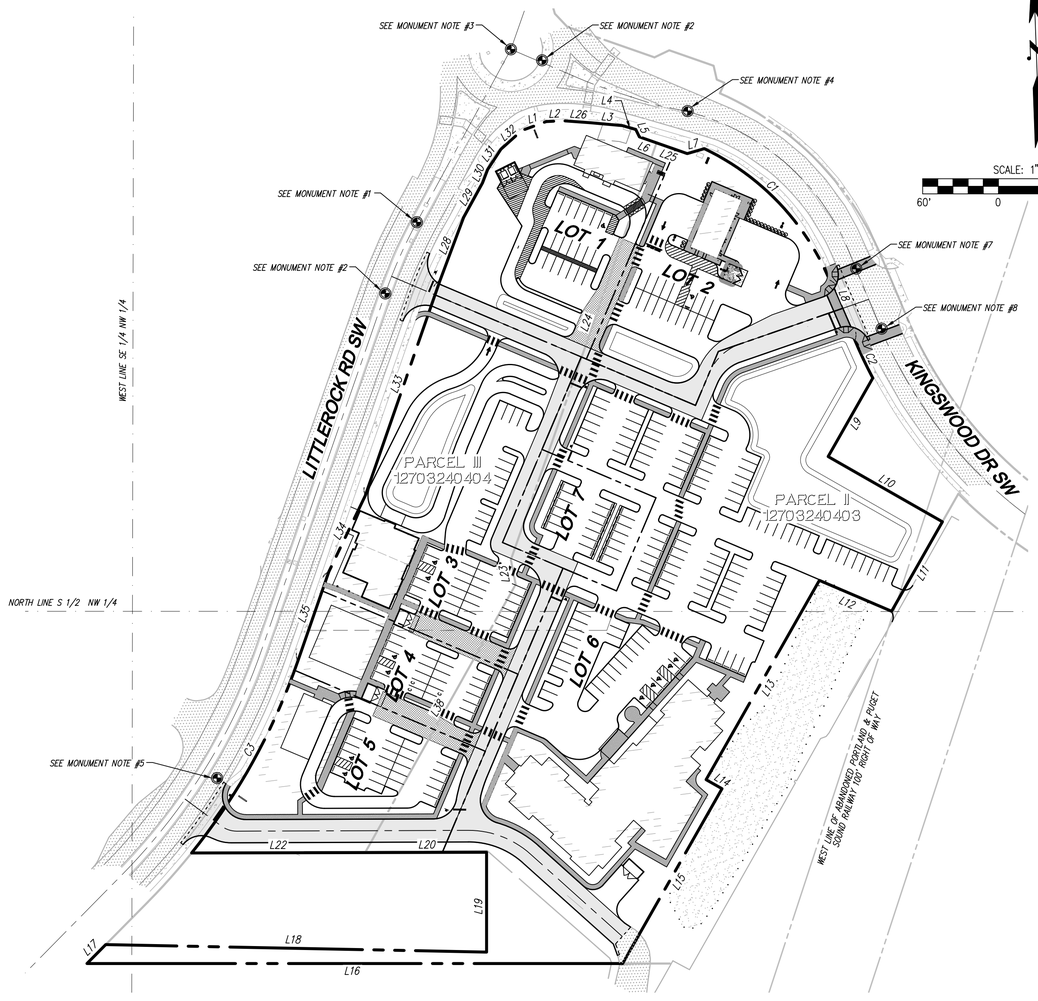
| | |
|---|---|
| CB | CATCH BASIN |
| ℄ | CENTERLINE |
| CMP | CORRUGATED METAL PIPE |
| CP | CONCRETE PIPE |
| EL | ELEVATION |
| EXIST. | EXISTING |
| ℄ | FLOWLINE |
| IE | INVERT ELEVATION |
| LCPE | LINED CORRUGATED POLYETHYLENE PIPE |
| ℙ | PROPERTY LINE |
| PP | POWER POLE |
| PVC | POLYVINYL CHLORIDE PIPE |
| R/W | RIGHT-OF-WAY |
| STA | STATION |
| SD | STORM DRAIN |
| SS | SANITARY SEWER |
| SSMH | SANITARY SEWER MANHOLE |
| SWPE | SOLID WALL POLYETHYLENE PIPE |
| TYP | TYPICAL |
| TBR | TO BE REMOVED |

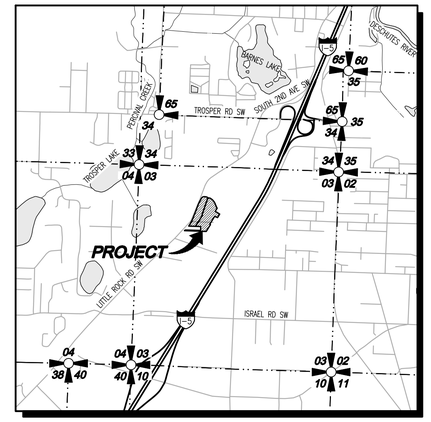
**PROPOSED STORM SYMBOLS**

| SYMBOL | DESCRIPTION |
|---|---|
| | SD CAP |
| | TYPE 1 CATCH BASIN, GRATED LID |
| | TYPE 1 CATCH BASIN, SOLID LID |
| | TYPE 2 CATCH BASIN, GRATED LID |
| | TYPE 2 CATCH BASIN, SOLID LID |
| | BEEHIVE MANHOLE COVER |
| | SQUARE YARD DRAIN |
| | ROUND YARD DRAIN |
| | STORM CLEAN OUT |
| | STORM PIPE |

**PROPOSED SEWER SYMBOLS**

| SYMBOL | DESCRIPTION |
|---|---|
| | SEWER CAP |
| | SEWER CLEANOUT |
| | SEWER MANHOLE |
| | SEWER PIPE |




VICINITY MAP
SCALE: 1"=2000'

### LINE TABLE

| LINE | LENGTH | BEARING |
|---|---|---|
| L1 | 27.53 | N71°59'44"E |
| L2 | 17.06 | N88°47'27"E |
| L3 | 33.32 | N82°48'02"W |
| L4 | 14.64 | N71°48'44"W |
| L5 | 8.66 | N23°56'30"W |
| L6 | 19.20 | N68°40'18"W |
| L7 | 18.81 | N76°05'39"E |
| L8 | 68.84 | N20°44'20"W |
| L9 | 95.33 | N31°41'38"E |
| L10 | 138.91 | N58°14'03"W |
| L11 | 108.68 | N31°41'42"E |
| L12 | 82.88 | N64°47'29"W |
| L13 | 241.98 | N31°41'42"E |
| L14 | 19.35 | N58°18'18"W |
| L15 | 212.33 | N31°41'42"E |
| L16 | 565.57 | N87°55'41"W |
| L17 | 28.12 | N46°45'58"E |
| L18 | 402.25 | N86°48'00"W |
| L19 | 105.37 | N02°04'19"E |
| L20 | 128.22 | N88°03'37"W |

### LINE TABLE

| LINE | LENGTH | BEARING |
|---|---|---|
| L22 | 183.24 | N88°03'37"W |
| L23 | 26.51 | N08°58'20"W |
| L24 | 466.26 | N21°19'43"E |
| L25 | 34.35 | N68°40'35"E |
| L26 | 30.41 | N83°42'32"W |
| L28 | 71.32 | N22°36'24"E |
| L29 | 41.68 | N30°45'35"E |
| L30 | 15.08 | N23°07'41"E |
| L31 | 25.58 | N35°10'04"E |
| L32 | 29.49 | N50°04'33"E |
| L33 | 240.11 | N21°13'01"E |
| L34 | 89.00 | N27°40'17"E |
| L35 | 100.29 | N21°13'01"E |
| L38 | 324.66 | N31°22'46"E |

### CURVE TABLE

| CURVE | LENGTH | RADIUS | DELTA |
|---|---|---|---|
| C1 | 196.06 | 270.00 | 041°36'16" |
| C2 | 44.16 | 505.00 | 005°00'36" |
| C3 | 232.36 | 676.41 | 019°40'57" |

### PROJECT INFORMATION

**TAX PARCELS:** 12703240403 & 12703240404
**SITE ADDRESS:** 1401 & 1551 KINGSWOOD DR SW, TUMWATER
**SITE AREA:** 390,907 SF 8.96 AC

### TABLE OF CONTENTS


1 COVER SHEET
2 PRELIMINARY BINDING SITE PLAN
3 PRELIMINARY GRADING AND DRAINAGE PLAN
4 PRELIMINARY UTILITY PLAN
5 PRELIMINARY EASEMENT PLAN


### CONTACT LIST


**APPLICANT:**
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PO BOX 6979
TACOMA, WA 98417
CONTACT: TREVOR COLBY
EMAIL: trevor@kciwa.com

**OWNER**
KINGSWOOD CAPITAL, INC.
701 W GEORGIA ST STE 520 IBM TOWER
VANCOUVER, BC V7Y1A1
CONTACT: TORBEN NELSON
EMAIL: torben@tnelsonconsulting.com

**GEOTECH:**
INSIGHT GEOLOGIC, INC.
1015 4TH AVE E
OLYMPIA, WASHINGTON 98506
CONTACT: WILLIAM E. HALBERT, L.HG., L.E.G.
PHONE: (360) 754-2128
FAX: (360) 754-9299
EMAIL: billh@insightgeologic.com

**CIVIL ENGINEER:**
LDC, INC.
1411 STATE AVE NE, STE 200
OLYMPIA, WA 98506
CONTACT: TYRELL E. BRADLEY, PE
PHONE: (425) 806-1869
FAX: (425) 482-2893
EMAIL: tbradley@ldccorp.com

**SURVEYOR:**
MTN 2 COAST, LLC
2320 MOTTMAN RD SW, SUITE 106
TUMWATER, WA 98512
CONTACT: SETH E. PRIGGE, PLS
PHONE: (360) 688-1949


### SURVEY INFORMATION

### LEGAL DESCRIPTION

PARCEL II:
PARCEL B OF CITY OF TUMWATER BOUNDARY LINE ADJUSTMENT NO. BLA 03-7444 TW, ACCORDING TO SURVEY RECORDED FEBRUARY 4, 2003 UNDER RECORDING NO. 3500815, IN THURSTON COUNTY, WASHINGTON;
EXCEPT THAT PORTION CONVEYED TO CITY OF TUMWATER BY DEED RECORDED JUNE 6, 2003 UNDER RECORDING NO.3539066.

PARCEL III:
PARCEL D OF CITY OF TUMWATER BOUNDARY LINE ADJUSTMENT NO. BLA 02-7432TW, ACCORDING TO SURVEY
RECORDED OCTOBER 24, 2002 UNDER RECORDING NO. 3472425, IN THURSTON COUN TY, WASHINGTON;
EXCEPT THAT PORTION CONVEYED TO CITY OF TUMWATER RECORDED JUNE 6, 2003 UNDER RECORDING NO.3539066;
ALSO EXCEPT THAT PORTION CONVEYED TO CITY OF TUMWATER RECORDED FEBRUARY 25, 2008 UNDER RECORDING NO.3991167;
AND EXCEPT THAT PORTION CONVEYED TO CITY OF TUMWATER RECORDED JUNE 30, 2010 UNDER RECORDING NO.4158266;
TOGETHER WITH THAT PORTION OF VACATED LITTLEROCK ROAD, ADJOINING OR ABUTTING THEREON, BY RIGHT OF
WAY VACATION ORDINANCE NO. 02010-018 RECORDED MARCH 16, 2011 UNDER RECORDING NO. 4202517.

### VERTICAL DATUM

VERTICAL DATUM FOR THIS SURVEY IS NOVD 29 BASED ON TIES TO THURSTON COUNTRY MONUMENT 1302.

### HORIZONTAL DATUM

HORIZONTAL DATUM FOR THIS SURVEY IS WASHINGTON STATE COORDINATES SOUTH ZONE, NAD 83/2011 BASED ON TIES TO THURSTON COUNTY MONUMENT 1302.

### MONUMENT NOTES

1. FOUND 3" BRASS CAP W/ PUNCH MARKED "LS 33138 NOV 2011" SET IN 6" CONC @ ℄ LITTLEROCK RD SE @ POINT HEADING SOUTH OF ROUNDABOUT.
2. FOUND 3" BRASS CAP W/ PUNCH MARKED "LS 33138 NOV 2011" SET IN 6" CONC @ ℄ OF LITTLEROCK RD SE @ POINT OF CURVE HEADING SOUTH.
3. FOUND 2-1/2" BRASS CAP W/ PUNCH MARKED "LS 33138" ON EAST SIDE OF ROUNDABOUT IN APRON.
4. FOUND 2-1/2" BRASS CAP W/ PUNCH MARKED "LS 33138" IN 8" CONC @ ℄ OF ROUNDABOUT.
5. FOUND 2-1/2" BRASS CAP W/ PUNCH MARKED "LS 33138" IN 8" CONC @ ℄ OF KINGSWOOD DR AND ± 30' EAST OF EAST NOSE OF ISLAND.
6. FOUND 3" BRASS CAP W/ PUNCH MARKED "LS 33138" @ ℄ OF "EAST" LANE OF LITTLEROCK RD NEAR NORTHERLY MOST ENTRANCE TO TUMWATER MIDDLE SCHOOL.
7. FOUND 2" BRASS CAP W/ PUNCH SET IN CONC @ ℄ KINGSWOOD DR NORTH OF WALMART ENTRANCE.
8. FOUND 2" BRASS CAP W/ PUNCH SET IN CONC @ ℄ KINGSWOOD DR SOUTH OF WALMART ENTRANCE.

### SURVEY NOTES

1. INSTRUMENT USED: SOKKIA SRX 3 TOTAL STATION AND TOPCON GR5 GPS.
2. THIS SURVEY MEETS OR EXCEEDS THE STANDARDS OF WAC 332-130-090
3. SURVEY COMPLETED 10/2019.
4. ALL MONUMENTS SHOWN AS FOUND VISITED 10/2019.
5. CONTOURS WERE ESTABLISHED FROM ONSITE MAPPING USING A SOKKIA SRX 3 TOTAL STATION AND TOPCON GR5 GPS.
6. M2C WAS RETAINED BY KCI COMMERCIAL, INC TO VERIFY AND TO UPDATE EASEMENT INFORMATION OF SURVEY COMPLETED IN 10/2019, M2C JOB NO. 19-056. EASEMENTS SHOWN PER TITLE INSURANCE ISSUED BY FIRST AMERICAN TITLE INSURANCE COMPANY, FILE NO. NCS-1112204-WA1.
7. PLS RESPONSIBLE FOR THE SURVEYING OF THE PROJECT MUST OBTAIN A PERMIT FROM DNR BEFORE ANY MONUMENTS ARE DISTURBED

### UTILITY NOTES

UTILITIES SHOWN HEREON ARE FROM MAPPING VISIBLE SURFACE APPURTENANCES, REFERRING TO AS-BUILT RECORDS AND MAPPING UTILITY PAINT MARKS FROM A UTILITY LOCATING SERVICE. BURIED UTILITIES ARE ONLY SHOWN AS APPROXIMATE AND SHOULD BE VERIFIED BEFORE CONSTRUCTION.

### REFERENCED SURVEYS

1. BLA AFN 3500815
2. BLA AFN 9203030198
3. DEED AFN 4158266
4. DEED AFN 3539066
5. DEED AFN 3991167

### DISCLAIMER

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REVISIONS

| NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|


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Surveying Engineering Planning
Woodinville Olympia Kent
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KCI COMMERCIAL, INC.

KINGSWOOD COMMERCIAL
BINDING SITE PLAN

COVER SHEET

TYRELL E. BRADLEY STATE OF WASHINGTON 51055 REGISTERED PROFESSIONAL ENGINEER 11-29-22

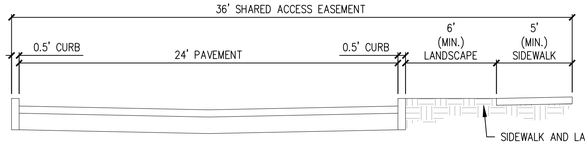
| | |
|---|---|
| JOB NUMBER: | C22151 |
| DRAWING NAME: | C22151P-CS-PL |
| DESIGNER: | REW |
| DRAFTING BY: | AJW |
| DATE: | NOVEMBER, 2022 |
| SCALE: | 1"=60' |
| JURISDICTION: | TUMWATER |

CS-01

SHEET 1 OF 5

Drawing: P:\Civil\2022\22-151 kingswood commercial\Drawings\preliminary\C22151P-CS-PL.dwg Plotted: Nov 29, 2022 - 12:11pm

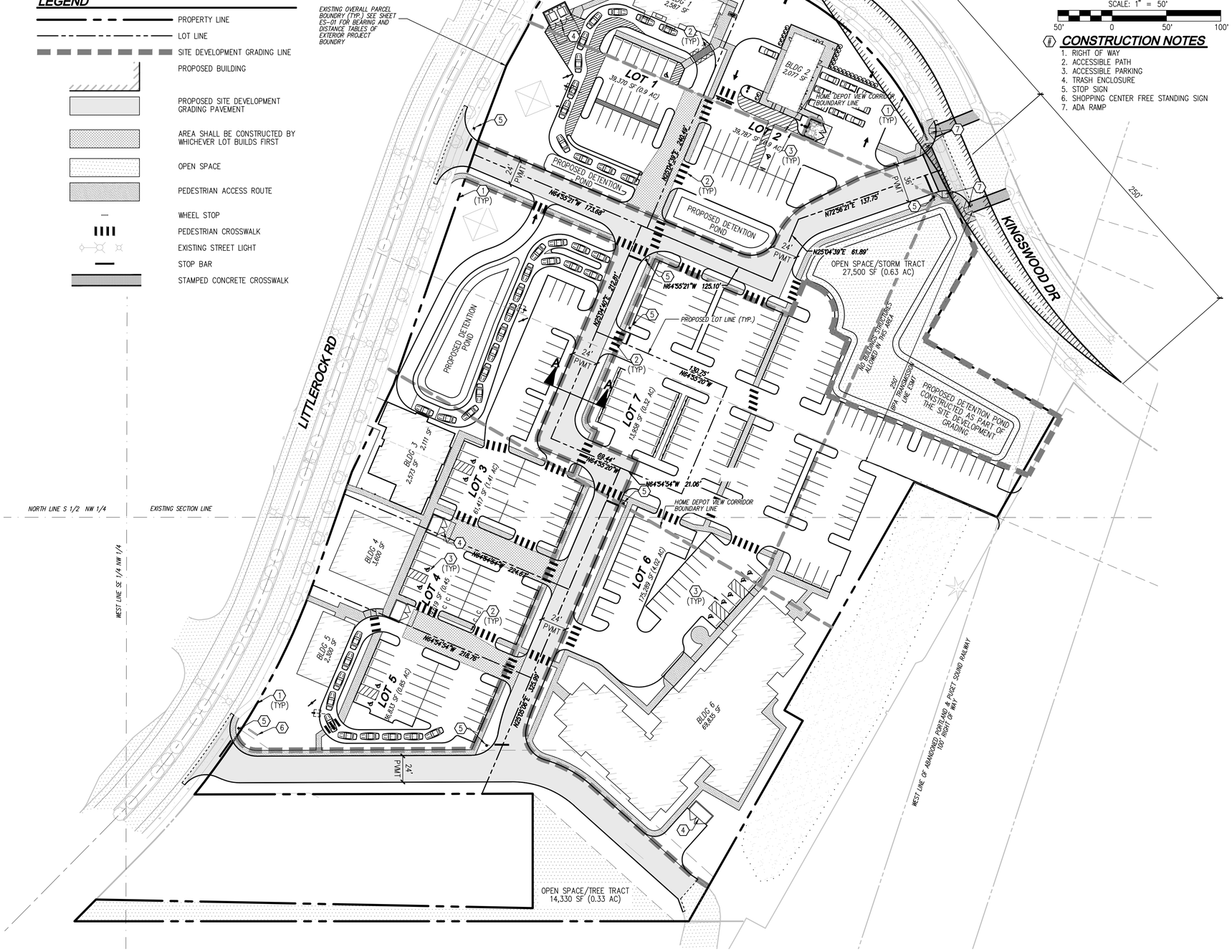
# A PORTION OF SEC 03, TWN 17, RGE 2W, W.M., CITY OF TUMWATER, THURSTON COUNTY, WASHINGTON




## PHASE 1 PRIVATE ROAD A-A

## LEGEND

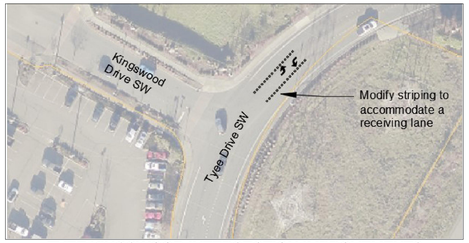
- PROPERTY LINE
- LOT LINE
- SITE DEVELOPMENT GRADING LINE
- PROPOSED BUILDING
- PROPOSED SITE DEVELOPMENT GRADING PAVEMENT
- AREA SHALL BE CONSTRUCTED BY WHICHEVER LOT BUILDS FIRST
- OPEN SPACE
- PEDESTRIAN ACCESS ROUTE
- WHEEL STOP
- PEDESTRIAN CROSSWALK
- EXISTING STREET LIGHT
- STOP BAR
- STAMPED CONCRETE CROSSWALK




SCALE: 1" = 50'
50' 0 50' 100'

## CONSTRUCTION NOTES

1. RIGHT OF WAY
2. ACCESSIBLE PATH
3. ACCESSIBLE PARKING
4. TRASH ENCLOSURE
5. STOP SIGN
6. SHOPPING CENTER FREE STANDING SIGN
7. ADA RAMP




## TYEE/KINGSWOOD INTERSECTION IMPROVEMENTS (COMPLETED AS PART OF SITE DEVELOPMENT GRADING)

## BINDING SITE PLAN INFORMATION

SITE INFORMATION

- SITE ADDRESS: 1401 & 1551 KINGSWOOD DR SW, TUMWATER
- TAX PARCEL NUMBER(S): 12703240403 & 12703240404
- SITE AREA: 8.96 AC
- NO RECORD OF ANY WELLS WITHIN 200 FEET OF PROPERTY WERE FOUND
- ZONING: GENERAL COMMERCIAL (GC)
- WATER: CITY OF TUMWATER
- SEWER: CITY OF TUMWATER
- POWER/GAS: PUGET SOUND ENERGY
- CABLE/PHONE: COMCAST, CENTURYLINK, WAVE
- REFUSE COLLECTION: WASTE CONNECTIONS (LEMAY)
- SCHOOL DISTRICT: CITY OF TUMWATER
- MAXIMUM LOT COVERAGE (IMPERVIOUS SURFACE) ALLOWED: 85%
- PROPOSED IMPERVIOUS SURFACE COVERAGE PROVIDED: 4.80 AC (54%)
- PROPOSED PERVIOUS SURFACE COVERAGE PROVIDED: 3.15 AC (35%)
- MAXIMUM BUILDING HEIGHT: 65 FEET

PROPOSED ADDRESSES
LOT 1: 1477 KINGSWOOD DR SW, TUMWATER, WA 98512
LOT 2: 1453 KINGSWOOD DR SW, TUMWATER, WA 98512
LOT 3: 6104 LITTLEROCK RD SW, TUMWATER, WA 98512
LOT 4: 6142 LITTLEROCK RD SW, TUMWATER, WA 98512
LOT 5: 6208 LITTLEROCK RD SW, TUMWATER, WA 98512
LOT 6: 1436 KINGSWOOD DR SW, TUMWATER, WA 98512
LOT 7: 1421 KINGSWOOD DR SW, TUMWATER, WA 98512

PROPOSED USE:
LOT 1: FAST FOOD RESTAURANT
LOT 2: OIL CHANGE SERVICE STATION
LOT 3: FAST FOOD RESTAURANT & SEATED RESTAURANT
LOT 4: RETAIL/OFFICE
LOT 5: FAST FOOD RESTAURANT
LOT 6: HOTEL
LOT 7: CAR CHARGING STATION

PARKING:
LOT 1: *21 PARKING STALLS (1 EV STALL REQUIRED)
LOT 2: 19 PARKING STALLS (1 EV STALL REQUIRED)
LOT 3: **41 PARKING STALLS (EV PARKING PROVIDED ON LOT 7
LOT 4: 24 PARKING STALLS (1 EV STALL REQUIRED)
LOT 5: 25 PARKING STALLS (1 EV STALL REQUIRED)
LOT 6: 130 PARKING STALLS (121 UNITS PLUS 9 PARKING STALLS FOR 1,500 SF MEETING ROOM. EV PARKING PROVIDED ON LOT 7)
LOT 7: 20 CAR CHARGING STALLS

*A SHARED PARKING AND CROSS ACCESS AGREEMENT WILL BE PREPARED FOR ALL 7 LOTS. HOWEVER, IF LOT 1 IS CONSTRUCTED BEFORE LOT 2, THEN LOT 1 SHALL CONSTRUCT A MINIMUM OF 5 PARKING STALLS ON THE WEST END OF LOT 2 PARKING LOT, AS LOT 1 IS UNDER THE 28 PARKING STALL REQUIREMENT AS A STANDALONE PARCEL. LOT 2 WILL REQUIRE 4-6 PARKING BASED ON USE (SIMILAR TO JIFFY LUBE IN USE) AND CURRENTLY IS PROVIDING 19 PARKING STALLS.

**A SHARED PARKING AND CROSS ACCESS AGREEMENT WILL BE PREPARED FOR ALL 7 LOTS. HOWEVER, IF LOT 3 IS CONSTRUCTED BEFORE LOT 4, THEN LOT 3 SHALL CONSTRUCT A MINIMUM OF 6 PARKING STALLS ON THE NORTH END OF LOT 4 PARKING LOT, AS LOT 3 IS UNDER THE 47 PARKING STALL REQUIREMENT AS A STANDALONE PARCEL. LOT 4 REQUIRES 1.3 PARKING STALLS AS RETAIL/OFFICE AND CURRENTLY IS PROVIDING 24 PARKING STALLS.

REQUIRED BICYCLE PARKING: (LOCATION PROVIDED AT BUILDING PERMIT FOR EACH LOT)
LOT 1: 2 SHORT TERM
LOT 2: 2 SHORT TERM
LOT 3: 2 SHORT TERM
LOT 4: 2 SHORT TERM
LOT 5: 2 SHORT TERM
LOT 6: 7 SHORT TERM AND 2 LONG TERM
LOT 7: NOT APPLICABLE TO USE

GENERAL NOTES:

1. PARCELS 3, 4, AND 5 UP TO THE BPA TRANSMISSION LINE EASEMENT ARE SUBJECT TO THE CITY OF TUMWATER DESIGN GUIDLINES, APPENDIX A, PAGE A-9, AND THE DESIGN GUIDELINES FOR BUILDINGS ALONG SIGNATURE ROADS 2.B.2.1 THROUGH 2.B.2.7
2. A MINIMUM 8-FOOT WALKWAY OR 6-FOOT WALKWAY WITH 3-FOOT LANDSCAPE STRIP IS REQUIRED BETWEEN THE BUILDING AND THE PARKING STALLS.
3. FIRE LANE SIGNS AND YELLOW STRIPING SHALL BE PROVIDED ON-SITE TO IDENTIFY FIRE DEPARTMENT ACCESS ROADS AND PROHIBIT THE OBSTRUCTION THEREOF. IFC 503.3.
4. LANDSCAPE SCREENING SHALL BE PROVIDED BETWEEN PUBLIC RIGHT-OF-WAY AND ALL DUMPSTER ENCLOSURES TO THAT THE ENCLOSURE IS OBSTRUCTED FROM VIEW FROM PUBLIC RIGHTS-OF-WAY. THIS WILL BE SHOWN ON THE SITE DEVELOPMENT GRADING LANDSCAPE PLANS FOR EACH INDIVIDUAL LOT.
5. LANDSCAPE DESIGN SHALL BE CONSISTENT THROUGHOUT THE ENTIRE BINDING SITE PLAN AND ALL LOTS.

OPEN SPACE
OVERALL SITE OPEN SPACE: 41,830 SF (0.96 AC) 11% OF TOTAL SITE

*REQUIRED OPEN SPACE: (LOCATION PROVIDED AT BUILDING PERMIT FOR EACH LOT)
LOT 1: 419 SF
LOT 2: 419 SF
LOT 3: 640 SF
LOT 4: 232 SF
LOT 5: 391 SF
LOT 6: 2,451 SF
LOT 7: NOT APPLICABLE TO USE

*1% OF THE GROUND FLOOR OF NON-RESIDENTIAL BUILDING FOOTPRINT PLUS 1% OF THE SITE AREA IS REQUIRED AS NON-RESIDENTIAL OPEN SPACE. THE OPEN SPACE MAY BE IN THE FORM OF PEDESTRIAN-ORIENTED OPEN SPACE (GUIDELINE 2.C.2.1), GARDEN, PLAY AREA OR OTHER OPEN SPACE FEATURE THAT SERVES BOTH AS A VISUAL AMENITY AND A PLACE FOR HUMAN ACTIVITY.

## DISCLAIMER

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| NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|

REVISIONS

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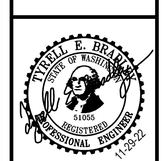
KCI COMMERCIAL, INC.

# KINGSWOOD COMMERCIAL

## BINDING SITE PLAN

*PRELIMINARY BINDING SITE PLAN*



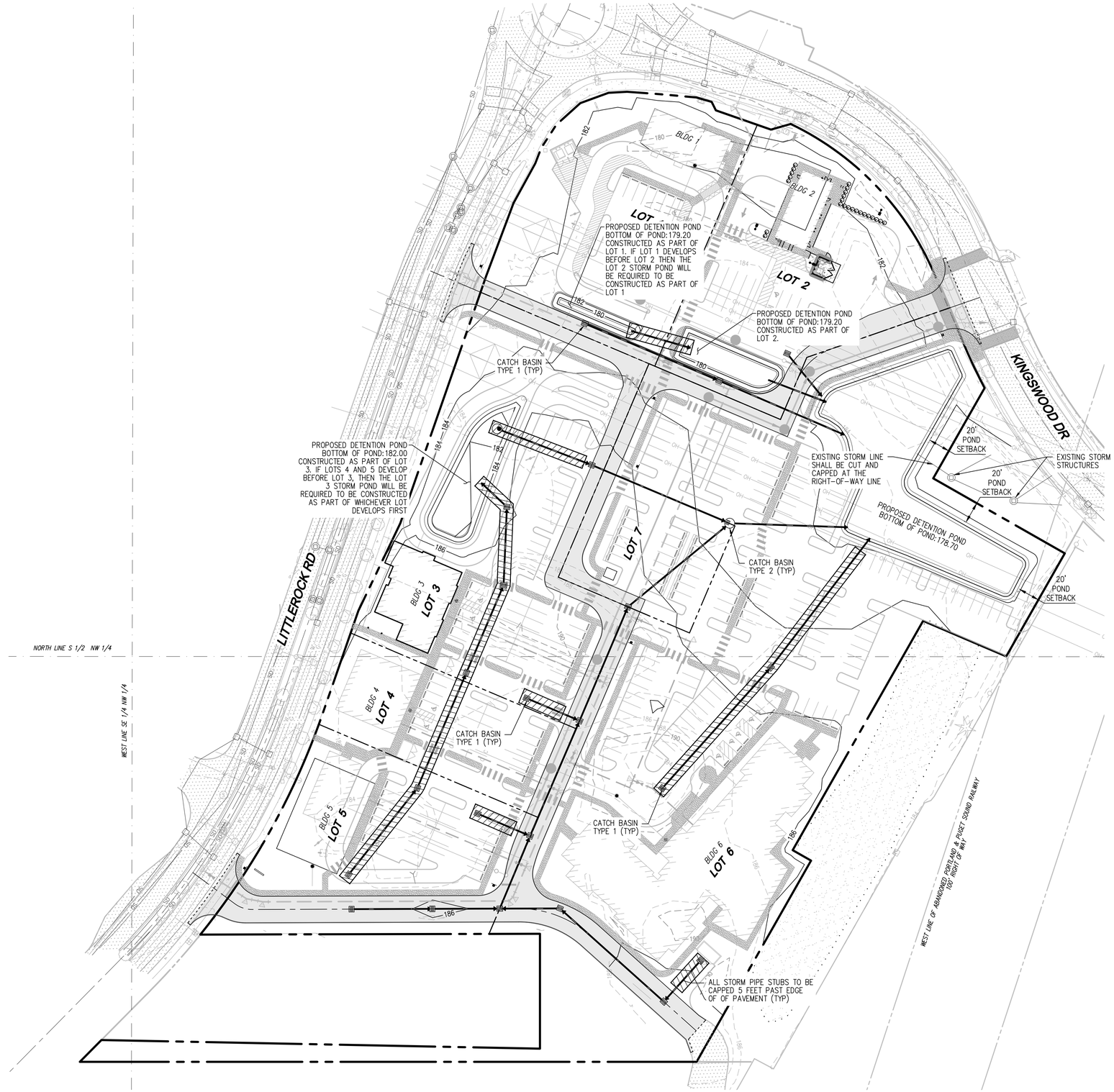

| | |
|---|---|
| JOB NUMBER: | C22151 |
| DRAWING NAME: | C22151P-SP-PL |
| DESIGNER: | REW |
| DRAFTING BY: | AJW |
| DATE: | NOVEMBER, 2022 |
| SCALE: | 1"=50' |
| JURISDICTION: | TUMWATER |

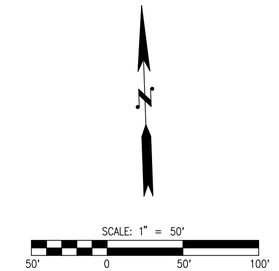
SP-01

SHEET 2 OF 5

Drawing: P:\Civil\2022\c22-151 Kingswood commercial\Drawings\preliminary\C22151P-SP-PL.dwg Plotted: Nov 29, 2022 - 1:09pm

# A PORTION OF SEC 03, TWN 17, RGE 2W, W.M., CITY OF TUMWATER, THURSTON COUNTY, WASHINGTON




## LEGEND

- TYPE 1 CATCH BASIN, GRATED LID
- TYPE 1 CATCH BASIN, SOLID LID
- TYPE 2 CATCH BASIN, GRATED LID
- TYPE 2 CATCH BASIN, SOLID LID
- STORM PIPE
- SEWER PIPE
- WATER PIPE
- STORM PIPE – DEVELOPED AS PART OF INDIVIDUAL LOTS

## GRADING NOTES

THE CITY OF TUMWATER REQUIRES THAT THE FIRM PROVIDING THE SOILS REPORT PERFORM WORK IN ACCORDANCE WITH THE FOLLOWING:

INSIGHT GEOLOGIC, INC. CONDUCT THE SITE INSPECTIONS AS DEFINED IN THE REPORT. THE CITY ALSO REQUIRES THAT IN ADDITION TO THE SOILS ENGINEERING FIRM, A WABO REGISTERED SPECIAL INSPECTOR WITH EXPERIENCE WITH SOIL GRADING BE EMPLOYED, BY THE OWNER, TO CONDUCT COMPACTION TESTING FOR THE BUILDING PADS AND THE REQUIRED FIRE LANES. THE SPECIAL INSPECTOR SHALL NOT BE THE GEOTECHNICAL FIRM, THE CIVIL ENGINEER OF RECORD OR AN EMPLOYEE OF THE CONTRACTOR.

ALL GRADING WORK SHALL BE CONDUCTED IN ACCORDANCE WITH THE SOILS REPORT PREPARED BY INSIGHT GEOLOGIC, INC. COMPACTION TESTING OF THE SOILS UNDER THE FIRE LANES AND THE BUILDING FOUNDATIONS AND UTILITY TRENCHES SHALL BE VERIFIED BY INSIGHT GEOLOGIC, INC. AND THE WABO SPECIAL INSPECTOR.

THE OWNER WILL NEED TO SUBMIT THE NAME OF THE WABO REGISTERED FIRM WHO WILL CONDUCT THE SPECIAL INSPECTIONS, TO THE BUILDING OFFICIAL, PRIOR TO ISSUANCE OF THE SITE DEVELOPMENT/GRADING PERMITS.

THAT NO VERTICAL OR COMBUSTIBLE CONSTRUCTION WILL BE ALLOWED ON THE CONSTRUCTION SITE UNTIL THE FIRE HYDRANTS AND PAVED ROADS ARE INSTALLED, TESTED AND APPROVED BY THE CITY OF TUMWATER. NOTE: TESTING WILL ALSO INCLUDE VERIFICATION OF FIRE FLOW BY THE FIRE DEPARTMENT.

## DISCLAIMER

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REVISIONS

| NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |

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T 425.806.1869 | www.LDCcorp.com | F 425.482.2893

KCI COMMERCIAL, INC.

# KINGSWOOD COMMERCIAL

## BINDING SITE PLAN

*PRELIMINARY GRADING AND DRAINAGE PLAN*

TYRELL E. BRABB
STATE OF WASHINGTON
51055
REGISTERED PROFESSIONAL ENGINEER
11-29-22

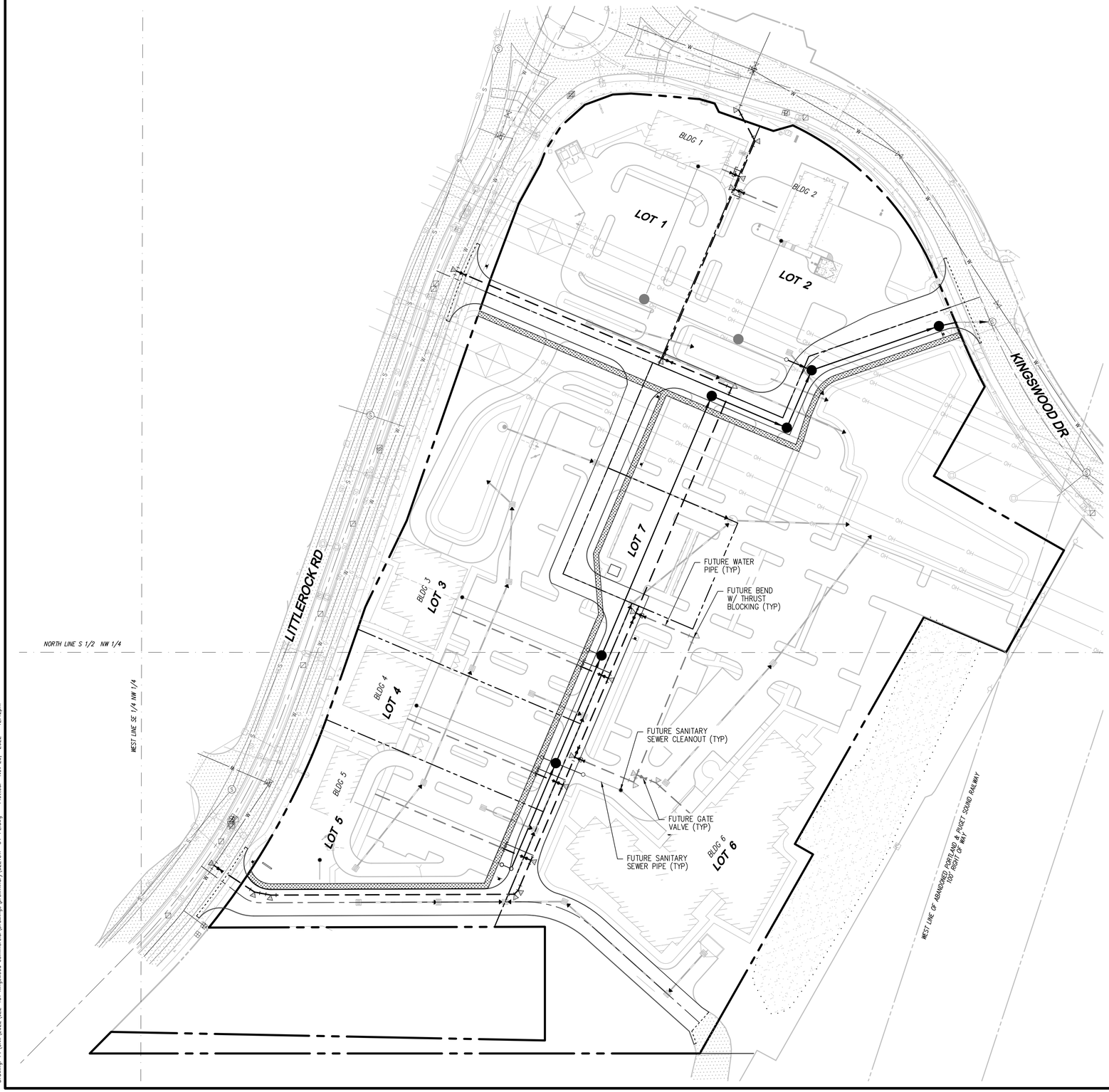
| | |
|---|---|
| JOB NUMBER: | C22151 |
| DRAWING NAME: | C22151P-RD-PL |
| DESIGNER: | REW |
| DRAFTING BY: | AJW |
| DATE: | NOVEMBER, 2022 |
| SCALE: | 1"=50' |
| JURISDICTION: | TUMWATER |

**CG-01**

SHEET 3 OF 5

Drawing: P:\Civil\2022\c22-151 kingswood commercial\Drawings\preliminary\C22151P-RD-PL.dwg Plotted: Nov 29, 2022 - 12:11pm

# A PORTION OF SEC 03, TWN 17, RGE 2W, W.M., CITY OF TUMWATER, THURSTON COUNTY, WASHINGTON




SCALE: 1" = 50'

50' 0 50' 100'

## LEGEND

| | |
|---|---|
| PROPOSED SANITARY SEWER MANHOLE | FUTURE SANITARY SEWER CLEANOUT |
| PROPOSED SANITARY SEWER CLEANOUT | FUTURE THRUST BLOCKING |
| THRUST BLOCKING | FUTURE GATE VALVE |
| GATE VALVE | FUTURE 90° BEND W/ THRUST BLOCKING |
| 90° BEND W/ THRUST BLOCKING | FUTURE 11.25° BEND W/ THRUST BLOCKING |
| 11.25° BEND W/ THRUST BLOCKING | FUTURE 22.5° BEND W/ THRUST BLOCKING |
| 22.5° BEND W/ THRUST BLOCKING | FUTURE 45° BEND W/ THRUST BLOCKING |
| 45° BEND W/ THRUST BLOCKING | FUTURE WATER PIPE |
| WATER CAP | JOINT UTILITY TRENCH |
| SEWER PIPE | |
| STORM PIPE | |
| WATER PIPE | |

**DISCLAIMER**

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|---|---|---|---|

LDC
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F 425.482.2893

KCI COMMERCIAL, INC.

# KINGSWOOD COMMERCIAL
## BINDING SITE PLAN

*PRELIMINARY UTILITY PLAN*

TYLEIL E. BEARDEN
STATE OF WASHINGTON
51055
REGISTERED
PROFESSIONAL ENGINEER
11-29-22

| | |
|---|---|
| JOB NUMBER: | C22151 |
| DRAWING NAME: | C22151P-UT-PL |
| DESIGNER: | REW |
| DRAFTING BY: | AJW |
| DATE: | NOVEMBER, 2022 |
| SCALE: | 1"=50' |
| JURISDICTION: | TUMWATER |

**UT-01**

SHEET 4 OF 5

Drawing: P:\Civil\2022\22-151 Kingswood commercial\Drawings\preliminary\C22151P-UT-PL.dwg Plotted: Nov 29, 2022 - 12:12pm

# A PORTION OF SEC 03, TWN 17, RGE 2W, W.M., CITY OF TUMWATER, THURSTON COUNTY, WASHINGTON

SCALE: 1" = 50'

50' 0 50' 100'

## LEGEND

COMMON AREA ACCESS EASEMENT

JOINT UTILITY EASEMENT

## CURVE TABLE

| CURVE | LENGTH | RADIUS | DELTA |
|---|---|---|---|
| C1 | 196.06 | 270.00 | 041°36'16" |
| C2 | 44.16 | 505.00 | 005°00'36" |
| C3 | 232.36 | 676.41 | 019°40'57" |

## LINE TABLE

| LINE | LENGTH | BEARING |
|---|---|---|
| L1 | 27.53 | N71°59'44"E |
| L2 | 17.06 | N88°47'27"E |
| L3 | 33.32 | N82°48'02"W |
| L4 | 14.64 | N71°48'44"W |
| L5 | 8.66 | N23°56'30"W |
| L6 | 19.20 | N68°40'18"W |
| L7 | 18.81 | N76°05'39"E |
| L8 | 68.84 | N20°44'20"W |
| L9 | 95.33 | N31°41'38"E |
| L10 | 138.91 | N58°14'03"W |
| L11 | 108.68 | N31°41'42"E |
| L12 | 82.88 | N64°47'29"W |
| L13 | 241.98 | N31°41'42"E |
| L14 | 19.35 | N58°18'18"W |
| L15 | 212.33 | N31°41'42"E |
| L16 | 565.57 | N87°55'41"W |
| L17 | 28.12 | N46°45'58"E |
| L18 | 402.25 | N86°48'00"W |
| L19 | 105.37 | N02°04'19"E |
| L20 | 128.22 | N88°03'37"W |
| L22 | 183.24 | N88°03'37"W |
| L23 | 26.51 | N08°58'20"W |
| L24 | 466.26 | N21°19'43"E |
| L25 | 34.35 | N68°40'35"W |
| L26 | 30.41 | N83°42'32"W |
| L28 | 71.32 | N22°36'24"E |
| L29 | 41.68 | N30°45'35"E |
| L30 | 15.08 | N23°07'41"E |
| L31 | 25.58 | N35°10'04"E |
| L32 | 29.49 | N50°04'33"E |
| L33 | 240.11 | N21°13'01"E |
| L34 | 89.00 | N27°40'17"E |
| L35 | 100.29 | N21°13'01"E |
| L38 | 324.66 | N31°22'46"E |

## DISCLAIMER

*TOPOGRAPHIC SURVEY INFORMATION CONTAINED ON THESE PLANS HAS BEEN PROVIDED BY MTN 2 COAST, LLC. LDC, INC. (LAND DEVELOPMENT CONSULTANTS, INC.) ASSUMES NO LIABILITY AS TO THE ACCURACY AND COMPLETENESS OF THIS DATA. ANY DISCREPANCIES FOUND BETWEEN WHAT IS SHOWN ON THE PLANS AND WHAT IS NOTED IN THE FIELD SHOULD BE BROUGHT IMMEDIATELY TO THE ATTENTION OF THE ENGINEER.*

| REVISIONS | | | |
|---|---|---|---|
| NO. | DATE | DESCRIPTION | BY |

LDC
Surveying
Engineering
Planning
Woodinville
Olympia
Kent
1411 State Avenue NE #200
Olympia, WA 98506
T 425.806.1869
www.LDCcorp.com
F 425.482.2893

KCI COMMERCIAL, INC.

# KINGSWOOD COMMERCIAL

## BINDING SITE PLAN

*PRELIMINARY EASEMENT PLAN*

TYRELL E. BRAMAN
STATE OF WASHINGTON
51055
REGISTERED
PROFESSIONAL ENGINEER
11-29-22

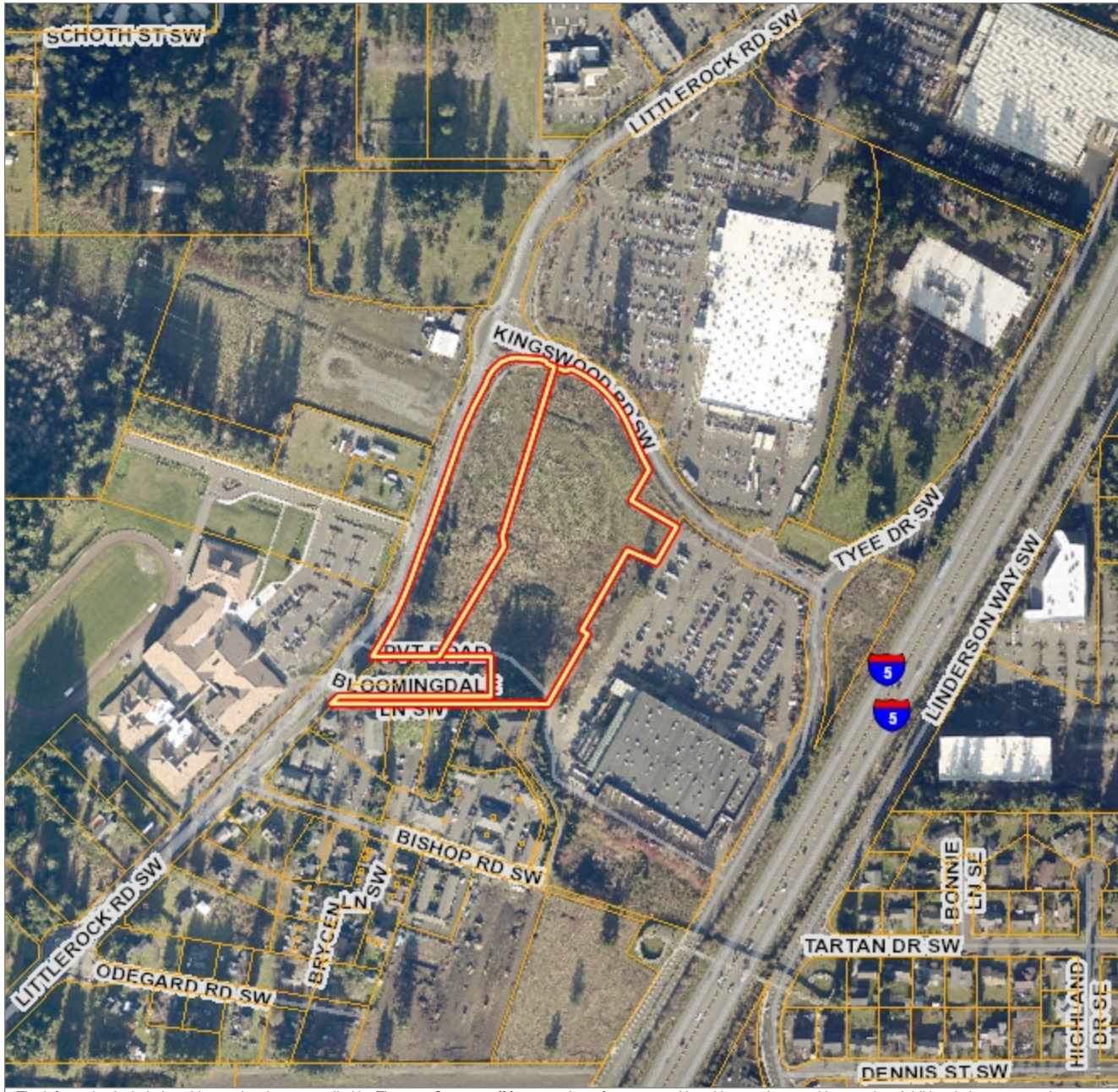
| | |
|---|---|
| JOB NUMBER: | C22151 |
| DRAWING NAME: | C22151P-ES-PL |
| DESIGNER: | REW |
| DRAFTING BY: | AJW |
| DATE: | NOVEMBER, 2022 |
| SCALE: | 1"=50' |
| JURISDICTION: | TUMWATER |

**ES-01**

SHEET 5 OF 5

Drawing: P:\Civil\2022\c22-151 Kingswood commercial\Drawings\preliminary\C22151P-ES-PL.dwg Plotted: Nov 29, 2022 - 12:12pm

Exhibit 3




# Kingswood Commercial Vicinity Map

**Legend**

- Streams
- Parcel Boundaries

Scale 1: 7,558

0 350 700

Feet

Map Created Using GeoData Public Website

Published: 6/13/2023

Note:

THURSTON COUNTY
WASHINGTON
SINCE 1852

Thurston County GeoData Center

The information included on this map has been compiled by Thurston County staff from a variety of sources and is subject to change without notice. Additional elements may be present in reality that are not represented on the map. Ortho-photos and other data may not align. The boundaries depicted by these datasets are approximate. This document is not intended for use as a survey product. ALL DATA IS EXPRESSLY PROVIDED 'AS IS' AND 'WITH ALL FAULTS'. Thurston County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. In no event shall Thurston County be liable for direct, indirect, incidental, consequential, special, or tort damages of any kind, including, but not limited to, lost revenues or lost profits, real or anticipated, resulting from the use, misuse or reliance of the information contained on this map. If any portion of this map or disclaimer is missing or altered, Thurston County removes itself from all responsibility from the map and the data contained within. The burden for determining fitness for use lies entirely with the user and the user is solely responsible for understanding the accuracy limitation of the information contained in this map. Authorized for 3rd Party reproduction for personal use only.

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Exhibit 4

City Hall
555 Israel Road SW
Tumwater, WA 98501-6515
Phone: 360-754-5855
Fax: 360-754-4138

**NOTICE OF APPLICATION**
**Kingswood Commercial**
Permit No. TUM-22-0234
December 15, 2022

**Proposal:** The applicant is proposing a new seven lot commercial binding site plan with associated open space, parking, landscaping and infrastructure.

**Applicant:** KCI Commercial, Inc., PO Box 6797, Tacoma, WA 98417.

**Representative:** Tyrell Bradley, 1411 Slate Ave NE, Suite 200, Olympia, WA 98506

**Location:** 1401 and 1551 Kingswood Dr. SW, Tumwater, WA 98512 in Section 03, T17, 2W. Parcel # 12703240404 and 12703240403.

**Complete Application**: Application submitted: November 29, 2022. Application deemed complete: December 8, 2022.

**Project Permit/Approvals:** The following permits and approvals may be required: Site Plan Approval, Design Review Approval, Variance, Preliminary and Final Binding Site Plan, Landscape Plan Approval, On-site Lighting Approval, Building Permit, Site Development/Grading Permit, Sign Permits and NPDES Permit.

**Environmental Documents Relating to the Project:** A completed environmental checklist and related reports were submitted. Persons receiving this notice will be informed about the City's threshold determination when it is issued.

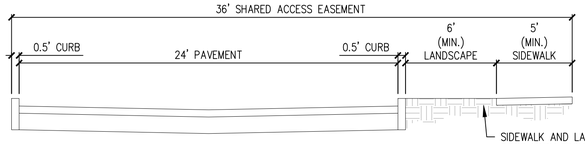
**Determination of Consistency:** No determination of consistency with City of Tumwater or State of Washington plans, regulations, or standards has been made. At a minimum, this project will be subject to the following plans and regulations: Tumwater Comprehensive Plan, Tumwater Zoning Code (TMC Title 18), Tumwater Environmental Policy Ordinance (TMC 16.04), the City of Tumwater Drainage Design and Erosion Control Manual, and the International Building Code.

**Public Hearing:** A public hearing is required for this project and public notice will take place once the meeting date is scheduled.

**Public Comment Period:** The 14 day comment period ends at 5:00 p.m. on December 30, 2022. Written comments may be submitted to City of Tumwater Community Development Department, Attn: Alex Baruch, 555 Israel Road SW, Tumwater, WA 98501, or email abaruch@ci.tumwater.wa.us.

If you have any questions or would like additional information, please contact Alex Baruch, Associate Planner, at 360-754-4180.

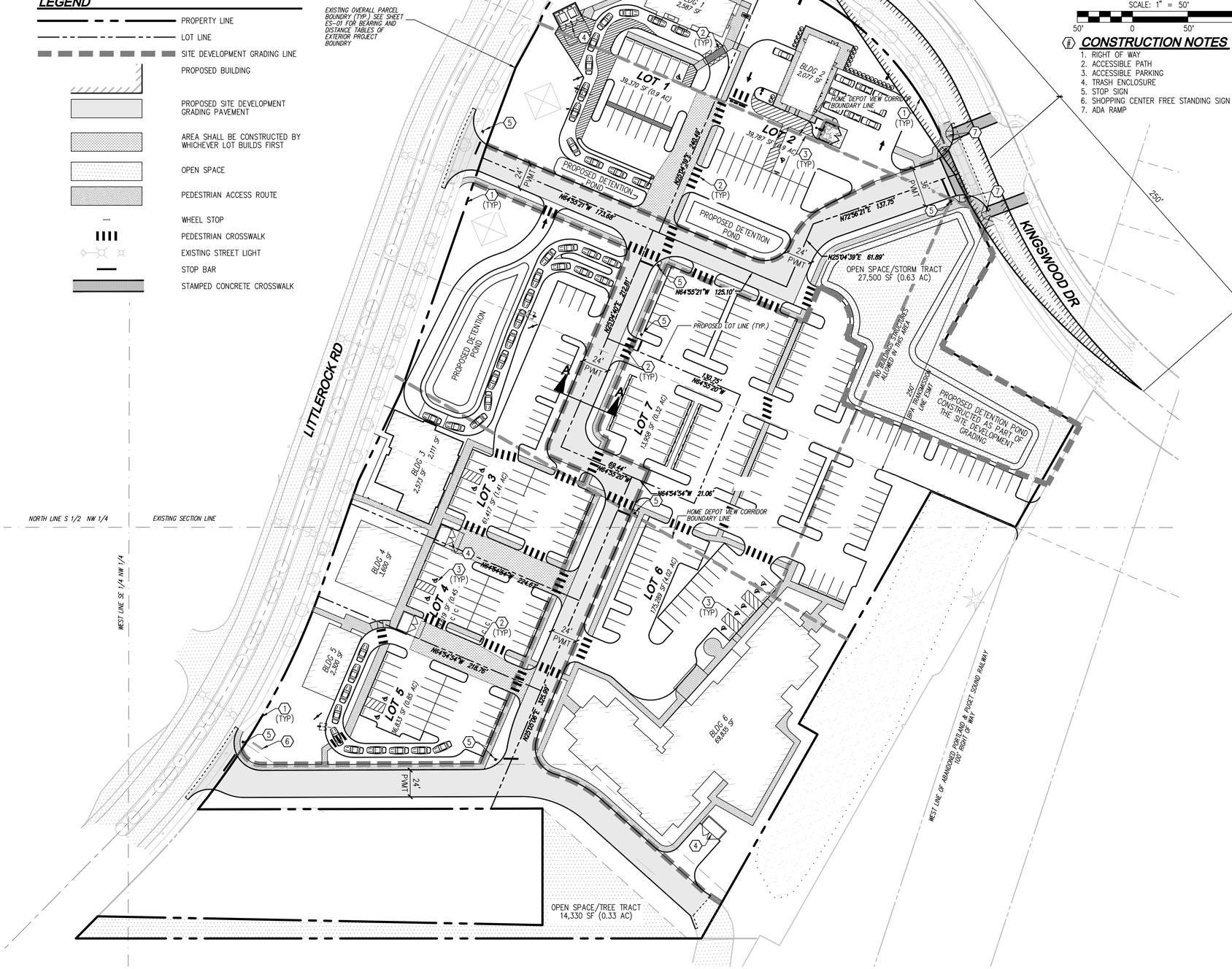
# A PORTION OF SEC 03, TWN 17, RGE 2W, W.M., CITY OF TUMWATER, THURSTON COUNTY, WASHINGTON




## PHASE 1 PRIVATE ROAD A-A

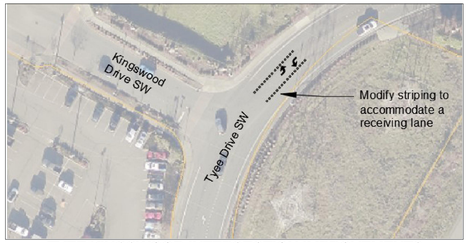
## LEGEND

- PROPERTY LINE
- LOT LINE
- SITE DEVELOPMENT GRADING LINE
- PROPOSED BUILDING
- PROPOSED SITE DEVELOPMENT GRADING PAVEMENT
- AREA SHALL BE CONSTRUCTED BY WHICHEVER LOT BUILDS FIRST
- OPEN SPACE
- PEDESTRIAN ACCESS ROUTE
- WHEEL STOP
- PEDESTRIAN CROSSWALK
- EXISTING STREET LIGHT
- STOP BAR
- STAMPED CONCRETE CROSSWALK




## CONSTRUCTION NOTES

1. RIGHT OF WAY
2. ACCESSIBLE PATH
3. ACCESSIBLE PARKING
4. TRASH ENCLOSURE
5. STOP SIGN
6. SHOPPING CENTER FREE STANDING SIGN
7. ADA RAMP




## TYEE/KINGSWOOD INTERSECTION IMPROVEMENTS (COMPLETED AS PART OF SITE DEVELOPMENT GRADING)

## BINDING SITE PLAN INFORMATION

SITE INFORMATION
- SITE ADDRESS: 1401 & 1551 KINGSWOOD DR SW, TUMWATER
- TAX PARCEL NUMBER(S): 12703240403 & 12703240404
- SITE AREA: 8.96 AC
- NO RECORD OF ANY WELLS WITHIN 200 FEET OF PROPERTY WERE FOUND
- ZONING: GENERAL COMMERCIAL (GC)
- WATER: CITY OF TUMWATER
- SEWER: CITY OF TUMWATER
- POWER/GAS: PUGET SOUND ENERGY
- CABLE/PHONE: COMCAST, CENTURYLINK, WAVE
- REFUSE COLLECTION: WASTE CONNECTIONS (LEMAY)
- SCHOOL DISTRICT: CITY OF TUMWATER
- MAXIMUM LOT COVERAGE (IMPERVIOUS SURFACE) ALLOWED: 85%
- PROPOSED IMPERVIOUS SURFACE COVERAGE PROVIDED: 4.80 AC (54%)
- PROPOSED PERVIOUS SURFACE COVERAGE PROVIDED: 3.15 AC (35%)
- MAXIMUM BUILDING HEIGHT: 65 FEET

PROPOSED ADDRESSES
LOT 1: 1477 KINGSWOOD DR SW, TUMWATER, WA 98512
LOT 2: 1453 KINGSWOOD DR SW, TUMWATER, WA 98512
LOT 3: 6104 LITTLEROCK RD SW, TUMWATER, WA 98512
LOT 4: 6142 LITTLEROCK RD SW, TUMWATER, WA 98512
LOT 5: 6208 LITTLEROCK RD SW, TUMWATER, WA 98512
LOT 6: 1436 KINGSWOOD DR SW, TUMWATER, WA 98512
LOT 7: 1421 KINGSWOOD DR SW, TUMWATER, WA 98512

PROPOSED USE:
LOT 1: FAST FOOD RESTAURANT
LOT 2: OIL CHANGE SERVICE STATION
LOT 3: FAST FOOD RESTAURANT & SEATED RESTAURANT
LOT 4: RETAIL/OFFICE
LOT 5: FAST FOOD RESTAURANT
LOT 6: HOTEL
LOT 7: CAR CHARGING STATION

PARKING:
LOT 1: *21 PARKING STALLS (1 EV STALL REQUIRED)
LOT 2: 19 PARKING STALLS (1 EV STALL REQUIRED)
LOT 3: **41 PARKING STALLS (EV PARKING PROVIDED ON LOT 7
LOT 4: 24 PARKING STALLS (1 EV STALL REQUIRED)
LOT 5: 25 PARKING STALLS (1 EV STALL REQUIRED)
LOT 6: 130 PARKING STALLS (121 UNITS PLUS 9 PARKING STALLS FOR 1,500 SF MEETING ROOM. EV PARKING PROVIDED ON LOT 7)
LOT 7: 20 CAR CHARGING STALLS

*A SHARED PARKING AND CROSS ACCESS AGREEMENT WILL BE PREPARED FOR ALL 7 LOTS. HOWEVER, IF LOT 1 IS CONSTRUCTED BEFORE LOT 2, THEN LOT 1 SHALL CONSTRUCT A MINIMUM OF 5 PARKING STALLS ON THE WEST END OF LOT 2 PARKING LOT, AS LOT 1 IS UNDER THE 26 PARKING STALL REQUIREMENT AS A STANDALONE PARCEL. LOT 2 WILL REQUIRE 4-6 PARKING BASED ON USE (SIMILAR TO JIFFY LUBE IN USE) AND CURRENTLY IS PROVIDING 19 PARKING STALLS.

**A SHARED PARKING AND CROSS ACCESS AGREEMENT WILL BE PREPARED FOR ALL 7 LOTS. HOWEVER, IF LOT 3 IS CONSTRUCTED BEFORE LOT 4, THEN LOT 3 SHALL CONSTRUCT A MINIMUM OF 6 PARKING STALLS ON THE NORTH END OF LOT 4 PARKING LOT, AS LOT 3 IS UNDER THE 47 PARKING STALL REQUIREMENT AS A STANDALONE PARCEL. LOT 4 REQUIRES 13 PARKING STALLS AS RETAIL/OFFICE AND CURRENTLY IS PROVIDING 24 PARKING STALLS.

REQUIRED BICYCLE PARKING: (LOCATION PROVIDED AT BUILDING PERMIT FOR EACH LOT)
LOT 1: 2 SHORT TERM
LOT 2: 2 SHORT TERM
LOT 3: 2 SHORT TERM
LOT 4: 2 SHORT TERM
LOT 5: 2 SHORT TERM
LOT 6: 7 SHORT TERM AND 2 LONG TERM
LOT 7: NOT APPLICABLE TO USE

GENERAL NOTES:

1. PARCELS 3, 4, AND 5 UP TO THE BPA TRANSMISSION LINE EASEMENT ARE SUBJECT TO THE CITY OF TUMWATER DESIGN GUIDLINES, APPENDIX A, PAGE A-9, AND THE DESIGN GUIDELINES FOR BUILDINGS ALONG SIGNATURE ROADS 2.B.2.1 THROUGH 2.B.2.7
2. A MINIMUM 8-FOOT WALKWAY OR 6-FOOT WALKWAY WITH 3-FOOT LANDSCAPE STRIP IS REQUIRED BETWEEN THE BUILDING AND THE PARKING STALLS.
3. FIRE LANE SIGNS AND YELLOW STRIPING SHALL BE PROVIDED ON-SITE TO IDENTIFY FIRE DEPARTMENT ACCESS ROADS AND PROHIBIT THE OBSTRUCTION THEREOF. IFC 503.3.
4. LANDSCAPE SCREENING SHALL BE PROVIDED BETWEEN PUBLIC RIGHT-OF-WAY AND ALL DUMPSTER ENCLOSURES TO THAT THE ENCLOSURE IS OBSTRUCTED FROM VIEW FROM PUBLIC RIGHTS-OF-WAY. THIS WILL BE SHOWN ON THE SITE DEVELOPMENT GRADING LANDSCAPE PLANS FOR EACH INDIVIDUAL LOT.
5. LANDSCAPE DESIGN SHALL BE CONSISTENT THROUGHOUT THE ENTIRE BINDING SITE PLAN AND ALL LOTS.

OPEN SPACE
OVERALL SITE OPEN SPACE: 41,830 SF (0.96 AC) 11% OF TOTAL SITE

*REQUIRED OPEN SPACE: (LOCATION PROVIDED AT BUILDING PERMIT FOR EACH LOT)
LOT 1: 419 SF
LOT 2: 419 SF
LOT 3: 640 SF
LOT 4: 232 SF
LOT 5: 391 SF
LOT 6: 2,451 SF
LOT 7: NOT APPLICABLE TO USE

*1% OF THE GROUND FLOOR OF NON-RESIDENTIAL BUILDING FOOTPRINT PLUS 1% OF THE SITE AREA IS REQUIRED AS NON-RESIDENTIAL OPEN SPACE. THE OPEN SPACE MAY BE IN THE FORM OF PEDESTRIAN-ORIENTED OPEN SPACE (GUIDELINE 2.C.2.1), GARDEN, PLAY AREA OR OTHER OPEN SPACE FEATURE THAT SERVES BOTH AS A VISUAL AMENITY AND A PLACE FOR HUMAN ACTIVITY.

## DISCLAIMER

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| NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|

REVISIONS

LDC
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Engineering
Planning
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Olympia
Kent
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T 425.806.1869
F 425.482.2893
www.LDCcorp.com

KCI COMMERCIAL, INC.

# KINGSWOOD COMMERCIAL

## BINDING SITE PLAN

*PRELIMINARY BINDING SITE PLAN*

TYRELL E. BRAUER
STATE OF WASHINGTON
51055
REGISTERED
PROFESSIONAL ENGINEER
11-29-22

| | |
|---|---|
| JOB NUMBER: | C22151 |
| DRAWING NAME: | C22151P-SP-PL |
| DESIGNER: | REW |
| DRAFTING BY: | AJW |
| DATE: | NOVEMBER, 2022 |
| SCALE: | 1"=50' |
| JURISDICTION: | TUMWATER |

SP-01

SHEET 2 OF 5

Drawing: P:\Civil\2022\c22-151 Kingswood commercial\Drawings\preliminary\C22151P-SP-PL.dwg Plotted: Nov 29, 2022 - 1:09pm

Exhibit 5

City Hall
555 Israel Road SW
Tumwater, WA 98501-6515
Phone: 360-754-5855
Fax: 360-754-4138

# MITIGATED DETERMINATION OF NON-SIGNIFICANCE
## Kingswood Commercial
Permit No. TUM-22-0234
March 16, 2023

Description of Proposal: The applicant is proposing a new seven lot commercial binding site plan with associated open space, parking, landscaping and infrastructure.

Applicant: KCI Commercial, Inc., PO Box 6797, Tacoma, WA 98417.

Representative: Tyrell Bradley, 1411 Slate Ave NE, Suite 200, Olympia, WA 98506

Location of Proposal: 1401 and 1551 Kingswood Dr. SW, Tumwater, WA 98512 in Section 03, T17, 2W. Parcel # 12703240404 and 12703240403.

Lead agency: City of Tumwater, Community Development Department.
The lead agency for this proposal has determined that, as conditioned, 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)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead-agency. This information is available to the public on request.

This MDNS assumes that the applicant will comply with all City ordinances and development standards governing the type of development proposed, including but not limited to, street standards, storm water standards, high groundwater hazard areas ordinance standards, water and sewer utility standards, critical areas ordinance standards, tree protection standards, zoning ordinance standards, land division ordinance standards, building and fire code standards, and level of service standards relating to traffic. These ordinances and standards provide mitigation for adverse environmental impacts of the proposed development.

Condition of Approval for mitigating environmental impacts:
Findings:

1. The Tumwater Boulevard/I-5 northbound ramps intersection currently operates at LOS F during both peak periods for the northbound left-turn movement. The project is projected to add fifteen trips to this intersection. The City has recently developed a SEPA improvement project for the Tumwater Boulevard/I-5 interchange that include intersection improvements at the northbound I-5 ramps intersection, with a peak hour per trip impact fee of $4,219 for each trip entering the interchange area.

2. Mitigation proposed in the Traffic Impact Analysis for the failing movements at Kingswood Drive and Tyee Drive intersection (center receiving lane) does not adequately address safety, capacity and effectiveness issues in the long term. Other methods of controlling the intersection like a three way stop or traffic light would not be viable because the City cannot allow intersection control types that significantly impact throughput on Tyee without jeopardizing regional (Littlerock Road) capacity.

Mitigation Measures:

1. Prior to issuance of the Building Permit:
   a. Construct a roundabout at the northbound Interstate 5 On/Off Ramp and Tumwater Boulevard intersection; or
   b. Voluntarily pay a mitigation fee of $4,219 per peak trip generated by this project under RCW 82.02.020 to be used as described herein:
      *Tumwater Boulevard/I-5 Interchange: The City's planned transportation improvements at the Tumwater Boulevard/I-5 interchange include converting the interchange to a roundabout diamond interchange by replacing the southbound on/off ramp signal and northbound stop controlled intersections with roundabouts. If the subject development has trips to the interchange before the roundabout is constructed, a temporary signal will be required.*

2. To mitigate intersection movement failure caused by this development adding trips through the Kingswood Road and Tyee Drive intersection, the project shall install a compact roundabout. The roundabout design shall be approved by the City of Tumwater Transportation and Engineering Department as a part of the site development grading design review for frontage improvements required by this development.

This MDNS is issued under WAC 197-11-350; the lead agency will not act on this proposal for 14 days from the date below. Comments must be submitted no later than March 30, 2023, by 5:00 p.m.

Date: March 16, 2023

Responsible Official:

Michael Matlock, AICP
Community Development Director

Contact person: Alex Baruch, Associate Planner
555 Israel Road SW
Tumwater, WA 98501
abaruch@ci.tumwater.wa.us

Appeals of this MDNS must be made to the City of Tumwater Community Development Department, no later than April 6, 2023, by 5:00 p.m. All appeals shall be in writing, be signed by the appellant, be accompanied by a filing fee of $175, and set forth the specific basis for such appeal, error alleged and relief requested.

# CITY OF TUMWATER

**555 ISRAEL RD. SW, TUMWATER, WA 98501**

Email: cdd@ci.tumwater.wa.us

(360) 754-4180


TUM-22 - 1724

DATE STAMP

RECEIVED BY: Kerri

Any person proposing to develop in the incorporated limits of the City of Tumwater is required to submit an environmental checklist unless the project is exempt as specified in WAC 197-11-800 (Categorical Exemptions) of the State Environmental Policy Act Rules. **SUBMITTAL REQUIREMENTS** are as follows:

1. **A COMPLETE ENVIRONMENTAL CHECKLIST.** If the project is located within the Port of Olympia property, the checklist must also be signed by a representative of the Port.
2. **FEE OF $880.00 TO BE PAID UPON SUBMITTAL.** This includes the Public Notice fee.
3. **NAME AND ADDRESS LIST OF PROPERTY OWNERS WITHIN 300 FEET OF THE SUBJECT PROPERTY.**

## SEPA ENVIRONMENTAL CHECKLIST

***UPDATED 2015***

***Purpose of checklist:***

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

***Instructions for applicants*:** [help]

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

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

***Instructions for Lead Agencies:***

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

***Use of checklist for nonproject proposals:*** [help]

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead

agency may exclude (for non-projects) questions in Part B - Environmental Elements – that do not contribute meaningfully to the analysis of the proposal.

## A. Background [help]

**EVALUATION FOR AGENCY USE ONLY**

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

2. Name of applicant: [help]
   KCI Commercial, Inc.

3. Address and phone number of applicant and contact person: [help]
   Contact Person: Trevor Colby (253-475-4363)
   PO Box 6797, Tacoma WA 98417

4. Date checklist prepared: [help] May, 2022

5. Agency requesting checklist: [help]
   City of Tumwater

6. Proposed timing or schedule (including phasing, if applicable): [help]
   We intend to break ground immediately upon issuance of permits. There are two phases proposed at this time.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. [help]
   Other than the development proposed as part of phase 2, there are no plans for future additions, expansion, or further activity related to or connected with this proposal

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. [help]
   The following reports have been prepared for this proposal: foresters report, geotechnical report, stormwater report, and gopher study.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. [help]
   There are currently no applications for governmental approval that would directly impact the property of this proposal.

This is not a phased binding site plan, all site infrastructure and roads will be completed with a site development grading permit up front with work on each individual lot being completed by the proposed use through a building permit submittal.

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

Binding Site Plan permit issuance, SEPA Determination, Planned Unit Development, civil construction permit issuance, NPDES permit issuance

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

Development of 8.97 acre site into a new 7-lot commercial site with primarily retail & food service businesses, associated right-of-way, utilities, parking, and open space areas.

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

Project Address: 1401 & 1551 Kingswood Dr. SW, Tumwater WA 98512

Thurston County Parcels: 12703240403 & 12703240404

**EVALUATION FOR AGENCY USE ONLY**

Planned unit development is no longer needed, variance is needed for reduction in setbacks adjacent to residential zoned property (school) across Littlerock Road.

## B. ENVIRONMENTAL ELEMENTS [help]

### 1. Earth

a. General description of the site [help]

☑ Flat ☐ Rolling ☐ Hilly ☐ Steep Slopes ☐ Mountainous

☐ Other: _____

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

+/- 5%

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

Nisqually loamy fine sand.

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

There are no surface indications or history of unstable soilsin the immediate vicinity. Per the Geotech Report, the site has 'slight' hazard for erosion.

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

+/-20,000 CY of excavation and +/-20,000 CY of fill.

Fill material will be sourced from an approved location

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

Due to the flat nature of the site, erosion during clearing and grading and construction is not likely. Onsite temporary erosion control measures will be taken to mitigate the potential threat of any erosion during storm events.

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

+/- 85% of the site will be covered with impervious surfaces

Max 85% impervious surface permitted.

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

Best Management Practices (BMPs) will be used to control erosion. Measures may include diverting surface water away from the stripped or disturbed areas.

Silt fences and/or straw bales may be erected to prevent muddy water from leaving the site. Disturbed areas will be planted as soon as practical and vegetation maintained until established.

**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?

During construction, the primary emissions to the air will be ex

After construction, the primary source of emissions to the air w

**EVALUATION FOR AGENCY USE ONLY**

If any, generally describe and give approximate quantities if known. [help]

Not known at this time.

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

As it is currently known, there are no off-site sources of emissions or odors that may impact this proposal.

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

Should construction activities be taken during the dry season, periodic watering, if deemed necessary, could be used to control dust.

Automobile emissions should be negligible because of the standards requested by the State of Washington Department of Licensing.

3. **Water**

a. Surface Water: [help]

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

No, there are no surface water bodies on or in the immediate vicinity of the project site.

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

There will be no work over, in, or adjacent to surface waters.

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

No fill and dredge material will be placed in or removed from surface waters or wetlands.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and

**EVALUATION FOR AGENCY USE ONLY**

approximate quantities if known. [help]

No, this project will not require surface water withdrawals or diversions.

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

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

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

No, the proposal does not involve any discharges of waste material into surface waters.

b. Ground Water:

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

No, groundwater will not be withdrawn from a well for drinking water or other purposes.

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

The proposed development will be on the public sewer system, therefore no waste material will be discharged from septic tanks or other sources.

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?

Runoff from this site is primarily from rainfall on the site it

Runoff from roofs, roads, driveways, and walkway surfac

tightlines, catch basins and pipe routed to onsite water qu

**EVALUATION FOR AGENCY USE ONLY**

Will this water flow into other waters? If so, describe. [help]

No, stormwater will be treated and infiltrated on-site

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

It is unlikely that waste materials will enter ground or surface waters. Waste materials deposited by automobiles on interior roadways will be collected in a subsurface (piped) system and conveyed to the detention facility. Pollutants will be separated and filtered prior to release. Yard and rooftop drainage will be relatively clean and free of waste material.

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

The proposal will not alter or otherwise affect the drainage patterns in the vicinity of the project site.

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

All adopted development and engineering requirements imposed by the City to control hydrologic impacts on adjacent properties will be incorporated into final construction plans and implemented by the proponent. Storm drainage facilities will be designed in accordance with versions of the DOE Storm Water Manual, and the City of Tumwater engineering standards, as were in effect at time of original proposal.

4. **Plants** [help]

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

- ☐ deciduous tree: alder, maple, aspen, other
- ☑ evergreen tree: fir, cedar, pine, other
- ☑ shrubs
- ☑ grass
- ☐ pasture
- ☐ crop or grain
- ☐ orchards, vineyards or other permanent crops.
- ☐ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
- ☐ water plants: water lily, eelgrass, milfoil, other
- other types of vegetation

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

The entire site will be cleared for construction.

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

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

**EVALUATION FOR AGENCY USE ONLY**

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

Landscaping onsite has been designed in accordance with Tumwater Municipal Code (TMC) Section 18.47.

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

There are no known noxious weeds or invasive plant species on or near the site.

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: [help]

- birds: hawk, heron, eagle, songbirds, other:
- mammals: deer, bear, elk, beaver, other:
- fish: bass, salmon, trout, herring, shellfish
- other:

Animals onsite may include but are not limited to hawks, eagles, songbirds and other small mammals.

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

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

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

All of Western Washington is covered by the Pacific Flyway Migration Route. This is one of the four major North American migration routes for birds, especially waterfowl. It extends from Alaska and Canada to Mexico and South America.

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

New landscaping of native plants will provide a familiar environment to native animals, insects and fungi.

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

There are no known invasive animal species known to be on or near the site.

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. [help]

Electricity and natural gas will be the primary source of energy for the proposal and would be used for heating, lighting, and other miscellaneous purposes. Project will meet current energy codes.

**EVALUATION FOR AGENCY USE ONLY**

And design guidelines

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

No, the project will not affect the potential use of solar energy by adjacent properties.

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

Measures required by the Washington State commercial energy code would be employed.

Additional energy conservation features would be at choice of property owner.

**EVALUATION FOR AGENCY USE ONLY**

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. [help]

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

Review of the Department of Ecology Toxic Cleanup Program shows the project site as Tumwater Pickup Parts. This site has been cleaned and complies with the standards of the state's environmental cleanup law, the model Toxics Control Act.

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.

There are no existing hazardous chemicals/conditions that might affect the project development and design.

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.

There will be no toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction.

4) Describe special emergency services that might be required.

No need for special emergency services are anticipated.

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

All potentially hazardous materials used during construction would be handled and stored in accordance with state and federal hazardous material handling requirements. If contaminated soil or groundwater are encountered during construction, a formal plan would be developed consistent with state and federal regulations for their removal and treatment or disposal. Also, if contamination are encountered, measures would be implemented to minimize exposure to people in accordance with applicable regulations.

b. **Noise**

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

Typical noise from the surrounding commercial properties will be heard from the project site.

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. [help]

Noise levels would be intermittently high during construction, but would be limited to code allowed and normal waking hours. Post-development traffic noise created by vehicular trips would increase ambient noise levels to the vicinity.

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

Construction will be limited to normal waking hours as prescribed by the City of Tumwater Ordinance so nearby businesses should not experience long-lasting adverse noise impacts.

**EVALUATION FOR AGENCY USE ONLY**

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. [help]

The site is currently vacant. Adjacent properties are developed commercially.

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

No, the project site has not been used as working farm or forest lands in the past.

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

No, the proposal will not affect or be affected by surrounding working farm or forest land.

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

There are currently no structures on the site, the site is vacant.

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

There will be no structures demolished as part of this development

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

General Commercial.

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

General Commercial.

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

Not applicable.

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

There are no critical areas onsite.

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

+/- 200 people will work within the completed project

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

This proposal will not displace any people as the site is currently vacant.

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

There are no proposed measures to avoid or reduce displacement impacts as the site is currently vacant.

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

The proposed development is compatible and consistent with the adjacent land uses. The surrounding parcels are already developed with commercial buildings and the general commercial zone allows for this type of development.

m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:

There are no specific measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance.

**EVALUATION FOR AGENCY USE ONLY**

9. **Housing**

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

There will be no housing units provided. This is a commercial development.

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

No housing units will be eliminated.

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

There are currently no measures to reduce or control housing impacts as this is a commercial development.

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? [help]

65 feet maximum height with wood and masonry exterior finishes.

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

There will be no views in the immediate vicinity that would be altered or obstructed.

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

The observance of building setbacks and provision on ornamental and native landscaping would reduce the aesthetic of the project. The project will comply with City of Tumwater's Design Review.

11. **Light and glare**

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

The proposal would produce light from automobile headlights, streetlights, and external building lights, primarily at night.

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

Not to our knowledge. Provision of streetlights will enhance safety. All adjacent land uses are similar.

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

Light from nearby commercial development and streetlights may be present, but should not impact this proposal.

**EVALUATION FOR AGENCY USE ONLY**

Screening of headlights will be a requirement for individual building permit approval with enhanced landscaping. A photometric lighting plan will be reviewed with each building permit to ensure light glare meets ordinance requirements.

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

This project will be in compliance with all required light-diversion regulations.

12. **Recreation**

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

Across Littlerock Rd SW to the west is Trosper Lake and Park. Across I-5 to the east is V street Park.

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

No, the proposed project will not displace any existing recreational uses.

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

There are no proposed measures to reduce or control impacts to recreation.

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. [help]

There are no known buildings or structures onsite that are over 45 years old or are eligible for listings int he national, state or local preservation register.

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

There are no landmarks, features, or other evidence of Indian or historic use onsite.

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

Washington Information System for Architectural and Archaeological Records Data (WISSARD) was reviewed as well as Thurston County Geodata site.

**EVALUATION FOR AGENCY USE ONLY**

A cultural resource study will be a condition of site plan approval to be completed and approved prior to site development grading permit approval.

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.

Construction would be temporarily halted should evidence of historic, archaeological, scientific, or cultural importance should be discovered.

**EVALUATION FOR AGENCY USE ONLY**

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. [help]

The proposed development is located off Kingswood Rd SW in the north and is bounded by Littlerock Rd SW in the west direction.

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

Yes, the general area is currently served by public transit. The closest bus stop is just north of the site, roughly a tenth of an acre, near the Walmart & Calvary Cemetary.

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

The project will construct 274 new parking stalls, including 14 EV charging 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). [help]

Yes, this project will improve existing roads and also design/construct new public roads for the development.

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

No, the project site is not in the immediate vicinity of water, rail, or air transportation.

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).

+/- 2,255 daily vehicle trips will be generated from the complet

+/- 100 AM peak hour trips and +/- 162 PM peak hour trips

What data or transportation models were used to make these estimates? [help]

Institute of Transportation Engineers (ITE) publication, Trip Generation Manual, 11th Edition.

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, the proposal will not interfere with, affect or be affected by the movement of agricultural and forest products.

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

Frontage improvements will be constructed and impact fees will be paid.

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. [help]

The project will increase the need for public services such as fire, emergency aid, and police protection; however these services in place typically have the capacity for the new development. This will be determined as part of the City review.

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

Mitigation measures for traffic and school impacts will be provided, including payment of fees as required, pursuant to City of Tumwater's Municipal Code.

16. **Utilities**

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

None.

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

Electricity, natural gas, water, refuse service, telephone, sanitary sewer.

**EVALUATION FOR AGENCY USE ONLY**

Roundabout will be constructed at the intersection of Kingswood Drive and Tyee.

## C. Signature [HELP]

EVALUATION FOR
**AGENCY USE ONLY**

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: Tyrell E. Bradley

Name of signee: Tyrell Bradley

Position: Principal Engineer

Agency/Organization: LDC, Inc.

Date Submitted: 9/30/2022

## D. Signature – Property Owner's Review, Port of Olympia (if applicable)

I certify that I have reviewed the above environmental checklist prepared by the applicant and that the project is consistent with the tenant's lease for Port property. The Port's comments have been incorporated in the document as submitted or as noted.

Port of Olympia – Please Print: _____

Port of Olympia – Signature: _____

Date Submitted: _____

## E. CITY OF TUMWATER

Reviewed by: Alex Baruch

Date: 03-10-2023

## F. Supplemental sheet for nonproject actions [help]

(**IT IS NOT NECESSARY** to use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

**EVALUATION FOR AGENCY USE ONLY**

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

Proposed measures to avoid or reduce such increases are:

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

3. How would the proposal be likely to deplete energy or natural resources?

Proposed measures to protect or conserve energy and natural resources are:

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

Proposed measures to protect such resources or to avoid or reduce impacts are:

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

Proposed measures to avoid or reduce shoreline and land use impacts are:

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

Proposed measures to reduce or respond to such demand(s) are:

7. Identify, if possible, whether the proposal may conflict with local state, or federal laws or requirements for the protection of the environment.

**EVALUATION FOR AGENCY USE ONLY**

Exhibit 6

City Hall
555 Israel Road SW
Tumwater, WA 98501-6515
Phone: 360-754-5855
Fax: 360-754-4138

**NOTICE OF PUBLIC HEARING**
**Kingswood Commercial Preliminary Binding Site Plan and Variance**
June 16, 2023

**NOTICE IS HEREBY GIVEN** that the City of Tumwater Hearing Examiner will conduct a public hearing at or about **7:00 p.m. on Wednesday, June 28, 2023**, for consideration of the following items:

Case #: TUM-22-1731 and TUM-22-1732 Kingswood Commercial.

Description of Proposal: The applicant is requesting approval of a Preliminary Binding Site Plan and Variance to develop a seven lot commercial development with associated right-of-way, utilities, open space, landscaping and infrastructure.

Applicant: KCI Commercial, Inc. PO Box 6797, Tacoma WA 98417

Location of Proposal: The property is located at 1401 and 1551 Kingswood Dr. SW, Tumwater, WA 98512. Parcel Numbers 12703240404 and 12703240403.

The public hearing will be held both virtually via Zoom and in person at Tumwater City Hall.

**ATTEND in Person**
Tumwater City Hall, 555 Israel Rd. SW, Tumwater, WA 98501.

**WATCH Online**
Go to http://www.zoom.us/join, and enter the Webinar ID: 833 5992 4716 and Passcode 655699**.**

**LISTEN by Telephone**
Call (253) 215-8782, listen for the prompts, and enter the Webinar ID: 833 5992 4716 Passcode 655699**.**

The City of Tumwater Hearing Examiner will hear testimony from interested parties in person or via computer audio or by telephone. To provide comments via computer audio or by telephone you must register in advance:

https://us02web.zoom.us/webinar/register/WN_iUoQoqV5TtKME8QwjD_elg

After registering, you will receive a confirmation email containing information about joining the webinar.

Written comments may be submitted to City of Tumwater, Community Development Department, 555 Israel Road SW, Tumwater, WA 98501, or by email at abaruch@ci.tumwater.wa.us, and must be received by 5:00 p.m. on Wednesday, June 28, 2023. Verbal testimony will be received during the hearing either virtually, or in person.

The staff report for this request will be available for review at least five business-days prior to the public hearing. If you have any questions or would like additional information, please contact Alex Baruch at 360-754-4180.

Do not publish below this line

Published: June 16, 2023
Posted: June 16, 2023

Exhibit 7

# CITY OF TUMWATER

555 ISRAEL RD. SW, TUMWATER, WA 98501
(360) 754-4180 (360) 754-4126 (FAX)
Email: cdd@ci.tumwater.wa.us

## PRELIMINARY BINDING SITE PLAN Application

TUM - _____

_____ RCVD BY

DATE STAMP

Application fee: $770.00, plus $27.50 per lot

***SUBJECT PROPERTY***

ADDRESS OF PROPERTY (COMPLETE): 1401 & 1551 Kingswood Dr. SW, Tumwater WA 98512

PROJECT NAME: Kingswood Commercial

PARCEL NUMBER(s): 12703240404 & 12703240403

***APPLICANT*** *(please print neatly)*

NAME OF APPLICANT: KCI Commercial, Inc.

APPLICANT'S MAILING ADDRESS (COMPLETE): PO Box 6797, Tacoma WA 98417

APPLICANT'S TELEPHONE(S): 253-475-4363

APPLICANT'S E-MAIL: trevor@kciwa.com

***PROJECT REPRESENTATIVE***

NAME OF PROJECT REPRESENTATIVE: Tyrell Bradley

REPRESENTATIVE'S MAILING ADDRESS (COMPLETE): 1411 Slate Ave NE, Suite 200, Olympia WA 98506

REPRESENTATIVE'S TELEPHONE(S): 425-806-1869

REPRESENTATIVE'S E-MAIL: tbradley@ldccorp.com

***PROPERTY OWNER***

NAME OF PROPERTY OWNER: Kingswood Capital, Inc.

OWNER'S MAILING ADDRESS (COMPLETE): 701 W Georgia Street Suite 520 IBM Tower, Vancouver, CA V7Y1A1

OWNER'S TELEPHONE(S): _____

OWNER'S E-MAIL: torben@tnelsonconsulting.com

***PROJECT DESCRIPTION*** *(attach additional sheets and documentation, as needed)*

Development of 8.97 acre site into a new 7-lot commercial binding site plan with associated right-of-way, utilities and open space areas.

I affirm that all answers, statements, and information submitted with this application are correct and accurate to the best of my knowledge. I also affirm that I am the owner of the subject site or am duly authorized by the owner to act with respect to this application. Further, I grant permission to any and all employees and representatives of the City of Tumwater and other governmental agencies to enter upon and inspect said property as reasonably necessary to process this application. I agree to pay all fees of the City that apply to this application.

Tyrell E. Bradley

Signature of Applicant/Representative

5/24/2022

Date

Please attach the **Preliminary Binding Site Plan submittal checklist** to this Application.

Exhibit 8

**CITY OF TUMWATER**
**555 ISRAEL RD. SW, TUMWATER, WA 98501**
(360) 754-4180 (360) 754-4126 (FAX)
Email: cdd@ci.tumwater.wa.us

# VARIANCE
## Application

| TUM - | DATE STAMP |
|---|---|
| RCVD BY | |

Application fee: $1000.00

***SUBJECT PROPERTY***

ADDRESS OF PROPERTY (COMPLETE): 1401 & 1551 Kingswood Dr. SW, Tumwater WA 98512

PROJECT NAME: Kingswood Commercial

PARCEL NUMBER(S): 12703240402 & 12703240404

***APPLICANT*** *(please print neatly)*

NAME OF APPLICANT: KCI Commercial, Inc.

APPLICANT'S MAILING ADDRESS (COMPLETE): PO Box 6797, Tacoma WA 98417

APPLICANT'S TELEPHONE(S): 253-475-4363

APPLICANT'S E-MAIL: trevor@kciwa.com

***PROJECT REPRESENTATIVE***

NAME OF PROJECT REPRESENTATIVE: Tyrell Bradley

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OWNER'S TELEPHONE(S):

OWNER'S E-MAIL: torben@tnelsonconsulting.com

***PROJECT DESCRIPTION*** *(attach additional sheets and documentation, as needed)*

Development of 8.97 acre site into a new 7-lot commercial building site with associated right-of-way, utilities and open space areas.

Please see project narrative for additional information on the variance request.

I affirm that all answers, statements, and information submitted with this application are correct and accurate to the best of my knowledge. I also affirm that I am the owner of the subject site or am duly authorized by the owner to act with respect to this application. Further, I grant permission to any and all employees and representatives of the City of Tumwater and other governmental agencies to enter upon and inspect said property as reasonably necessary to process this application. I agree to pay all fees of the City that apply to this application.

Tyrell E. Bradley
Signature of Applicant

5/24/2022
Date

Please attach the **Variance submittal checklist** to this Application.

LDC Surveying Engineering Planning

Exhibit 9

November 29, 2022

City of Tumwater
Community Development
555 Israel Rd. SW.
Tumwater, WA 98501

**Kingswood Commercial – Variance Request**
**Building Setback Reduction**

Dear Reviewer(s),

The purpose of this letter is to request a variance from the development standards that are defined in Tumwater Municipal Code (TMC) Section 18.22.050. This variance application is for the setback reduction on the property of 1401 & 1551 Kingswood Dr SW, Tumwater, WA 98512.

## Applicable sections(s) of standards

*GC General Commercial Zone District 18.22.050(D) Development standards*

## Description of Variance Request

Tumwater Municipal Code Section 18.22.050(D) requires a minimum structural setback of 20 feet from the property line when general commercial development abuts a single-family zone. The commercial development proposed at the addresses listed above is located across Littlerock Rd. SW from the single-family residential zone. The variance proposal requests the building setbacks on the western property line be eliminated. In addition, it is proposed to have a free-standing, multi-tenant sign within the setback near Lot/Building 5. This is allowed per Tumwater Municipal Code Section 18.44.155(A), but the applicant was advised to include a description in this variance request. This sign will help patrons navigate from Littlerock Rd. to the development and will meet TMC design and height requirements.

## A variance may be granted, after investigation, provided all of the following findings of fact exist:

1. That special conditions exist which are peculiar to the land, such as size, shape, topography, or location, not applicable to other lands in the same district, and that literal interpretation of the provisions of this title would deprive the property owners of rights commonly enjoyed by other properties similarly situated in the same district under the terms of this title;

   ***The project site is surrounded by General Commercial (GC) zoned properties in the north, east and south directions. To the west of the site, there are Single-Family Low Density Residential (SFL) properties. The special conditions which exist for the proposed development is that Littlerock Rd. SW, a 50′ public right-of-way, bounds the project site in the west. This minor arterial has a boulevard style and provides a natural buffer for the proposed commercial development and the Single-Family Low Density Residential zone.***

   ***In addition, the parcels across Littlerock Rd. SW to the west are owned and operated by Tumwater Middle School. These parcels are occupied and have minimal to no potential for the standard development of single-family homes in the future.***

HQ: 20210 142nd Avenue NE, Woodinville, WA 98072 • Kent: 1851 Central Place South, Suite 101, Kent, WA 98030

2. That the special conditions and circumstances are not the result of actions of the applicant;

   ***There are no special conditions or circumstances that are a result of the actions of the applicant.***

3. That the granting of the variance requested will not confer a special privilege to the property that is denied other lands in the same district;

   ***The granting of the variance will not confer a special privilege to the property. The variance seeks to loosen regulations which are set in place for the typical areas where General Commercial and Single-Family Zones meet. However, considering the substantial natural buffer created by Littlerock Rd. SW and the actual use on the adjacent site, this variance would be granted for and only for the owners of 1401 & 1551 Kingswood Dr SW. This is a specific situation that will likely never be recreated elsewhere in the City of Tumwater.***

4. That the granting of the variance will not be materially detrimental to the public welfare or injurious to the property of improvements of the vicinity and zone in which the subject property is situated; and

   ***By granting the variance, it will not be materially detrimental to the public welfare or injurious to the property of improvements in the vicinity and zone in which the subject property is located. The proposed development is an allowed use in the General Commercial zoning district and does not produce any noise, odor, or emission that could be considered a nuisance.***

5. That the reasons set forth in the application justify the granting of the variance, and that the variance, if granted, would be the minimum variance that will make possible the reasonable use of the land.

   ***Allowing the buildings to be setback 5-feet from the property line adjacent to Littlerock Rd. SW will be the minimum variance possible to reasonably accommodate for the special conditions which exist on site and in the immediately surrounding zoned lands.***

Sincerely,

***LDC, Inc.***

Tyrell E. Bradley

Tyrell Bradley
Principal Engineer
Olympia Office

# Exhibit 10

## A PORTION OF SEC 03, TWN 17, RGE 2W, W.M., CITY OF TUMWATER, THURSTON COUNTY, WASHINGTON

GC General Commercial

SFL Single Family Low Density

| REVISIONS | | | |
|---|---|---|---|
| NO. | DATE | DESCRIPTION | BY |
| | | | |

LDC | Surveying Engineering Planning
Woodinville | Olympia | Kent
Olympia 1411 State Ave NE, #200 Olympia, WA 98506
T 425.806.1869 | F 425.482.2893
www.LDCorp.com

KCI COMMERCIAL, INC.

# KINGSWOOD COMMERCIAL
## BINDING SITE PLAN

| | |
|---|---|
| JOB NUMBER: | C22151 |
| DRAWING NAME: | C22151P-SP-PL |
| DESIGNER: | REW |
| DRAFTING BY: | AJW |
| DATE: | NOVEMBER, 2022 |
| SCALE: | 1"=50' |
| JURISDICTION: | TUMWATER |

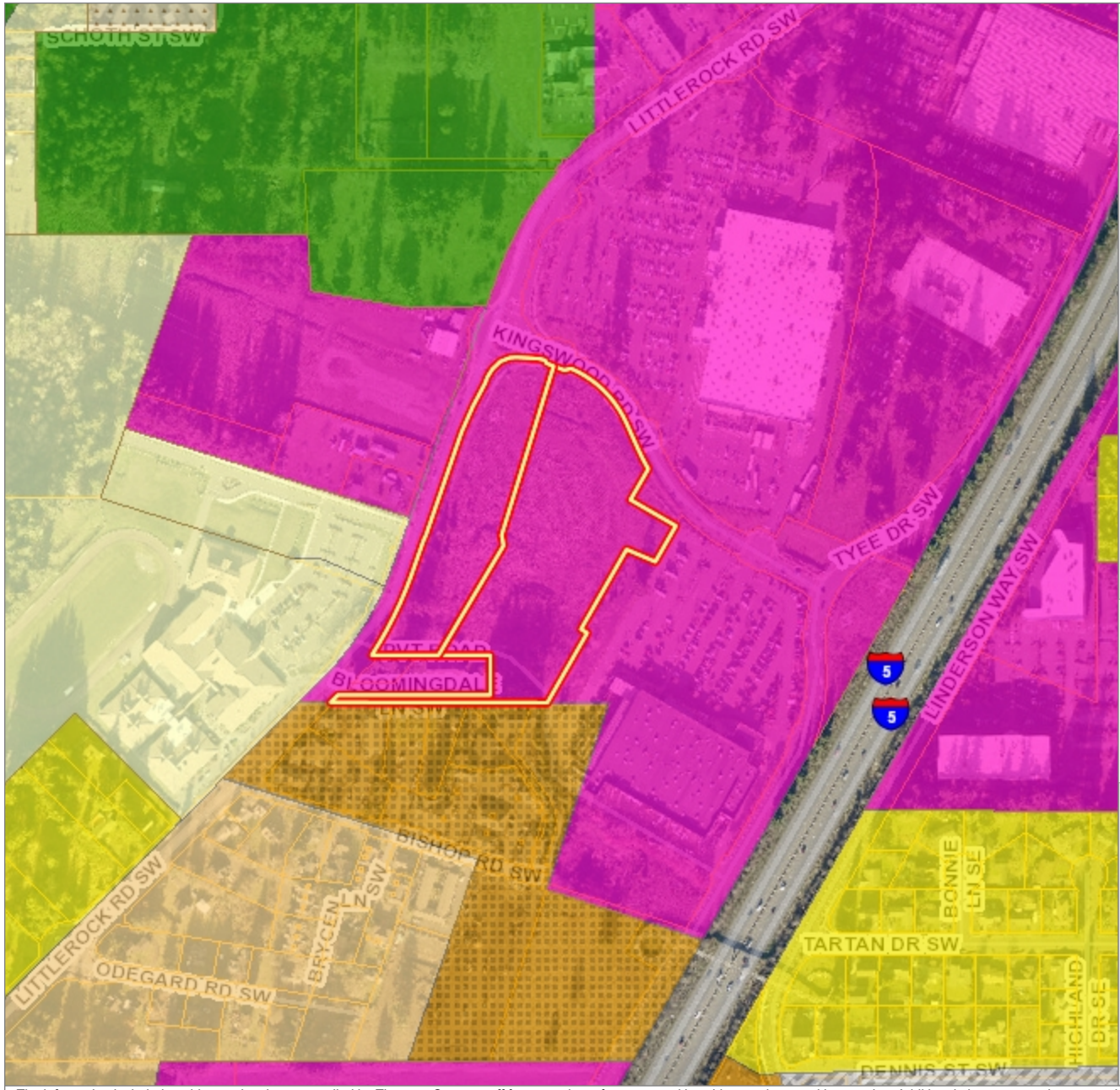
EX-01

SHEET 1 OF 1

Drawing: P:\Civil\2022\22-151 kingswood commercial\Drawings\preliminary\C22151P-SP-PL.dwg Plotted: Nov 29, 2022 - 1:09pm

Exhibit 11

# Zoning Map




## Legend

- Streams

Zoning

- AC - Arterial Commercial
- AG - Agriculture
- AQUATC - Aquatic
- ARI & ARI2 - Airport Related Industry
- AS - Auto Services
- BD - Brewery
- C - Cemetery
- C-1 - Commercial
- C-2 - Heavy Commercial
- C-3 - Large Lot Commercial
- C-3 - Special-Use Commercial
- CAP - Capitol Campus
- CBC & CBC2 - Capitol Boulevard Community
- CBD - Central Business District
- CBD 4 - Central Business District 4
- CBD 5 - Central Business District 5
- CBD 6 - Central Business District 6
- CBD 7 - Central Business District 7
- CC - Core Commercial
- CCD - Community Commercial
- CO - Community Office
- COM - Commercial
- COSC - Commercial Oriented Shopping Center
- CS - Community Service
- CS-H - Commercial Service High Density
- DB - Downtown Business

Scale 1: 7,558

0 350 700

Feet

Map Created Using GeoData Public Website

Published: 6/13/2023

Note:

THURSTON COUNTY
WASHINGTON
SINCE 1852

Thurston County GeoData Center

The information included on this map has been compiled by Thurston County staff from a variety of sources and is subject to change without notice. Additional elements may be present in reality that are not represented on the map. Ortho-photos and other data may not align. The boundaries depicted by these datasets are approximate. This document is not intended for use as a survey product. ALL DATA IS EXPRESSLY PROVIDED 'AS IS' AND 'WITH ALL FAULTS'. Thurston County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. In no event shall Thurston County be liable for direct, indirect, incidental, consequential, special, or tort damages of any kind, including, but not limited to, lost revenues or lost profits, real or anticipated, resulting from the use, misuse or reliance of the information contained on this map. If any portion of this map or disclaimer is missing or altered, Thurston County removes itself from all responsibility from the map and the data contained within. The burden for determining fitness for use lies entirely with the user and the user is solely responsible for understanding the accuracy limitation of the information contained in this map. Authorized for 3rd Party reproduction for personal use only.

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Exhibit 12

City Hall
555 Israel Road SW
Tumwater, WA 98501-6515
Phone: 360-754-5855
Fax: 360-754-4138

# CERTIFICATION OF PUBLIC NOTICE

I, Alex Baruch, Associate Planner for the City of Tumwater hereby certify that public notice for the Project # TUM-22-0234; Kingswood Commercial: was given as follows:

APPLICATION

| | |
|---|---|
| Notice of Application Published in Olympian: | December 15, 2022 |
| Notice of Application Uploaded to Website: | December 15, 2022 |
| Notice of Application Mailed: | December 14, 2022 |
| Notice of Application Posted: | December 15, 2022 |
| Posting Locations: | Edge of property (2 signs) facing Kingswood Drive and Littlerock Road |
| Environmental Determination Published: | March 16, 2023 |
| Environmental Determination Uploaded to Website: | March 16, 2023 |
| Environmental Determination Mailed: | March 15, 2023 |
| Environmental Determination Posted: | March 16, 2023 |
| Posting Locations: | Edge of property (2 signs) facing Kingswood Drive and Littlerock Road |

HEARING

| | |
|---|---|
| Notice of Public Hearing Published: | June 16, 2023 |
| Notice of Public Hearing Uploaded to Website: | June 16, 2023 |
| Notice of Public Hearing Mailed: | June 15, 2023 |
| Notice of Public Hearing Posted: | June 16, 2023 |
| Posting Locations: | Edge of property (2 signs) facing Kingswood Drive and Littlerock Road |

The above is an accurate accounting of the public notice provided for the project.

Alex Baruch, Associate Planner — June 16, 2023

NAME, TITLE — Date

Exhibit 13

**Nisqually Indian Tribe**
**4820 She-Nah-Num Dr. S.E.**
**Olympia, WA 98513**
**(360) 456-5221**

December 13, 2022

To: Alex Baruch, Associate Planner
City of Tumwater
Community Development
555 Israel Rd SW
Tumwater, WA 98501

**Re: TUM-22-0234**

The Nisqually Indian Tribe's THPO has reviewed the notice of application and supplemental materials that you provided for the above-named project and requests that a cultural resources survey be required as a condition of permitting. Please keep us informed if there are any Inadvertent Discoveries of Archaeological Resources/Human Burials.

Sincerely,

Brad Beach, THPO
Nisqually Indian Tribe
360-528-1084
360-456-5221 ext 1277
beach.brad@nisqually-nsn.gov

cc: Annette Bullchild, Director, Nisqually Indian Tribe

## Alex Baruch

**From:** Brad Beach <beach.brad@nisqually-nsn.gov>
**Sent:** Tuesday, December 13, 2022 3:01 PM
**To:** Alex Baruch
**Cc:** Annette Bullchild; Tami Merriman
**Subject:** RE: TUM-22-0234

Hi Alex,

I have two main concerns with this project. First, is just the sheer size of the parcels that are to be developed; this is a significant amount of land to develop without some basic precautions to protect cultural resources connected to the Medicine Creek Treaty Tribes. My second concern is the projects proximity to the Union/Pioneer Calvary Cemetery and the uncertainty around the original boundaries of the cemetery. We know from other cemeteries dating to the mid to late 1800's that non-Christian persons were not always interred within the boundaries of the cemetery, often being relegated to spaces outside of the actual cemetery. These burials are often very hard to find because they lack the documentation that "traditional" burials would have had.

Thank you,
Brad

---

**From:** Alex Baruch <ABaruch@ci.tumwater.wa.us>
**Sent:** Tuesday, December 13, 2022 2:38 PM
**To:** Brad Beach <beach.brad@nisqually-nsn.gov>
**Cc:** Annette Bullchild <bullchild.annette@nisqually-nsn.gov>; Tami Merriman <TMerriman@ci.tumwater.wa.us>
**Subject:** RE: TUM-22-0234

Hi Brad,

I hope you are doing well. Can you provide some additional information as to why the survey is being requested. I see the property is in the Moderate area on the WISAARD predictive map. We have required projects in the Survey Highly Advised areas (High and Very High Risk) to provide the cultural resource study in the past but only in limited situations when the map shows the area as Moderate. It would be helpful in our findings for the condition to have a reason in this circumstance.

Thank you for your help,

**Alex Baruch** | **he/him**
**Associate Planner**, Community Development
City of Tumwater
555 Israel Rd SW | Tumwater, WA 98501
(360) 754-4180 | ABaruch@ci.tumwater.wa.us
www.ci.tumwater.wa.us

---

**From:** Brad Beach <beach.brad@nisqually-nsn.gov>
**Sent:** Tuesday, December 13, 2022 8:36 AM
**To:** Alex Baruch <ABaruch@ci.tumwater.wa.us>
**Cc:** Annette Bullchild <bullchild.annette@nisqually-nsn.gov>
**Subject:** TUM-22-0234

**From:** Shaun Dinubilo
**To:** Brittaney Kelton
**Subject:** RE: City of Tumwater Notice of Application TUM-22-0234
**Date:** Wednesday, December 14, 2022 2:19:22 PM

Hello Brittaney,

Thank you for contacting the Squaxin Island Tribe Cultural Resources Department regarding the above listed project for our review and comment. The project area has a high potential for the location of cultural resources. We recommend a cultural resources survey and report be completed for this project. We would prefer to receive an electronic copy by email once completed.

Shaun Dinubilo
Archaeologist
Cultural Resource Department
Squaxin Island Tribe
200 S.E. Billy Frank Jr. Way
Shelton, WA 98584
Office Phone: 360-432-3998
Cell Phone: 360-870-6324
Email: sdinubilo@squaxin.us
Email is my perferred method of communication.

---

**From:** Brittaney Kelton <BKelton@ci.tumwater.wa.us>
**Sent:** Monday, December 12, 2022 10:29 AM
**Subject:** City of Tumwater Notice of Application TUM-22-0234

Good morning,

Click here to view the Notice of Application for Kingswood Commercial, TUM-22-0234. If you have any questions or would like additional information, please contact Alex Baruch, Associate Planner, at 360-754-4180 or abaruch@ci.tumwater.wa.us.

Thank you,

**Brittaney Kelton | Department Assistant II**
City of Tumwater Community Development
555 Israel Rd SW | Tumwater, WA 98501
(360) 754-4180
bkelton@ci.tumwater.wa.us | www.ci.tumwater.wa.us

Exhibit 14

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Southwest Region Office
PO Box 47775, Olympia, WA 98504-7775 • 360-407-6300

March 30, 2023

Alex Baruch, Associate Planner
City of Tumwater
Development Services Department
555 Israel Road Southwest
Tumwater, WA 98501

Dear Alex Baruch:

Thank you for the opportunity to comment on the mitigated determination of nonsignificance for the Kingswood Commercial Project (TUM-22-0234) as proposed by KCI Commercial Inc. The Department of Ecology (Ecology) reviewed the environmental checklist and has the following comment(s):

**SOLID WASTE MANAGEMENT: Derek Rockett (360) 407-6287**

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. All removed debris resulting from this project must be disposed of at an approved site. Contact the local jurisdictional health department or Department of Ecology for proper management of these materials.

**TOXICS CLEANUP: Thomas Middleton (360) 999-9594**

If contamination is suspected, discovered, or occurs during the proposed SEPA action, testing of the potentially contaminated media must be conducted. If contamination of soil or groundwater is readily apparent, or is revealed by testing, Ecology must be notified. Contact the Environmental Report Tracking System Coordinator for the Southwest Regional Office (SWRO) at (360) 407-6300. For assistance and information about subsequent cleanup and to identify the type of testing that will be required, contact Thomas Middleton with the SWRO, Toxics Cleanup Program at the phone number provided above.

**WATER QUALITY/WATERSHED RESOURCES UNIT:**
**Jacob Neuharth (360) 742-9751**

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 Evan Wood at evan.wood@ecy.wa.gov, or by phone at (360) 706-4599.

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.

Ecology's comments are based upon information provided by the lead agency. As such, they may not constitute an exhaustive list of the various authorizations that must be obtained or legal requirements that must be fulfilled in order to carry out the proposed action.

If you have any questions or would like to respond to these comments, please contact the appropriate reviewing staff listed above.

Department of Ecology
Southwest Regional Office

(JKT:202301180)

cc: Derek Rockett, SWM
Thomas Middleton, TCP
Jacob Neuharth, WQ

Exhibit 15

City Hall
555 Israel Road SW
Tumwater, WA 98501-6515
Phone: 360-754-4140
Fax: 360-754-4142

# Memo

To: Alex Baruch, Associate Planner
Tami Merriman, Permit Manager

From: Mary Heather Ames, Transportation Manager

Date: February 21, 2023

Re: Transportation Concurrency – Kingswood Commercial

Based on the Transportation Impact Analysis prepared for the Kingswood Commercial project, dated May of 2022 and the City of Tumwater Capital Facilities Plan, the City finds that the Kingswood Commercial project is concurrent in regards to Transportation conditioned as follows:

1. Shall pay Transportation Impact Fees per the Fee Resolution current at time of permit application.
2. Shall construct transportation improvements as shown on the formal site plan.
3. A recent study of the I-5 interchange at Tumwater Boulevard indicates improvements are needed in order to meet established safety and level of service standards. This project shall either:
    a. Construct a roundabout at the northbound Interstate 5 On/Off Ramp and Tumwater Boulevard intersection;
    b. Voluntarily pay a mitigation fee of $4,219 per peak trip generated by this project under RCW 82.02.020 to be used as described herein:
    *Tumwater Boulevard/I-5 Interchange: The City's planned transportation improvements at the Tumwater Boulevard/I-5 interchange include converting the interchange to a roundabout diamond interchange by replacing the southbound on/off ramp signal and northbound stop controlled intersections with roundabouts. If the subject development has trips to the interchange before the roundabout is constructed, a temporary signal will be required.*
4. The proposed mitigation (center receiving lane) for the failing movement at Kingswood Drive and Tyee Drive intersection does not adequately address intersection failure. To mitigate the additional trips through this intersection the project shall install a compact roundabout at the intersection of Kingswood Drive and Tyee Drive.

SEPA Finding: Mitigation proposed in the Traffic Impact Analysis for the failing movements at Kingswood Drive and Tyee Drive intersection (center receiving lane) does not adequately address safety, capacity and effectiveness issues in the long term. A three way stop or traffic signal will also not be viable because the City cannot allow intersection control types that significantly impact throughput on Tyee Dr without jeopardizing regional (Littlerock Road) capacity.

SEPA Condition: To mitigate intersection movement failure by additional trips through the Kingswood Road and Tyee Drive intersection, the project shall install a compact roundabout. The roundabout design shall be approved by the City of Tumwater Transportation and Engineering Department as a part of the site development grading design review for frontage improvements required by this development.

Exhibit 16

# Kingswood Commercial

**Preliminary Drainage Report**

Prepared for

**KCI Commercial, Inc.**

*PO Box 6979*
*Tacoma, WA 98417*

Prepared by

LDC Surveying Engineering Planning

*1411 State Avenue NE*
*Olympia, WA 98506*
*(425) 806-1869*

**September 2022** **Job No: 22-151**

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Figure 2: Existing Conditions (2021) 2-1

## LIST OF APPENDICES

Appendix 1: Design Calculations

Appendix 2: Soil Management Plan (**NOT INCLUDED AT THIS TIME**)

Appendix 3: Supplemental Reports and Information

## DRAINAGE CONTROL PLAN ATTACHMENTS

Attachment 1: Site Development Drawings

Attachment 2: Construction SWPPP Report (**NOT INCLUDED AT THIS TIME**)

Attachment 3: Soils Report

Attachment 4: Maintenance and Source Control Manual (**NOT INCLUDED AT THIS TIME**)

Attachment 5: Establishment of Maintenance Covenant (**NOT INCLUDED AT THIS TIME**)

## PROJECT ENGINEER'S CERTIFICATION

I hereby certify that this Stormwater Site Plan for the Kingswood Commercial Project has been prepared by me or under my supervision and meets the minimum standards of the City of Tumwater and normal standards of engineering practice. I hereby acknowledge and agree that the jurisdiction does not and will not assume liability for the sufficiency, suitability, or performance of drainage facilities designed by me.

Margaret G. Howsden

09/30/2022

Prepared by: Maggie Howsden, EIT — Date
mhowsden@ldccorp.com
(360) 634-2074

09/30/2022

Approved by: Tyrell Bradley, PE — Date
tbradley@ldccorp.com
(360) 634-2066

# 1.0 PROPOSED PROJECT DESCRIPTION

The following report was prepared for the Kingswood Commercial project in Tumwater, WA. This report was prepared to comply with the minimum technical standards and requirements that are set forth in the *2022 City of Tumwater Drainage Design and Erosion Control Manual (DDECM)*.

| | |
|---|---|
| **Project Proponent:** | KCI Commercial, Inc. |
| **Parcel Numbers:** | 12703240404, 12703240403 |
| **Total Parcel Area:** | 8.70 AC |
| **Current Zoning:** | GC (General Commercial) |
| **Required Permits:** | Grading, Utility, Paving, Building, etc. |
| **Site Address:** | 1551 Kingswood Dr SW & 1401 Kingswood Dr SW, Tumwater, WA 98512 |
| **Section, Township, Range:** | Section 3, Township 17N, Range 2W |

The proposed Kingswood Commercial project site is comprised of two parcels that total 8.70 acres in the southeast corner of the intersection of Kingswood Drive and Littlerock Road SW. The proposed construction will develop 6 lots with single story and multi-story commercial businesses, parking areas, drive aisles, electronic vehicle charging stations, landscaped areas and utilities, disturbing roughly the entire parcel, 8.70 acres. The frontage area will not be disturbed as frontage improvements have been completed in separate projects. The proposed drive aisle and parking system will be accessed from both the Kingswood Dr SW and Littlerock Rd SW public right-of-ways (ROW). This development project is designed under the *2022 Tumwater Drainage and Erosion Control Manual*. See Vicinity Map in the following pages and **Appendix 3** for visual representation of the subject property.

## 1.1 SUMMARY OF COMPLIANCE ON-SITE

This project adheres to the *2022 Tumwater Drainage Design and Erosion Control Manual*. A worksheet for determining the number of Minimum Requirements for this project per the *DDECM* has been prepared and included herein as **Appendix 3**. There is

less than 35% impervious surface on the site; as such, this project will be considered new development. The project proposes to add more than 10,000 square feet of new impervious surface and more than 5,000 SF of new pollution generating impervious surfaces (PGIS), designating the project as New Development. All 11 core requirements apply to the new impervious surfaces and converted pervious surfaces. The requirements are addressed as follows.

**Requirement #1: Preparation of Stormwater Site Plans**

The Drainage Control Plan has been completed per the *2022 City of Tumwater DDECM*.

**Requirement #2: Construction Stormwater Pollution Prevention**

The Stormwater Pollution Prevention Plan (SWPPP) will be completed and included herein as **Attachment No. 2** at the time of civil permit submittal. The SWPPP describes the 13 required elements in further detail. An erosion control plan will be prepared and included as part of the engineering construction plan set in **Attachment No. 1**.

**Requirement #3: Source Control of Pollution** – BMPs listed below are the minimum required for the site, additional BMPs not listed here may need to be implemented to meet the minimum requirements discussed in the *2022 DDECM*.

- Volume IV, Chapter 5, Section S.2 Dispose of Collected Runoff and Waste Materials Properly
- Volume IV, Chapter 5, Section S.6 Pave the Activity Area and Slope to a Sump or Holding Tank
- Volume IV, Chapter 5, Section S.9 Clean Catch Basins

**Requirement #4: Preservation of Natural Drainage Systems and Outfalls**

Currently, stormwater runoff generated within the site sheet flows toward the north corner of the site. Given the native soil conditions on-site, it is assumed that the stormwater runoff infiltrates on-site. If stormwater does leave the site, it would enter the existing storm drain system within Littlerock Rd or Kingswood Drive. The Littlerock Rd storm system outlets to an infiltration system directly adjacent to the project site.

The Kingswood Drive storm system outlets to an infiltration pond within 300 ft of the site.

After construction, the stormwater runoff from the site will be collected and fully infiltrated on the north half of the site. Stormwater runoff patterns within the vicinity of the project site will remain similar to their current condition. All downstream conveyance systems are not anticipated to be adversely affected at this time.

**Requirement #5: On-Site Stormwater Management**

In accordance with Minimum requirement #7, this project is not flow control exempt per Volume I, Section 2.4.8. The proposed project will trigger Minimum Requirements #1-11 and therefore the project shall employ the On-Site Stormwater Management BMPs in accordance with the Low Impact Performance Standard or List #2. The project will demonstrate compliance with List #2, as shown below.

**Lawn and Landscaped Areas:**

- Postconstruction soil quality and depth per volume V, Chapter 6: This BMP will be utilized to the maximum extent practicable for the project. See the landscape plans for more details.

**Roofs:**

- Full Dispersion in Volume V, Section 7.2, or Downspout Infiltration in Volume V, Section 15.3: Full Dispersion requires that the project protect at least 65% of the site in a forested or native condition. For this reason, Full Dispersion is infeasible. The geotechnical analysis of the site determined that infiltration of stormwater is possible with native soils; however, due to the high groundwater, Downspout Infiltration is infeasible.
- Bioretention in Volume V, Chapter 9: Bioretention is feasible for this project. Due to the site soils supporting infiltration, bioretention can be used to treat stormwater on-site. Bioretention will be utilized on site with a system of interconnected bioretention ponds.

**Other Hard Surfaces:**

- Full Dispersion in Volume V, Section 7.2: Full Dispersion is not feasible for this project for the reasons mentioned in the section above.
- Permeable Pavement in Volume V, Chapter 11: Based on the proposed use of the site, basic treatment and oil separation are required for the stormwater runoff, prior to infiltration. A permeable pavement system would not allow for the stormwater runoff to be treated prior to infiltration into the soils.
- Bioretention in Volume V, Chapter 9: Bioretention facilities are feasible for the reasons mentioned in the section above. Bioretention will be utilized on site with a system of interconnected bioretention ponds.

**Requirement #6: Runoff Treatment**

The proposed project will construct over 5,000 S.F. of pollution generating impervious surface; therefore, a stormwater treatment facility is required. The site does not trigger the requirements for enhanced treatment as it is not within the 1-year time-of-travel zone for a wellhead protection area nor does it infiltrate stormwater within one-quarter mile of a body of fresh or salt water designated for aquatic life. However, enhanced treatment will be provided for this project through the use of a bioretention soil mix in each of the bioretention ponds.

Commercial development of the site will include drive through fast food restaurants on Lot 1, Lot 3, and potentially Lot 5, and an auto-mechanic/maintenance business will occupy Lot 2. As such, Oil Control Facilities will be required upstream of infiltration facilities for these areas. Phosphorus control is not required as the system does not discharge to a body of fresh water or to a system tributary to a body of fresh water.

**Requirement #7: Flow Control**

The proposed project will construct over 10,000 SF of impervious surface and does not discharge to a flow control exempt water body, therefore flow control is required. Flow control will be provided for the site through full infiltration on-site.

**Requirement #8: Wetlands Protection**

There are no wetlands located on-site or adjacent to the site.

**Requirement #9: Operation and Maintenance**

A maintenance and source control manual will be completed and included herein the as **Attachment No. 4** at the time of civil permit submittal.

**Requirement #10: Financial Liability**

In accordance with Tumwater Municipal Code 12.16.080, the project applicant will provide financial guarantees to ensure that:

1. The project will operate according to the design approved by the project engineer, and
2. Operation of erosion control facilities will provide protection against siltation of surface water, erosion, damage to permanent stormwater BMPs, and damage to adjacent properties.

**Requirement #11: Offsite Analysis and Mitigation**

See Section 3 of this report for the offsite analysis.

# 2.0 EXISTING CONDITIONS DESCRIPTION

## 2.1 TOPOGRAPHY

The site generally slopes from south to north, ranging from 0% to 3%, with an overall relief of approximately 10 ft.

## 2.2 GROUND COVER

The site has remained undeveloped since at least 1990. The existing site is currently undeveloped and covered with short underlying brush and small trees around the perimeter of the site. There are two Bonneville Power Administration (BPA) Transmission Towers on the west edge of the site and a 250 ft wide no-build easement for the associated overhead power lines. There are several piles of imported fill located throughout the site. There is an access drive from Littlerock Rd that services the neighboring Home Depot to the east.

**Figure 1: Existing Conditions (1990)**

**Figure 2: Existing Conditions (2021)**

## 2.3 DRAINAGE

There are currently no known existing drainage structures on-site.

## 2.4 SOILS

According to the geotechnical report prepared by Insight Geologic, dated April 19th, 2011, the native site soils are classified as hydrologic soil group Type A and generally consist of 1 foot of dark brown silty sand. The central portion of the site consists of 2 to 7 ft of light brown sand with silt and cobbles overlying uncontrolled fill with waste materials consisting of brick, concrete, metal, shingles, wood and other debris to a depth of up to 14 ft. Analysis of native soils determined an infiltration rate of 2.0 inches per hour. The seasonal high groundwater is expected to be at a depth of about 15 feet below ground surface. The historic high groundwater is approximately 11 feet below ground surface. Therefore, in order to maintain 6 ft of separation from the bottom of an infiltration facility and the groundwater, the minimum bottom elevation of all infiltration facilities is 5 ft below present grade. See **Attachment No. 3** for the full geotechnical report.

## 2.5 CRITICAL AREAS

The project parcel is located within the Federal Emergency Management Agency (FEMA) Flood Insurance Rate map (FIRM) Panel No. 53067C0281E. According to the FIRM Map the project parcel is located within Zone X, which is determined to be an area of minimal flood hazard. See **Appendix 3** for the FIRM Map.

According to City of Tumwater GIS Maps, the project site is located within a Category I Critical Aquifer Recharge Area (CARA) and within a 10-year time-of-travel Wellhead Protection Area. There are no additional requirements or limitations for this project since the proposed infiltration facilities will not cause a violation of groundwater quality standards. See **Appendix 3** for the CARA and Wellhead Protection Areas maps.

## 2.6 ADJACENT AREAS

The proposed project is located in the southeast corner of the intersection of Kingswood Dr SW and Littlerock Rd SW. The property is bound by a Home Depot parking lot to the east and residential lots to the south.

## 2.7 REPORTS AND STUDIES

A full geotechnical report was prepared for the subject site by Insight Geologic, dated April 19th, 2011, and can be found in **Attachment No. 3**.

A Mazama pocket gopher and Thurston County regulated prairie absence report was conducted by Land Services Northwest, dated October 15th, 2021. No Mazama pocket gophers, Critical Areas Ordinance prairie plants, or Mima mounds were found on the site. The full report can be found in **Appendix 3**.

A forester's report was conducted by Sound Urban Forestry, dated April 28th, 2022. No trees within the site were considered specimen or 'Landmark' trees. The project requires a 1:1 tree replacement rate. The report can be found in **Appendix 3**.

No other reports were performed or required.

# 3.0 VICINITY ANALYSIS AND SUBBASIN DESCRIPTON

## 3.1 QUALITATIVE UPSTREAM ANALYSIS

It does not appear there are any significant areas of upstream runoff flow onto the project site. The Home Depot parking area to the east is developed with its own stormwater system. The other adjacent areas are downhill from the site.

## 3.2 QUALITATIVE DOWNSTREAM ANALYSIS

Given the native soils and flat nature of the existing site, it is assumed that most stormwater currently infiltrates on-site. All of the stormwater runoff generated on-site by the disturbed area of the proposed project will be collected, treated, and infiltrated on-site. Therefore, there are no anticipated adverse effects to the downstream system.

# 4.0 FLOW CONTROL AND WATER QUALITY FACILITY SIZING

## 4.1 IMPERVIOUS AND PERVIOUS AREA TABULATIONS

The proposed project follows the development requirements stated in the *2022 City of Tumwater Drainage Design and Erosion Control Manual*. Following Figure 2.1 (See **Appendix 3**), this project classifies as a new development that triggers all of the minimum requirements. The site does not have 35% or more of existing impervious coverage, and the project will add more than 5,000 S.F. of new impervious surfaces. See **Attachment No. 1** for the proposed stormwater facility locations and details. Table 1: Land Type Designations Existing vs. Proposed below illustrates the existing and proposed impervious and pervious areas of the disturbed areas. See **Appendix 3** for the basin maps.

**Table 1: Land Type Designations Existing vs. Proposed**

| LAND TYPE DESIGNATIONS | AREA (ACRES) | % OF TOTAL AREA |
|---|---|---|
| **Existing Areas** | **8.70** | **100** |
| Impervious | 0.40 | 4.60 |
| Pervious | 8.30 | 95.40 |
| **Proposed Areas** | **8.70** | **100** |
| Impervious | 4.93 | 56.67 |
| Pervious | 3.15 | 36.21 |
| Pond | 0.62 | 7.12 |

## 4.2 WATER QUALITY ANALYSIS

Per Minimum Requirement #6, the proposed project requires basic treatment for all on-site pollution-generating impervious surfaces. However, enhanced water quality treatment will be provided by means of an 18" bioretention soil layer in each of the proposed bioretention ponds on-site. All of the stormwater runoff conveyed to each pond will be completely infiltrated, satisfying the treatment requirement. Oil Control facilities will be required for Lots 1, 2, 3, and 5 as they will be developed with drive through businesses. The oil control facilities will be placed on each lot that it is required for and will be sized under a separate permit at the time of lot development.

## 4.3 FLOW CONTROL ANALYSIS

Flow control is required for the proposed development and will be provided through a system of interconnected bioretention ponds spread out across the site. WWHM was used to size the ponds so that as a system they will infiltrate 100% of the stormwater runoff generated on-site. The design infiltration rate of 2.0 in/hr provided in the geotechnical report from Insight Geologic dated April 19, 2011, was used to size the ponds in WWHM. The site has been divided into three separate basins with three bioretention pond systems. The ponds will be interconnected with a series of underground culverts to provide overflow and an additional factor of safety in case of failure. See Table 3 below for the basin area breakdown.

**Table 2: Flow Control Basin Areas**

| LAND TYPE DESIGNATIONS | BASIN 1 AREA (ACRES) | BASIN 2 AREA (ACRES) | BASIN 3 AREA (ACRES) |
|---|---|---|---|
| **BASIN TOTAL** | **1.54** | **1.70** | **5.46** |
| ROOF | 0.24 | 0.12 | 0.47 |
| ASPHALT / CONCRETE | 0.88 | 0.95 | 2.27 |
| LANDSCAPE | 0.30 | 0.55 | 2.30 |
| POND | 0.12 | 0.08 | 0.42 |

The runoff from Basin 1 will be collected and conveyed to a bioretention pond with a minimum bottom area of 3,366 SF and total depth of 3.5 ft, including 0.5 ft of freeboard. An infiltration pond with bottom area of 3,370 SF and depth of 3.5 ft has been provided. The stormwater conveyed to this pond is infiltrated 100%. This pond will have a riser at 3 ft above the bioretention soil mix that connects to the Basin 3 bioretention pond as an additional factor of safety in the case of failure.

The runoff from Basin 2 will be collected and conveyed to a bioretention pond with a bottom area of 1,918 SF and total depth of 3.3 ft, including 0.5 ft of freeboard. The bioretention pond only infiltrates 99.91% of the post-developed flow. As such, this pond system is connected to the Basin 3 bioretention pond. The runoff from Basin 3 and the overflow from Basin 2 will be collected and conveyed to an infiltration pond with minimum bottom area of 14,886 SF and total depth of 2.8 ft, including 0.5 ft of freeboard. An infiltration pond with bottom area of 15,286 SF and total depth of 2.8 ft. The stormwater conveyed from Basin 3 as well as the overflow from Basin 2 is infiltrated 100%.

It is important to note that in order to maintain the minimum 3 ft of separation from the historic high groundwater elevation to the bottom of the bioretention soil mix per Volume V, Section 9.3, the minimum elevation of the bottom of the bioretention soil mix for Basin 1 and 2 is 176.2 ft as the historic level of groundwater is 173.2 ft while the minimum elevation of the bottom of the bioretention soil mix for Basin 3 is 175.7 ft as the historic level of groundwater is 172.7 ft.

The drainage plan with the infiltration ponds and conveyance system has been included as **Attachment No. 1**. See **Appendix 1** for the WWHM reports.

# 5.0 AESTHETIC CONSIDERATIONS FOR FACILITIES

All disturbed soil will be vegetated and landscaped using Best Management Practices. The proposed bioretention ponds will be covered with a variety of plants that will help them blend in with other landscaping features. All conveyance and water quality facilities will be underground.

# 6.0 CONVEYANCE SYSTEM ANALYSIS AND DESIGN

The proposed conveyance systems have been sized to convey the stormwater runoff from the developed conditions at the 25-year return period within the pipe. With the exception of the rood drainpipes, all on-site conveyance systems will be a minimum 12" in diameter and installed at a minimum slope of 0.5%.

# 7.0 COVENANTS, DEDICATIONS, EASEMENTS

It is the City of Tumwater policy that the property owner(s) shall maintain their stormwater drainage facilities. Thus, KCI Commercial, Inc. will be responsible for maintaining and ensuring that all installed drainage facilities are functioning in accordance with the design purpose. KCI Commercial, Inc. will keep a copy of the maintenance plan at the project site. The Maintenance and Source Control Manual will be completed and included herein as **Attachment No. 4** at the time of civil permit submittal. Additionally, the Establishment of Maintenance Covenants will be completed and included herein as **Attachment No. 5** at the time of civil permit submittal.

# 8.0 AGREEMENTS AND GUARANTEES

Maintenance and/or operation bonding or other appropriate financial guarantees are required for all projects to ensure construction and functionality of drainage facilities are in compliance with applicable standards. These guarantees are to be consistent with the most recent edition of the City of Tumwater Development Guidelines and Public Works Standards.

# 9.0 OTHER PERMITS OR CONDITIONS PLACED ON THE PROJECT

No other permits or conditions have been placed on the project at this time.

Other permits that may be required for the proposed development are as follows:

- Clearing and Grading Permit
- National Pollution Discharge Elimination System (NPDES)
- Right-of-Way permit
- Utility Permit
- Building Permits

# APPENDIX 1

## DESIGN CALCULATIONS

# WWHM2012

# PROJECT REPORT

# General Model Information

| | |
|---|---|
| Project Name: | Kingswood Commercial_AllBasins2 |
| Site Name: | Kingswood Commerical |
| Site Address: | |
| City: | |
| Report Date: | 9/29/2022 |
| Gage: | Olympia Airport |
| Data Start: | 1955/10/01 |
| Data End: | 2008/09/30 |
| Timestep: | 15 Minute |
| Precip Scale: | 0.000 (adjusted) |
| Version Date: | 2021/08/18 |
| Version: | 4.2.18 |

## POC Thresholds

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

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# Landuse Basin Data

## Predeveloped Land Use

### Basin 3

| | |
|---|---|
| Bypass: | No |
| GroundWater: | No |

| Pervious Land Use | acre |
|---|---|
| A B, Forest, Flat | 5.46 |
| Pervious Total | 5.46 |

| Impervious Land Use | acre |
|---|---|
| Impervious Total | 0 |
| Basin Total | 5.46 |

Element Flows To:

| Surface | Interflow | Groundwater |
|---|---|---|

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## Basin 2

| | |
|---|---|
| Bypass: | No |
| GroundWater: | No |
| Pervious Land Use | acre |
| A B, Forest, Flat | 1.7 |
| Pervious Total | 1.7 |
| Impervious Land Use | acre |
| Impervious Total | 0 |
| Basin Total | 1.7 |

Element Flows To:

| Surface | Interflow | Groundwater |
|---|---|---|

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## Basin 1

| | |
|---|---|
| Bypass: | No |
| GroundWater: | No |
| Pervious Land Use | acre |
| A B, Forest, Flat | 1.54 |
| Pervious Total | 1.54 |
| Impervious Land Use | acre |
| Impervious Total | 0 |
| Basin Total | 1.54 |

Element Flows To:

| Surface | Interflow | Groundwater |
|---|---|---|

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## *Mitigated Land Use*

### Basin 3

| | |
|---|---|
| Bypass: | No |
| GroundWater: | No |

| Pervious Land Use | acre |
|---|---|
| A B, Pasture, Flat | 2.72 |
| Pervious Total | 2.72 |

| Impervious Land Use | acre |
|---|---|
| ROADS FLAT | 2.27 |
| ROOF TOPS FLAT | 0.47 |
| Impervious Total | 2.74 |
| Basin Total | 5.46 |

Element Flows To:

| Surface | Interflow | Groundwater |
|---|---|---|
| Surface retention 3 | Surface retention 3 | |

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## Basin 2

| | |
|---|---|
| Bypass: | No |
| GroundWater: | No |

| Pervious Land Use | acre |
|---|---|
| A B, Pasture, Flat | 0.63 |
| Pervious Total | 0.63 |

| Impervious Land Use | acre |
|---|---|
| ROADS FLAT | 0.95 |
| ROOF TOPS FLAT | 0.12 |
| Impervious Total | 1.07 |
| Basin Total | 1.7 |

Element Flows To:

| Surface | Interflow | Groundwater |
|---|---|---|
| Surface retention 2 | Surface retention 2 | |

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## Basin 1

| | |
|---|---|
| Bypass: | No |
| GroundWater: | No |

| Pervious Land Use | acre |
|---|---|
| A B, Pasture, Flat | 0.42 |
| Pervious Total | 0.42 |

| Impervious Land Use | acre |
|---|---|
| ROADS FLAT | 0.88 |
| ROOF TOPS FLAT | 0.24 |
| Impervious Total | 1.12 |
| Basin Total | 1.54 |

Element Flows To:

| Surface | Interflow | Groundwater |
|---|---|---|
| Surface retention 1 | Surface retention 1 | |

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# Routing Elements

## Predeveloped Routing

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## *Mitigated Routing*

### Bioretention 1

| | |
|---|---|
| Bottom Length: | 60.10 ft. |
| Bottom Width: | 56.00 ft. |
| Material thickness of first layer: | 1.5 |
| Material type for first layer: | SMMWW |
| Material thickness of second layer: | 0 |
| Material type for second layer: | Sand |
| Material thickness of third layer: | 0 |
| Material type for third layer: | GRAVEL |
| Infiltration On | |
| Infiltration rate: | 2 |
| Infiltration safety factor: | 1 |
| Wetted surface area On | |
| Total Volume Infiltrated (ac-ft.): | 254.498 |
| Total Volume Through Riser (ac-ft.): | 0 |
| Total Volume Through Facility (ac-ft.): | 254.498 |
| Percent Infiltrated: | 100 |
| Total Precip Applied to Facility: | 17.589 |
| Total Evap From Facility: | 5.098 |
| Underdrain not used | |
| Discharge Structure | |
| Riser Height: | 3 ft. |
| Riser Diameter: | 12 in. |
| Element Flows To: | |
| Outlet 1 | Outlet 2 |
| Surface retention 3 | |

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Bioretention Hydraulic Table

| Stage(feet) | Area(ac.) | Volume(ac-ft.) | Discharge(cfs) | Infilt(cfs) |
|---|---|---|---|---|
| 0.0000 | 0.0941 | 0.0000 | 0.0000 | 0.0000 |
| 0.0549 | 0.0939 | 0.0017 | 0.0000 | 0.0000 |
| 0.1099 | 0.0932 | 0.0034 | 0.0000 | 0.0000 |
| 0.1648 | 0.0926 | 0.0052 | 0.0000 | 0.0008 |
| 0.2198 | 0.0920 | 0.0069 | 0.0000 | 0.0040 |
| 0.2747 | 0.0913 | 0.0087 | 0.0000 | 0.0070 |
| 0.3297 | 0.0907 | 0.0105 | 0.0000 | 0.0111 |
| 0.3846 | 0.0901 | 0.0123 | 0.0000 | 0.0164 |
| 0.4396 | 0.0894 | 0.0141 | 0.0000 | 0.0231 |
| 0.4945 | 0.0888 | 0.0159 | 0.0000 | 0.0312 |
| 0.5495 | 0.0882 | 0.0177 | 0.0000 | 0.0408 |
| 0.6044 | 0.0875 | 0.0195 | 0.0000 | 0.0522 |
| 0.6593 | 0.0869 | 0.0214 | 0.0000 | 0.0653 |
| 0.7143 | 0.0863 | 0.0233 | 0.0000 | 0.0802 |
| 0.7692 | 0.0857 | 0.0252 | 0.0000 | 0.0972 |
| 0.8242 | 0.0851 | 0.0270 | 0.0000 | 0.1163 |
| 0.8791 | 0.0845 | 0.0290 | 0.0000 | 0.1376 |
| 0.9341 | 0.0838 | 0.0309 | 0.0000 | 0.1612 |
| 0.9890 | 0.0832 | 0.0328 | 0.0000 | 0.1778 |
| 1.0440 | 0.0826 | 0.0348 | 0.0000 | 0.1791 |
| 1.0989 | 0.0820 | 0.0367 | 0.0000 | 0.1803 |
| 1.1538 | 0.0814 | 0.0387 | 0.0000 | 0.1816 |
| 1.2088 | 0.0808 | 0.0407 | 0.0000 | 0.1829 |
| 1.2637 | 0.0802 | 0.0427 | 0.0000 | 0.1842 |
| 1.3187 | 0.0796 | 0.0447 | 0.0000 | 0.1855 |

| | | | | |
|---|---|---|---|---|
| 1.3736 | 0.0790 | 0.0468 | 0.0000 | 0.1867 |
| 1.4286 | 0.0784 | 0.0488 | 0.0000 | 0.1880 |
| 1.4835 | 0.0779 | 0.0509 | 0.0000 | 0.1893 |
| 1.5000 | 0.0773 | 0.0515 | 0.0000 | 0.1897 |

Bioretention Hydraulic Table

| Stage(feet) | Area(ac.) | Volume(ac-ft.) | Discharge(cfs) | To Amended(cfs) | Infilt(cfs) |
|---|---|---|---|---|---|
| 1.5000 | 0.0941 | 0.0515 | 0.0000 | 0.4674 | 0.0013 |
| 1.5549 | 0.0947 | 0.0567 | 0.0000 | 0.4674 | 0.0026 |
| 1.6099 | 0.0954 | 0.0619 | 0.0000 | 0.5017 | 0.0039 |
| 1.6648 | 0.0960 | 0.0672 | 0.0000 | 0.5188 | 0.0052 |
| 1.7198 | 0.0967 | 0.0725 | 0.0000 | 0.5359 | 0.0066 |
| 1.7747 | 0.0973 | 0.0778 | 0.0000 | 0.5531 | 0.0079 |
| 1.8297 | 0.0980 | 0.0832 | 0.0000 | 0.5702 | 0.0092 |
| 1.8846 | 0.0987 | 0.0886 | 0.0000 | 0.5873 | 0.0106 |
| 1.9396 | 0.0993 | 0.0940 | 0.0000 | 0.6044 | 0.0119 |
| 1.9945 | 0.1000 | 0.0995 | 0.0000 | 0.6215 | 0.0133 |
| 2.0495 | 0.1007 | 0.1050 | 0.0000 | 0.6387 | 0.0146 |
| 2.1044 | 0.1013 | 0.1106 | 0.0000 | 0.6558 | 0.0160 |
| 2.1593 | 0.1020 | 0.1161 | 0.0000 | 0.6729 | 0.0173 |
| 2.2143 | 0.1027 | 0.1218 | 0.0000 | 0.6900 | 0.0187 |
| 2.2692 | 0.1033 | 0.1274 | 0.0000 | 0.7072 | 0.0201 |
| 2.3242 | 0.1040 | 0.1331 | 0.0000 | 0.7243 | 0.0214 |
| 2.3791 | 0.1047 | 0.1389 | 0.0000 | 0.7414 | 0.0228 |
| 2.4341 | 0.1054 | 0.1446 | 0.0000 | 0.7585 | 0.0242 |
| 2.4890 | 0.1061 | 0.1504 | 0.0000 | 0.7757 | 0.0256 |
| 2.5440 | 0.1068 | 0.1563 | 0.0000 | 0.7928 | 0.0270 |
| 2.5989 | 0.1075 | 0.1622 | 0.0000 | 0.8099 | 0.0284 |
| 2.6538 | 0.1081 | 0.1681 | 0.0000 | 0.8270 | 0.0298 |
| 2.7088 | 0.1088 | 0.1740 | 0.0000 | 0.8441 | 0.0312 |
| 2.7637 | 0.1095 | 0.1800 | 0.0000 | 0.8613 | 0.0326 |
| 2.8187 | 0.1102 | 0.1861 | 0.0000 | 0.8784 | 0.0340 |
| 2.8736 | 0.1109 | 0.1922 | 0.0000 | 0.8955 | 0.0354 |
| 2.9286 | 0.1116 | 0.1983 | 0.0000 | 0.9126 | 0.0368 |
| 2.9835 | 0.1123 | 0.2044 | 0.0000 | 0.9298 | 0.0382 |
| 3.0385 | 0.1130 | 0.2106 | 0.0000 | 0.9469 | 0.0397 |
| 3.0934 | 0.1138 | 0.2169 | 0.0000 | 0.9640 | 0.0411 |
| 3.1484 | 0.1145 | 0.2231 | 0.0000 | 0.9811 | 0.0426 |
| 3.2033 | 0.1152 | 0.2294 | 0.0000 | 0.9982 | 0.0440 |
| 3.2582 | 0.1159 | 0.2358 | 0.0000 | 1.0154 | 0.0454 |
| 3.3132 | 0.1166 | 0.2422 | 0.0000 | 1.0325 | 0.0469 |
| 3.3681 | 0.1173 | 0.2486 | 0.0000 | 1.0496 | 0.0484 |
| 3.4231 | 0.1181 | 0.2551 | 0.0000 | 1.0667 | 0.0498 |
| 3.4780 | 0.1188 | 0.2616 | 0.0000 | 1.0839 | 0.0513 |
| 3.5330 | 0.1195 | 0.2681 | 0.0000 | 1.1010 | 0.0528 |
| 3.5879 | 0.1202 | 0.2747 | 0.0000 | 1.1181 | 0.0542 |
| 3.6429 | 0.1210 | 0.2813 | 0.0000 | 1.1352 | 0.0557 |
| 3.6978 | 0.1217 | 0.2880 | 0.0000 | 1.1523 | 0.0572 |
| 3.7527 | 0.1224 | 0.2947 | 0.0000 | 1.1695 | 0.0587 |
| 3.8077 | 0.1232 | 0.3015 | 0.0000 | 1.1866 | 0.0602 |
| 3.8626 | 0.1239 | 0.3082 | 0.0000 | 1.2037 | 0.0617 |
| 3.9176 | 0.1247 | 0.3151 | 0.0000 | 1.2208 | 0.0632 |
| 3.9725 | 0.1254 | 0.3219 | 0.0000 | 1.2380 | 0.0647 |
| 4.0275 | 0.1262 | 0.3289 | 0.0000 | 1.2551 | 0.0662 |
| 4.0824 | 0.1269 | 0.3358 | 0.0000 | 1.2722 | 0.0677 |
| 4.1374 | 0.1277 | 0.3428 | 0.0000 | 1.2893 | 0.0692 |
| 4.1923 | 0.1284 | 0.3498 | 0.0000 | 1.3064 | 0.0708 |
| 4.2473 | 0.1292 | 0.3569 | 0.0000 | 1.3236 | 0.0723 |

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| | | | | | |
|---|---|---|---|---|---|
| 4.3022 | 0.1299 | 0.3640 | 0.0000 | 1.3407 | 0.0738 |
| 4.3571 | 0.1307 | 0.3712 | 0.0000 | 1.3578 | 0.0754 |
| 4.4121 | 0.1315 | 0.3784 | 0.0000 | 1.3749 | 0.0769 |
| 4.4670 | 0.1322 | 0.3856 | 0.0000 | 1.3921 | 0.0785 |
| 4.5220 | 0.1330 | 0.3929 | 0.0346 | 1.4023 | 0.0800 |
| 4.5769 | 0.1338 | 0.4002 | 0.2257 | 1.4023 | 0.0816 |
| 4.6319 | 0.1345 | 0.4076 | 0.5015 | 1.4023 | 0.0831 |
| 4.6868 | 0.1353 | 0.4150 | 0.8261 | 1.4023 | 0.0847 |
| 4.7418 | 0.1361 | 0.4225 | 1.1671 | 1.4023 | 0.0863 |
| 4.7967 | 0.1369 | 0.4300 | 1.4914 | 1.4023 | 0.0878 |
| 4.8516 | 0.1376 | 0.4375 | 1.7695 | 1.4023 | 0.0894 |
| 4.9066 | 0.1384 | 0.4451 | 1.9818 | 1.4023 | 0.0910 |
| 4.9615 | 0.1392 | 0.4527 | 2.1274 | 1.4023 | 0.0921 |
| 5.0000 | 0.1398 | 0.4581 | 2.2635 | 1.4023 | 0.0000 |

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## Surface retention 1

Element Flows To:

| Outlet 1 | Outlet 2 |
| --- | --- |
| Surface retention 3 | Bioretention 1 |

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## Bioretention 2

| | |
|---|---|
| Bottom Length: | 56.00 ft. |
| Bottom Width: | 34.25 ft. |
| Material thickness of first layer: | 1.5 |
| Material type for first layer: | SMMWW |
| Material thickness of second layer: | 0 |
| Material type for second layer: | Sand |
| Material thickness of third layer: | 0 |
| Material type for third layer: | GRAVEL |
| Infiltration On | |
| Infiltration rate: | 2 |
| Infiltration safety factor: | 1 |
| Wetted surface area On | |
| Total Volume Infiltrated (ac-ft.): | 238.837 |
| Total Volume Through Riser (ac-ft.): | 0.28 |
| Total Volume Through Facility (ac-ft.): | 239.117 |
| Percent Infiltrated: | 99.88 |
| Total Precip Applied to Facility: | 10.871 |
| Total Evap From Facility: | 3.058 |
| Underdrain not used | |
| Discharge Structure | |
| Riser Height: | 2.8 ft. |
| Riser Diameter: | 12 in. |
| Element Flows To: | |
| Outlet 1 | Outlet 2 |
| Surface retention 3 | |

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Bioretention Hydraulic Table

| Stage(feet) | Area(ac.) | Volume(ac-ft.) | Discharge(cfs) | Infilt(cfs) |
|---|---|---|---|---|
| 0.0000 | 0.0573 | 0.0000 | 0.0000 | 0.0000 |
| 0.0527 | 0.0571 | 0.0009 | 0.0000 | 0.0000 |
| 0.1055 | 0.0566 | 0.0019 | 0.0000 | 0.0000 |
| 0.1582 | 0.0561 | 0.0028 | 0.0000 | 0.0004 |
| 0.2110 | 0.0556 | 0.0038 | 0.0000 | 0.0021 |
| 0.2637 | 0.0551 | 0.0048 | 0.0000 | 0.0037 |
| 0.3165 | 0.0546 | 0.0058 | 0.0000 | 0.0058 |
| 0.3692 | 0.0541 | 0.0068 | 0.0000 | 0.0086 |
| 0.4220 | 0.0537 | 0.0078 | 0.0000 | 0.0121 |
| 0.4747 | 0.0532 | 0.0088 | 0.0000 | 0.0164 |
| 0.5275 | 0.0527 | 0.0098 | 0.0000 | 0.0215 |
| 0.5802 | 0.0522 | 0.0108 | 0.0000 | 0.0275 |
| 0.6330 | 0.0518 | 0.0119 | 0.0000 | 0.0345 |
| 0.6857 | 0.0513 | 0.0129 | 0.0000 | 0.0425 |
| 0.7385 | 0.0508 | 0.0140 | 0.0000 | 0.0516 |
| 0.7912 | 0.0504 | 0.0151 | 0.0000 | 0.0619 |
| 0.8440 | 0.0499 | 0.0161 | 0.0000 | 0.0733 |
| 0.8967 | 0.0494 | 0.0172 | 0.0000 | 0.0861 |
| 0.9495 | 0.0490 | 0.0183 | 0.0000 | 0.1002 |
| 1.0022 | 0.0485 | 0.0194 | 0.0000 | 0.1063 |
| 1.0549 | 0.0480 | 0.0206 | 0.0000 | 0.1073 |
| 1.1077 | 0.0476 | 0.0217 | 0.0000 | 0.1082 |
| 1.1604 | 0.0471 | 0.0228 | 0.0000 | 0.1092 |
| 1.2132 | 0.0467 | 0.0240 | 0.0000 | 0.1102 |
| 1.2659 | 0.0462 | 0.0251 | 0.0000 | 0.1111 |
| 1.3187 | 0.0458 | 0.0263 | 0.0000 | 0.1121 |
| 1.3714 | 0.0454 | 0.0275 | 0.0000 | 0.1131 |

| | | | | |
|---|---|---|---|---|
| 1.4242 | 0.0449 | 0.0287 | 0.0000 | 0.1141 |
| 1.4769 | 0.0445 | 0.0299 | 0.0000 | 0.1151 |
| 1.5000 | 0.0440 | 0.0304 | 0.0000 | 0.1155 |

Bioretention Hydraulic Table

| Stage(feet) | Area(ac.) | Volume(ac-ft.) | Discharge(cfs) | To Amended(cfs) | Infilt(cfs) |
|---|---|---|---|---|---|
| 1.5000 | 0.0573 | 0.0304 | 0.0000 | 0.2664 | 0.0010 |
| 1.5527 | 0.0578 | 0.0335 | 0.0000 | 0.2664 | 0.0020 |
| 1.6055 | 0.0583 | 0.0365 | 0.0000 | 0.2851 | 0.0030 |
| 1.6582 | 0.0588 | 0.0396 | 0.0000 | 0.2945 | 0.0040 |
| 1.7110 | 0.0593 | 0.0427 | 0.0000 | 0.3039 | 0.0050 |
| 1.7637 | 0.0598 | 0.0459 | 0.0000 | 0.3132 | 0.0061 |
| 1.8165 | 0.0603 | 0.0490 | 0.0000 | 0.3226 | 0.0071 |
| 1.8692 | 0.0608 | 0.0522 | 0.0000 | 0.3320 | 0.0081 |
| 1.9220 | 0.0613 | 0.0554 | 0.0000 | 0.3413 | 0.0092 |
| 1.9747 | 0.0618 | 0.0587 | 0.0000 | 0.3507 | 0.0102 |
| 2.0275 | 0.0623 | 0.0620 | 0.0000 | 0.3601 | 0.0112 |
| 2.0802 | 0.0629 | 0.0653 | 0.0000 | 0.3694 | 0.0123 |
| 2.1330 | 0.0634 | 0.0686 | 0.0000 | 0.3788 | 0.0133 |
| 2.1857 | 0.0639 | 0.0720 | 0.0000 | 0.3882 | 0.0144 |
| 2.2385 | 0.0644 | 0.0753 | 0.0000 | 0.3975 | 0.0154 |
| 2.2912 | 0.0649 | 0.0788 | 0.0000 | 0.4069 | 0.0165 |
| 2.3440 | 0.0655 | 0.0822 | 0.0000 | 0.4163 | 0.0176 |
| 2.3967 | 0.0660 | 0.0857 | 0.0000 | 0.4256 | 0.0186 |
| 2.4495 | 0.0665 | 0.0892 | 0.0000 | 0.4350 | 0.0197 |
| 2.5022 | 0.0671 | 0.0927 | 0.0000 | 0.4444 | 0.0208 |
| 2.5549 | 0.0676 | 0.0962 | 0.0000 | 0.4537 | 0.0219 |
| 2.6077 | 0.0681 | 0.0998 | 0.0000 | 0.4631 | 0.0230 |
| 2.6604 | 0.0687 | 0.1034 | 0.0000 | 0.4725 | 0.0241 |
| 2.7132 | 0.0692 | 0.1071 | 0.0000 | 0.4818 | 0.0252 |
| 2.7659 | 0.0698 | 0.1107 | 0.0000 | 0.4912 | 0.0263 |
| 2.8187 | 0.0703 | 0.1144 | 0.0000 | 0.5006 | 0.0274 |
| 2.8714 | 0.0709 | 0.1181 | 0.0000 | 0.5099 | 0.0285 |
| 2.9242 | 0.0714 | 0.1219 | 0.0000 | 0.5193 | 0.0296 |
| 2.9769 | 0.0720 | 0.1257 | 0.0000 | 0.5287 | 0.0307 |
| 3.0297 | 0.0725 | 0.1295 | 0.0000 | 0.5380 | 0.0318 |
| 3.0824 | 0.0731 | 0.1333 | 0.0000 | 0.5474 | 0.0329 |
| 3.1352 | 0.0736 | 0.1372 | 0.0000 | 0.5568 | 0.0341 |
| 3.1879 | 0.0742 | 0.1411 | 0.0000 | 0.5662 | 0.0352 |
| 3.2407 | 0.0747 | 0.1450 | 0.0000 | 0.5755 | 0.0363 |
| 3.2934 | 0.0753 | 0.1490 | 0.0000 | 0.5849 | 0.0375 |
| 3.3462 | 0.0759 | 0.1530 | 0.0000 | 0.5943 | 0.0386 |
| 3.3989 | 0.0764 | 0.1570 | 0.0000 | 0.6036 | 0.0398 |
| 3.4516 | 0.0770 | 0.1610 | 0.0000 | 0.6130 | 0.0409 |
| 3.5044 | 0.0776 | 0.1651 | 0.0000 | 0.6224 | 0.0421 |
| 3.5571 | 0.0782 | 0.1692 | 0.0000 | 0.6317 | 0.0432 |
| 3.6099 | 0.0787 | 0.1733 | 0.0000 | 0.6411 | 0.0444 |
| 3.6626 | 0.0793 | 0.1775 | 0.0000 | 0.6505 | 0.0456 |
| 3.7154 | 0.0799 | 0.1817 | 0.0000 | 0.6598 | 0.0468 |
| 3.7681 | 0.0805 | 0.1859 | 0.0000 | 0.6692 | 0.0479 |
| 3.8209 | 0.0811 | 0.1902 | 0.0000 | 0.6786 | 0.0491 |
| 3.8736 | 0.0816 | 0.1945 | 0.0000 | 0.6879 | 0.0503 |
| 3.9264 | 0.0822 | 0.1988 | 0.0000 | 0.6973 | 0.0515 |
| 3.9791 | 0.0828 | 0.2032 | 0.0000 | 0.7067 | 0.0527 |
| 4.0319 | 0.0834 | 0.2076 | 0.0000 | 0.7160 | 0.0539 |
| 4.0846 | 0.0840 | 0.2120 | 0.0000 | 0.7254 | 0.0551 |
| 4.1374 | 0.0846 | 0.2164 | 0.0000 | 0.7348 | 0.0563 |
| 4.1901 | 0.0852 | 0.2209 | 0.0000 | 0.7441 | 0.0575 |

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| | | | | | |
|---|---|---|---|---|---|
| 4.2429 | 0.0858 | 0.2254 | 0.0000 | 0.7535 | 0.0587 |
| 4.2956 | 0.0864 | 0.2300 | 0.0000 | 0.7629 | 0.0599 |
| 4.3484 | 0.0870 | 0.2345 | 0.1127 | 0.7636 | 0.0612 |
| 4.4011 | 0.0876 | 0.2391 | 0.3390 | 0.7636 | 0.0624 |
| 4.4538 | 0.0882 | 0.2438 | 0.6273 | 0.7636 | 0.0636 |
| 4.5066 | 0.0888 | 0.2484 | 0.9487 | 0.7636 | 0.0649 |
| 4.5593 | 0.0895 | 0.2531 | 1.2742 | 0.7636 | 0.0661 |
| 4.6121 | 0.0901 | 0.2579 | 1.5750 | 0.7636 | 0.0673 |
| 4.6648 | 0.0907 | 0.2626 | 1.8269 | 0.7636 | 0.0686 |
| 4.7176 | 0.0913 | 0.2674 | 2.0158 | 0.7636 | 0.0698 |
| 4.7703 | 0.0919 | 0.2723 | 2.1459 | 0.7636 | 0.0706 |
| 4.8000 | 0.0923 | 0.2750 | 2.2779 | 0.7636 | 0.0000 |

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## Surface retention 2

Element Flows To:

| Outlet 1 | Outlet 2 |
| --- | --- |
| Surface retention 3 | Bioretention 2 |

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## Bioretention 3

| | |
|---|---|
| Bottom Length: | 144.80 ft. |
| Bottom Width: | 102.80 ft. |
| Material thickness of first layer: | 1.5 |
| Material type for first layer: | SMMWW |
| Material thickness of second layer: | 0 |
| Material type for second layer: | Sand |
| Material thickness of third layer: | 0 |
| Material type for third layer: | GRAVEL |
| Infiltration On | |
| Infiltration rate: | 2 |
| Infiltration safety factor: | 1 |
| Wetted surface area On | |
| Total Volume Infiltrated (ac-ft.): | 647.538 |
| Total Volume Through Riser (ac-ft.): | 0 |
| Total Volume Through Facility (ac-ft.): | 647.538 |
| Percent Infiltrated: | 100 |
| Total Precip Applied to Facility: | 75.128 |
| Total Evap From Facility: | 20.838 |
| Underdrain not used | |
| Discharge Structure | |
| Riser Height: | 2.3 ft. |
| Riser Diameter: | 12 in. |
| Element Flows To: | |
| Outlet 1 | Outlet 2 |

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Bioretention Hydraulic Table

| Stage(feet) | Area(ac.) | Volume(ac-ft.) | Discharge(cfs) | Infilt(cfs) |
|---|---|---|---|---|
| 0.0000 | 0.3767 | 0.0000 | 0.0000 | 0.0000 |
| 0.0473 | 0.3758 | 0.0065 | 0.0000 | 0.0000 |
| 0.0945 | 0.3747 | 0.0130 | 0.0000 | 0.0000 |
| 0.1418 | 0.3736 | 0.0195 | 0.0000 | 0.0015 |
| 0.1890 | 0.3724 | 0.0261 | 0.0000 | 0.0120 |
| 0.2363 | 0.3713 | 0.0327 | 0.0000 | 0.0210 |
| 0.2835 | 0.3702 | 0.0393 | 0.0000 | 0.0330 |
| 0.3308 | 0.3691 | 0.0459 | 0.0000 | 0.0486 |
| 0.3780 | 0.3680 | 0.0525 | 0.0000 | 0.0680 |
| 0.4253 | 0.3669 | 0.0592 | 0.0000 | 0.0914 |
| 0.4725 | 0.3658 | 0.0659 | 0.0000 | 0.1191 |
| 0.5198 | 0.3646 | 0.0726 | 0.0000 | 0.1515 |
| 0.5670 | 0.3635 | 0.0793 | 0.0000 | 0.1887 |
| 0.6143 | 0.3624 | 0.0860 | 0.0000 | 0.2310 |
| 0.6615 | 0.3613 | 0.0928 | 0.0000 | 0.2786 |
| 0.7088 | 0.3602 | 0.0996 | 0.0000 | 0.3319 |
| 0.7560 | 0.3591 | 0.1064 | 0.0000 | 0.3909 |
| 0.8033 | 0.3580 | 0.1132 | 0.0000 | 0.4560 |
| 0.8505 | 0.3569 | 0.1200 | 0.0000 | 0.5274 |
| 0.8978 | 0.3558 | 0.1269 | 0.0000 | 0.6053 |
| 0.9451 | 0.3547 | 0.1338 | 0.0000 | 0.6899 |
| 0.9923 | 0.3536 | 0.1407 | 0.0000 | 0.7354 |
| 1.0396 | 0.3525 | 0.1476 | 0.0000 | 0.7376 |
| 1.0868 | 0.3515 | 0.1546 | 0.0000 | 0.7398 |
| 1.1341 | 0.3504 | 0.1615 | 0.0000 | 0.7421 |
| 1.1813 | 0.3493 | 0.1685 | 0.0000 | 0.7443 |
| 1.2286 | 0.3482 | 0.1755 | 0.0000 | 0.7466 |

| | | | | |
|---|---|---|---|---|
| 1.2758 | 0.3471 | 0.1826 | 0.0000 | 0.7488 |
| 1.3231 | 0.3460 | 0.1896 | 0.0000 | 0.7511 |
| 1.3703 | 0.3450 | 0.1967 | 0.0000 | 0.7534 |
| 1.4176 | 0.3439 | 0.2038 | 0.0000 | 0.7556 |
| 1.4648 | 0.3428 | 0.2109 | 0.0000 | 0.7579 |
| 1.5000 | 0.3417 | 0.2162 | 0.0000 | 0.7596 |

Bioretention Hydraulic Table

| Stage(feet) | Area(ac.) | Volume(ac-ft.) | Discharge(cfs) | To Amended(cfs) | Infilt(cfs) |
|---|---|---|---|---|---|
| 1.5000 | 0.3767 | 0.2162 | 0.0000 | 2.0674 | 0.0023 |
| 1.5473 | 0.3778 | 0.2341 | 0.0000 | 2.0674 | 0.0045 |
| 1.5945 | 0.3789 | 0.2519 | 0.0000 | 2.1977 | 0.0068 |
| 1.6418 | 0.3800 | 0.2699 | 0.0000 | 2.2628 | 0.0091 |
| 1.6890 | 0.3812 | 0.2879 | 0.0000 | 2.3279 | 0.0114 |
| 1.7363 | 0.3823 | 0.3059 | 0.0000 | 2.3931 | 0.0137 |
| 1.7835 | 0.3834 | 0.3240 | 0.0000 | 2.4582 | 0.0160 |
| 1.8308 | 0.3846 | 0.3421 | 0.0000 | 2.5233 | 0.0183 |
| 1.8780 | 0.3857 | 0.3603 | 0.0000 | 2.5884 | 0.0206 |
| 1.9253 | 0.3869 | 0.3786 | 0.0000 | 2.6536 | 0.0229 |
| 1.9725 | 0.3880 | 0.3969 | 0.0000 | 2.7187 | 0.0252 |
| 2.0198 | 0.3891 | 0.4153 | 0.0000 | 2.7838 | 0.0275 |
| 2.0670 | 0.3903 | 0.4337 | 0.0000 | 2.8490 | 0.0298 |
| 2.1143 | 0.3914 | 0.4521 | 0.0000 | 2.9141 | 0.0321 |
| 2.1615 | 0.3926 | 0.4707 | 0.0000 | 2.9792 | 0.0344 |
| 2.2088 | 0.3937 | 0.4892 | 0.0000 | 3.0443 | 0.0368 |
| 2.2560 | 0.3949 | 0.5079 | 0.0000 | 3.1095 | 0.0391 |
| 2.3033 | 0.3960 | 0.5266 | 0.0000 | 3.1746 | 0.0414 |
| 2.3505 | 0.3972 | 0.5453 | 0.0000 | 3.2397 | 0.0438 |
| 2.3978 | 0.3984 | 0.5641 | 0.0000 | 3.3048 | 0.0461 |
| 2.4451 | 0.3995 | 0.5829 | 0.0000 | 3.3700 | 0.0484 |
| 2.4923 | 0.4007 | 0.6019 | 0.0000 | 3.4351 | 0.0508 |
| 2.5396 | 0.4018 | 0.6208 | 0.0000 | 3.5002 | 0.0531 |
| 2.5868 | 0.4030 | 0.6398 | 0.0000 | 3.5654 | 0.0555 |
| 2.6341 | 0.4042 | 0.6589 | 0.0000 | 3.6305 | 0.0578 |
| 2.6813 | 0.4053 | 0.6780 | 0.0000 | 3.6956 | 0.0602 |
| 2.7286 | 0.4065 | 0.6972 | 0.0000 | 3.7607 | 0.0625 |
| 2.7758 | 0.4077 | 0.7164 | 0.0000 | 3.8259 | 0.0649 |
| 2.8231 | 0.4088 | 0.7357 | 0.0000 | 3.8910 | 0.0673 |
| 2.8703 | 0.4100 | 0.7551 | 0.0000 | 3.9561 | 0.0696 |
| 2.9176 | 0.4112 | 0.7745 | 0.0000 | 4.0213 | 0.0720 |
| 2.9648 | 0.4124 | 0.7939 | 0.0000 | 4.0864 | 0.0744 |
| 3.0121 | 0.4135 | 0.8134 | 0.0000 | 4.1515 | 0.0768 |
| 3.0593 | 0.4147 | 0.8330 | 0.0000 | 4.2166 | 0.0791 |
| 3.1066 | 0.4159 | 0.8526 | 0.0000 | 4.2818 | 0.0815 |
| 3.1538 | 0.4171 | 0.8723 | 0.0000 | 4.3469 | 0.0839 |
| 3.2011 | 0.4183 | 0.8921 | 0.0000 | 4.4120 | 0.0863 |
| 3.2484 | 0.4195 | 0.9118 | 0.0000 | 4.4771 | 0.0887 |
| 3.2956 | 0.4206 | 0.9317 | 0.0000 | 4.5423 | 0.0911 |
| 3.3429 | 0.4218 | 0.9516 | 0.0000 | 4.6074 | 0.0935 |
| 3.3901 | 0.4230 | 0.9716 | 0.0000 | 4.6725 | 0.0959 |
| 3.4374 | 0.4242 | 0.9916 | 0.0000 | 4.7377 | 0.0983 |
| 3.4846 | 0.4254 | 1.0117 | 0.0000 | 4.8028 | 0.1007 |
| 3.5319 | 0.4266 | 1.0318 | 0.0000 | 4.8679 | 0.1032 |
| 3.5791 | 0.4278 | 1.0520 | 0.0000 | 4.9330 | 0.1056 |
| 3.6264 | 0.4290 | 1.0722 | 0.0000 | 4.9982 | 0.1080 |
| 3.6736 | 0.4302 | 1.0925 | 0.0000 | 5.0633 | 0.1104 |
| 3.7209 | 0.4314 | 1.1129 | 0.0000 | 5.1284 | 0.1128 |
| 3.7681 | 0.4326 | 1.1333 | 0.0000 | 5.1936 | 0.1153 |

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| | | | | | |
|---|---|---|---|---|---|
| 3.8154 | 0.4338 | 1.1538 | 0.0203 | 5.2375 | 0.1177 |
| 3.8626 | 0.4350 | 1.1743 | 0.1660 | 5.2375 | 0.1202 |
| 3.9099 | 0.4362 | 1.1949 | 0.3835 | 5.2375 | 0.1226 |
| 3.9571 | 0.4374 | 1.2155 | 0.6467 | 5.2375 | 0.1250 |
| 4.0044 | 0.4387 | 1.2362 | 0.9350 | 5.2375 | 0.1275 |
| 4.0516 | 0.4399 | 1.2570 | 1.2276 | 5.2375 | 0.1299 |
| 4.0989 | 0.4411 | 1.2778 | 1.5036 | 5.2375 | 0.1324 |
| 4.1462 | 0.4423 | 1.2987 | 1.7445 | 5.2375 | 0.1349 |
| 4.1934 | 0.4435 | 1.3196 | 1.9373 | 5.2375 | 0.1373 |
| 4.2407 | 0.4447 | 1.3406 | 2.0789 | 5.2375 | 0.1398 |
| 4.2879 | 0.4460 | 1.3616 | 2.1805 | 5.2375 | 0.1404 |
| 4.3000 | 0.4463 | 1.3670 | 2.3041 | 5.2375 | 0.0000 |

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## Surface retention 3

Element Flows To:

| Outlet 1 | Outlet 2 |
| --- | --- |
| | Bioretention 3 |

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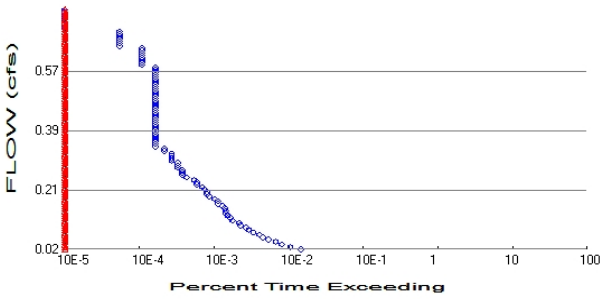
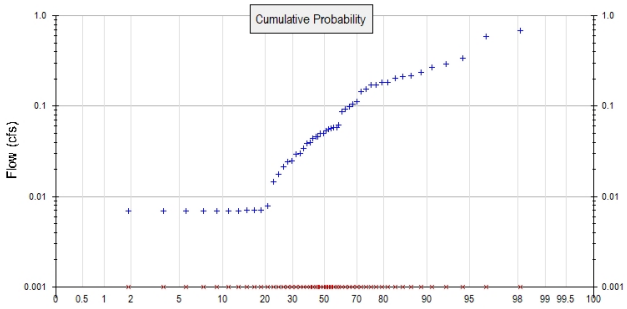
# Analysis Results

## POC 1




\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 8.7
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1
Total Pervious Area: 3.77
Total Impervious Area: 4.93

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

| Return Period | Flow(cfs) |
|---|---|
| 2 year | 0.047618 |
| 5 year | 0.14735 |
| 10 year | 0.265941 |
| 25 year | 0.499168 |
| 50 year | 0.749721 |
| 100 year | 1.08093 |

Flow Frequency Return Periods for Mitigated. POC #1

| Return Period | Flow(cfs) |
|---|---|
| 2 year | 0 |
| 5 year | 0 |
| 10 year | 0 |
| 25 year | 0 |
| 50 year | 0 |
| 100 year | 0 |

## Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

| Year | Predeveloped | Mitigated |
|---|---|---|
| 1956 | 0.092 | 0.000 |
| 1957 | 0.050 | 0.000 |
| 1958 | 0.039 | 0.000 |
| 1959 | 0.034 | 0.000 |
| 1960 | 0.204 | 0.000 |
| 1961 | 0.181 | 0.000 |
| 1962 | 0.007 | 0.000 |
| 1963 | 0.268 | 0.000 |
| 1964 | 0.154 | 0.000 |
| 1965 | 0.171 | 0.000 |

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| | | |
|---|---|---|
| 1966 | 0.087 | 0.000 |
| 1967 | 0.058 | 0.000 |
| 1968 | 0.040 | 0.000 |
| 1969 | 0.008 | 0.000 |
| 1970 | 0.030 | 0.000 |
| 1971 | 0.058 | 0.000 |
| 1972 | 0.143 | 0.000 |
| 1973 | 0.007 | 0.000 |
| 1974 | 0.105 | 0.000 |
| 1975 | 0.062 | 0.000 |
| 1976 | 0.055 | 0.000 |
| 1977 | 0.007 | 0.000 |
| 1978 | 0.053 | 0.000 |
| 1979 | 0.021 | 0.000 |
| 1980 | 0.044 | 0.000 |
| 1981 | 0.056 | 0.000 |
| 1982 | 0.046 | 0.000 |
| 1983 | 0.024 | 0.000 |
| 1984 | 0.112 | 0.000 |
| 1985 | 0.007 | 0.000 |
| 1986 | 0.099 | 0.000 |
| 1987 | 0.584 | 0.000 |
| 1988 | 0.007 | 0.000 |
| 1989 | 0.007 | 0.000 |
| 1990 | 0.336 | 0.000 |
| 1991 | 0.292 | 0.000 |
| 1992 | 0.007 | 0.000 |
| 1993 | 0.015 | 0.000 |
| 1994 | 0.007 | 0.000 |
| 1995 | 0.046 | 0.000 |
| 1996 | 0.172 | 0.000 |
| 1997 | 0.184 | 0.000 |
| 1998 | 0.030 | 0.000 |
| 1999 | 0.212 | 0.000 |
| 2000 | 0.025 | 0.000 |
| 2001 | 0.007 | 0.000 |
| 2002 | 0.050 | 0.000 |
| 2003 | 0.007 | 0.000 |
| 2004 | 0.235 | 0.000 |
| 2005 | 0.007 | 0.000 |
| 2006 | 0.692 | 0.000 |
| 2007 | 0.217 | 0.000 |
| 2008 | 0.017 | 0.000 |

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## Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

| Rank | Predeveloped | Mitigated |
|---|---|---|
| 1 | 0.6918 | 0.0000 |
| 2 | 0.5840 | 0.0000 |
| 3 | 0.3358 | 0.0000 |
| 4 | 0.2918 | 0.0000 |
| 5 | 0.2680 | 0.0000 |
| 6 | 0.2355 | 0.0000 |
| 7 | 0.2174 | 0.0000 |
| 8 | 0.2120 | 0.0000 |
| 9 | 0.2042 | 0.0000 |
| 10 | 0.1837 | 0.0000 |
| 11 | 0.1813 | 0.0000 |

| | | |
|---|---|---|
| 12 | 0.1720 | 0.0000 |
| 13 | 0.1706 | 0.0000 |
| 14 | 0.1540 | 0.0000 |
| 15 | 0.1435 | 0.0000 |
| 16 | 0.1119 | 0.0000 |
| 17 | 0.1050 | 0.0000 |
| 18 | 0.0989 | 0.0000 |
| 19 | 0.0922 | 0.0000 |
| 20 | 0.0868 | 0.0000 |
| 21 | 0.0624 | 0.0000 |
| 22 | 0.0579 | 0.0000 |
| 23 | 0.0577 | 0.0000 |
| 24 | 0.0563 | 0.0000 |
| 25 | 0.0551 | 0.0000 |
| 26 | 0.0531 | 0.0000 |
| 27 | 0.0503 | 0.0000 |
| 28 | 0.0500 | 0.0000 |
| 29 | 0.0463 | 0.0000 |
| 30 | 0.0458 | 0.0000 |
| 31 | 0.0438 | 0.0000 |
| 32 | 0.0396 | 0.0000 |
| 33 | 0.0390 | 0.0000 |
| 34 | 0.0341 | 0.0000 |
| 35 | 0.0302 | 0.0000 |
| 36 | 0.0295 | 0.0000 |
| 37 | 0.0246 | 0.0000 |
| 38 | 0.0244 | 0.0000 |
| 39 | 0.0215 | 0.0000 |
| 40 | 0.0175 | 0.0000 |
| 41 | 0.0147 | 0.0000 |
| 42 | 0.0078 | 0.0000 |
| 43 | 0.0070 | 0.0000 |
| 44 | 0.0070 | 0.0000 |
| 45 | 0.0070 | 0.0000 |
| 46 | 0.0070 | 0.0000 |
| 47 | 0.0069 | 0.0000 |
| 48 | 0.0069 | 0.0000 |
| 49 | 0.0069 | 0.0000 |
| 50 | 0.0069 | 0.0000 |
| 51 | 0.0069 | 0.0000 |
| 52 | 0.0069 | 0.0000 |
| 53 | 0.0069 | 0.0000 |

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## Duration Flows

The Facility PASSED

| Flow(cfs) | Predev | Mit | Percentage | Pass/Fail |
|---|---|---|---|---|
| 0.0238 | 272 | 0 | 0 | Pass |
| 0.0311 | 194 | 0 | 0 | Pass |
| 0.0385 | 150 | 0 | 0 | Pass |
| 0.0458 | 124 | 0 | 0 | Pass |
| 0.0531 | 99 | 0 | 0 | Pass |
| 0.0605 | 84 | 0 | 0 | Pass |
| 0.0678 | 76 | 0 | 0 | Pass |
| 0.0751 | 62 | 0 | 0 | Pass |
| 0.0825 | 54 | 0 | 0 | Pass |
| 0.0898 | 50 | 0 | 0 | Pass |
| 0.0971 | 42 | 0 | 0 | Pass |
| 0.1045 | 40 | 0 | 0 | Pass |
| 0.1118 | 33 | 0 | 0 | Pass |
| 0.1191 | 31 | 0 | 0 | Pass |
| 0.1265 | 28 | 0 | 0 | Pass |
| 0.1338 | 27 | 0 | 0 | Pass |
| 0.1411 | 27 | 0 | 0 | Pass |
| 0.1485 | 26 | 0 | 0 | Pass |
| 0.1558 | 24 | 0 | 0 | Pass |
| 0.1631 | 21 | 0 | 0 | Pass |
| 0.1705 | 21 | 0 | 0 | Pass |
| 0.1778 | 19 | 0 | 0 | Pass |
| 0.1851 | 16 | 0 | 0 | Pass |
| 0.1925 | 15 | 0 | 0 | Pass |
| 0.1998 | 15 | 0 | 0 | Pass |
| 0.2071 | 14 | 0 | 0 | Pass |
| 0.2145 | 13 | 0 | 0 | Pass |
| 0.2218 | 11 | 0 | 0 | Pass |
| 0.2291 | 11 | 0 | 0 | Pass |
| 0.2364 | 10 | 0 | 0 | Pass |
| 0.2438 | 8 | 0 | 0 | Pass |
| 0.2511 | 7 | 0 | 0 | Pass |
| 0.2584 | 7 | 0 | 0 | Pass |
| 0.2658 | 7 | 0 | 0 | Pass |
| 0.2731 | 6 | 0 | 0 | Pass |
| 0.2804 | 6 | 0 | 0 | Pass |
| 0.2878 | 6 | 0 | 0 | Pass |
| 0.2951 | 5 | 0 | 0 | Pass |
| 0.3024 | 5 | 0 | 0 | Pass |
| 0.3098 | 5 | 0 | 0 | Pass |
| 0.3171 | 5 | 0 | 0 | Pass |
| 0.3244 | 4 | 0 | 0 | Pass |
| 0.3318 | 4 | 0 | 0 | Pass |
| 0.3391 | 3 | 0 | 0 | Pass |
| 0.3464 | 3 | 0 | 0 | Pass |
| 0.3538 | 3 | 0 | 0 | Pass |
| 0.3611 | 3 | 0 | 0 | Pass |
| 0.3684 | 3 | 0 | 0 | Pass |
| 0.3758 | 3 | 0 | 0 | Pass |
| 0.3831 | 3 | 0 | 0 | Pass |
| 0.3904 | 3 | 0 | 0 | Pass |
| 0.3978 | 3 | 0 | 0 | Pass |
| 0.4051 | 3 | 0 | 0 | Pass |

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| | | | | |
|---|---|---|---|---|
| 0.4124 | 3 | 0 | 0 | Pass |
| 0.4198 | 3 | 0 | 0 | Pass |
| 0.4271 | 3 | 0 | 0 | Pass |
| 0.4344 | 3 | 0 | 0 | Pass |
| 0.4418 | 3 | 0 | 0 | Pass |
| 0.4491 | 3 | 0 | 0 | Pass |
| 0.4564 | 3 | 0 | 0 | Pass |
| 0.4638 | 3 | 0 | 0 | Pass |
| 0.4711 | 3 | 0 | 0 | Pass |
| 0.4784 | 3 | 0 | 0 | Pass |
| 0.4858 | 3 | 0 | 0 | Pass |
| 0.4931 | 3 | 0 | 0 | Pass |
| 0.5004 | 3 | 0 | 0 | Pass |
| 0.5078 | 3 | 0 | 0 | Pass |
| 0.5151 | 3 | 0 | 0 | Pass |
| 0.5224 | 3 | 0 | 0 | Pass |
| 0.5297 | 3 | 0 | 0 | Pass |
| 0.5371 | 3 | 0 | 0 | Pass |
| 0.5444 | 3 | 0 | 0 | Pass |
| 0.5517 | 3 | 0 | 0 | Pass |
| 0.5591 | 3 | 0 | 0 | Pass |
| 0.5664 | 3 | 0 | 0 | Pass |
| 0.5737 | 3 | 0 | 0 | Pass |
| 0.5811 | 3 | 0 | 0 | Pass |
| 0.5884 | 2 | 0 | 0 | Pass |
| 0.5957 | 2 | 0 | 0 | Pass |
| 0.6031 | 2 | 0 | 0 | Pass |
| 0.6104 | 2 | 0 | 0 | Pass |
| 0.6177 | 2 | 0 | 0 | Pass |
| 0.6251 | 2 | 0 | 0 | Pass |
| 0.6324 | 2 | 0 | 0 | Pass |
| 0.6397 | 2 | 0 | 0 | Pass |
| 0.6471 | 1 | 0 | 0 | Pass |
| 0.6544 | 1 | 0 | 0 | Pass |
| 0.6617 | 1 | 0 | 0 | Pass |
| 0.6691 | 1 | 0 | 0 | Pass |
| 0.6764 | 1 | 0 | 0 | Pass |
| 0.6837 | 1 | 0 | 0 | Pass |
| 0.6911 | 1 | 0 | 0 | Pass |
| 0.6984 | 0 | 0 | 0 | Pass |
| 0.7057 | 0 | 0 | 0 | Pass |
| 0.7131 | 0 | 0 | 0 | Pass |
| 0.7204 | 0 | 0 | 0 | Pass |
| 0.7277 | 0 | 0 | 0 | Pass |
| 0.7351 | 0 | 0 | 0 | Pass |
| 0.7424 | 0 | 0 | 0 | Pass |
| 0.7497 | 0 | 0 | 0 | Pass |

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# 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 |
|---|---|---|---|---|---|---|---|---|---|
| retention 3 POC | ☐ | 589.26 | | | ☐ | 100.00 | | | |
| retention 1 | ☐ | 231.59 | | | ☐ | 100.00 | | | |
| retention 2 | ☐ | 217.60 | | | ☐ | 99.88 | | | |
| Total Volume Infiltrated | | 1038.45 | 0.00 | 0.00 | | 99.98 | 0.00 | 0% | No Treat. Credit |
| Compliance with LID Standard 8% of 2-yr to 50% of 2-yr | | | | | | | | | Duration Analysis Result = Passed |
| | | | | | | | | | |

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# 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.

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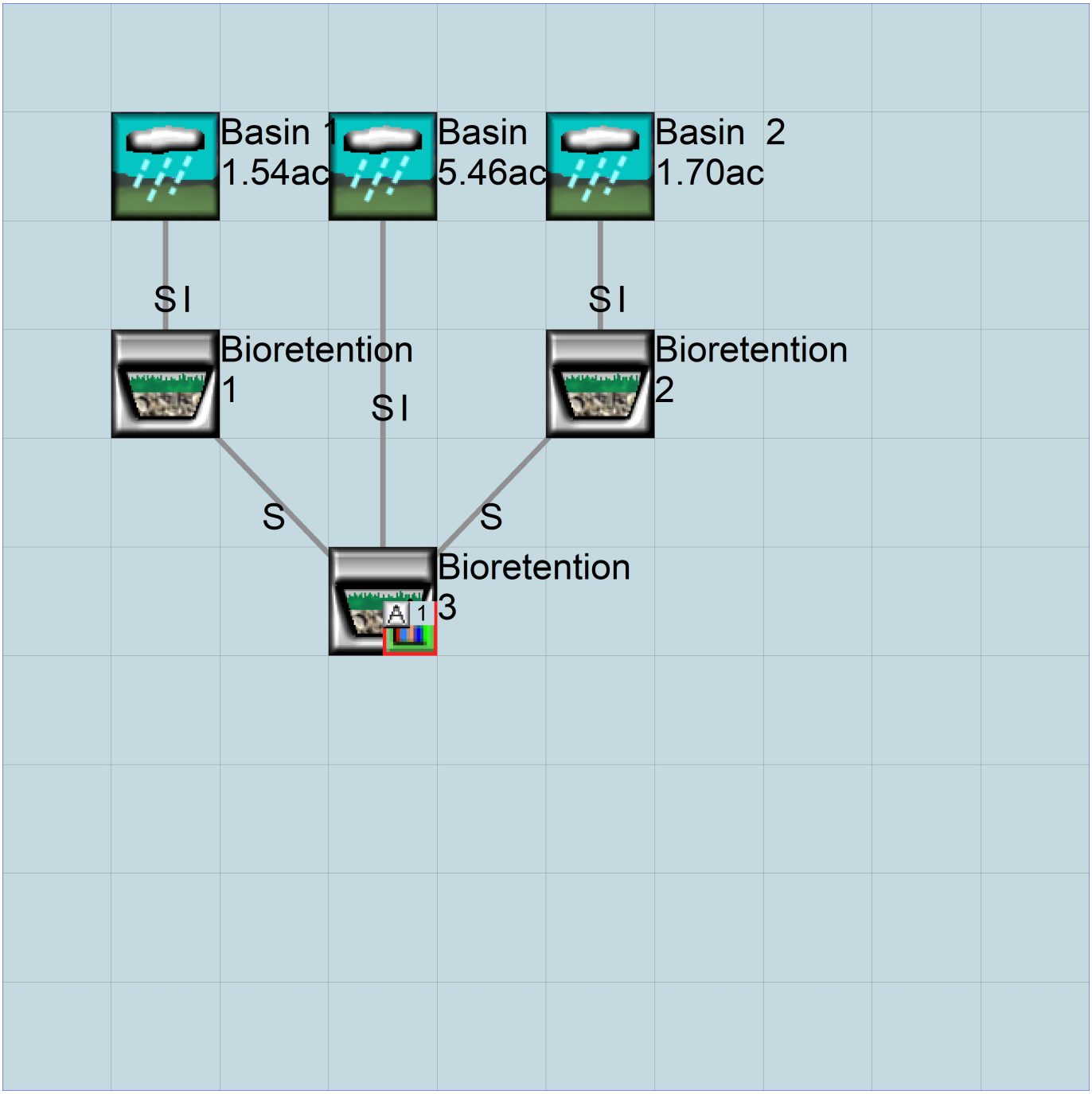
# Appendix

## Predeveloped Schematic

## Mitigated Schematic



# Disclaimer

## Legal Notice

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# APPENDIX 2

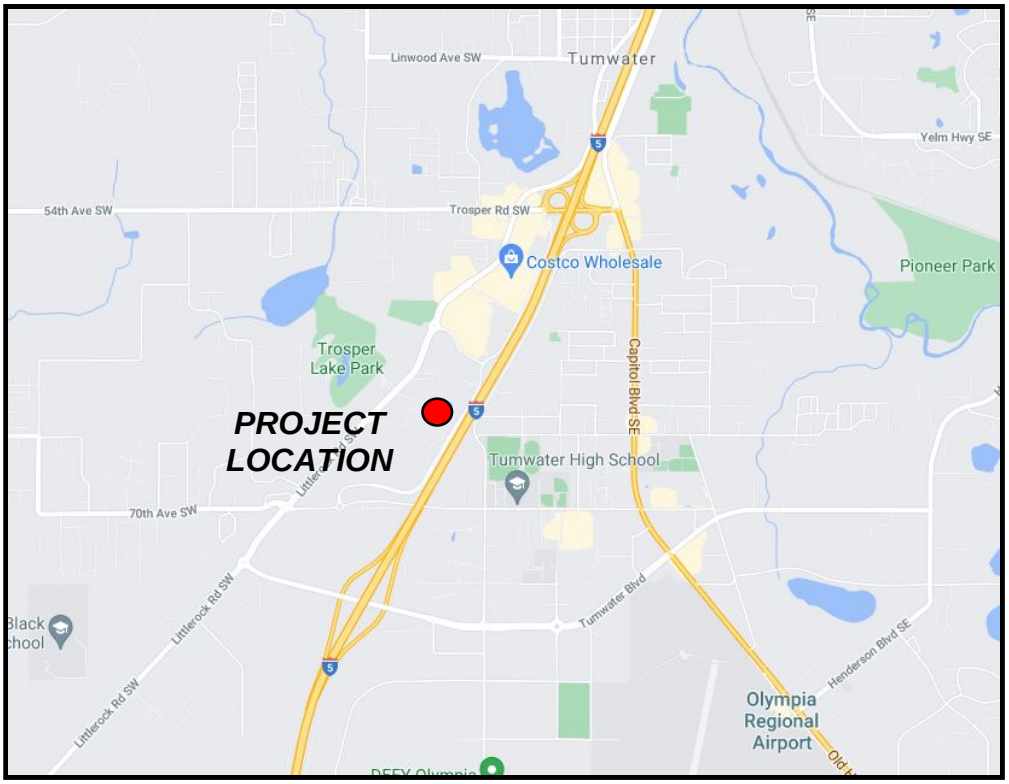
## SOIL MANAGEMENT PLAN

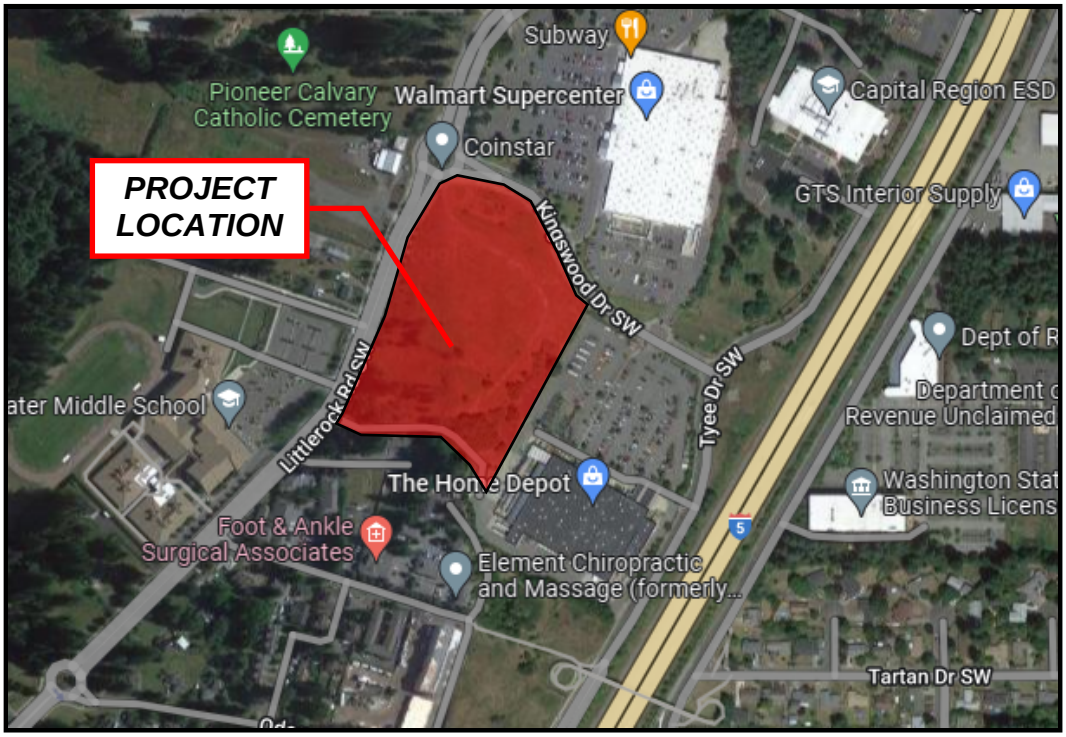
TO BE INCLUDED AS PART OF THE CONSTRUCTION DOCUMENT SUBMITTAL

# APPENDIX 3

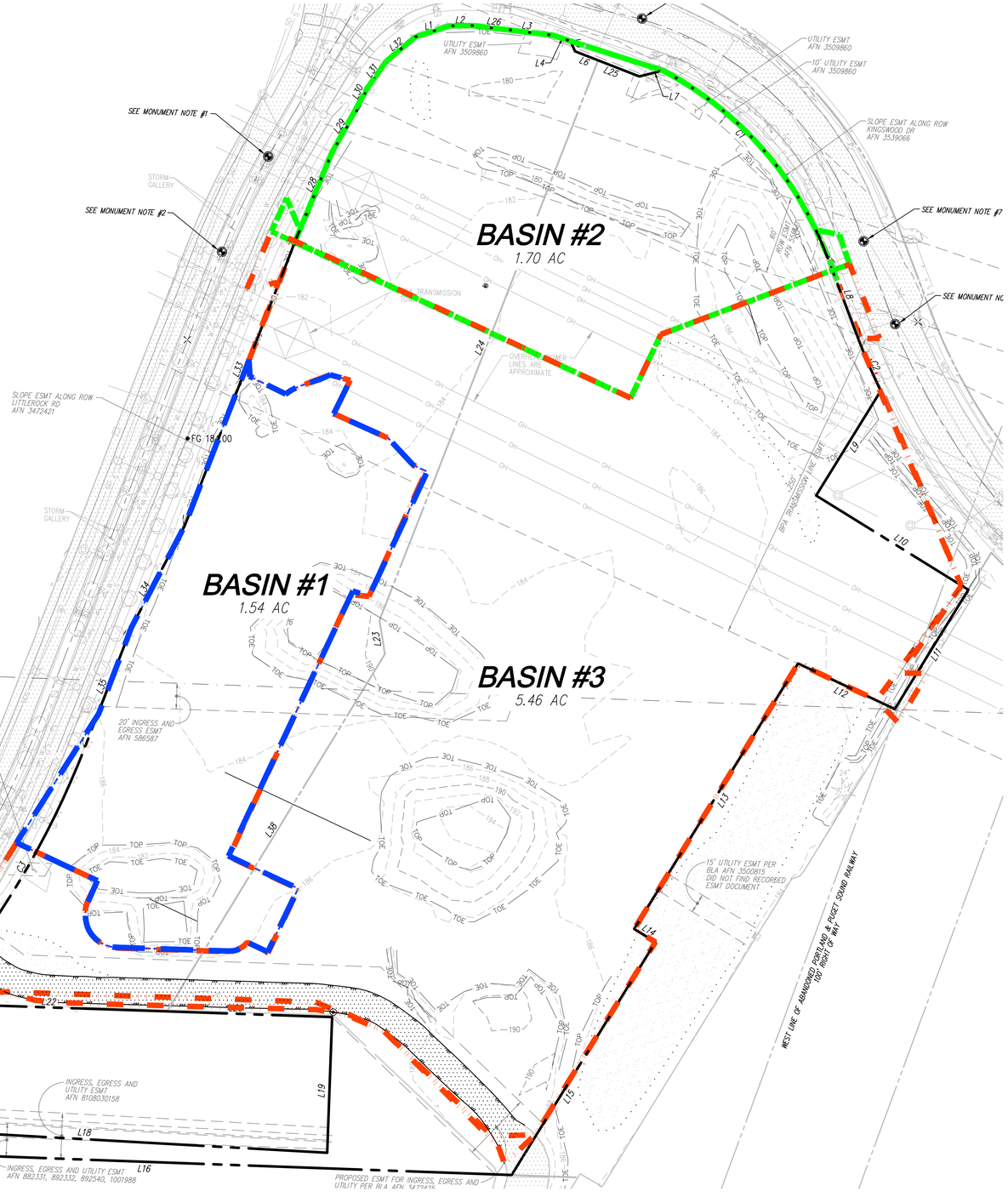
## SUPPLEMENTAL REPORTS AND INFORMATION

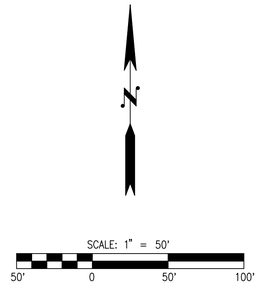
LDC Surveying Engineering Planning




1411 State Avenue NE, Suite 200 • Olympia, WA 98506 • ph: 425.806.1869 • fx: 425.482.2893 • www.LDCcorp.com




***EXISTING AREAS***

***BASIN 1:***

| | |
|---|---|
| PERVIOUS: | 1.54 AC |

***BASIN 2:***

| | |
|---|---|
| PERVIOUS: | 1.70 AC |

***BASIN 3:***

| | |
|---|---|
| PERVIOUS: | 5.06 AC |
| IMPERVIOUS: | 0.40 AC |

***TOTAL AREA:*** 8.70 AC

REVISIONS

| NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|

LDC
Surveying
Engineering
Planning
Kent
Woodinville
20210 142nd Avenue NE
Woodinville, WA 98072
Olympia
T 425.806.1869
www.LDCcorp.com
F 425.482.2893

KCI COMMERCIAL, INC.

# KINGSWOOD COMMERCIAL

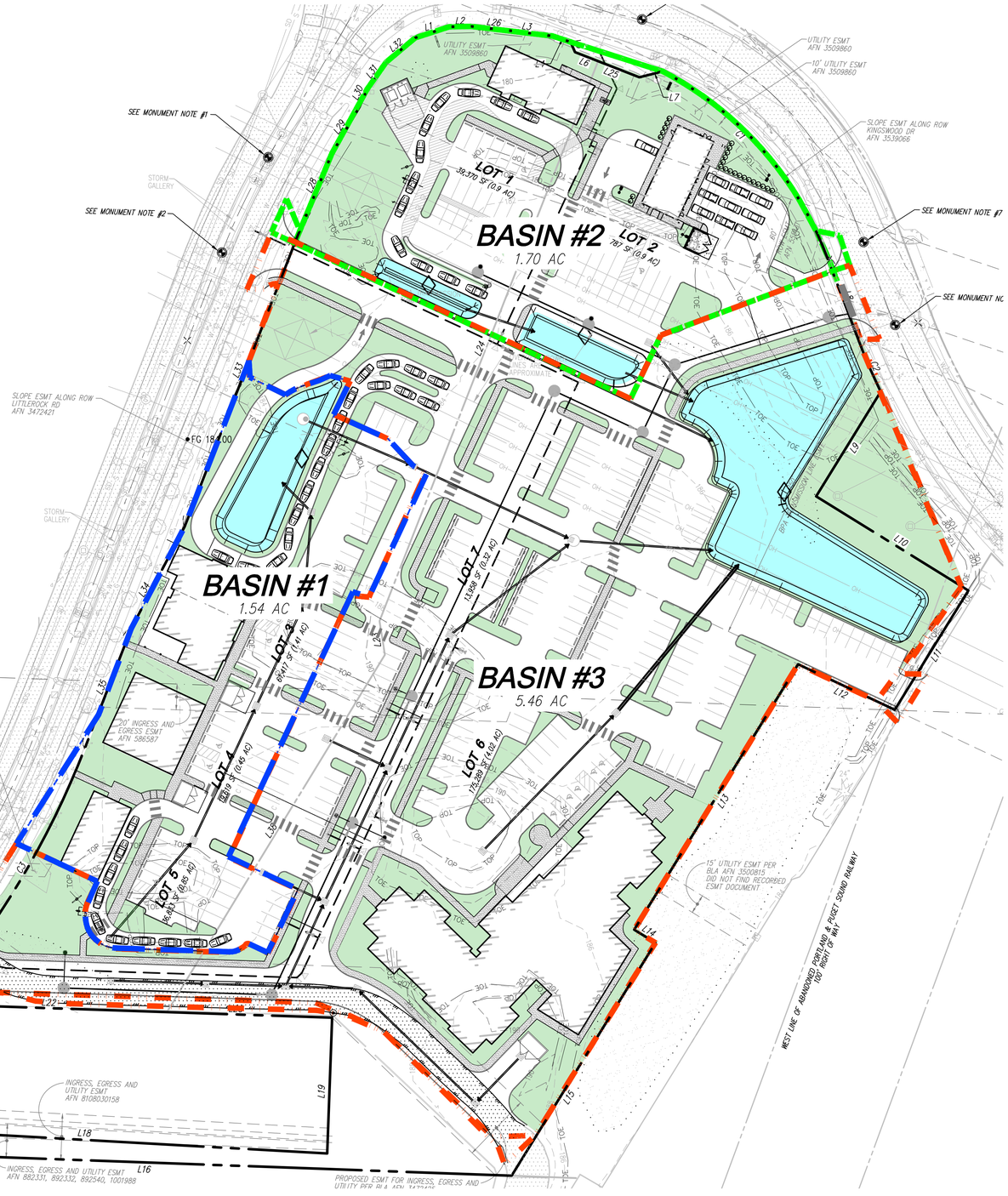
*EXISTING CONDITIONS MAP*

| | |
|---|---|
| JOB NUMBER: | C22-151 |
| DRAWING NAME: | C22-151 EX CONDITIONS MAP |
| DESIGNER: | MGH |
| DRAFTING BY: | EO |
| DATE: | SEPTEMBER 2022 |
| SCALE: | AS NOTED |
| JURISDICTION: | TUMWATER |

**EX-01**

SHEET 1 OF 2

Drawing: P:\Civil\2022\C22-151 Kingswood Commercial\Drawings\Exhibits\C22-151 Ex Conditions Map.dwg Plotted: Sep 29, 2022 - 1:06pm




SCALE: 1" = 50'
50' 0 50' 100'

## CONSTRUCTION AREAS:

**BASIN 1:**

| | |
|---|---|
| PERVIOUS: | 0.30 AC |
| IMPERVIOUS: | 1.12 AC |
| POND SIZE: | 0.12 AC |

**BASIN 2:**

| | |
|---|---|
| PERVIOUS: | 0.55 AC |
| IMPERVIOUS: | 1.07 AC |
| POND SIZE: | 0.08 AC |

**BASIN 3:**

| | |
|---|---|
| PERVIOUS: | 2.30 AC |
| IMPERVIOUS: | 2.74 AC |
| POND SIZE: | 0.42 AC |

**TOTAL AREA:** 8.70 AC

REVISIONS

| NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|

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KCI COMMERCIAL, INC.

# KINGSWOOD COMMERCIAL

*PROPOSED CONDITIONS MAP*

| | |
|---|---|
| JOB NUMBER: | C22-151 |
| DRAWING: | C22-151PR.CONDITIONS MAP |
| DESIGNER: | MGH |
| DRAFTING BY: | EO |
| DATE: | SEPTEMBER 2022 |
| SCALE: | AS NOTED |
| JURISDICTION: | TUMWATER |

**EX-02**

SHEET 2 OF 2

Drawing: P:\Civil\2022\C22-151 Kingswood Commercial\Drawings\Exhibits\C22-151 Pr Conditions Map.dwg Plotted: Sep 29, 2022 - 1:05pm

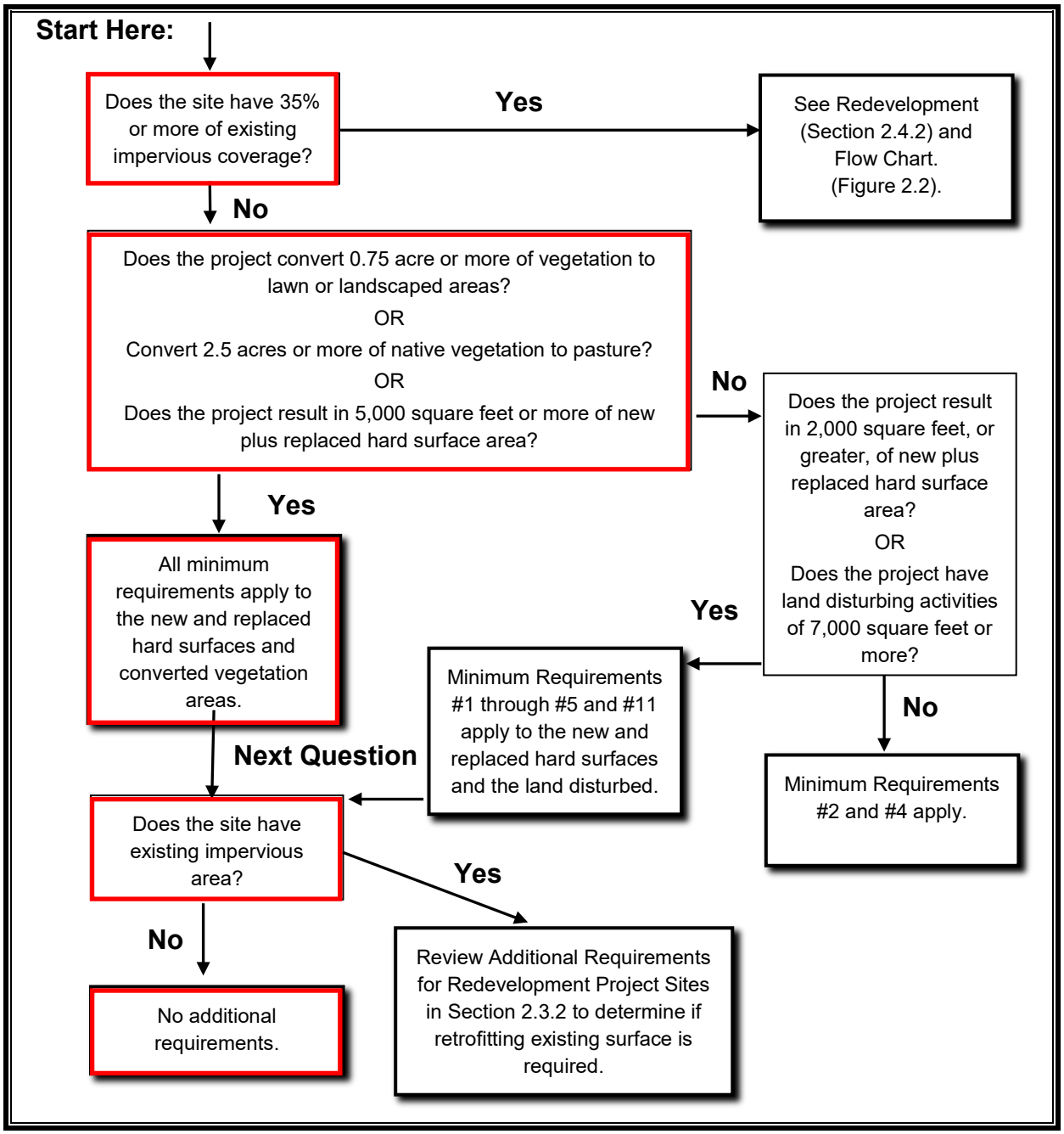



**Figure 2.1. Flow Chart for Determining Requirements for New Development.**

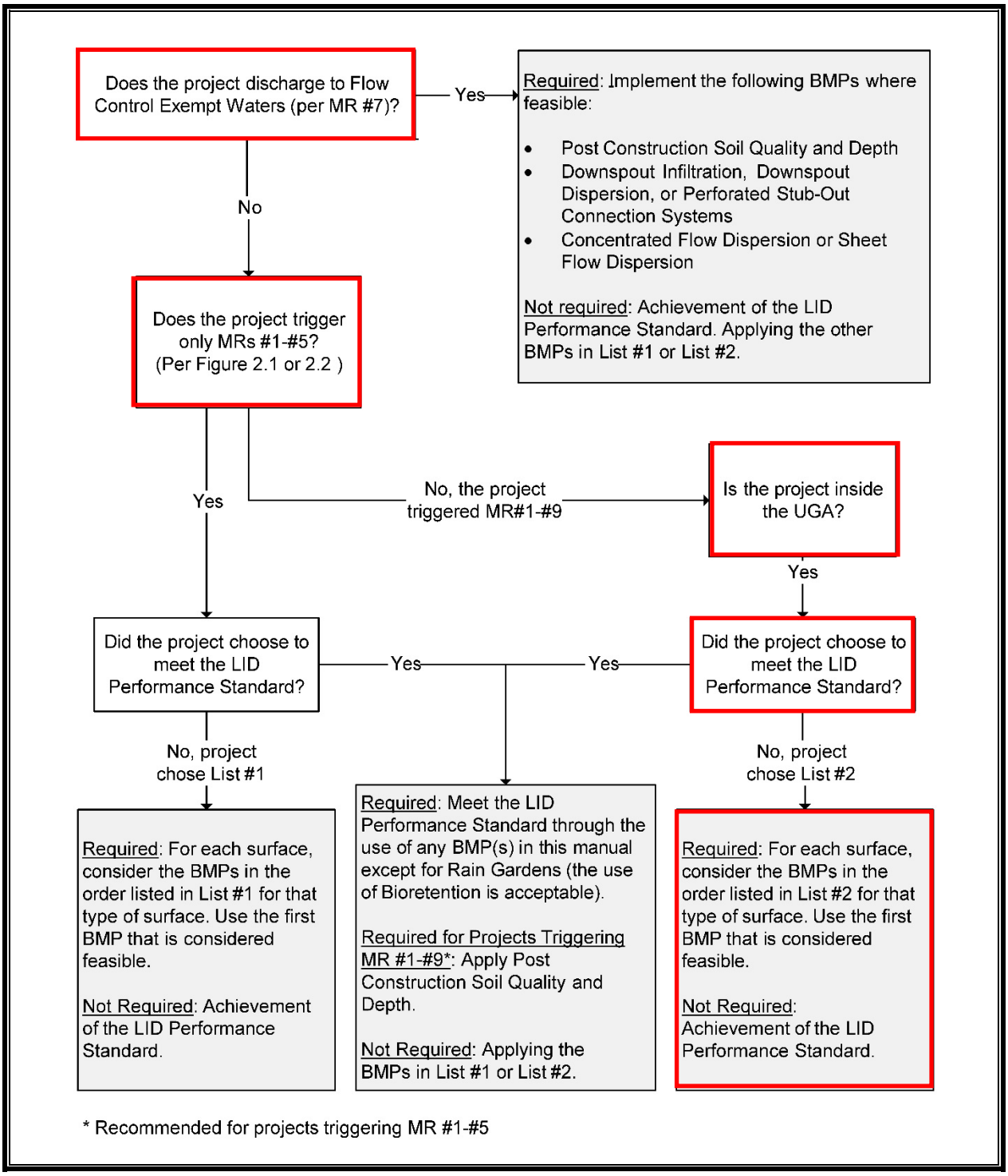



**Figure 2.3. Flow Chart for Determining Minimum Requirement #5 Requirements.**

Item 2a.

# onal Flood Hazard Layer FIRMette

FEMA

122°55'35"W 46°59'51"N

122°54'58"W 46°59'26"N

137

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 FIRM PANEL LAYOUT

**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 3/18/2022 at 4:54 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 identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

# Critical Aquifer Recharge Areas

Search by Parcel # or Address...

Home | Find | Identify | Measure | Draw | Map & Layers | Crime

Tool Labels

Show Layer List (Layer)

County Base Map | Aerial 2020 (Fast) | Aerials (All) | Hillshades (Basemap)

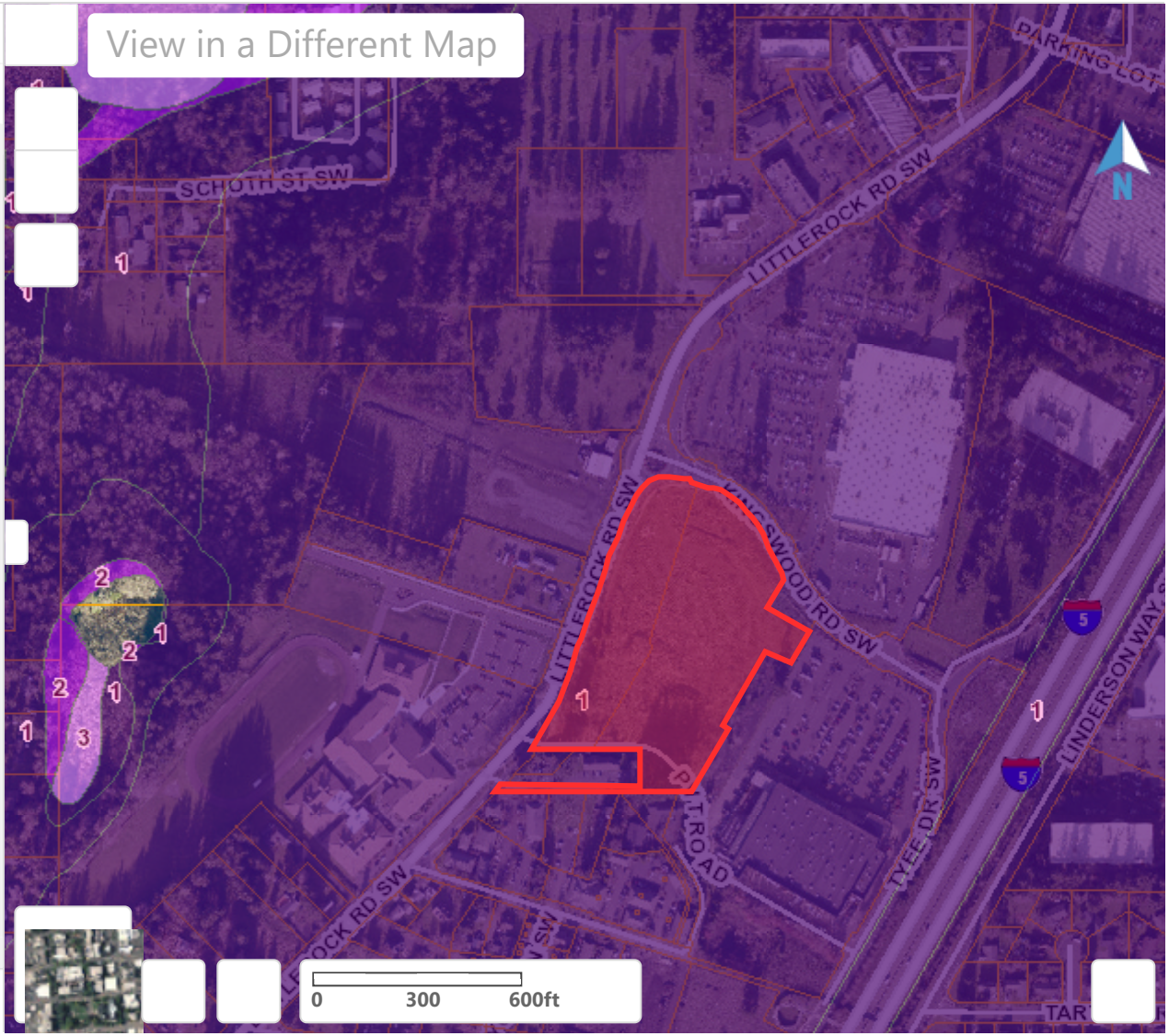
Add To Favorites | Bookmarks | Reset The Map (Map)

## Layers

Filter Layers... Filter

- Carlyon Landslide
- Closed Landfills
- Community Water System Boundaries
- Contaminated Sites
- Critical Aquifer Recharge Areas
  - 1
  - 2
  - 3
- Critical Aquifer Recharge Areas (Agricultural)
- Groundwater Concern Areas

General... | Layers | Identify ... | Snappa...



# Wellhead Protection Areas

Search by Parcel # or Address...

Home | Find | Identify | Measure | Draw | Map & Layers | Crime

Tool Labels

Show Layer List (Layer)

County Base Map | Aerial 2020 (Fast) | Aerials (All) | Hillshades (Basemap)

Add To Favorites | Bookmarks | Reset The Map (Map)

## Layers

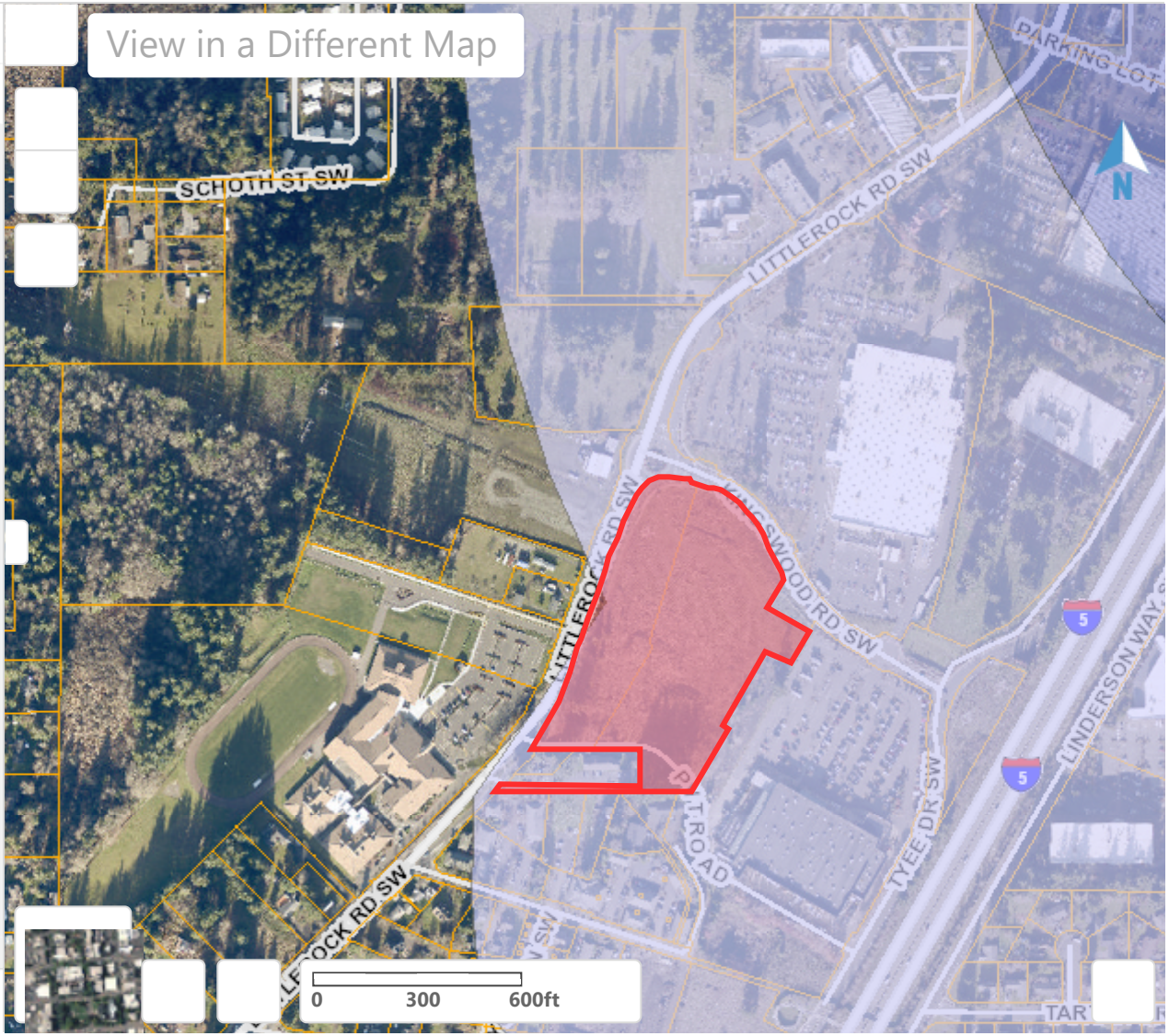
Filter Layers... Filter

McAllister Groundwater

Sensitive Area

- [ ] Watershed Protection Areas
- [x] Wellhead Protection Areas
  - 6 Month
  - 1 Year
  - 2 Year
  - 3 Year
  - 5 Year
  - 10 Year
- [x] Flood & Groundwater Hazard
- [x] Jurisdictions
- [x] Habitat Conservation Plan

General... | Layers | Identify ... | Snappa...



# MAZAMA POCKET GOPHER (*Thomomys Mazama)* AND THURSTON COUNTY REGULATED PRAIRIE ABSENCE REPORT

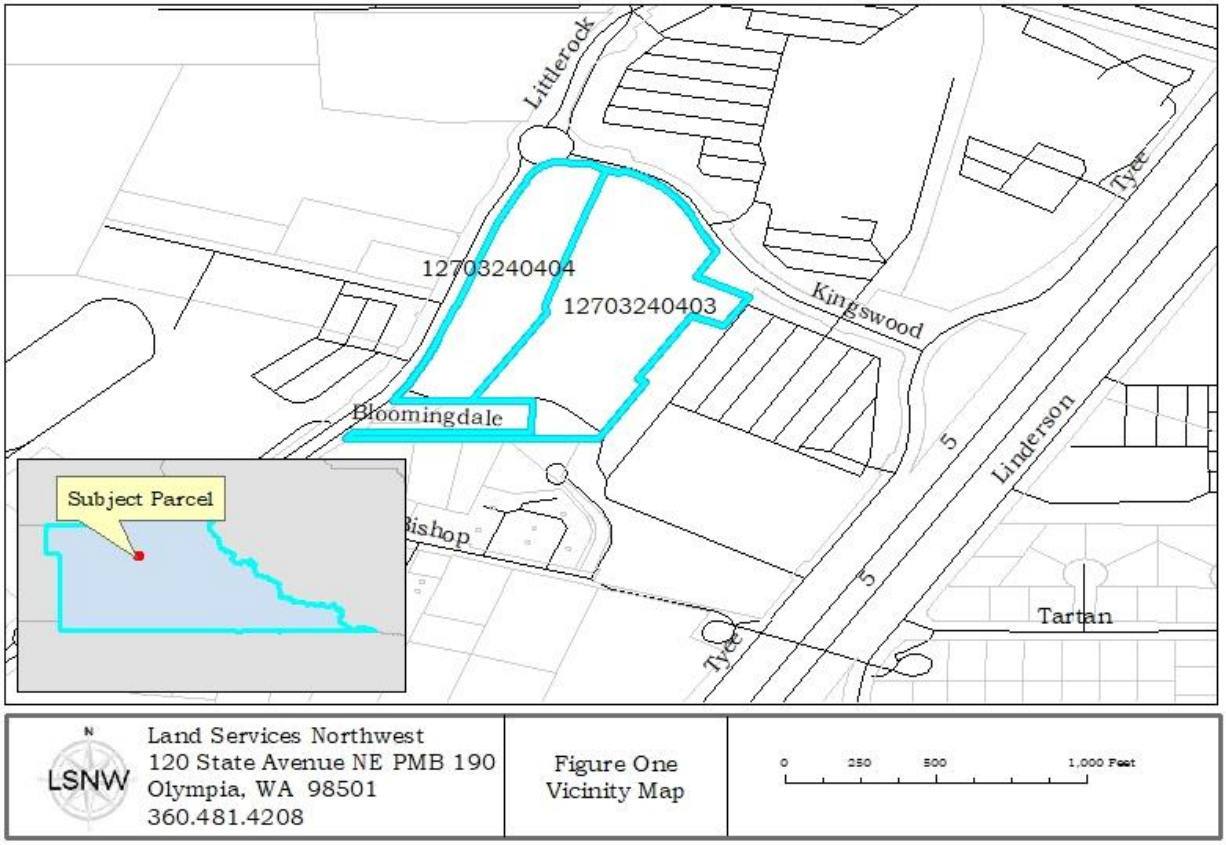
**Prepared for Kingswood Capital Inc.**

*Prepared By:*

ALEXANDER CALLENDER, M.S. PWS
LAND SERVICES NORTHWEST
OLYMPIA, WASHINGTON
OCTOBER 15,2021

# 1.0 INTRODUCTION

This report is the result of a Mazama Pocket Gopher and regulated prairie survey of the 5.76-acre and 3.24-acre parcel numbers 12703240403 and 12703240404 at 1401 KINGSWOOD DR SW and 1551 KINGSWOOD DR SW, with the legal descriptions of Section 03 Township 17 Range 2W Quarter NE NW & SE NW TR B BLA03744 3500815 EXCEPT PTN DEDICATED TO CITY OF TUMWATER PER AFN 3539066 and Section 03 Township 17 Range 2W Quarter NE NW BLA027432 TR D Document 3472425 EXC PTN TO CITY OF TUMWATER PER AFN:3539066; EXC PTN FOR RD PER AFN:3991167; ALSO EXC PTN FOR RD PER AFN:4158266 in the City of Tumwater, WA (**Figure 1**).




The Purpose of this report is to provide a study of the presence or absence of indicators of the Mazama Pocket Gopher (*Thomomys Mazama*) (MPG) and Regulated Prairie Under Tumwater City Code (TCC) Chapter 24**.**

## Mazama Pocket Gopher

Four subspecies of Mazama pocket gophers found in Thurston County are listed as threatened under the Endangered Species Act (ESA). Impacts to Mazama pocket gophers should be avoided or addressed through USFWS permitting processes**.** The presence of this species on a property may have regulatory implications that may limit the amount or type of development that can occur on a property in order to avoid "take" of the species. Take is defined under the ESA as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect any threatened or endangered species.

This study should allow the reader to assess whether the Mazama pocket gopher is likely to be found on site and what the implications of its presence or absence may have with regard to permitting a residence or other structures or development.

### Regulated Prairie, Garry Oaks and Mima Mounds

The parcel contains soil types associated with prairies as defined in the Thurston County Critical Areas Ordinance (CAO 24.25). Transects were walked throughout the parcel (or at least throughout the building envelope and 50-foot buffer area). A list of plant species encountered during the survey was recorded and CAO target prairie plants were noted. Regulated prairie can be either wet or dry outwash prairie and is critical habitat for the Taylors checkerspot butterfly and the Mardon skipper butterfly. Prairie habitat is regulated if three indictor species are found within 5 meters (15 feet) of each other with 25 or more of each species in the plot.

# 2.0 METHODS

## 2.1 Review of Existing Information

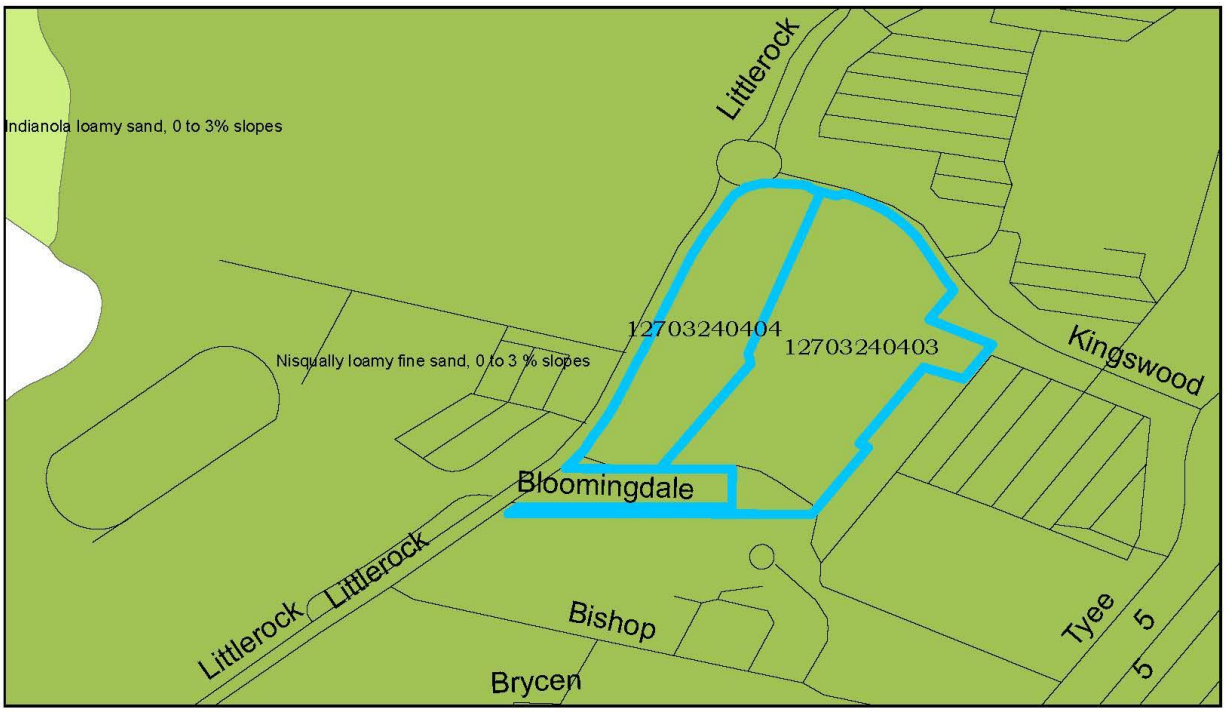
Background Review

Background information on the subject property was reviewed prior to field investigations and included the following:

- Thurston County Geodata Gopher Soils Shapefiles
- WDFW Priority Habitats and Species Information
- USFWS species list information
- WDFW species information

## 2.2 Summary of Existing Information

The existing information shows Nisqually loamy fine sand, 0 to 3 percent slopes, which is more preferred by the MPG, withing 300 feet of the subject parcel (**Figure 2) and (Attachment A).**




| | | |
|---|---|---|
| LSNW<br>Land Services Northwest<br>120 State Avenue NE PMB 190<br>Olympia, WA 98501<br>360.481.4208 | Figure Two<br>USDA Soil Survey | 0 187.5 375 750 Feet |

## Attachment A

Table 1. Soils known to be associated with Mazama pocket gopher occupancy.

| Mazama Pocket Gopher Preference | Soil Type |
|---|---|
| More Preferred<br><br>(formerly High and Medium Preference Soils) | Nisqually loamy fine sand, 0 to 3 percent slopes<br>Nisqually loamy fine sand, 3 to 15 percent slopes<br>Spanaway-Nisqually complex, 2 to 10 percent slopes<br>Cagey loamy sand<br>Indianola loamy sand, 0 to 3 percent slopes<br>Spanaway gravelly sandy loam, 0 to 3 percent slopes<br>Spanaway gravelly sandy loam, 3 to 15% slopes |
| Less Preferred<br><br>(formerly Low Preference Soils) | Alderwood gravelly sandy loam, 0 to 3 percent slopes<br>Alderwood gravelly sandy loam, 3 to 15 percent slopes<br>Everett very gravelly sandy loam, 0 to 3 percent slopes<br>Everett very gravelly sandy loam, 3 to 15 percent slopes<br>Indianola loamy sand, 3 to 15 percent slopes<br>Kapowsin silt loam, 3 to 15 percent slopes<br>McKenna gravelly silt loam, 0 to 5 percent slopes<br>Norma fine sandy loam<br>Norma silt loam<br>Spana gravelly loam<br>Spanaway stony sandy loam, 0 to 3 percent slopes<br>Spanaway stony sandy loam, 3 to 15 percent slopes<br>Yelm fine sandy loam, 0 to 3 percent slopes<br>Yelm fine sandy loam, 3 to 15 percent slopes |

The WDFW Priority Habitats and Species Map shows MPG occupancy in 1995 within 600 feet of the subject parcel. (**Appendix B**).

## 2.3 2021 Mazama Pocket Gopher Protocol

### A. General Information – 2021 Approach

1. The MPG review season will run June 1-October 31, 2021.

2. The protocol described in this memorandum will only apply to properties not known to be occupied by MPG since April 2014, the date of the federal listing.

The property was not known to be occupied by the MPG since April 2014.

3. Negative determinations will be valid for the length of the underlying County permit or approval, per County code.

The determination is negative.

4. Qualified consultants may perform field reviews and submit results for County evaluation, per the CAO. Consultants must have received training from USFWS at one of the two trainings offered in May/June 2021 and is certified to conduct these surveys.

Alex Callender is qualified as a consultant as he received training and certification during the May 2019 class conducted by the United States Fish and Wildlife Service.

## B. In-Office Procedures

1. Staff will review land use applications to determine if the MPG field screening protocols described in this memorandum must be initiated for the following:

a. Within 600 feet of a site known to have positive MPG occurrence ; or

The properties are within 600 feet of a site known to have a positive MPG occurrence.

b. On or within 300 feet of a soil type known to be associated with MPG occupancy.

The existing information shows Nisqually loamy fine sand, 0 to 3 percent slopes within 300 feet of the subject parcel.

2. County staff will determine if other factors preclude the need for field screening. See Preliminary assessment below.

3. County staff will notify applicants if their application cannot be excluded from further review.

4. Applicants may hire a consultant to perform field review, or may request that field review be conducted by County staff according to the protocol described in this memorandum.

5. County staff will review critical area reports submitted by consultants.

6. For sites to be screened by the County, staff will coordinate site visits with landowners/applicants, ensure advance notification and property access, and develop site visit schedules.

7. For sites where no MPG activity is observed, the County will provide applicants with a project condition that requires them to stop construction activity and alert the County and USFWS if evidence of MPG occupancy is observed.

N/A - No activity observed

8. Thurston County landowners who know or learn that Mazama pocket gophers are present on their property can move forward with their proposed development by: 1) proposing

mitigation to the County as directed in the County's Critical Areas Ordinance (Title 24 TCC); or 2) contacting USFWS directly to discuss the review, assessment, and mitigation process most appropriate for their site(s) and proposed activities; or 3) waiting to participate in the yet to be completed Thurston County HCP.

## C. Preliminary Assessment

As land use applications are received, properties mapped with or within 300 feet of gopher and/or prairie soils undergo the following preliminary assessment in-office.

1. For properties or project areas that appear to meet County criteria below, an internal review is conducted by staff biologist to determine if the project may be released from the full gopher review process. The following criteria may release a project from further gopher review:

- Locations west of the Black River, or on the Steamboat Island or Cooper Point peninsulas.
  N/A
- Sites submerged for 30 consecutive days or more since October 31, 2017.
  N/A
- Sites covered with impervious surfaces (as defined in CAO Chapter 17.15 and Title 24).
  N/A
- Fully forested (>30%) sites with shrub and fern understory.
  N/A
- Sites that consist of slopes greater than 40 percent, or that contain landslide hazard areas (per existing County regulations).
  N/A
- Sites on less preferred MPG soils north of Interstate 5.
  N/A
- Building to take place in the footprint of an existing structure (also mobile home replacements in the same footprint).
  N/A
- Mobile home replacements in existing lots in an existing mobile home park.
  N/A
- Heating oil tank removal
  **N/A**
- Foundation repair
  N/A
- Projects which lie >300 feet from mapped gopher soils.
  The parcel is within 300 feet of mapped gopher soils.

2. If a property and/or project area do not meet internal review criteria, the project is put on a list to be scheduled for full MPG review during the appropriate seasonal review period.

3. In addition to the in-office preliminary assessment, the County HCP biologist may, if time allows, visit properties prior to the first gopher review in order to screen for prairie habitat. This screening process focuses on the presence or absence of native prairie plants, Oregon white oak trees (Quercus garryana), or Mima mounds protected under the Critical Areas Ordinance (CAO).

The site was evaluated for Regulated prairie plants on August 27 and during the two gopher studies on September 14 and October 14, 2021. No CAO regulated prairie plants were found.

No Mima mounds were found.

Garry oaks were found and locations are shown on the transect maps in Appendix C.

## D. Implementation Measures

In order to ensure the review process runs efficiently, the following measures will be implemented as part of the 2021 screening approach. These are intended to reduce costs and staff time, and ensure that MPG screening requests, especially those associated with building permit applications, are screened during the screening season.

1. No soil verification will be required in conjunction with MPG field screening.

2. Site mowing or brushing will be required to initiate first site visits, where necessary and feasible, and completed two to four weeks in advance of the site visit.

   The ground was visible.

3. No further screening will be conducted in 2021 following the detection of MPG mounds on a property. The County will notify landowners that MPG evidence has been detected within two weeks.

   The Mazama pocket gopher mounds were **not** found.

4. At the end of the 2021 season, County staff will provide data regarding MPG occupancy to USFWS.

5. No additional site visit will be required if indeterminate mounds are detected, if the full number of required visits has been completed.

   N/A

6. The County will prioritize project specific applications over non-project applications. This will help ensure that applicants that have projects ready for construction will receive necessary permits and may initiate construction in a timely manner.

## E. Site Visit Overview

County field personnel or hired consultants will conduct field observations to determine MPG presence on sites with potential habitat. These site visits will be conducted as follows:

1. All valid site visits must be conducted from June 1 through October 31, 2021. Site visits outside that survey window will not be considered valid.

Site visits were conducted on September 14 and October 14, 2021.

2. A site or parcel is considered to be the entire property, not just the footprint of the proposed project.

A portion of the properties are excluded and is shown on the transect maps in Appendix C.

3. Sites with less preferred soils (see Attachment A) will be visited two (2) times, at least 30 days apart.

The site was visited to two times during the proper study period 30 days apart.

4. Sites with more preferred soils (see Attachment A) will be visited two (2) times, at least 30 days apart.

5. Site conditions must be recorded on a data sheet or similar information documented in narrative form. A template data sheet can be found on the County website at http://www.co.thurston.wa.us/permitting/gopher-reviews/index.html

The data sheets are provided in Appendix C.

6. Document and describe which areas of the parcel cannot be screened due to limited accessibility and/or dense understory. This should be depicted on an aerial or site plan submitted to the County.

The entire parcel was surveyed.

7. The ground must be easily visible to ensure mound observation and identification. Request mowing if necessary to ensure visibility. Wait two to three weeks after mowing before beginning screening.

The ground was visible.

http://www.co.thurston.wa.us/permitting/gopher-reviews/index.html F. Detailed Field Methodology

1. The survey crew orients themselves with the layout of the property using aerial maps, and strategizes their route for walking through the property.

2. Start GPS to record survey route.

3. Walk the survey transects methodically, slowly walking a straight line and scanning an area approximately 2-3 meters to the left and right as you walk, looking for mounds. Transects should be no more than five (5) meters apart when conducted by a single individual.

4. If the survey is performed by a team, walk together in parallel lines approximately 5 meters apart while you are scanning left to right for mounds.

The survey was conducted according to the protocol.

5. At each mound found, stop and identify it as a MPG or mole mound. If it is a MPG mound, identify it as a singular mound or a group (3 mounds or more) on a data sheet to be submitted to the County. (County has developed data sheets for your use on http://www.co.thurston.wa.us/permitting/gopher-reviews/index.html )

No MPG mounds were found. The mounds found on site were typical of moles which are round, clumpy and the show was in a linear fashion.

6. Record all positive MPG mounds, likely MPG mounds, and MPG mound groups in a GPS unit that provides a date, time, georeferenced point, and other required information in County GPS data instruction for each MPG mound. Submit GPS data in a form acceptable to the County. County GPS Data instruction can be found at http://www.co.thurston.wa.us/permitting/gopher-reviews/index.html

N /A

7. Photograph all MPG mounds or MPG mound groups. At a minimum, photograph MPG mounds or MPG mound groups representative of MPG detections on site.

**No MPG mounds found.**

8. Photos of mounds should include one that has identifiable landscape features for reference. In order to accurately depict the presence of gopher activity on a specific property, the following series of photos should be submitted to the County:
   - At least one up-close photo to depict mound characteristics
     **No MPG mounds were found.**
   - At least one photo depicting groups of mounds as a whole (when groups are encountered).
     N/A
   - At least one photo depicting gopher mounds with recognizable landscape features in the background, at each location where mounds are detected on a property
     N/A
   - Photos can be taken with the GPS unit or a separate, camera, preferably a camera with locational features (latitude, longitude)
     N/A
   - Photo point description or noteworthy landscape or other features to aid in relocation. Additional photos to be considered.
     N/A
   - The approximate building footprint location from at least two cardinal directions.
     N/A

- Landscape photos to depict habitat type and in some cases to indicate why not all portions of a property require gopher screening.
  Appendix A Photos

9. Describe and/or quantify what portion and proportion of the property was screened, and record your survey route and any MPG mounds found on either an aerial or parcel map.

A portion of the properties is excluded and is shown on the transect maps in Appendix C.

10. If MPG mounds are observed on a site, that day's survey effort should continue until the entire site is screened and all mounds present identified, but additional site visits are not required.

**No mounds were found.**

11. In order for the County to accurately review Critical Area Reports submitted in lieu of County field inspections the information collected in the field (GPS, data sheets, field notes, transect representations on aerial, etc.) shall be filed with the County. GPS

No mounds were found, the information was submitted in an acceptable format.

## 2021 Regulated Prairie, Garry Oaks and Mima Mounds Protocol

**The parcel contains soil types associated with prairies as defined in the Thurston County Critical Areas Ordinance (CAO 24.25).**

Transects were walked throughout the parcel. A list of plant species encountered during the survey was recorded and CAO target prairie plants were noted. Regulated prairie can be either wet or dry outwash prairie and is critical habitat for the Taylors checkerspot butterfly and the Mardon skipper butterfly. Prairie habitat is regulated if three indicator species are found within 5 meters (15 feet) of each other with 25 or more of each species in the plot.

The site was evaluated for Regulated prairie plants on August 27 during the gopher studies on September 14 and October 14, 2021.

No prairie plant species identified in the Thurston County CAO were detected on the parcel.

No Mima mounds were found.

Garry oaks were found and their locations are shown on the transect maps in Appendix C.

If prairie habitat is detected elsewhere on the property, the landowner must be informed in order to avoid future disturbance of this habitat. Target plant species may be hand-drawn on the aerial map or logged using GPS equipment, depending on availability. Existing and ongoing agricultural activities may continue.

The landowner was informed regarding the Garry oaks.

## 3.0 CURRENT CONDITIONS AND METHODS

Land Services Northwest conducted a survey on September 14 and October 14, 2021, walking the area and looking for signs of the MPG and regulated prairie in accordance with the protocol.

The 5.76-acre and 3.24-acre parcels are undeveloped vacant fields with uneven terrain. There are large retail stores to the north and east, small commercial businesses to the south and a school, single family residences and a commercial business to the west. The surveyed area unmowed prior to the prairie survey and then mowed according to the protocol in this document and left unmowed for three weeks.

## 4.0 RESULTS

**No Mazama pocket gophers were found on site.** The mounds found on site were typical of moles which are round, clumpy and the show was in a linear fashion.

No CAO prairie plants were found.

No Mima mounds were found.

Garry oaks were found and their locations are shown on the transect maps in Appendix C.

# Appendix A

# Photos

Latitude: 46.994115
Longitude: -122.921135
Elevation: 57.91±3 m
Accuracy: 32.4 m
Azimuth: 206° (SW)
Pitch: -1.8° (1.3°)
Time: 10-14-2021 16:07
Note: Kingswood
Powered by AngleCam

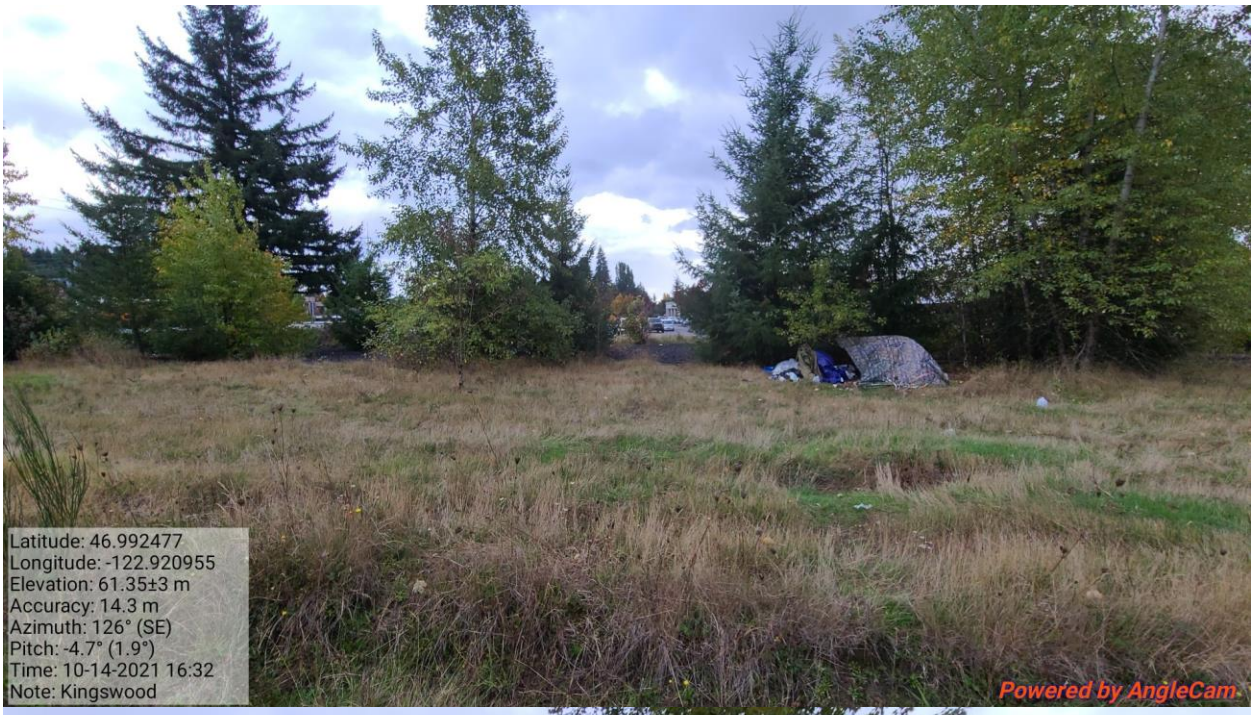
Latitude: 46.99404
Longitude: -122.921697
Elevation: 57.83±3 m
Accuracy: 13.4 m
Azimuth: 128° (SE)
Pitch: -4.5° (0.7°)
Time: 10-14-2021 16:08
Note: Kingswood
Powered by AngleCam

Latitude: 46.993524
Longitude: -122.921235
Elevation: 50.31±5 m
Accuracy: 9.3 m
Azimuth: 260° (W)
Pitch: -48.3° (2.8°)
Time: 10-14-2021 16:15
Note: Kingswood
Powered by AngleCam

Latitude: 46.993951
Longitude: -122.922052
Elevation: 56.05±3 m
Accuracy: 53.5 m
Azimuth: 193° (S)
Pitch: -2.2°
Time: 10-14-2021 16:17
Note: Kingswood
Powered by AngleCam

Latitude: 46.993252
Longitude: -122.922144
Elevation: 56.55±3 m
Accuracy: 9.2 m
Azimuth: 122° (SE)
Pitch: -4.7° (0.6°)
Time: 10-14-2021 16:28
Note: Kingswood
Powered by AngleCam

Latitude: 46.992477
Longitude: -122.920955
Elevation: 61.35±3 m
Accuracy: 14.3 m
Azimuth: 54° (NE)
Pitch: -6.0°
Time: 10-14-2021 16:32
Note: Kingswood
Powered by AngleCam


Latitude: 46.992477
Longitude: -122.920955
Elevation: 61.35±3 m
Accuracy: 14.3 m
Azimuth: 126° (SE)
Pitch: -4.7° (1.9°)
Time: 10-14-2021 16:32
Note: Kingswood
Powered by AngleCam

Latitude: 46.992537
Longitude: -122.921432
Elevation: 58.37±6 m
Accuracy: 12.3 m
Azimuth: 320° (NW)
Pitch: -4.5° (-0.9°)
Time: 10-14-2021 16:39
Note: Kingswood
Powered by AngleCam

Latitude: 46.992876
Longitude: -122.921926
Elevation: 60.04±3 m
Accuracy: 43.2 m
Azimuth: 326° (NW)
Pitch: 0.3° (0.5°)
Time: 10-14-2021 16:40
Note: Kingswood
Powered by AngleCam

Latitude: 46.992391
Longitude: -122.922044
Elevation: 60.15±3 m
Accuracy: 60.5 m
Azimuth: 82° (E)
Pitch: -51.0° (-1.3°)
Time: 10-14-2021 16:42
Note: Kingswood
Powered by AngleCam

Latitude: 46.992604
Longitude: -122.922413
Elevation: 58.99±3 m
Accuracy: 10.6 m
Azimuth: 50° (NE)
Pitch: -5.7° (0.6°)
Time: 10-14-2021 16:46
Note: Kingswood
Powered by AngleCam

Latitude: 46.992599
Longitude: -122.922419
Elevation: 59.72±3 m
Accuracy: 11.1 m
Azimuth: 340° (N)
Pitch: -6.0° (-1.7°)
Time: 10-14-2021 16:46
Note: Kingswood
Powered by AngleCam

Latitude: 46.992581
Longitude: -122.922429
Elevation: 58.99±3 m
Accuracy: 11.4 m
Azimuth: 277° (W)
Pitch: -0.9° (-1.3°)
Time: 10-14-2021 16:46
Note: Kingswood
Powered by AngleCam

Latitude: 46.992478
Longitude: -122.922455
Elevation: 59.02±3 m
Accuracy: 6.2 m
Azimuth: 125° (SE)
Pitch: -2.3° (-2.7°)
Time: 10-14-2021 16:46
Note: Kingswood
Powered by AngleCam

Latitude: 46.991658
Longitude: -122.920941
Elevation: 57.35±3 m
Accuracy: 41.6 m
Azimuth: 118° (SE)
Pitch: -2.0° (2.3°)
Time: 10-14-2021 16:54
Note: Kingswood
Powered by AngleCam

# Appendix B

# WDFW Priority Habitats and Species Map

# Priority Habitats and Species on the Web

**Buffer radius: 600 Feet**

**Report Date: 10/12/2021**

PHS Species/Habitats Overview:

| Occurence Name | Federal Status | State Status | Sensitive Location |
|---|---|---|---|
| Mazama (Western) pocket gopher | Threatened | Threatened | No |
| Big brown bat | N/A | N/A | Yes |
| Townsend's Big-eared Bat | N/A | Candidate | Yes |

## PHS Species/Habitats Details:

| Mazama (Western) pocket gopher | |
|---|---|
| Scientific Name | *Thomomys mazama* |
| Priority Area | Occurrence |
| Site Name | BUSH PRAIRIE |
| Accuracy | 1/4 mile (Quarter Section) |
| Notes | WESTERN POCKET GOPHER MOUND SYSTEM CROSSING NEWLY CLEARED AREA FOR 3RD SOUTH LANE TO I-5. FINE DARK SOIL WITH V. LITTLE GRAVEL. MOUNDS 1/4 MILE SO. OF TYEE INN ALONG NEW CUT BANK ON W. SIDE OF I-5. LOC UPDATED FROM PHS POLY 2009. |
| Source Record | 3172 |
| Source Dataset | WS_OccurPolygon |
| Source Date | WS_OccurPolygon |
| Source Name | TAYLOR, DWDFW |
| Source Entity | WA Dept. of Fish and Wildlife |
| Federal Status | Threatened |
| State Status | Threatened |
| PHS Listing Status | PHS LISTED OCCURRENCE |
| Sensitive | N |
| SGCN | Y |
| Display Resolution | AS MAPPED |
| ManagementRecommendations | http://wdfw.wa.gov/publications/pub.php?id=01175 |
| Geometry Type | Polygons |

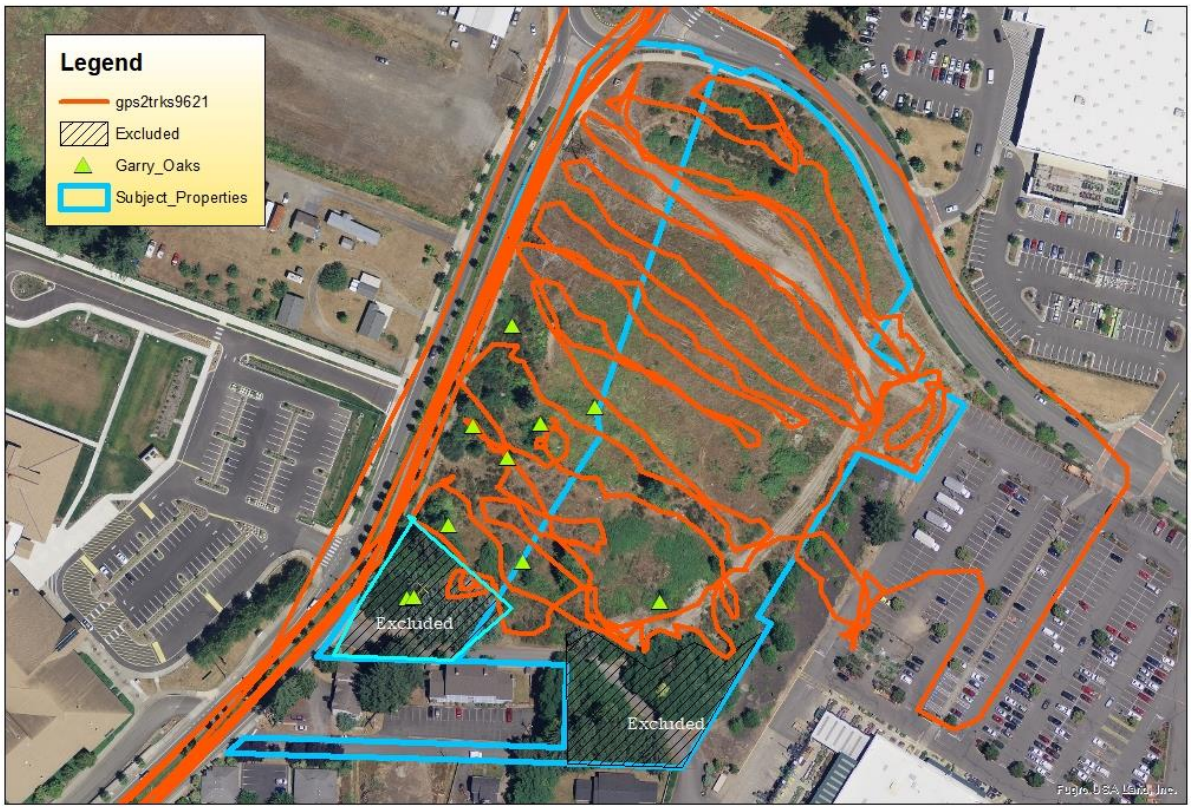
| Big brown bat | |
|---|---|
| Scientific Name | *Eptesicus fuscus* |
| Notes | This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release (360-902-2543) for obtaining information about masked sensitive species and habitats. |
| Federal Status | N/A |
| State Status | N/A |
| PHS Listing Status | PHS Listed Occurrence |
| Sensitive | Y |
| SGCN | N |
| Display Resolution | TOWNSHIP |
| ManagementRecommendations | http://wdfw.wa.gov/publications/pub.php?id=00605 |

| Townsend's Big-eared Bat | |
|---|---|
| Scientific Name | *Corynorhinus townsendii* |
| 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 | Candidate |
| PHS Listing Status | PHS Listed Occurrence |
| Sensitive | Y |
| SGCN | Y |
| Display Resolution | TOWNSHIP |
| ManagementRecommendations | http://wdfw.wa.gov/publications/pub.php?id=00027 |

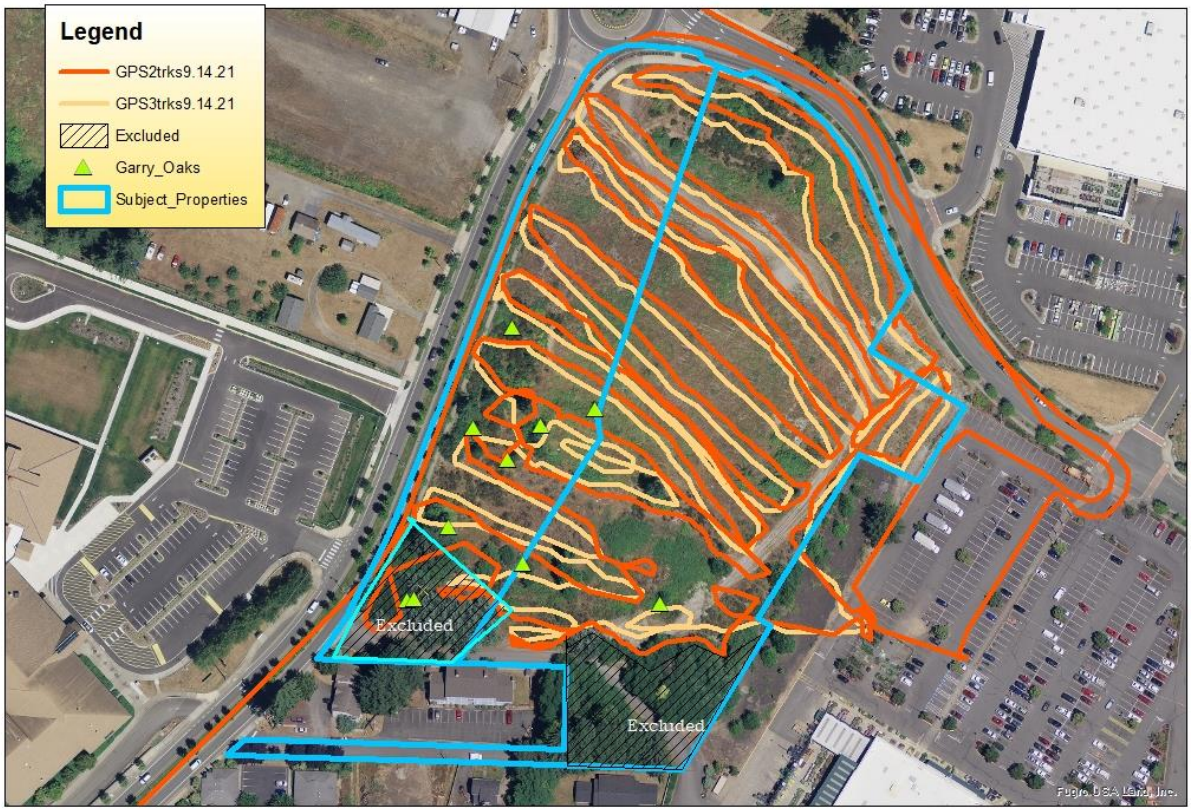
DISCLAIMER. This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents 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 necesssary 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 C

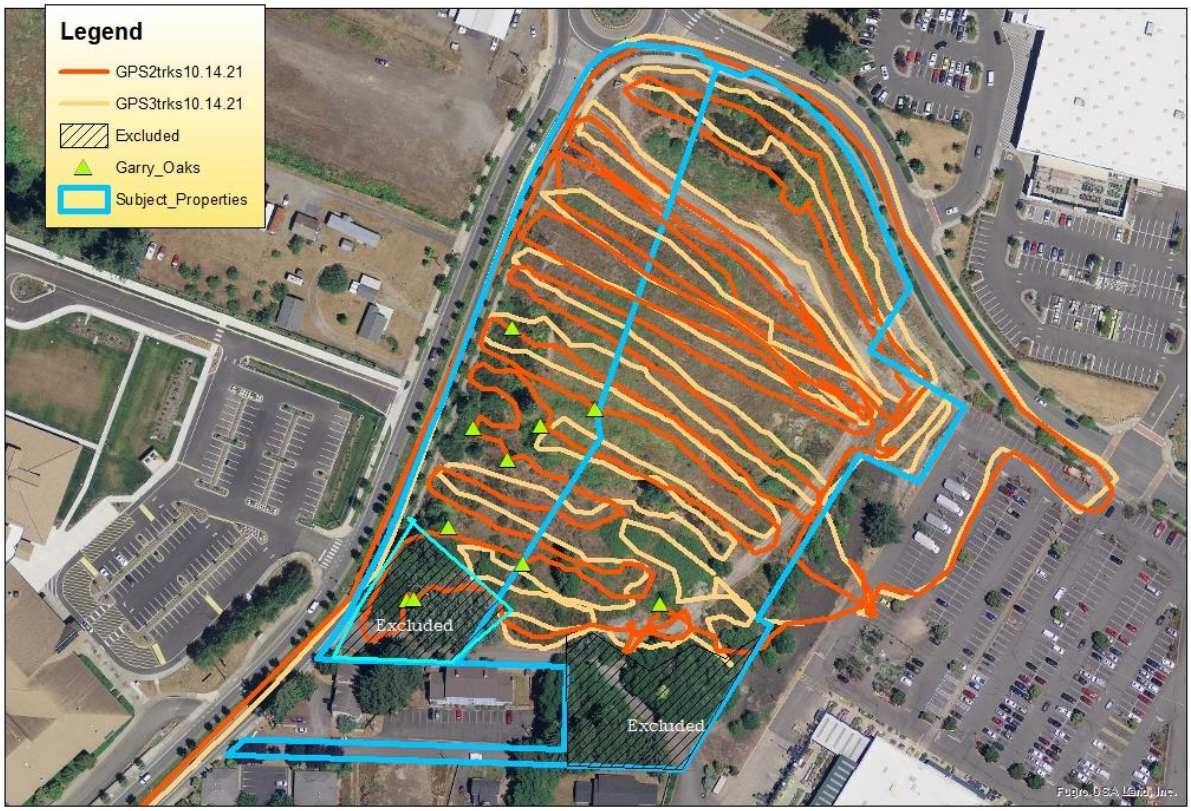
# MPG Survey Form and Transect Maps




| | | |
|---|---|---|
| LSNW<br>Land Services Northwest<br>120 State Avenue NE PMB 190<br>Olympia, WA 98501<br>360.481.4208 | SV1<br>Regulated Prairie Survey<br>8.27.2021 | 0 125 250 500 Feet |




| | | |
|---|---|---|
| Land Services Northwest<br>120 State Avenue NE PMB 190<br>Olympia, WA 98501<br>360.481.4208 | SV2<br>Regulated Prairie Survey<br>9.14.2021 | 0 125 250 500 Feet |




| | | |
|---|---|---|
| Land Services Northwest<br>120 State Avenue NE PMB 190<br>Olympia, WA 98501<br>360.481.4208 | SV3<br>Regulated Prairie Survey<br>10.14.2021 | 0 125 250 500 Feet |

**2020 Thurston County Mazama Pocket Gopher Screening Field Form  Site Visit Date: 9.14.2021**

| | |
|---|---|
| **Site Name and Parcel #** | **Parcel # 12703240403 and 12703240404**<br>**Project #:**<br>**Site/Landowner: Kingswood Capital Inc.** |
| **How were the data collected? (circle the method for each)** | **Transect: Trimble (Garmin) Aerial**<br>**Mounds Trimble Garmin Aerial**<br>**Notes: _____** |
| **Field Team Personnel:**<br>**(Indicate all staff present, CIRCLE who filled out form)** | **Name: Alex Callender**<br>**Name: (Susan Callender)**<br>**Name:** |
| **Others onsite (name/affiliation)** | |
| **Site visit #**<br>**(CIRCLE all that apply)** | **(1st) 2nd Unable to screen**<br>**Notes:** |
| **Do onsite conditions preclude the need for further visits?** | **Yes (No)**<br>**Dense woody cover that encompasses the entire site (trees/shrubs) that appears to preclude any potential MPG use.**<br>**Impervious Compacted Graveled Flooded**<br>**Other _____**<br>**Notes:** |
| **Describe visibility for mound detection:** | **Poor Fair (Good) Notes:** |
| **Request mowing?**<br>**(CIRCLE and DESCRIBE WHERE MOWING IS NEEDED and SHOW ON AERIAL PHOTO** | **(Yes) No N/A Notes:**<br>The area was mowed according to the protocol prior to the MPG surveys. |

| Mounds observed over the whole site are characteristic of:<br><br>Quantify or describe amount of each type and approx. # of mounds<br><br>*Group = 3 mounds or more* | MPG Mounds | Likely MPG Mounds | Indeterminate | Likely Mole Mounds | Mole Mounds |
|---|---|---|---|---|---|
| | 0 | 0 | 0 | 0 | 20 |
| | (No MPG mounds (circle)) | | | | |
| MPG mounds in GPS?<br><br>(CIRCLE and DESCRIBE)<br><br>If MPG mounds present, entered in GPS? | None All Most Some<br><br>Notes:<br><br>Yes No (N/A) | | | | |
| Does woody vegetation onsite match aerial photo? | (Yes) No - describe differences and show on parcel map/aerial: | | | | |
| What portion(s) of the property was screened?<br><br>(CIRCLE and DESCRIBE) | All (Part) - describe and show on parcel map/aerial:<br><br>Portions of the parcels are excluded and shown on the transcect maps in Appendix C | | | | |
| Notes - | Describe, and show on parcel map/aerial if applicable: | | | | |
| Team reviewed and agreed to data recorded on form?<br><br>(CIRCLE, and EXPLAIN if "No") | (Yes) No Reviewed by initials: AC, SC<br><br>Notes: | | | | |

**2020 Thurston County Mazama Pocket Gopher Screening Field Form  Site Visit Date: 10.14.2021**

| | |
|---|---|
| **Site Name and Parcel #** | **Parcel # 12703240403 and 12703240404**<br>**Project #:**<br>**Site/Landowner: Kingswood Capital Inc.** |
| **How were the data collected? (circle the method for each)** | **Transect: Trimble (Garmin) Aerial**<br>**Mounds Trimble Garmin Aerial**<br>**Notes: _____** |
| **Field Team Personnel:**<br>**(Indicate all staff present, CIRCLE who filled out form)** | **Name: Alex Callender**<br>**Name: (Susan Callender)**<br>**Name:** |
| **Others onsite (name/affiliation)** | |
| **Site visit #**<br>**(CIRCLE all that apply)** | **1st (2nd) Unable to screen**<br>**Notes:** |
| **Do onsite conditions preclude the need for further visits?** | **Yes (No)**<br>**Dense woody cover that encompasses the entire site (trees/shrubs) that appears to preclude any potential MPG use.**<br>**Impervious Compacted Graveled Flooded**<br>**Other _____**<br>**Notes:** |
| **Describe visibility for mound detection:** | **Poor Fair (Good) Notes:** |
| **Request mowing?**<br>**(CIRCLE and DESCRIBE WHERE MOWING IS NEEDED and SHOW ON AERIAL PHOTO** | **(Yes) No N/A Notes:**<br>The area was mowed according to protocal prior to the gopher surveys. |

| Mounds observed over the whole site are characteristic of:<br><br>Quantify or describe amount of each type and approx. # of mounds<br><br>*Group = 3 mounds or more* | MPG Mounds | Likely MPG Mounds | Indeterminate | Likely Mole Mounds | Mole Mounds |
|---|---|---|---|---|---|
| | 0 | 0 | 0 | 0 | 20 |
| | No MPG mounds (circle) | | | | |
| MPG mounds in GPS?<br><br>(CIRCLE and DESCRIBE)<br><br>If MPG mounds present, entered in GPS? | None All Most Some<br><br>Notes:<br><br>Yes No N/A | | | | |
| Does woody vegetation onsite match aerial photo? | Yes No - describe differences and show on parcel map/aerial: | | | | |
| What portion(s) of the property was screened?<br><br>(CIRCLE and DESCRIBE) | All Part - describe and show on parcel map/aerial:<br><br>Portions of the parcels are excluded and shown on the transcect maps in Appendix C | | | | |
| Notes - | Describe, and show on parcel map/aerial if applicable: | | | | |
| Team reviewed and agreed to data recorded on form?<br><br>(CIRCLE, and EXPLAIN if "No") | Yes No Reviewed by initials: AC, SC<br><br>Notes: | | | | |

# Appendix D

# CAO Prairie Data Sheet

## 2019 Thurston County Critical Areas Ordinance (CAO) Prairie Screening Data Sheet

| | | | |
|---|---|---|---|
| Parcel Number: 81300800000 | | **CAO prairie criteria met?** | Yes or (No) |
| Property Owner: Vander Linden Project | | **Mima mounds present?** | Yes or (No) |
| Surveyor(s): Alex and Susan Callender | | **Oaks (*Quercus garryana*) present?** | (Yes) or No |
| Date: 9.14.21 and 10.14.2021 | | Mature: | |
| Composition of Vegetation: | | Sapling: | |
| | | Seedling: | |

| X | Target species | Class* (circle) |
|---|---|---|
| | *Apocynum androsaemifolium* | 1 2 3 4 5 N/A |
| | ***Balsamorhiza deltoidea*** | Present / Absent |
| | ***Bistorta bistortoides*** | Present / Absent |
| | *Brodiaea coronaria* | 1 2 3 4 5 N/A |
| | *Camassia leichtlinii* | 1 2 3 4 5 N/A |
| | *Camassia quamash* | Present / Absent |
| | ***Carex densa*** | Present / Absent |
| | *Carex feta* | 1 2 3 4 5 N/A |
| | *Carex inops* ssp. *inops* | 1 2 3 4 5 N/A |
| | *Carex tumulicola* | 1 2 3 4 5 N/A |
| | *Carex unilateralis* | 1 2 3 4 5 N/A |
| | *Castilleja hispida* | 1 2 3 4 5 N/A |
| | ***Castilleja levisecta*** | Present / Absent |
| | *Danthonia californica* | 1 2 3 4 5 N/A |
| | *Delphinium menziesii* | 1 2 3 4 5 N/A |
| | *Delphinium nuttallii* | 1 2 3 4 5 N/A |
| | *Deschampsia cespitosa* | 1 2 3 4 5 N/A |
| | *Deschampsia danthonioides* | 1 2 3 4 5 N/A |
| | *Dodecatheon hendersonii* | 1 2 3 4 5 N/A |
| | *Downingia yina* | 1 2 3 4 5 N/A |
| | *Erigeron speciosus* | 1 2 3 4 5 N/A |
| | *Eriophyllum lanatum* | Cover: ___ $m^2$ N/A |
| | ***Eryngium petiolatum*** | Present / Absent |
| | *Festuca roemeri (F. idahoensis)* | 1 2 3 4 5 N/A |
| | *Fragaria virginiana* | Cover: 3 $m^2$ N/A |
| | *Fritillaria affinis* | 1 2 3 4 5 N/A |
| | *Hieracium scouleri* | 1 2 3 4 5 N/A |
| | ***Hosackia pinnata*** *(Lotus pinnatus)* | Present / Absent |
| | *Koeleria macrantha (K. cristata)* | 1 2 3 4 5 N/A |
| | *Leptosiphon bicolor (Linanthus b.)* | 1 2 3 4 5 N/A |
| | ***Lomatium bradshawii*** | Present / Absent |
| | *Lomatium nudicaule* | 1 2 3 4 5 N/A |
| | *Lomatium triternatum* | 1 2 3 4 5 N/A |
| | *Lomatium utriculatum* | Present / Absent |

| | | |
|---|---|---|
| | *Lupinus albicaulis* | 1 2 3 4 5 N/A |
| | *Lupinus lepidus* var. *lepidus* | 1 2 3 4 5 N/A |
| | *Lupinus polyphyllus* | 1 2 3 4 5 N/A |
| | *Micranthes integrifolia (Saxifraga i.)* | Present / Absent |
| | *Micranthes oregana (Saxifraga o.)* | 1 2 3 4 5 N/A |
| | ***Microseris laciniata*** | Present / Absent |
| | *Perideridia gairdneri* | 1 2 3 4 5 N/A |
| | *Plagiobothrys figuratus* | 1 2 3 4 5 N/A |
| | *Plectritis congesta* | Present / Absent |
| | ***Polemonium carneum*** | Present / Absent |
| | *Potentilla gracillis* | Present / Absent |
| | *Ranunculus alismifolius* | 1 2 3 4 5 N/A |
| | *Ranunculus occidentalis* | Present / Absent |
| | *Ranunculus orthorhynchus* | 1 2 3 4 5 N/A |
| | ***Sericocarpus rigidus*** | Present / Absent |
| | ***Sidalcea malviflora* var. *virgata*** | Present / Absent |
| | ***Silene scouleri*** | Present / Absent |
| | *Sisyrinchium idahoense* | 1 2 3 4 5 N/A |
| | *Solidago missouriensis* | 1 (2) 3 4 5 N/A |
| | *Solidago simplex (S. spathulata)* | 1 2 3 4 5 N/A |
| | *Toxicoscordion venenosum var. venenosum (Zigadenus venenosus)* | 1 2 3 4 5 N/A |
| | *Trifolium willdenowii (T. tridentatum)* | 1 2 3 4 5 N/A |
| | *Triteleia grandiflora* | 1 2 3 4 5 N/A |
| | *Triteleia hyacinthina* | 1 2 3 4 5 N/A |
| | *Veratrum californicum* | 1 2 3 4 5 N/A |
| | ***Veratrum viride*** | 1 2 3 4 5 N/A |
| | *Viola adunca* | 1 2 3 4 5 N/A |
| | *Viola praemorsa* var. *nuttallii* | 1 2 3 4 5 N/A |

*Species Count Class:
1 = < 25
2 = 25 - 49
3 = 50 - 74
4 = 75 - 100
5 = >100

Prairie Plant Manual:
https://www.thurstoncountywa.gov/planning/planningdocuments/cao-prairie-plant-manual-4.23.2018.pdf

## Non-CAO vegetation

| | Species or codons (i.e. "HYPRAD" for *Hypochaeris radicata* ) | Notes | No real density of prairie species |
|---|---|---|---|
| 1 | Narrow leafed plantain (Plantago lanceolata) | | |
| 2 | White Clover (Trifolium repens) | | |
| 3 | Trailing blackberry (Rubus ursinus) | | |
| 4 | Velvetgrass (*Holcus lanatus*) | | |
| 5 | Common dandelion *(Taraxacum officinale)* | | |
| 6 | Ox eye daisey (*Leucanthemum vulgare*) | | |
| 7 | Himalayan blackberry (Rubus armeniacus ) | | |
| 8 | Red fescue (Festuca rubra) | | |
| 9 | Orchard Grass (Dactylis glomerata) | | |
| 10 | Scotch broom *(Cytisus scoparius)* | | |
| 11 | St. johnswort *(Hypericum perforatum)* | | |
| 12 | Wild carrot *(Daucus carota)* | | |
| 13 | Birds-foot trefoil *(Lotus corniculatus)* | | |
| 14 | Hairy cats ear *(Hypochaeris radicata)* | | |
| 15 | | | |

| |
|---|
| Prairie Habitat Criteria: If at any point at least three target species, totaling in general at least 25 plants each are encountered within about 5 meters of each other (WDFW 2015), the area in question meets the criteria to be established as occurrence of prairie. For certain plants such as WNHP rare plants (indicated here in bold), or species which serves as nectar or host plants for both TCB and either SCC or SGCN butterflies (indicated here with underline), presence is enough to meet prairie habitat criteria for such species, even if their count is less than 25 individual plants. CAO wet and dry prairie plant lists can be found in Tables 24.25-7 and 24.25-8, respectively. More info available at: https://www.thurstoncountywa.gov/planning/Pages/hcp-prairie-review.aspx |
| Mima mounds and oak habitat definitions can be found in TCC 24.03.010 |

# SUF

**SOUND URBAN FORESTRY**
**Appraisals, Planning, Urban Landscape Design and Management**

**Kingswood Commercial Project**
1401 & 1551 Kingswood Drive SW
Tumwater, Washington 98501

Tree Protection Plan

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Prepared for: KCI Commercial Inc., Trevor Colby

Prepared by: Kevin M. McFarland, SUF
Consulting Urban Forester/ISA Certified Arborist & Tree Risk Assessor Qualified

Date: 4/28/2022

This report has been developed as part of the proposed 8.97-acre Kingswood commercial project, in Tumwater, Washington. This plan will satisfy the requirements as specified by the Tumwater Protection of Trees and Vegetation Ordinance (TMC 16.08) pursuant to the City of Tumwater Development Guidelines and Standards.

## I. Overall Vegetation Description

The majority of the property is field grass with small pockets of trees around the outer edges in the southern portion. The species found are a mix of natives with Douglas fir the dominant, and invasives such as black locust and poplars.

## II. Inventory of Trees

A 100% inventory of the trees within the parcels was conducted on April 18, 2022. This information is presented in the table below and the approximate locations are shown on the attached aerial.

**Table 1. Inventory of Trees within Property**

| ID# | Species | DBH | Condition |
|---|---|---|---|
| *1 | Cottonwood | 20” | Good |
| 2 | Douglas Fir | 14” | Good |
| 3 | Douglas Fir | 20” | Good |
| 4 | Red Oak | 6” | Good |
| 5 | Crabapple | 16” | Fair |
| 6 | Black Locust | 12” | Good |
| 7 | Black Locust | 14” | Good |
| 8 | Black Locust | 10” | Good |
| 9 | Black Locust | 16” | Good |
| 10 | Douglas Fir | 28” | Good |
| 11 | Black Locust | 16” | Fair |
| 12 | Black Locust | 20” | Fair |
| 13 | Black Locust | 16” | Fair |
| 14 | Black Locust | 20” | Fair |
| *15 | Poplar | 18” | Fair |
| 16 | Black Locust | 14” | Fair |
| *17 | Poplar | 12” | Fair |
| 18 | Bitter Cherry | 15” | Fair |
| 19 | Scots Pine | 18” | Fair |
| 20 | Scots Pine | 20” | Fair |
| 21 | Douglas Fir | 20” | Fair |
| 22 | Douglas Fir | 25” | Fair |
| *23 | Douglas Fir | 24” | Poor |
| *24 | Douglas Fir | 22” | Poor |
| 25 | Douglas Fir | 18” | Fair |
| *26 | Douglas Fir | 14” | Poor |
| 27 | Douglas Fir | 22” | Fair |
| 28 | Douglas Fir | 17” | Fair |
| **29 | Douglas Fir | 26” | Fair |
| 30 | Douglas Fir | 18” | Fair |
| 31 | Douglas Fir | 20” | Good |

| ID# | Species | DBH | Condition |
|---|---|---|---|
| **32 | Douglas Fir | 24” | Good |
| 33 | Douglas Fir | 17” | Fair |
| 34 | Douglas Fir | 22” | Good |
| **35 | Douglas Fir | 24” | Good |
| **36 | Western Red Cedar | 50”+ | Good |
| **37 | Douglas Fir | 26” | Fair |
| *38 | Black Locust | 26” | Poor |
| **39 | Black Locust | 24” | Fair |
| 40 | Black Locust | 6” | Fair |
| 41 | Black Locust | 8” | Fair |
| 42 | Black Locust | 6” | Fair |
| 43 | Black Locust | 6” | Fair |
| 44 | Black Locust | 8” | Fair |
| 45 | Black Locust | 6” | Fair |
| 46 | Black Locust | 10” | Fair |
| 47 | Black Locust | 6” | Fair |
| 48 | Port Orford Cedar | 23” | Good |
| 49-62 | Black Locust | 6-18” | Poor to Fair |
| 63 | Black Locust | 8” | Fair |
| 64 | Black Locust | 10” | Fair |
| *65 | Poplar | 26” | Poor |
| *66 | Poplar | 12” | Poor |
| *67 | Poplar | 14” | Poor |
| *68 | Poplar | 16” | Poor |
| *69 | Poplar | 16” | Poor |
| *70 | Poplar | 20” | Poor |
| *71 | Cottonwood | 6” | Fair |
| 72 | Black Locust | 8” | Fair |
| *73 | Cottonwood | 14” | Good |
| *74 | Cottonwood | 23” | Fair |
| *75 | Cottonwood | 14” | Fair |

*Denotes trees subtracted from tree retention calculations due to species or poor condition.
**Denotes trees that are to be retained and count as 2 trees due to their 24”+ diameters.

**Landmark Trees**

I found no trees within the site that would be considered specimen or ‘Landmark’ trees.

**Off-Site & Edge Trees**

No offsite trees were identified with the potential of impacts.

## III. Tree Retention Calculations

Per TMC 16.08.070, cottonwoods, poplars and trees that do not have a post construction life expectancy greater than 10 years are not considered for the purposes of calculating tree retention standards. Therefore, 17 trees were subtracted from the total of 75 listed in Table 1 (noted *).

Trees to be retained are located within the southeast corner of the project and include #19-47. Of these, 4 trees were subtracted due to their poor conditions (*) and 6 trees are of size that they count as two trees (**). Therefore, this project has a total of 31 tree retention credits.

**Table 6. Summary of Tree Retention Calculations**

| | |
|---|---|
| Gross Acreage | 8.97 |
| Total Trees Within Site (75 – 17) | 58 |
| 20% Tree Retention | 12 Trees |
| *12 Trees/ Acre Retention | 108 Trees |
| Proposed Tree Retention | 31 Trees |
| Shortfall on Required Retention | 77 Trees |
| Required Replanting (1:1) | 77 Trees |

***This is the greater amount and therefore required by TMC**

## IV. Replanting

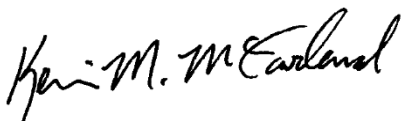
This project falls short of the minimum retention by 79 trees and is therefore required to replant at a rate of 1:1 within the site. This requirement will be met with the landscape plans and will follow the standards as outlined in TMC 16.08.070.3.

## IV. Tree Protection

I recommend tree protection fencing be installed along the outer edges of the area of trees to be retained (#19-47). I have indicated approximate location in orange on the attached site plan. Fencing shall meet the City's standards and in place and inspected by myself or another certified arborist prior to any site work. The fencing shall remain in place during the entire construction process with absolutely no equipment or materials allowed beyond the fencing.

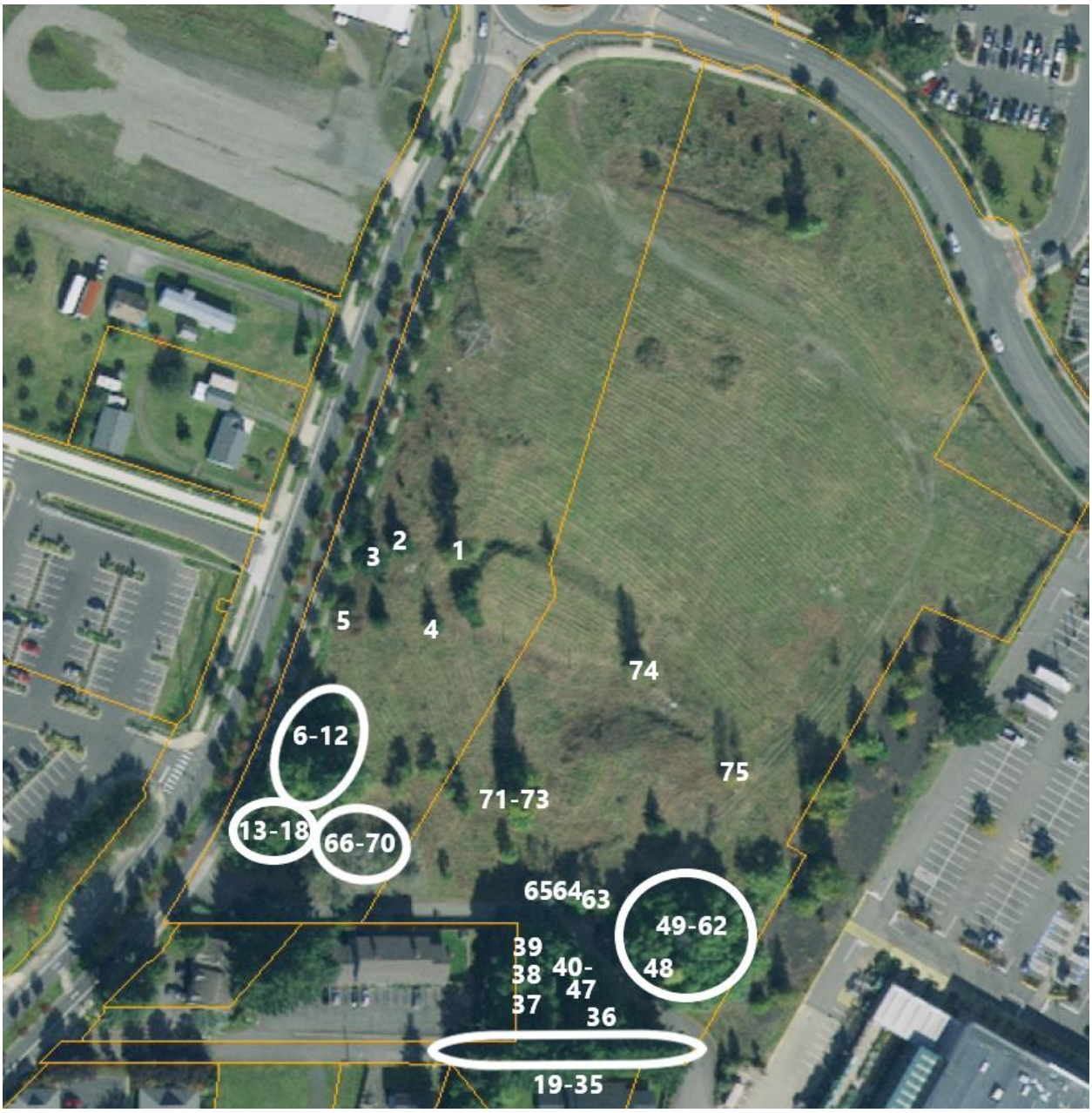
I am also recommending that the English ivy be removed from the trees to be retained. This will start having a negative effect on the condition of the trees.

Professionally Submitted,

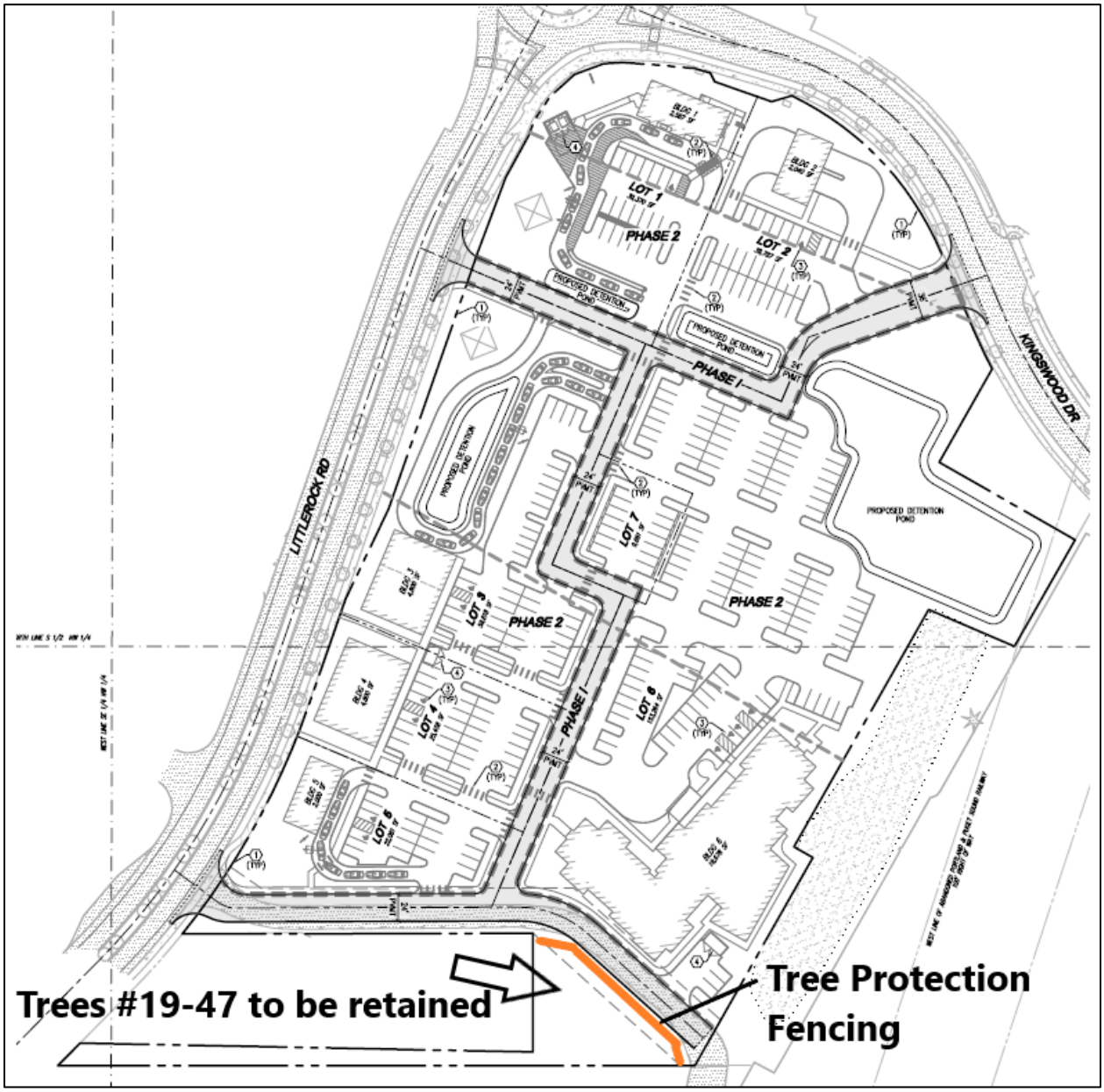


Kevin M. McFarland, Principal
ISA Certified Arborist PN-0373 & ISA Tree Risk Assessment Qualified
Sound Urban Forestry, LLC

# Locations of Inventoried Trees



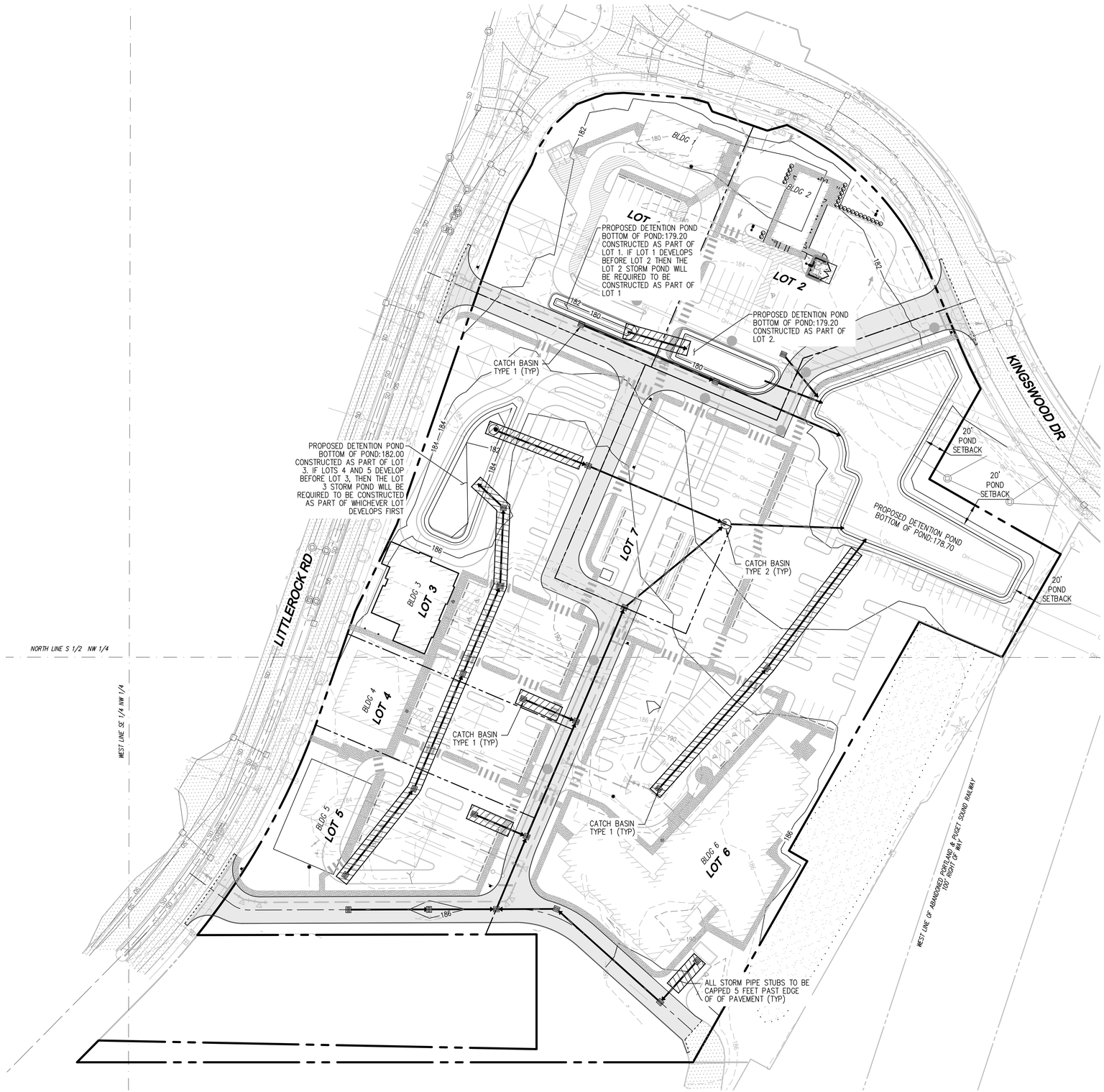
## Recommended Tree Protection Fencing

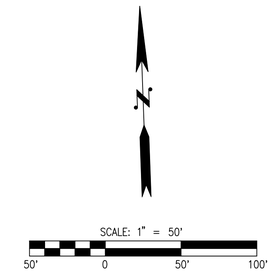


# ATTACHMENT 1:

## SITE DEVELOPMENT DRAWINGS

# A PORTION OF SEC 03, TWN 17, RGE 2W, W.M., CITY OF TUMWATER, THURSTON COUNTY, WASHINGTON




## LEGEND

- TYPE 1 CATCH BASIN, GRATED LID
- TYPE 1 CATCH BASIN, SOLID LID
- TYPE 2 CATCH BASIN, GRATED LID
- TYPE 2 CATCH BASIN, SOLID LID
- STORM PIPE
- SEWER PIPE
- WATER PIPE
- STORM PIPE – DEVELOPED AS PART OF INDIVIDUAL LOTS

## GRADING NOTES

THE CITY OF TUMWATER REQUIRES THAT THE FIRM PROVIDING THE SOILS REPORT PERFORM WORK IN ACCORDANCE WITH THE FOLLOWING:

INSIGHT GEOLOGIC, INC. CONDUCT THE SITE INSPECTIONS AS DEFINED IN THE REPORT. THE CITY ALSO REQUIRES THAT IN ADDITION TO THE SOILS ENGINEERING FIRM, A WABO REGISTERED SPECIAL INSPECTOR WITH EXPERIENCE WITH SOIL GRADING BE EMPLOYED, BY THE OWNER, TO CONDUCT COMPACTION TESTING FOR THE BUILDING PADS AND THE REQUIRED FIRE LANES. THE SPECIAL INSPECTOR SHALL NOT BE THE GEOTECHNICAL FIRM, THE CIVIL ENGINEER OF RECORD OR AN EMPLOYEE OF THE CONTRACTOR.

ALL GRADING WORK SHALL BE CONDUCTED IN ACCORDANCE WITH THE SOILS REPORT PREPARED BY INSIGHT GEOLOGIC, INC. COMPACTION TESTING OF THE SOILS UNDER THE FIRE LANES AND THE BUILDING FOUNDATIONS AND UTILITY TRENCHES SHALL BE VERIFIED BY INSIGHT GEOLOGIC, INC. AND THE WABO SPECIAL INSPECTOR.

THE OWNER WILL NEED TO SUBMIT THE NAME OF THE WABO REGISTERED FIRM WHO WILL CONDUCT THE SPECIAL INSPECTIONS, TO THE BUILDING OFFICIAL, PRIOR TO ISSUANCE OF THE SITE DEVELOPMENT/GRADING PERMITS.

THAT NO VERTICAL OR COMBUSTIBLE CONSTRUCTION WILL BE ALLOWED ON THE CONSTRUCTION SITE UNTIL THE FIRE HYDRANTS AND PAVED ROADS ARE INSTALLED, TESTED AND APPROVED BY THE CITY OF TUMWATER. NOTE: TESTING WILL ALSO INCLUDE VERIFICATION OF FIRE FLOW BY THE FIRE DEPARTMENT.

## DISCLAIMER

*TOPOGRAPHIC SURVEY INFORMATION CONTAINED ON THESE PLANS HAS BEEN PROVIDED BY MTN 2 COAST, LLC. LDC, INC. (LAND DEVELOPMENT CONSULTANTS, INC.) ASSUMES NO LIABILITY AS TO THE ACCURACY AND COMPLETENESS OF THIS DATA. ANY DISCREPANCIES FOUND BETWEEN WHAT IS SHOWN ON THE PLANS AND WHAT IS NOTED IN THE FIELD SHOULD BE BROUGHT IMMEDIATELY TO THE ATTENTION OF THE ENGINEER.*

| REVISIONS | | | |
|---|---|---|---|
| NO. | DATE | DESCRIPTION | BY |

LDC
Surveying
Engineering
Planning
Woodinville
Olympia
Kent
1411 State Avenue NE #200
Olympia, WA 98506
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KCI COMMERCIAL, INC.

# KINGSWOOD COMMERCIAL

## BINDING SITE PLAN AND PLANNED UNIT DEVELOPMENT

*PRELIMINARY GRADING AND DRAINAGE PLAN*

TYRELL E. BRANHAM
STATE OF WASHINGTON
51055
REGISTERED
PROFESSIONAL ENGINEER
9-30-22

| | |
|---|---|
| JOB NUMBER: | C22151 |
| DRAWING NAME: | C22151P-RD-PL |
| DESIGNER: | REW |
| DRAFTING BY: | AJW |
| DATE: | SEPTEMBER, 2022 |
| SCALE: | 1"=50' |
| JURISDICTION: | TUMWATER |

**CG-01**

SHEET **3** OF **5**

Drawing: P:\Civil\2022\c22-151 kingswood commercial\Drawings\preliminary\C22151P-RD-PL.dwg Plotted: Sep 30, 2022 - 9:16am

# ATTACHMENT 2:

## CONSTRUCTION SWPPP REPORT

TO BE INCLUDED AS PART OF THE CONSTRUCTION DOCUMENT SUBMITTAL

# ATTACHMENT 3:

## SOILS REPORT

INSIGHT GEOLOGIC, INC.

# *Geotechnical & Stormwater Evaluation*

## *Proposed Retail Development*
## *1401 & 1551 Kingswood Drive SW*

***Prepared For:***

*Kingswood Capital, Inc.*

INSIGHT GEOLOGIC, INC.

April 19, 2011

Pacland
606 Columbia Street NW, Suite 106
Olympia, WA 98501

Attention: Nick Taylor

Report
Geotechnical and Stormwater Evaluation
Proposed Retail Development
Kingswood Drive
Tumwater, Washington
File No. 519-001-01

## INTRODUCTION

Insight Geologic, Inc. is pleased to provide this report of our evaluation of site soil conditions as they relate to geotechnical properties and infiltration and disposal of stormwater from the retail developments to be located at the properties currently identified as 1401 and 1551 Kingswood Drive SW in Tumwater, Washington.

The Kingswood Drive properties consist of two parcels comprising approximately 9 acres. We understand that the proposed development project will include several single-story commercial buildings, paved parking and driveway areas and appurtenant stormwater facilities. No excess loads for the buildings are anticipated. We understand that stormwater from the proposed development is to be infiltrated to the subsurface through an infiltration facility located on the northeastern portion of the property.

Our proposal was requested by Pacland in their Request for Proposal dated February 4, 2011 and authorized by Pacland on March 24, 2011.

## SCOPE OF SERVICES

The purpose of our services was to evaluate subsurface soil conditions as they relate to foundation and pavement design as well as the infiltration and disposal of stormwater from the proposed development. The specific tasks performed are outlined below.

1. Conduct a Phase I Environmental Site Assessment for the property in general accordance with ASTM methodology. This report is being provided under separate cover.
2. Conduct a site reconnaissance to evaluate and mark proposed test pit and boring locations at the site.

1015 East 4th Avenue, Olympia, Washington 98506
Phone: 360.754.2128 Fax: 360.754.9299

3. Provide for clearing needed to access the property and test pit locations.
4. Perform utility location at the site to evaluate the presence of subsurface obstructions.
5. Excavate as many as 19 exploratory test pits at the site using a small, track-mounted excavator. The test pits extended to a depth of about 10 feet below ground surface.
6. Drill 3 exploratory borings in the area of the proposed stormwater infiltration pond and underground gallery. The borings were drilled to a depth of 24 feet or five times the depth of the proposed structure as required under the City of Tumwater 2009 Drainage Manual.
7. Collect representative soil samples from the borings for evaluation of grain size distribution.
8. Maintain logs of the soil encountered in the test pits and borings in general accordance with the Unified Soil Classification System.
9. Conduct appropriate laboratory testing on soil samples collected from the test pits and borings to evaluate design infiltration rates and geotechnical properties including bearing capacity and suitability of site soils for use as fill.
10. Prepare a report containing the results of our assessment and including recommendations for site preparation, evaluation of site soils for use as fill, recommended stripping depths, building slab and foundation recommendations, building drainage, cut and fill slope recommendations, and light- and heavy-duty pavement preparation and design as well as design stormwater infiltration rates and identified seasonal high groundwater elevations.

## SITE CONDITIONS

### GENERAL

The site is located east of Littlerock Road SW and south of Kingswood Drive within the City of Tumwater. The site is shown relative to surrounding physical features in Figure 1. The site is bordered to the east by a Home Depot store and to the north by a WalMart store currently under construction. Properties to the west and south are occupied by single and multi-family housing.

A Bonneville Power Administration (BPA) high-voltage transmission line traverses the northern third of the property within an easement area. Four metal towers are located on the property.

A groundwater monitoring well (MW-1) is located adjacent to Littlerock Road between the western-most power line towers. This groundwater monitoring well appears to have been installed during a previous geotechnical investigation centered on the Walmart Property to the north. Monitoring well MW-1 was used to calculate historic high groundwater elevations for the property and will be discussed later.

Historically a number of residences were located on the western parcel of property fronting Littlerock Road. Additionally, the central portion of the properties was used as a borrow source for topsoil to depth of about 12 feet. The excavation remaining after the borrow operations was filled with a mixture of debris including bricks, concrete, metal, composite shingles and wood waste. This uncontrolled fill material was then covered with soil and moderately compacted. A discussion of this uncontrolled fill is included later in this report.

Several piles of fill material are also located on the property. The origin of the fill is unknown. The soils in the piles appear to be somewhat high in the percentage of fines, but appear to be suitable for use as fill, or in landscape areas at the site.

The property is roughly rectangular in shape and comprises approximately 9 acres. The site is generally flat with an elevation ranging between approximately 188 and 180 feet above mean sea level (MSL) measured to the NGVD 29 datum. The property is currently undeveloped.

## SURFICIAL SOIL CONDITIONS

Surficial soil conditions were evaluated by reviewing the U.S. Department of Agriculture Soil Survey of Thurston County, Washington dated 1979. According to the soil survey report, the site is underlain by Nisqually loamy fine sand. This soil exhibits rapid permeability, slow water runoff and a slight hazard of erosion.

# SUBSURFACE EXPLORATIONS

## GENERAL

Subsurface conditions at the site were explored by advancing 3 borings and 19 test pits at the approximate locations shown in Figure 2 on March 28 and 29 2011. The test pits were excavated using a small, track-mounted backhoe. The test pits were completed to depths ranging between 5 and 11 feet below ground surface. Borings were conducted using a truck mounted probe rig to obtain subsurface samples continuously to the total depth of the borehole.

A geologist from Insight Geologic, monitored the excavation of the test pits and borings and maintained logs of the soils encountered. The soils were visually classified in general accordance with the system described in ASTM D2487-06. Logs of the exploratory test pits and borings are contained in Attachment A of this report.

The exploratory test pits were backfilled using the soil removed from the test pit. Backfilled soil was tamped in place using the bucket of the backhoe. The backfilled soil was not compacted as structural fill and should be expected to settle over time. If structures are intended to be placed over the test pit areas, the soil should be over-excavated and compacted.

## SUBSURFACE CONDITIONS

Native soil exposed in the test pits consisted of about 1 foot of dark brown silty fine to medium sand (SM) overlying fine to medium sand (SP) with trace amounts of silt. We encountered fill soil in the middle and north central portions of the site that consisted of between 2 and 7 feet of light brown fine to coarse sand with silt and cobbles overlying waste materials consisting of brick, concrete, metal, composite shingles, wood-waste and other debris that is unsuitable for construction at the site. Our estimate of the volume of unsuitable fill material at the site is approximately 80,000 cubic yards based on a nominal thickness of 14 feet, although it is likely that much of this material may be screened and reused as structural fill. Unsuitable fill materials such as trash and wood debris should be excavated and removed from the site. Overlying material and some material within the fill such as brick and concrete debris may be reused as structural fill provided they meet the requirements of structural fill as detailed later in this report. The general area of unsuitable and uncontrolled fill found at the site is shown in Figure 2.

Groundwater was encountered in the borings at a depth of about 15 feet below existing grade. Given the time of year the borings were drilled, this depth may be considered as the seasonal high groundwater level for the purposes of stormwater system design.

## LABORATORY TESTING

Four soil samples from the borings in the area of the proposed stormwater infiltration structure and two soil samples from test pits TP-6 and TP-9 were submitted for gradation analysis in general accordance with ASTM methodology. The results of the gradation analyses are contained in Attachment B.

The gradation analyses indicated that the soils exposed in boring B-2 at depths of between 0 and 10 feet consisted of poorly graded sand with silt and gravel (SP-SM) and silty sand with gravel (SM). This soil appears to be imported fill material and not soil native to the site. The sample from boring B-2 representative of the 10 to 25 foot interval consisted of poorly graded sand (SP). The sample from boring B-3 collected from a depth between 7 and 15 feet also consisted of poorly graded sand (SP). These materials appear to be representative of native soils on the site.

The samples from test pit TP-6 and TP-9 were collected from stockpiled soils on the site. The sample from TP-6 consists of silt (ML) and the sample from TP-9 was classified as silty sand (SM).

Four soil samples collected from native as well as stockpiled soils were tested for moisture-density relationships using the Modified Proctor Method (ASTM D1557). Testing indicates that the maximum dry density of native soils is 114 pounds per cubic foot

at a moisture content of 11 percent. Laboratory results for Proctor tests are included in Attachment B.

## CONCLUSIONS AND RECOMMENDATIONS

### GENERAL

The test pits and borings conducted for our study revealed the presence of native silty sand and poorly graded sand to the maximum depth explored. These soils appear to be suitable for the proposed commercial development planned for the site.

Our explorations also revealed the presence of a large area of uncontrolled, undocumented fill that will be unsuitable for bearing structures or parking areas on. We encountered fill soil in the middle and north central portions of the site that consisted of between 2 and 7 feet of light brown fine to coarse sand with silt and cobbles overlying waste materials consisting of brick, concrete, wood-waste and other debris that is unsuitable for construction at the site. Our estimate of the volume of unsuitable fill material at the site is approximately 80,000 cubic yards based on a nominal thickness of 14feet.

Unsuitable fill materials such as trash and wood debris should be excavated and removed from the site. Overlying material and some material within the fill such as brick and concrete debris may be reused as structural fill provided they meet the requirements of structural fill as detailed later in this report. The general area of unsuitable and uncontrolled fill found at the site is shown in Figure 2.

### EARTHWORK

#### General

We expect that site grading may be accomplished using conventional earthmoving equipment. The soils in the upper 2 feet of the site contain a moderate amount of fines and organics and may be moisture sensitive during wet weather. These materials may be difficult to operate on or compact during wet weather. Operation of heavy equipment at the site under wet conditions or when the soils are above optimum moisture content can be expected to result in considerable disturbance to the exposed subgrade soils. We recommend that earthwork be undertaken during periods of dry weather to reduce grading costs.

#### Clearing and Site Preparation

All areas to be graded should be cleared of surface and subsurface deleterious materials including trees, sod, brush, debris and other unsuitable or organic materials. We expect that stripping depths of between 6 and 12 inches will be required at the site to remove the surficial soils containing substantial amounts of organic material. Deeper stripping depths

will be required in areas of heavy vegetation or, if the clearing operations cause excessive disturbance to the surficial soils, or if additional unsuitable soils are exposed during stripping operations.

We recommend that any trees be removed by overturning so that a majority of the tree roots are removed. Excavations from tree removal operations should be backfilled with structural fill compacted to the densities indicated in the "Structural Fill" section of this report.

The stripped material may be stockpiled and used later in nonstructural applications (e.g. landscape areas). Materials that cannot be used for landscaping should be removed from the project site and wasted.

### Removal of Uncontrolled Fill

Significant quantities of uncontrolled and unsuitable fill were encountered in test pits and borings conducted in the north-central portion of the site extending to depths of 14 feet. The unsuitable fill materials consisted of brick, concrete, wood-waste, construction debris and trash. Uncontrolled fill, particularly fill containing significant quantities of wood and wood-waste such as logs and stumps, can be expected to settle over time as the wood decays. Long-term settlement can result in pavement distress or failure, utility disruption or deflection of floor slabs.

We recommend that the unsuitable fill material be removed and replaced with appropriate structural fill. Properly screened fill soil may be used as structural fill as long as it meets the specifications in the "Structural Fill" section of this report. All organic materials and refuse removed during the remediation process should be hauled from the site and disposed of at an approved facility. Masonry brick and concrete materials encountered during removal may be reused as structural fill provided they are reduced to fragments 3 inches or smaller in diameter. Oversize material that is screened out during the process should be hauled to an approved landfill and disposed of.

It should be noted that during a previous geotechnical investigation focused on the property immediately north of the subject site, soil samples collected and analyzed for the presence of heavy metals indicated the presence of chromium and lead at concentrations exceeding the Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) Method A cleanup levels for unrestricted land use (WAC 173-340-740). Therefore, it is possible that other soils imported to the site for use as fill may contain concentrations of hazardous or potentially hazardous materials. We recommend that additional sampling and appropriate laboratory testing be undertaken to evaluate the potential of hazardous materials on the property prior to the commencement of grading efforts.

### Subgrade Preparation

We recommend that a representative of Insight Geologic be present to observe and evaluate the exposed subgrade conditions after stripping is completed and prior to placement of any structural fill. The exposed subgrade soil should be evaluated by proof rolling with heavy rubber tired equipment during dry weather or by probing with a ½ inch diameter steel rod during wet weather.

Any soft, loose or otherwise unsuitable areas delineated during proof rolling or probing should be recompacted, if practical, or over-excavated and replaced by structural fill.

After completing the proof rolling, the subgrade areas should be recompacted to a firm and unyielding condition. We recommend that Insight Geologic or a qualified testing firm evaluate the compaction effort and any compacted soils. A full and complete record of all observations and compaction measurements should be retained by the client. We recommend that all subgrade areas beneath roadways be compacted to at least 95 percent of the soil maximum dry density (MDD) in accordance with ASTM D1557 test procedure.

## STRUCTURAL FILL

### General

All fill that is placed at the site beneath structures and/or pavements should be placed as structural fill. We recommend that structural fill be free of debris, significant organic materials and rock fragments larger than about 6 inches. The workability of materials for use as structural fill depends on the gradation and moisture content of the soil. As the amount of fines increases, soil becomes increasingly more sensitive to small changes in moisture content. Compaction of native soils in accordance with the recommendations provided in this report then becomes difficult or impossible to achieve if the soil is above the optimum moisture content.

All fill and backfill beneath buildings should be compacted to at least 95 percent of soil MDD, based on ASTM D1557 (modified Proctor) testing procedure. Pavement subgrade soils and utility trench backfill should be compacted to at least 90 percent of the MDD up to within 2 feet of design grades; the upper 2 feet should be compacted to at least 95 percent of the MDD.

The lift thickness used during placement and compaction of structural fill will depend on the moisture and gradation characteristics of the soil and the type of equipment being used. If necessary, the material should be moisture conditioned to near-optimum moisture content prior to compaction. During fill and backfill placement, sufficient testing of in-place density should be performed to verify that adequate compaction is being achieved. The required frequency of density testing should be determined by the on-site testing professional. We recommend a lift thickness of no greater than 6 inches be placed and compacted for each compaction run.

### Suitability of On-Site Materials as Fill

During dry weather construction, any non-organic (generally less than 30 percent organics) onsite soil may be considered for use as structural fill, provided it meets the criteria described in the Structural Fill section of this report and can be compacted as recommended. If the native material is over optimum moisture content when excavated, it will be necessary to aerate or dry the soil prior to placement as structural fill.

The site soils which contain moderate amounts of silt may be moisture sensitive. These materials may not be suitable for use as fill under wet weather conditions.

### Cut Slopes

Temporary cut slopes are anticipated for construction of underground utilities. All temporary cut slopes and shoring must comply with the provisions of Washington Administrative Code (WAC) Title 296, Part N, "Excavation, Trenching and Shoring." The contractor performing the work has the primary responsibility for protection of workers and adjacent improvements, deciding whether to use shoring, and for establishing the safe inclination for open-cut slopes.

Temporary unsupported cut slopes more than 4 feet high may be inclined to 1.5H:1V maximum steepness in the native soils. Cut slopes in the unconsolidated fill should be 2H:1V or flatter. This guideline assumes that all surface loads are kept at a minimum distance of at least one half the depth of the cut away from the top of the slope and that significant seepage is not present in the slope face. Flatter slopes will be necessary where significant seepage occurs. Some sloughing and raveling of the cut slopes should be expected over time. Temporary covering with heavy plastic sheeting should be used to protect these slopes during periods of wet weather.

Cut slopes for long term structures such as stormwater ponds should be inclined to 2H:1V or flatter for long term stability.

## FOUNDATION SUPPORT

The soils at the site are generally in a loose condition. Spread footings are appropriate for the soils encountered if anticipated footing loads do not exceed 2,000 pounds per square foot (psf) for combined dead and long-term live loads, exclusive of the weight of the footing and overlying backfill. This value may be increased by one third for transient loads such as those induced by seismic events or wind loadings. If higher loads are anticipated, deep foundations or removal of unsuitable soil and replacement with structural fill should be considered.

We estimate that settlement of footings designed as recommended will be less than 1 inch for the anticipated load conditions, with differential settlements of less than 1 inch

between comparably loaded footings. Most of the settlements should essentially occur as loads are being applied. However, disturbance of the foundation subgrade during construction or the presence of loose or soft soils below the foundation could result in larger settlements than predicted.

### Footing Depths and Widths

For frost and erosion protection, the base of all exterior footings should bear at least 24 inches below adjacent outside grades. To limit post-construction settlements, continuous (wall) and isolated (column) footings should be at least 18 and 24 inches wide, respectively.

### Bearing Subgrades

At least 12 inches of structural fill, compacted to a density of at least 95 percent (based on ASTM:D-1557), should underlie spread footings on this site that bear on the silty sand (SM) and poorly graded sand (SP) soils.

### Lateral Overexcavation

Because foundation stresses are transferred outward as well as downward into the bearing soils, all structural fill placed under footings, up to 3 feet in thickness, should extend horizontally outward from the edge of each footing a distance equal to the depth of placed fill. Fill should extend a minimum of 12 inches below the footing base and should also extend a minimum of 12 inches outward from the footing edges.

### Subgrade Observation

All footing subgrades should consist of either firm, unyielding, native soils or suitable structural fill materials. Footings should never be cast atop loose, soft, or frozen soil, slough, debris, existing uncontrolled fill, or surfaces covered by standing water. We recommend that the condition of all subgrades be observed by a representative of Insight Geologic or other qualified testing firm before any concrete is placed.

### Bearing Pressures

In our opinion, for static loading, footings that bear on properly prepared, structural fill subgrades can be designed for a maximum allowable soil bearing pressures of 2,000 psf.

### Footing Settlement

We estimate that total post-construction settlements of properly designed footings bearing on properly prepared subgrades will not exceed 1 inch. Differential settlements for

comparably loaded elements may approach one-half of this value over horizontal distances of approximately 50 feet.

### Footing and Stemwall Backfill

To provide erosion protection and lateral load resistance, we recommend that all footing excavations be backfilled on both sides of the footings, retaining walls, and stemwalls after the concrete has cured. Either imported structural fill or non-organic (generally less than 30 percent organics) on-site soils can be used for this purpose, contingent on a suitable moisture content at the time of placement. Regardless of soil type, all footing backfill soil should be compacted to a density of at least 90 percent (based on ASTM:D-1557).

## BUILDING FLOOR SLABS

The maximum allowable soil bearing pressure for site soils is 2,000 psf. We recommend that preparations for the floor slabs for the proposed commercial structures adhere to the subgrade preparation and structural fill recommendations presented in this report. The slab base section should consist of a minimum 6-inch thick layer of crushed base course per WSDOT Standard Specification Section 9-03.9(3). The slab base material should be compacted to a minimum of 95 percent of their modified proctor maximum dry density per ASTM D1557.

To reduce the transmission of water vapor through the floor slab, we recommend the use of suitable vapor retarders such as plastic sheeting placed between the slab base and the floor slab and/or specially formulated concrete mixtures. At a minimum, a sheet of 6-mil polyethylene sheeting should be placed on top of the prepared base course and 2 inches of builders sand be placed atop the plastic sheeting and compacted to 90 percent MDD.

The identification of alternatives to prevent vapor transmission is outside of our expertise. A qualified architect or building envelope consultant can make recommendations for reducing vapor transmission through the slab based on the building use and flooring specifications. Our investigation addresses present subgrade conditions for slab support only and does not evaluate future potential conditions unless specifically stated otherwise.

## PAVEMENT

All pavement designs were developed assuming a 20-year design life and a usage factor of 7-days-a-week.

Our pavement design recommendations were developed using the AASHTO method for flexible and rigid pavement designs. Our pavement sections are based on the following assumptions and design information:

- An assumed subgrade CBR of 20

- Standard-Duty Paving Equivalent Single Axle Loading (ESAL) 54,000
- Heavy-Duty Paving ESAL 270,800
- Pavement sections should be placed on a subgrade that has been proof-rolled, determined by a qualified person to be firm and unyielding and is compacted to at least 95 percent of the modified proctor MDD in accordance with ASTM D1557.
- All asphalt edges shall be supported by adjacent structure, curb, or compacted gravel shoulder
- Paved surfaces should be adequately sloped to direct surface water runoff away from the building.

The standard-duty pavement section shall consist of subgrade material compacted to 95 percent MDD overlain by 8 inches of gravel base course conforming to section 9-03.10 of the WSDOT Standard Specifications and compacted to 95 percent MDD. A minimum of 2 inches of crushed surfacing Top Course conforming to Section 9-03.9(3) of the WSDOT Standard Specifications shall be placed atop the prepared base course and compacted to a minimum density of 95 percent MDD. The wearing course shall consist of a minimum of 3 inches of Commercial Hot Mix Asphalt sloped to provide adequate drainage.

Heavy-duty pavement areas shall consist of subgrade material compacted to 95 percent MDD overlain by 8 inches of gravel base course conforming to section 9-03.10 of the WSDOT Standard Specifications and compacted to 95 percent MDD. A minimum of 2 inches of crushed surfacing Top Course conforming to Section 9-03.9(3) of the WSDOT Standard Specifications shall be placed atop the prepared base course and compacted to a minimum density of 95 percent MDD. The wearing course shall consist of a minimum of 5 inches of Commercial Hot Mix Asphalt sloped to provide adequate drainage.

## SEISMIC AND GEOLOGIC HAZARDS

### IBC Seismic Design Criteria

The subject property is located in an area designated as Site Class D is appropriate for design based on the 2006 IBC. Based on our experience in this area, a 100-foot boring was not required in order to provide a recommended Site Classification.

### Seismicity and Faulting

The Puget Lowland is located in an area of frequent earthquakes of moderate to strong intensity. It lies over an active subduction zone, where the oceanic Juan de Fuca plate is being subducted beneath the North American plate. Areas adjacent to subduction zones are capable of generating very high magnitude earthquakes. Three earthquakes within the Puget Sound area in the last 55 years have caused significant damage. The April 13, 1949 earthquake is the largest recorded earthquake in the region having a moment magnitude

(Mm) of 7.1. Other lesser, but still significant earthquakes in 1965 and 2001 were had magnitudes of 6.5 and 6.8, respectively.

Moment magnitude is only one measure of earthquake intensity. Even moderate earthquakes can produce structural damage on poorly consolidated soils.

No mapped active faults are located within 5 miles of the project site; therefore, we estimate the ground rupture hazard at the site to be low.

### Liquefaction

The probability of liquefaction occurring on the site during a design-level earthquake is low, based on the granular nature of the soils and on the depth to groundwater beneath the site.

### Other Geologic Hazards

No other potential geologic hazards such as landslides or subsidence were identified on, or near the subject site.

## DRAINAGE CONSIDERATIONS

The native soils on the site classify as Hydrologic Group A soils to a depth of 60 inches below existing grade. Foundation drains should be used where (1) crawl spaces or basements will be below a structure, (2) a slab is below the outside grade, or (3) the outside grade does not slope downward from a building. Drains should also be placed at the base of all earth-retaining walls. These drains should be surrounded by at least 6 inches of 1-inch-minus, washed rock and then wrapped in non-woven, geotextile filter fabric. At its highest point, a perforated pipe invert should be at least 6 inches below the bottom of a slab floor, and it should be sloped for drainage. All roof and surface water drains must be kept separate from the foundation drain system. Final site grading in areas adjacent to the buildings should slope away at least 2 percent for a distance of at least 10 feet, except where the area is paved.

## STORMWATER INFILTRATION

Stormwater runoff from the site is proposed to be infiltrated into a pond or subsurface infiltration structure located in the northeastern portion of the site. Soil samples collected from the exploratory borings in this area and subjected to gradation analysis indicate the presence of fill soils (SP-SM and SM) overlying native SP soils at about 7 feet in depth.

We utilized the “Simple Method” identified in Table A.2 of the City of Tumwater Drainage Design and Erosion Control Manual (2009) to develop the design (long-term) infiltration rate for the proposed infiltration facility. Based on our gradation analyses, the native soils have a $D_{10}$ of about 0.10 millimeters and a corresponding design infiltration rate of 2.0 inches per hour. This infiltration rate includes a safety factor of 2. We

recommend that any fill soils removed from this area as a part of grading efforts be replaced with suitably coarse material having a $D_{10}$ grain size that is 0.10 millimeters or greater.

Seasonal high groundwater can be expected to occur at a depth of about 15 feet below ground surface in this portion of the site based on groundwater observed in the borings. This seasonal high groundwater elevation provides a vertical separation of greater than three feet between the base of the proposed infiltration structure and seasonal high groundwater assuming an infiltration structure depth of 5 feet below existing grade in accordance with Tumwater's design guidelines. The seasonal high groundwater elevation should not be confused with the historic high groundwater elevation, which is discussed in detail below.

## HISTORIC HIGH GROUNDWATER ELEVATIONS

The proposed project sites lie within an area designated by the City of Tumwater as an area of high groundwater concern due to flooding in 1996 and 1999. Tumwater promulgated Ordinance No. O2004-003 "Site Development Standards for New Development in the Salmon Creek Basin and other High Groundwater Areas in 2004. These standards outline the steps necessary to evaluate the effect of stormwater infiltration on proposed development prior to beginning construction.

The first step in the evaluation is to estimate the depth to historical high groundwater beneath the site. Sites with historic high groundwater levels within 6 feet of the base of a proposed infiltration facility require further evaluation and modeling. We have reviewed the figure titled "Estimated Depth to Water, Winter 1999" contained in the report "Salmon Creek Drainage Basin Conceptual Hydrogeologic Model" dated June 2001, to evaluate the depth to high groundwater beneath the proposed project site. The estimated depth to the historic groundwater table beneath the site appears to be less than 6 feet below ground surface and therefore requires further evaluation to resolve the high groundwater issue.

A groundwater monitoring well located on the western portion of the property (MW-1) was installed by Kleinfelder and Associates in 2005 as a part of a study that included the WalMart property to the north of Kingswood Drive. As a part of the WalMart project, Pacific Groundwater Group (PGG) conducted an analysis of the groundwater data collected by Kleinfelder to establish the historic high groundwater elevation beneath the property.

While data from MW-1 was not used for the WalMart project, PGG performed the required regression analysis of the collected data and established a historic high groundwater elevation at the location of MW-1 of 173.2 feet (NGVD 29) or approximately 11 feet below ground surface. The regression analysis was performed by plotting groundwater elevation data for the City's reference well (LRS-O1A) against monitoring

data obtained from Kleinfelder for MW-1. A line of best fit was generated for each data set. The equation of the best-fit line and the R-squared value were also generated.

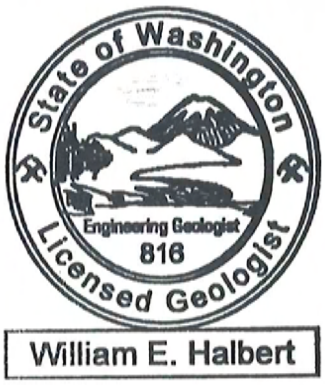
The historic high groundwater elevations for each monitoring well were calculated by using the known 1999 high groundwater elevation for the reference wells in the linear equations generated in the regression analyses. The depth to the calculated historic high groundwater table was obtained by subtracting the calculated groundwater elevation from the surveyed ground surface elevation at each monitoring well. PGG's Technical Memorandum dated March 5, 2010 prepared for the proposed WalMart store immediately north of the subject property and including data for the subject site is included in Attachment C to this report. The data derived by PGG and presented in their technical memorandum will be used to complete the necessary mounding analysis.

## LIMITATIONS

We have prepared this geological report for use by Pacland and their client, Kingswood Capital for the proposed commercial development to be located at 1401 and 1551 Kingswood Drive SW in Tumwater, Washington.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of geological engineering and in accordance with the City of Tumwater's Drainage Manual at the time this report was prepared. No warranty or other conditions express or implied, should be understood.

We appreciate the opportunity to assist you with this project. Please contact us if you have questions regarding the information presented in this report or if we can provide additional services.

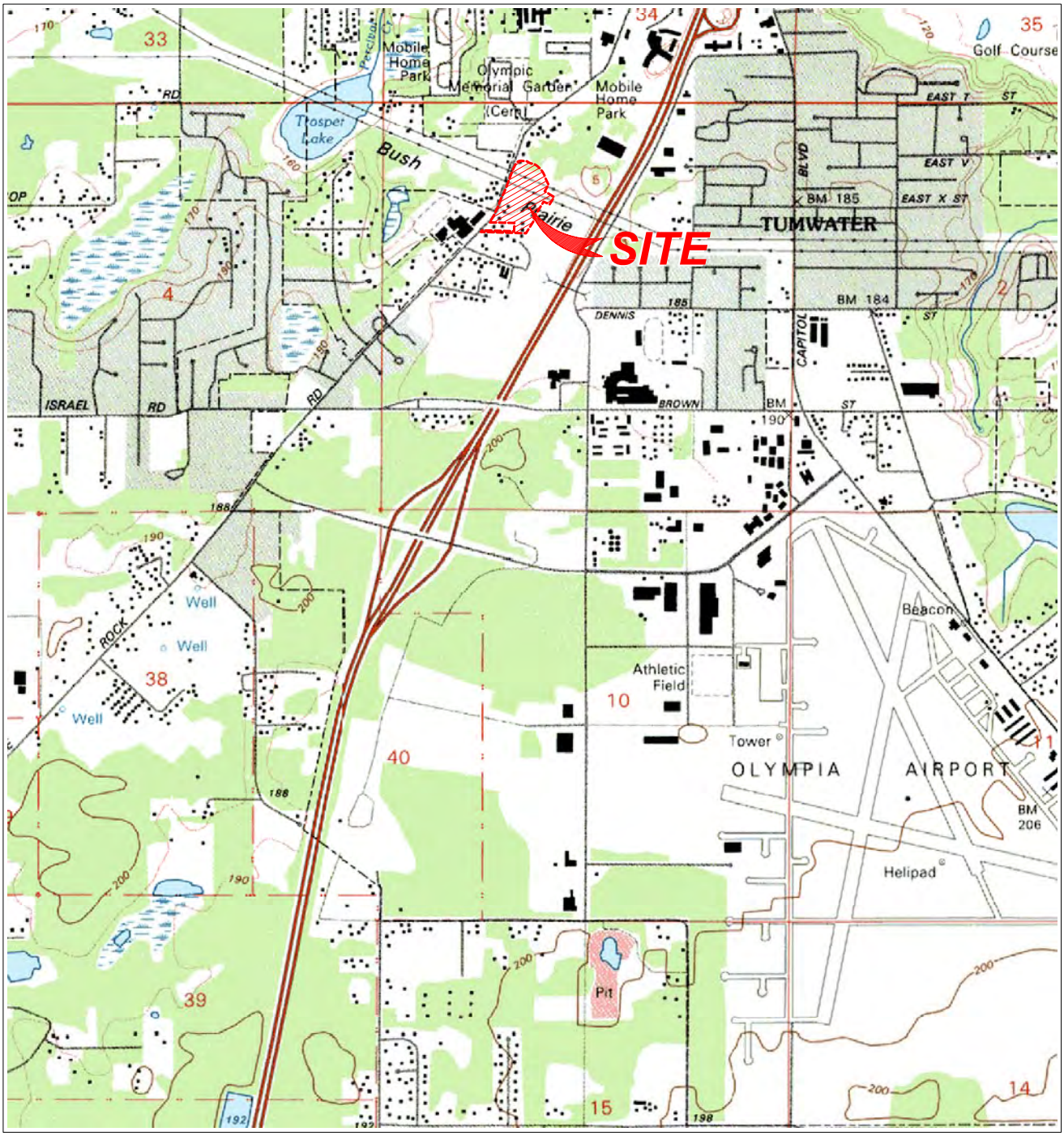



Very truly yours,
INSIGHT GEOLOGIC, INC.

William E. Halbert, L.G., L.E.G.
Principal

Attachments

# FIGURES




Source: Maptech, Inc. (C) 1997

*MAYTOWN, WASHINGTON*
*7.5 MINUTE QUADRANGLE*
*Year Created 1990*

SCALE: 1: 24000

## *KINGSWOOD CAPITAL*

TUMWATER, WASHINGTON

INSIGHT GEOLOGIC, INC.

Figure 1
Vicinity Map

FILE INFO: \\lg-s01\company\Insight\519-001-01 Kingswood Capital\Figures\Figure 1 - Vicinity Map.dwg PLOTTED: Apr 08, 2011 4:47pm BY:reneeb

Source: U.S. Geological Survey & PacLand (c) 2011

0 25 50 100
SCALE: 1" = 100'

***LEGEND:***

- **B-1** — BORING LOCATION
- **TP-1** — TEST PIT LOCATION
- **MW-1** — MONITORING WELL LOCATION
- FILL PILE BOUNDARY
- BURIED FILL BOUNDARY
- PROJECT BOUNDARY

***KINGSWOOD CAPITAL***

TUMWATER, WASHINGTON

INSIGHT GEOLOGIC, INC.

Figure 2
Site Plan

FILE INFO: \\fp-s01\company\Insight\1519-001-01 Kingswood Capital\Figures\Geo Rpt - Figure 2 - Site Plan.dwg PLOTTED: Aug 22, 2011 12:02pm BY:reneeb

# ATTACHMENT A

# EXPLORATION LOGS

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# B-1

DATE: **3/28/11**
TOTAL DEPTH:**20 Feet**

| DEPTH (FT) | SAMPLE NO. | SAMPLE INTERVAL | INCHES DRIVEN/ RECOVERED | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | 1 | | 48/26 | SM | | Dark brown fine to coarse sand with silt, occasional fine to medium gravel, brick and wood, loose, moist (Fill). | |
| 5 | 2 | | 48/18 | | | | |
| | 3 | | 48/13 | | | Grades to fine to medium sand with silt, occasional wood, loose, moist (Fill). | |
| 10 | 4 | | 48/35 | | | | |
| 15 | 5 | | 48/48 | SP | | Gray green fine to medium sand, medium dense, moist to wet. | Groundwater at 17 Feet |
| 20 | | | | | | | |
| 25 | | | | | | | |

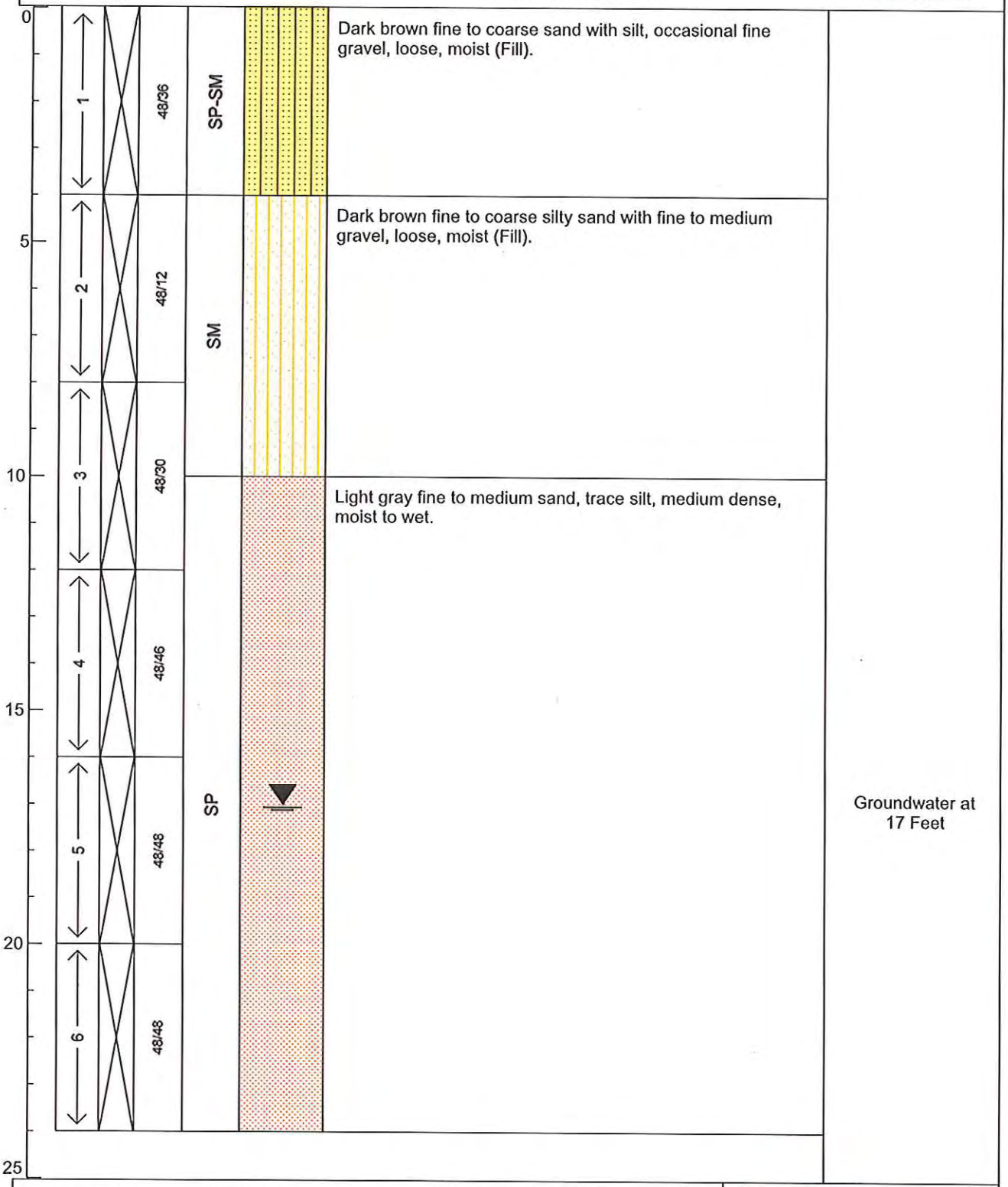
Drilling Contractor: **NW Probe**
Drilling Equipment: **AMS Power Probe 9630**
Logged By: **Kevin V.**
Driller: **Jason R.**
Drilling Method: **Direct Push**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# B-2

DATE: **3/28/11**
TOTAL DEPTH: **24 Feet**




Drilling Contractor: **NW Probe**
Drilling Equipment: **AMS Power Probe 9630**
Logged By: **Kevin V.**
Driller: **Jason R.**
Drilling Method: **Direct Push**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# B-3

DATE: **3/28/11**
TOTAL DEPTH: **24 Feet**

| DEPTH (FT) | SAMPLE NO. | SAMPLE INTERVAL | INCHES DRIVEN/ RECOVERED | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | 1 | | 48/36 | SM | | Dark brown silty fine to coarse sand, occasional fine to medium gravel and wood, loose, moist (Fill). | |
| 5 | 2 | | 48/12 | | | | |
| | 3 | | 48/30 | SP | | Gray green fine to coarse sand with trace silt, occasional fine gravel, medium dense, moist to wet. | |
| 10 | 4 | | 48/46 | | | | |
| 15 | 5 | | 48/48 | | ▼ | Grades to fine to medium sand with trace silt, medium dense, wet. | Groundwater at 17 Feet |
| 20 | 6 | | 48/48 | | | | |
| 25 | | | | | | | |

Drilling Contractor: **NW Probe**
Driller: **Jason R.**
Drilling Equipment: **AMS Power Probe 9630**
Drilling Method: **Direct Push**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-1

DATE: **3/28/11**
TOTAL DEPTH: **10 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Dark brown silt with fine to medium sand, loose, moist. | |
| | SP | | Light brown fine to medium sand with silt, loose, moist. | |
| 5 | | | Grades to light gray fine to medium sand with trace silt, loose, moist. | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-2

DATE: **3/28/11**
TOTAL DEPTH: **10 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Light brown fine to coarse sand and silt, occasional cobbles, loose, moist (Fill). | |
| | | | Grades to dark brown fine to medium sand and silt, loose, moist. | |
| 5 | SP | | Light brown fine to medium sand and silt, loose, moist. | |
| | | | Grades to light gray fine to medium sand and trace silt, loose, moist. | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-3

DATE: **3/28/11**
TOTAL DEPTH: **9.5 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Light brown fine to coarse sand and silt with fine to coarse gravel, occasional cobbles, medium dense, moist (Fill). | |
| | | | Grades to gray fine to coarse sand and silt with fine to coarse gravel, occasional cobbles, wood and brick debris, medium dense, moist (Fill). | |
| 5 | | | | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-4

DATE: **3/28/11**
TOTAL DEPTH: **6 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Light brown fine to coarse sand and silt with fine to coarse gravel, occasional cobbles, medium dense, moist (Fill). | |
| 5 | SP | | Gray fine to coarse sand and silt with wood and construction debris, medium dense, moist (Fill). | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-5

DATE: **3/28/11**
TOTAL DEPTH: **8 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Light brown to light gray silty fine to coarse sand and gravel, dense, moist (Fill). | |
| | | | Grades to gray silt with fine to coarse sand and fine to coarse gravel with wood debris (Fill). | |
| 5 | | | | Groundwater at 8 Feet |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-6

DATE: **3/28/11**
TOTAL DEPTH: **10 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Dark brown silty fine to medium sand with fine to medium gravel, occasional cobbles, loose, moist (Fill). | |
| | SP | | Brown fine to coarse sand with fine to medium gravel, medium dense, moist (Fill). | |
| 5 | ML | | Gray silt with fine to medium sand, trace fine to medium gravel, occasional wood debris, medium dense, moist (Fill). | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-7

DATE: **3/29/11**
TOTAL DEPTH: **11.5 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Dark brown silty fine to medium sand, loose, moist. | |
| | | | Grades to light brown silty fine to coarse sand, occasional fine to coarse gravel, medium dense, moist (Fill). | |
| 5 | SP | | Dark brown silty fine to medium sand, loose, moist. | |
| | | | Grades to light brown fine to coarse sand with silt, loose, moist. | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-8

DATE: **3/29/11**
TOTAL DEPTH: **11.5 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Dark brown silty fine to medium sand, loose, moist. | |
| 5 | SP | | Light brown fine to medium sand with silt, loose, moist. | |
| 10 | | | Grades to light gray fine to coarse sand with trace silt, loose, moist. | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-9

DATE: **3/29/11**
TOTAL DEPTH: **12 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Brown fine to coarse silty sand with fine to coarse gravel, loose, moist (Fill). | |
| 5 | | | Grades to dark brown silty fine to medium sand, loose, moist. | |
| 10 | | | Grades to light brown fine to coarse sand with silt, loose, moist. | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-10

DATE: **3/29/11**
TOTAL DEPTH: **11.5 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Dark brown silty fine to medium sand, loose, moist. | |
| 5 | SP | | Light brown fine to coarse sand with trace silt, loose, moist. | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-11

DATE: **3/29/11**
TOTAL DEPTH: **9 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Dark brown silty fine to medium sand, loose, moist. | |
| 5 | SP | | Light brown fine to coarse sand with trace silt, loose, moist. | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-12

DATE: **3/29/11**
TOTAL DEPTH: **9 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Brown silty fine to medium sand, occasional fine to medium gravel, loose, moist (Fill). | |
| | SP | | Light brown fine to coarse sand with fine to coarse gravel and silt, occasional cobbles and boulders, medium dense, moist (Fill). | |
| 5 | | | Grades to fine to coarse sand with silt, loose, moist. | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-13

DATE: **3/29/11**
TOTAL DEPTH: **8 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Brown silty fine to medium sand, occasional fine to medium gravel, loose, moist (Fill). | |
| | SP | | Light gray to brown fine to coarse sand with fine to coarse gravel and silt, occasional cobbles and boulders, medium dense, moist (Fill). | |
| | SM | | Blue gray silt with fine to medium sand, loose, moist. | |
| 5 | | | Grades to fine to coarse sand with fine to coarse gravel and wood debris, loose, moist (Fill). | Note: wood debris created void containing water at 5 feet |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-14

DATE: **3/29/11**
TOTAL DEPTH: **10 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SP | | Brown to dark brown fine to coarse sand with fine to coarse gravel and wood, concrete, metal and plastic debris, loose, moist (Fill). | |
| 5 | | | | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-15

DATE: **3/29/11**
TOTAL DEPTH: **9 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SP | | Gray fine to coarse sand with fine to coarse gravel and silt, occasional wood, concrete, and boulder debris, medium dense, moist (Fill). | |
| 5 | | | | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-16

DATE: **3/29/11**
TOTAL DEPTH: **10 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SP | | Brown fine to coarse sand with fine to coarse gravel and silt, occasional wood debris, loose, moist (Fill). | |
| 5 | | | Grades to light brown fine to coarse sand with trace silt, loose, moist. | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-17

DATE: **3/29/11**
TOTAL DEPTH: **10 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Dark brown silty fine to medium sand, loose, moist. | |
| 5 | SP | | Light brown fine to coarse sand with trace silt, loose, moist. | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-18

DATE: **3/29/11**
TOTAL DEPTH: **6 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Dark brown silty fine to medium sand, loose, moist. | |
| 5 | | | | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-19

DATE: **3/29/11**
TOTAL DEPTH: **5 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SP | | Gray brown fine to coarse sand with fine to coarse gravel and silt, occasional wood, brick and concrete debris, loose, moist (Fill). | |
| 5 | | | | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

# ATTACHMENT B

# LABORATORY ANALYSES

# Gradation Analysis Summary Data

**Job Name:** Kingswood Capital
**Job Number:** 519-001-01
**Date Tested:** 3/28/11
**Tested By:** Kevin V.

**Boring #:** B-2
**Sample #:** B-2 0' - 4'
**Depth:** 0 - 4 Feet

Moisture Content (%) 14.4%

| Sieve Size | Percent Passing |
|---|---|
| 3.0 in. (75.0) | 100.0 |
| 1.5 in. (37.5) | 100.0 |
| 3/4 in. (19.0) | 94.8 |
| 3/8 in. (9.5-mm) | 85.1 |
| No. 4 (4.75-mm) | 79.6 |
| No. 10 (2.00-mm) | 75.7 |
| No. 20 (.850-mm) | 71.2 |
| No. 40 (.425-mm) | 58.8 |
| No. 60 (.250-mm) | 34.7 |
| No. 100 (.150-mm) | 16.2 |
| No. 200 (.075-mm) | 7.9 |

| Size Fraction | Percent by Weight |
|---|---|
| Coarse Gravel | 5.2 |
| Fine Gravel | 15.2 |
| Coarse Sand | 3.9 |
| Medium Sand | 16.9 |
| Fine Sand | 50.9 |
| Fines | 7.9 |
| **Total** | **100.0** |

| | |
|---|---|
| **LL** | - - |
| **PL** | - - |
| **PI** | - - |
| $D_{10}$ | 0.091 |
| $D_{30}$ | 0.230 |
| $D_{60}$ | 0.460 |
| $D_{90}$ | 15.000 |
| **Cc** | 1.264 |
| **Cu** | 5.055 |

ASTM Classification
Group Name: **Poorly Graded Sand with Silt and Gravel**
Symbol: **SP-SM**

INSIGHT GEOLOGIC, INC.

# Gradation Analysis Summary Data

**Job Name:** Kingswood Capital
**Job Number:** 519-001-01
**Date Tested:** 3/28/11
**Tested By:** Kevin V.

**Boring #:** B-2
**Sample #:** B-2 4' - 10'
**Depth:** 4 - 10 Feet

Moisture Content (%) 10.1%

| Sieve Size | Percent Passing |
|---|---|
| 3.0 in. (75.0) | 100.0 |
| 1.5 in. (37.5) | 100.0 |
| 3/4 in. (19.0) | 85.5 |
| 3/8 in. (9.5-mm) | 74.7 |
| No. 4 (4.75-mm) | 67.8 |
| No. 10 (2.00-mm) | 62.1 |
| No. 20 (.850-mm) | 55.4 |
| No. 40 (.425-mm) | 42.6 |
| No. 60 (.250-mm) | 28.4 |
| No. 100 (.150-mm) | 19.3 |
| No. 200 (.075-mm) | 12.7 |

| Size Fraction | Percent by Weight |
|---|---|
| Coarse Gravel | 14.5 |
| Fine Gravel | 17.7 |
| Coarse Sand | 5.7 |
| Medium Sand | 19.5 |
| Fine Sand | 29.9 |
| Fines | 12.7 |
| **Total** | **100.0** |

| | |
|---|---|
| **LL** | - - |
| **PL** | - - |
| **PI** | - - |
| $D_{10}$ | 0.000 |
| $D_{30}$ | 0.275 |
| $D_{60}$ | 1.600 |
| $D_{90}$ | 24.000 |
| **Cc** | - - |
| **Cu** | - - |

ASTM Classification
Group Name: **Silty Sand with Gravel**
Symbol: **SM**

INSIGHT GEOLOGIC, INC.

# Gradation Analysis Summary Data

**Job Name:** Kingswood Capital
**Job Number:** 519-001-01
**Date Tested:** 3/28/11
**Tested By:** Kevin V.

**Boring #:** B-2
**Sample #:** B-2 10' - 24'
**Depth:** 10 - 24 Feet

Moisture Content (%) 14.7%

| Sieve Size | Percent Passing |
|---|---|
| 3.0 in. (75.0) | 100.0 |
| 1.5 in. (37.5) | 100.0 |
| 3/4 in. (19.0) | 100.0 |
| 3/8 in. (9.5-mm) | 100.0 |
| No. 4 (4.75-mm) | 100.0 |
| No. 10 (2.00-mm) | 100.0 |
| No. 20 (.850-mm) | 99.9 |
| No. 40 (.425-mm) | 96.3 |
| No. 60 (.250-mm) | 61.5 |
| No. 100 (.150-mm) | 16.3 |
| No. 200 (.075-mm) | 4.9 |

| Size Fraction | Percent by Weight |
|---|---|
| Coarse Gravel | 0.0 |
| Fine Gravel | 0.0 |
| Coarse Sand | 0.0 |
| Medium Sand | 3.7 |
| Fine Sand | 91.4 |
| Fines | 4.9 |
| **Total** | **100.0** |

| | |
|---|---|
| **LL** | - - |
| **PL** | - - |
| **PI** | - - |
| $D_{10}$ | 0.130 |
| $D_{30}$ | 0.180 |
| $D_{60}$ | 0.250 |
| $D_{90}$ | 0.350 |
| **Cc** | 0.997 |
| **Cu** | 1.923 |

ASTM Classification
Group Name: **Poorly Graded Sand**
Symbol: **SP**

INSIGHT GEOLOGIC, INC.

# Gradation Analysis Summary Data

**Job Name:** Kingswood Capital
**Job Number:** 519-001-01
**Date Tested:** 3/28/11
**Tested By:** Kevin V.

**Boring #:** B-3
**Sample #:** B-3 7' - 15'
**Depth:** 7 - 15 Feet

Moisture Content (%) 12.4%

| Sieve Size | Percent Passing |
|---|---|
| 3.0 in. (75.0) | 100.0 |
| 1.5 in. (37.5) | 100.0 |
| 3/4 in. (19.0) | 100.0 |
| 3/8 in. (9.5-mm) | 100.0 |
| No. 4 (4.75-mm) | 100.0 |
| No. 10 (2.00-mm) | 100.0 |
| No. 20 (.850-mm) | 99.7 |
| No. 40 (.425-mm) | 93.7 |
| No. 60 (.250-mm) | 42.6 |
| No. 100 (.150-mm) | 10.4 |
| No. 200 (.075-mm) | 3.4 |

| Size Fraction | Percent by Weight |
|---|---|
| Coarse Gravel | 0.0 |
| Fine Gravel | 0.0 |
| Coarse Sand | 0.0 |
| Medium Sand | 6.3 |
| Fine Sand | 90.3 |
| Fines | 3.4 |
| **Total** | **100.0** |

**LL** - -
**PL** - -
**PI** - -

$D_{10}$ 0.160
$D_{30}$ 0.220
$D_{60}$ 0.299
$D_{90}$ 0.400

**Cc** 1.012
**Cu** 1.869

ASTM Classification
Group Name: **Poorly Graded Sand**
Symbol: **SP**

INSIGHT GEOLOGIC, INC.

# Gradation Analysis Summary Data

**Job Name:** Kingswood Capital
**Job Number:** 519-001-01
**Date Tested:** 3/28/11
**Tested By:** Kevin V.

**Boring #:** TP-6
**Sample #:** TP-6 3' - 10'
**Depth:** 3 - 10 Feet

Moisture Content (%) 18.6%

| Sieve Size | Percent Passing |
|---|---|
| 3.0 in. (75.0) | 100.0 |
| 1.5 in. (37.5) | 100.0 |
| 3/4 in. (19.0) | 100.0 |
| 3/8 in. (9.5-mm) | 100.0 |
| No. 4 (4.75-mm) | 99.7 |
| No. 10 (2.00-mm) | 99.3 |
| No. 20 (.850-mm) | 98.8 |
| No. 40 (.425-mm) | 98.5 |
| No. 60 (.250-mm) | 97.9 |
| No. 100 (.150-mm) | 95.2 |
| No. 200 (.075-mm) | 85.5 |

| Size Fraction | Percent by Weight |
|---|---|
| Coarse Gravel | 0.0 |
| Fine Gravel | 0.3 |
| Coarse Sand | 0.5 |
| Medium Sand | 0.7 |
| Fine Sand | 13.1 |
| Fines | 85.5 |
| **Total** | **100.0** |

**LL** - -
**PL** - -
**PI** - -

$D_{10}$ 0.000
$D_{30}$ 0.000
$D_{60}$ 0.000
$D_{90}$ 0.110

**Cc** - -
**Cu** - -

ASTM Classification
Group Name: **Silt**
Symbol: **ML**

INSIGHT GEOLOGIC, INC.

# Gradation Analysis Summary Data

**Job Name:** Kingswood Capital
**Job Number:** 519-001-01
**Date Tested:** 3/28/11
**Tested By:** Kevin V.

**Boring #:** TP-9
**Sample #:** TP-9 0' - 4'
**Depth:** 0 - 4 Feet

Moisture Content (%) 17.9%

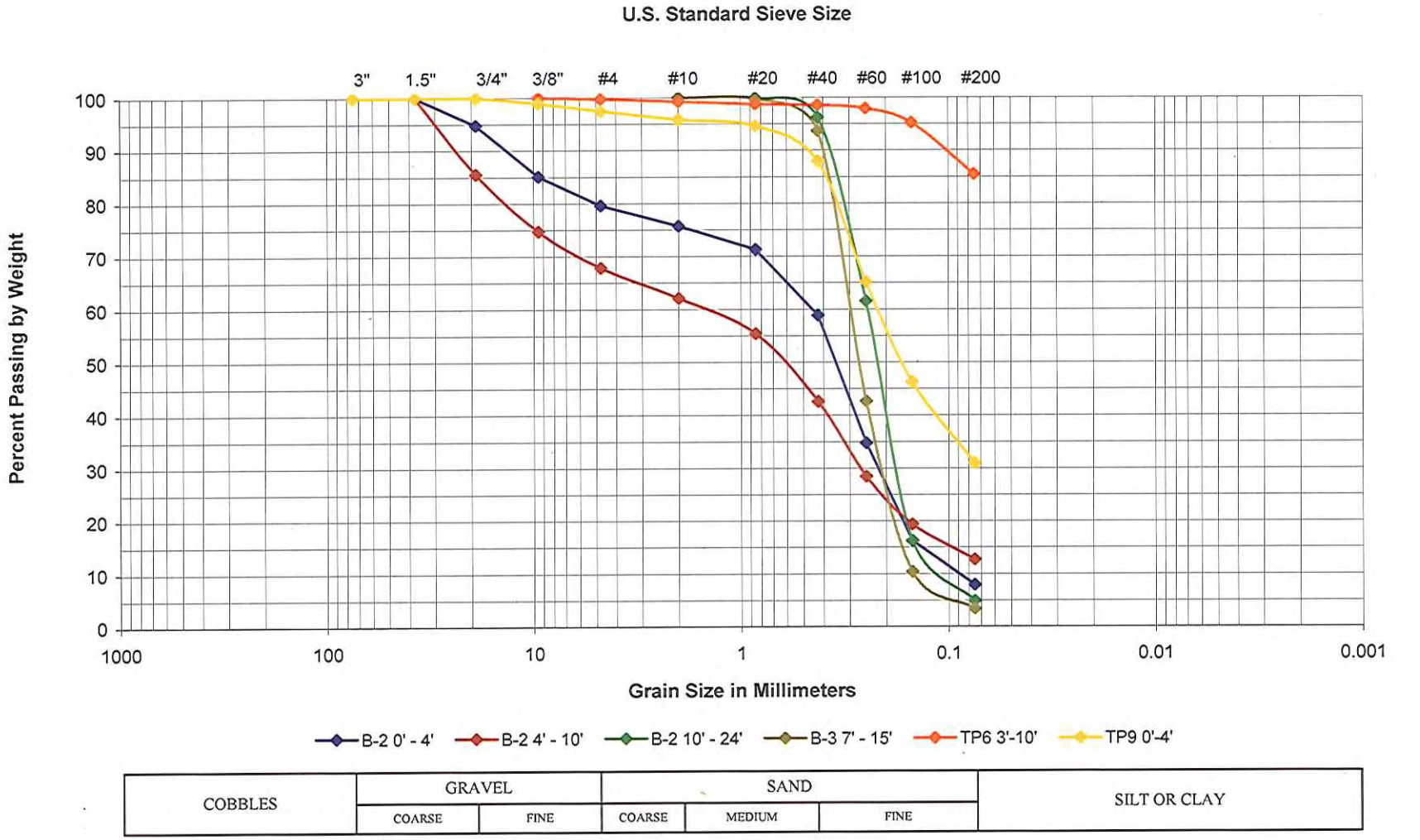
| Sieve Size | Percent Passing |
|---|---|
| 3.0 in. (75.0) | 100.0 |
| 1.5 in. (37.5) | 100.0 |
| 3/4 in. (19.0) | 100.0 |
| 3/8 in. (9.5-mm) | 99.0 |
| No. 4 (4.75-mm) | 97.5 |
| No. 10 (2.00-mm) | 95.9 |
| No. 20 (.850-mm) | 94.6 |
| No. 40 (.425-mm) | 88.0 |
| No. 60 (.250-mm) | 65.1 |
| No. 100 (.150-mm) | 46.3 |
| No. 200 (.075-mm) | 31.0 |

| Size Fraction | Percent by Weight |
|---|---|
| Coarse Gravel | 0.0 |
| Fine Gravel | 2.5 |
| Coarse Sand | 1.6 |
| Medium Sand | 7.9 |
| Fine Sand | 57.0 |
| Fines | 31.0 |
| **Total** | **100.0** |

| | |
|---|---|
| **LL** | - - |
| **PL** | - - |
| **PI** | - - |
| $D_{10}$ | 0.000 |
| $D_{30}$ | 0.000 |
| $D_{60}$ | 0.230 |
| $D_{90}$ | 0.480 |
| **Cc** | - - |
| **Cu** | - - |

ASTM Classification
Group Name: **Silty Sand**
Symbol: **SM**

INSIGHT GEOLOGIC, INC.




INSIGHT GEOLOGIC, INC.

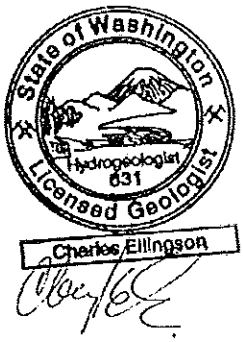
Gradation Analysis Results
Graph 1

## ATTACHMENT C

## PACIFIC GROUNDWATER GROUP – TECHNICAL MEMORANDUM

PACIFIC groundwater GROUP

# Technical Memorandum




**To:** Nick Tayor, Pacland Engineering

**From:** Pony Ellingson, Pacific Groundwater Group

**Re:** Design Groundwater Elevation at proposed Walmart Store 3850

**Date:** March 5, 2010

This memo summarizes Pacific Groundwater Group's recommended design groundwater elevation for the indicated project, and opinions on the extent to which the hydrogeologic work performed to obtain the water level data conform to the letter, and intent, of Tumwater City Ordinance O2005-003. Our work was authorized by Pacland Engineering on March 1, 2010.

## DESIGN GROUNDWATER ELEVATION

Design groundwater elevations were calculated for the following wells and infiltration galleries:

Table 1. Design Groundwater Elevations Compared to Preliminary Gallery Bottoms

| Well/Gallery Pair | Recommended design groundwater elevations at wells and nearby galleries, feet NGVD29 | Predicted minimum depth to water below proposed infiltration surface in gallery, feet (see note) |
|---|---|---|
| MW-2/Gallery 2 | 171.5 / 171.5 | -1.5 |
| MW-3/Gallery 3 | 170.4 / 169.9 | -0.9 |
| MW-4/Gallery 1 | 172.2 / 173.2 | -2.6 |

Note negative depth to water indicates water is above the bottom of the infiltration gallery.

The elevations are an estimate of the maximum historic groundwater elevation at these locations, based on correlation of the on-site groundwater level data to Thurston County Control wells (Table 2, Figure 1). County control well LRS-01A was the only control well used because it is the closest well (~7000 feet southwest of Walmart) and the only well to have current data, continuous data throughout the 1999 high water event, and to have not been flooded during 1999. The predicted maximum groundwater elevations at the wells are 4.5 to 5.5 higher than the maximum

elevations recorded in on-site wells on February 18, 2006. The calculations indicate that the design groundwater elevations estimated for the gallery locations are 0.9 to 2.6 feet *above* the bottoms of the infiltration galleries based on the preliminary designs provided to us (Grading and Drainage Plan C-20, issued 9/18/09).

The materials provided to PGG indicate that the site survey by ALTA was to the NGVD29 datum, but no specific reference for the datum used for wellheads was provided, thus we assumed the wellheads were also surveyed to NGVD29. The wellhead survey datum should be confirmed.

Table 2. Correlations to County Control Well Data

| On-site Well | Correlation Eqn | Max groundwater elevation at LRS-01A (NGVD29) | Predicted max groundwater elevation at site well (NGVD29) | Groundwater elevation adjustment for off-set between well and gallery (ft) | Predicted max groundwater elevation at nearest gallery (NGVD29) | Infiltration surface elevation of nearest gallery (NGVD29) | Minimum depth to groundwater below gallery (ft) |
|---|---|---|---|---|---|---|---|
| MW-1 | y = 0.6485x + 51.782 | 187.19 | 173.2 | not applicable | | | |
| MW-2 | y = 0.6515x + 49.551 | 187.19 | 171.5 | 0.0 (gallery 2) | 171.5 | 170.0 | -1.5 |
| MW-3 | y = 0.6415x + 50.352 | 187.19 | 170.4 | -0.5 (gallery 3) | 169.9 | 169.0 | -0.9 |
| MW-4 | y = 0.6674x + 47.303 | 187.19 | 172.2 | 1.0 (gallery 1) | 173.2 | 170.7 | -2.6 |
| MW-5 | y = 0.6386x + 50.038 | 187.19 | 169.6 | not applicable | | | |
| | | | | | | | |
| | y = on-site elevation | | | | | | |
| | x = LRS-01A elevation | | | | | | |

## CONFIDENCE IN CALCULATIONS

City ordinance O2005-003 refers to well installation, survey, and measurement guidance that should maximize confidence in these calculations. Table 3 below summarizes our comparison of key aspects of the guidance to this project's data, and our opinion on the impact to confidence. Although the letter of the guidance was not met, our opinion is that the data are sufficient to meet the intent of the ordinance. Any model used to calculate groundwater mounding will require the thickness of the upper aquifer to be specified. That information will have to be generated by data from surrounding wells and projects.

Table 3. Comparison of Project Data to City Guidance

| Topic (not comprehensive) | City Guidance (not comprehensive) | Project Data | Opinion / Confidence |
|---|---|---|---|
| Well Drilling | Drill to 50 feet depth or to till, whichever is shallower.<br><br>Screen at the water table. | Numerous borings and test pits. Maximum depth 31.5 ft. No till encountered. Screens at water table. | Good wells. Bottom of upper aquifer not documented (no till). Till can be interpreted from other nearby well logs. |
| Survey and Precision | Survey to NGVD29 with wellhead precision of 0.01 ft.<br><br>Measure and record water level data to 0.01 ft precision. | Metadata for wellhead survey not provided.<br><br>Water level data recorded to 0.1 ft precision but derived water elevation improperly reported to 0.01 ft precision. | Confirm NGVD29 survey of wellheads (monitoring point), and precision.<br><br>Precision of 0.1 ft is probably OK. |
| Water Level Monitoring | Twelve monthly measurements or weekly for four months over winter-spring. | Eight measurements over 12 months, not equally spaced. | Documented 4.5 to 5 feet of on-site groundwater fluctuation. Five of eight measurements in generally high water table months although one value much higher than other s (Figure 1). Highly correlated to County data. Conclude data meet intent but not letter of the ordinance. |

## COMPARISON TO SIMILAR CALCULATIONS NEARBY

As a reality check on the design groundwater elevations, we compared the elevations for this project to those for nearby projects. The Walmart site lies about 1500 feet north of the northernmost well at which previous calculations are known to us (We are not aware of similar calculations performed at Home Depot directly south of Walmart). The elevation at that prior location (Mountain View Church of the Nazarene) is 177.5 ft. or about 4 feet higher than the maximum design elevation calculated at Walmart (Table 2, Well 1). Given the northerly groundwater gradient in this vicinity, the lower elevation at Walmart is expected.

The Thurston County GeoData Center website does not indicate the presence of nearby areas that were flooded with groundwater during the high water table events of 1997 and 1999.

*water level memo v1*

*JE1002*

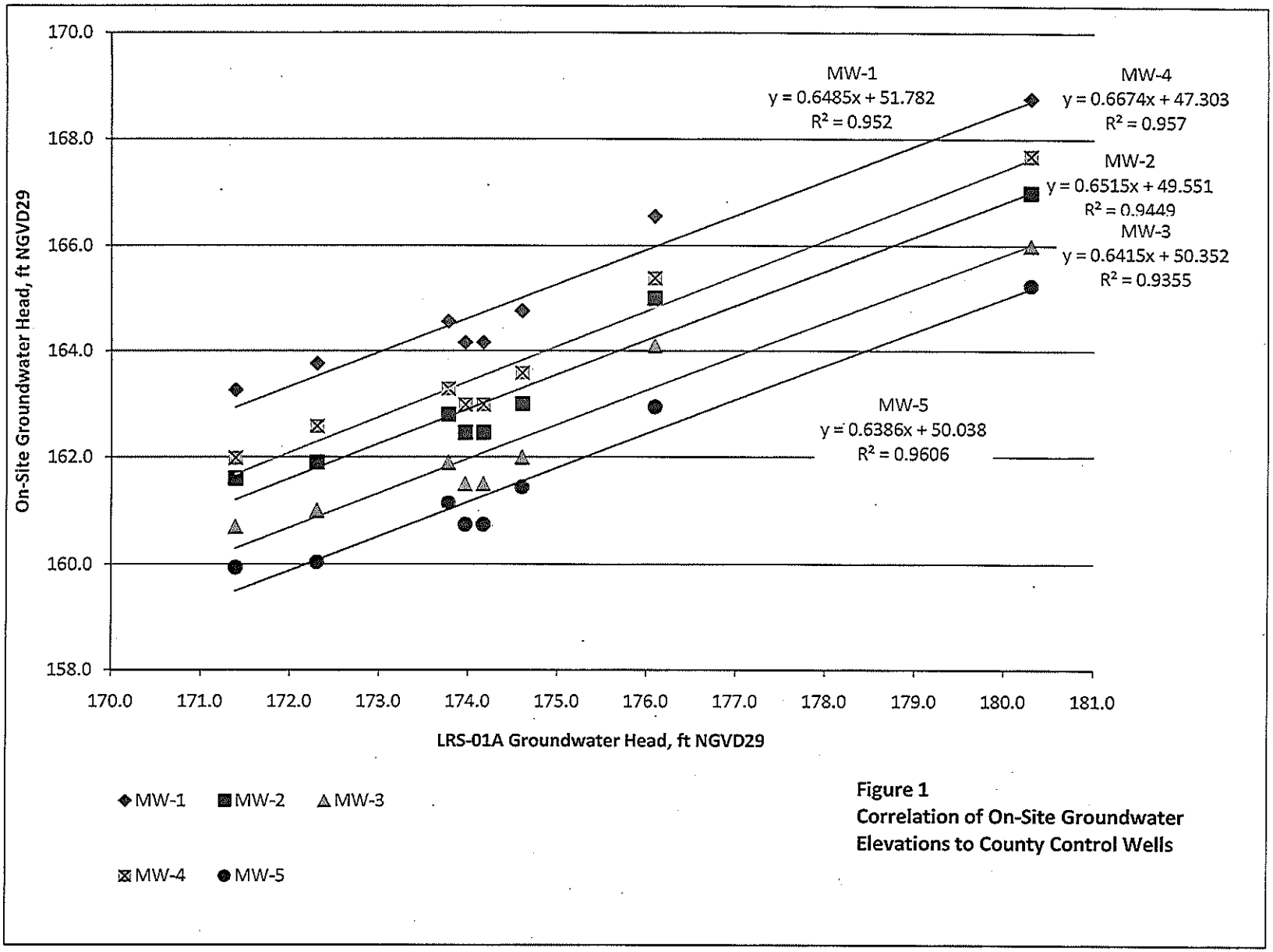
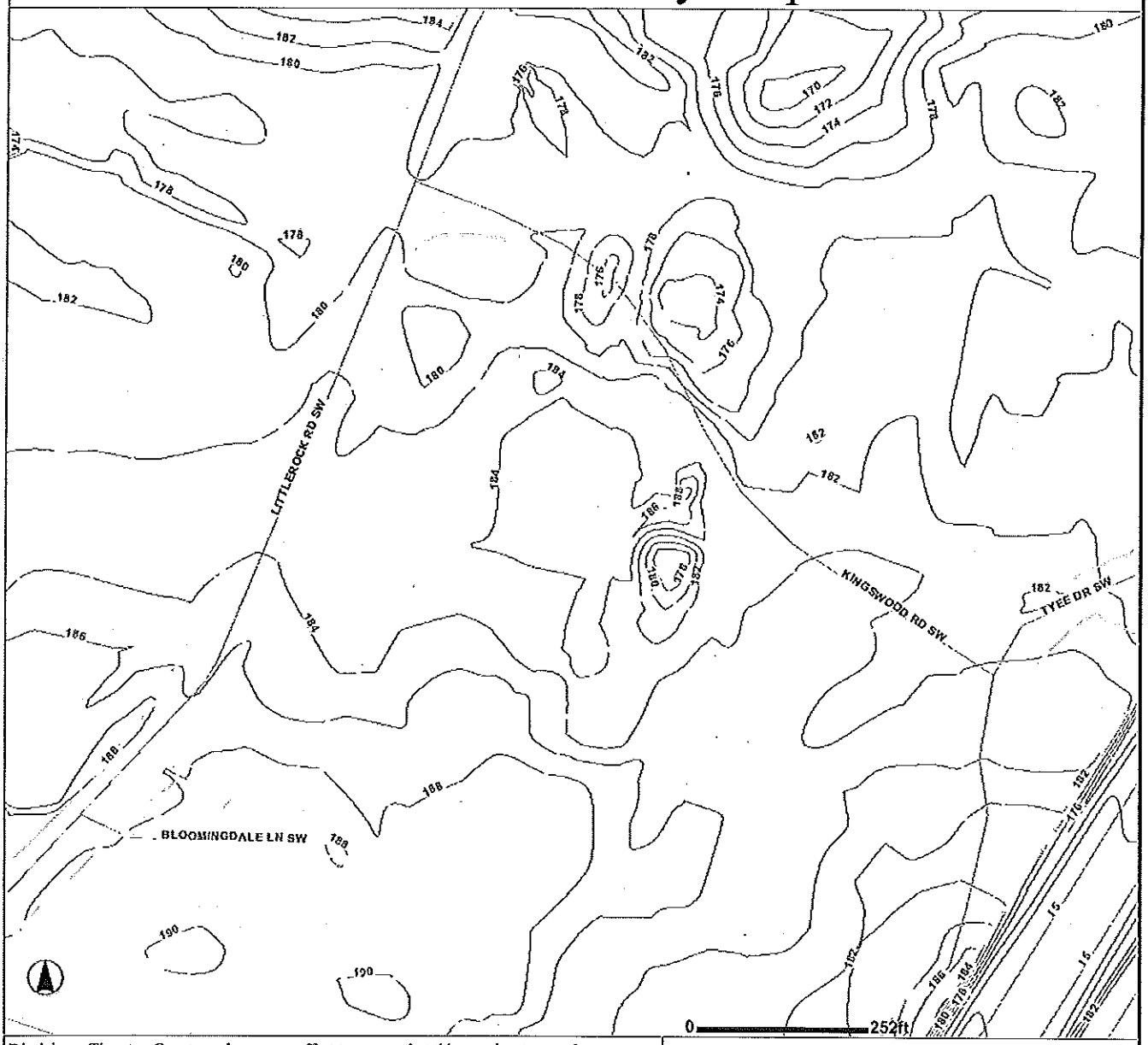



**Figure 1**
**Correlation of On-Site Groundwater Elevations to County Control Wells**

# Thurston County Map




Disclaimer: Thurston County makes every effort to ensure that this map is a true and accurate representation of the work of County government. However, the County and all related personnel make no warranty, expressed or implied, regarding the accuracy, completeness or convenience of any information disclosed on this map. Nor does the County accept liability for any damage or injury caused by the use of this map.
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Under no circumstances, including, but not limited to, negligence, shall Thurston County be liable for any direct, indirect, incidental, special or consequential damages that result from the use of, or the inability to use, Thurston County materials.

Thurston GeoData Center
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929 Lakeridge Drive SW, Suite 216, 3rd Floor
Olympia, WA 98502-6031

## LEGEND

- Major Roads
- Roads
- Streams
- Contours
- Wetlands
- Wetland Buffers
- Flood Zones
- Water Bodies
- Zoning
- Cities
- Parcels

# Table 1
## Depth to Water Measurements
## Proposed Commercial Site
## East of Littlerock Road S.W.
## Tumwater, Washington

| Groundwater Monitoring Well | Well Elevation from Top of PVC Well Casing (Feet) | Dates Water Level Measured | Depth to Water from Below Top of PVC Well Casing (Feet) | Water Level Elevation (Feet) | Groundwater Flow Direction | Comments |
|---|---|---|---|---|---|---|
| MW-1 | 184.46 | 3/3/2005 | 20.3 | 164.16 | Northeast | First Water Level Measurement |
| | | 3/10/2005 | 20.3 | 164.16 | Northeast | Obtained During GPR Investigation |
| | | 4/8/2005 | 19.9 | 164.56 | Northeast | Second Water Level Measurement |
| | | 6/8/2005 | 19.7 | 164.76 | Northeast | Third Water Level Measurement |
| | | 8/15/2005 | 20.7 | 163.76 | North-Northeast | Fourth Water Level Measurement |
| | | 12/15/2005 | 21.2 | 163.26 | Northeast | Fifth Water Level Measurement |
| | | 1/19/2006 | 17.9 | 166.56 | Northeast | Sixth Water Level Measurement |
| | | 2/18/2006 | 15.7 | 168.76 | Northeast | Seventh Water Level Measurement |
| MW-2 | 185.30 | 3/3/2005 | 22.9 | 162.46 | Northeast | First Water Level Measurement |
| | | 3/10/2005 | 22.9 | 162.46 | Northeast | Obtained Druing GPR Investigation |
| | | 4/8/2005 | 22.5 | 162.80 | Northeast | Second Water Level Measurement |
| | | 6/8/2005 | 22.3 | 163.00 | Northeast | Third Water Level Measurement |
| | | 8/15/2005 | 23.4 | 161.90 | North-Northeast | Fourth Water Level Measurement |
| | | 12/15/2005 | 23.7 | 161.60 | Northeast | Fifth Water Level Measurement |
| | | 1/19/2006 | 20.3 | 165.00 | Northeast | Sixth Water Level Measurement |
| | | 2/18/2006 | 18.3 | 167.00 | Northeast | Seventh Water Level Measurement |
| MW-3 | 175.50 | 3/3/2005 | 14.0 | 161.50 | Northeast | First Water Level Measurement |
| | | 3/10/2005 | 14.0 | 161.50 | Northeast | Obtained Druing GPR Investigation |
| | | 4/8/2005 | 13.6 | 161.90 | Northeast | Second Water Level Measurement |
| | | 6/8/2005 | 13.5 | 162.00 | Northeast | Third Water Level Measurement |
| | | 8/15/2005 | 14.5 | 161.00 | North-Northeast | Fourth Water Level Measurement |
| | | 12/15/2005 | 14.8 | 160.70 | Northeast | Fifth Water Level Measurement |
| | | 1/19/2006 | 11.4 | 164.10 | Northeast | Sixth Water Level Measurement |
| | | 2/18/2006 | 9.5 | 166.00 | Northeast | Seventh Water Level Measurement |
| MW-4 | 184.38 | 3/3/2005 | 21.4 | 162.98 | Northeast | First Water Level Measurement |
| | | 3/10/2005 | 21.4 | 162.98 | Northeast | Obtained Druing GPR Investigation |
| | | 4/8/2005 | 21.1 | 163.28 | Northeast | Second Water Level Measurement |
| | | 6/8/2005 | 20.8 | 163.58 | Northeast | Third Water Level Measurement |
| | | 8/15/2005 | 21.8 | 162.58 | North-Northeast | Fourth Water Level Measurement |
| | | 12/15/2005 | 22.4 | 161.98 | Northeast | Fifth Water Level Measurement |
| | | 1/19/2006 | 19.0 | 165.38 | Northeast | Sixth Water Level Measurement |
| | | 2/18/2006 | 16.7 | 167.68 | Northeast | Seventh Water Level Measurement |
| MW-5 | 181.54 | 3/3/2005 | 20.8 | 160.74 | Northeast | First Water Level Measurement |
| | | 3/10/2005 | 20.8 | 160.74 | Northeast | Obtained Druing GPR Investigation |
| | | 4/8/2004 | 20.4 | 161.14 | Northeast | Second Water Level Measurement |
| | | 6/8/2005 | 20.1 | 161.44 | Northeast | Third Water Level Measurement |
| | | 8/15/2005 | 21.5 | 160.04 | North-Northeast | Fourth Water Level Measurement |
| | | 12/15/2005 | 21.6 | 159.94 | Northeast | Fifth Water Level Measurement |
| | | 1/19/2006 | 18.6 | 162.94 | Northeast | Sixth Water Level Mearuement |
| | | 2/18/2006 | 16.3 | 165.24 | Northeast | Seventh Water Level Measurement |

Note: Depth to water measurements were obtained after the monitoring wells were developed on February 28, 2005.


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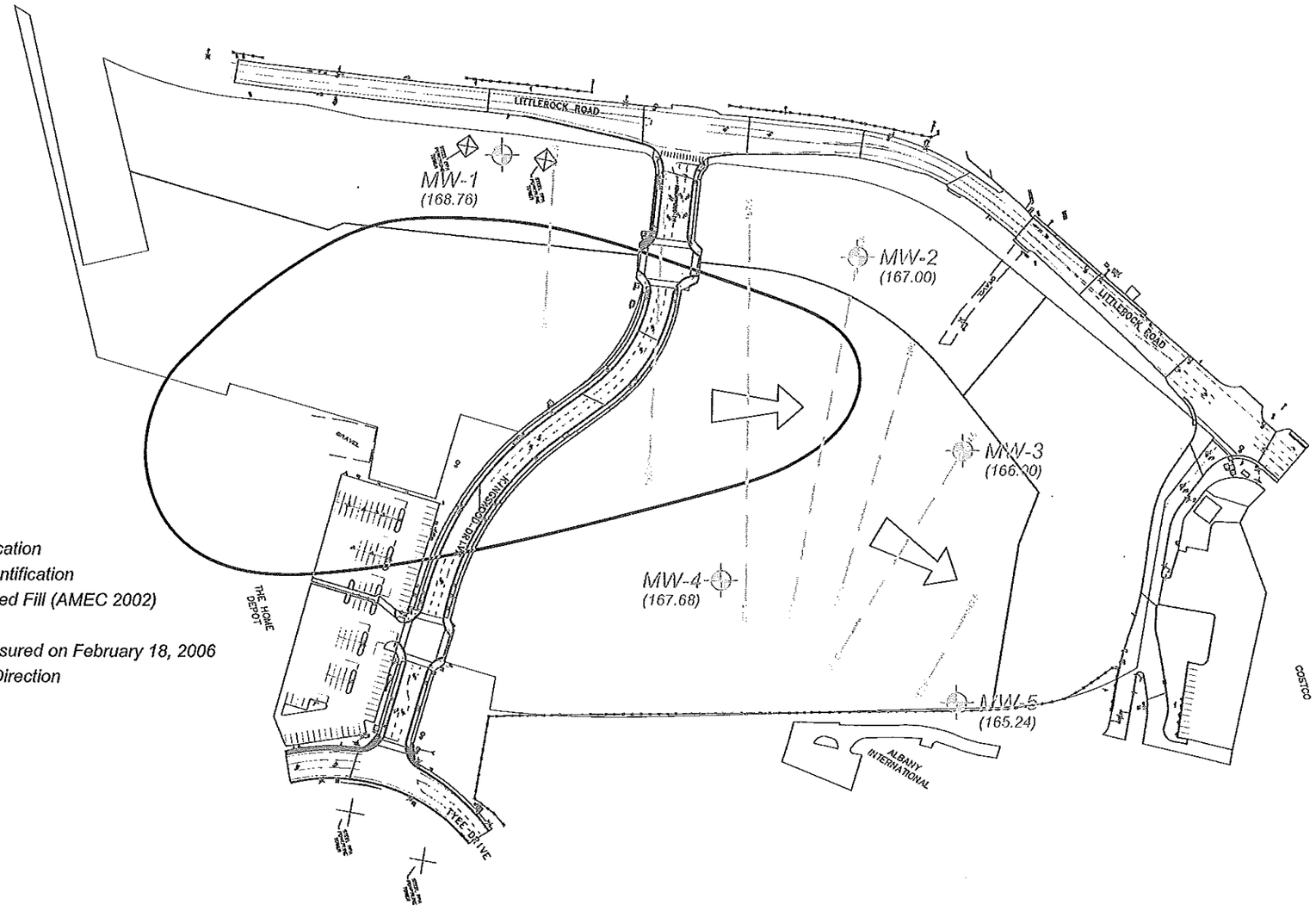
# February 18, 2006




## Legend

- Groundwater Monitoring Well Location
- MW-1 Groundwater Monitoring Well Identification
- Approximate Limits of Uncontrolled Fill (AMEC 2002)
- Water Level Contour (Ft.)
- (168.76) Groundwater Elevation (Ft.) measured on February 18, 2006
- Generalized Groundwater Flow Direction

N

0 200 400

Scale1" = 200'

Source: PacLand (March 2005)

KLEINFELDER

Proposed Commercial Site
East of Littlerock Road S.W.
Tumwater, Washington

Project: 50431 February 2006

Well Locations with Groundwater Elevations

FIGURE 1

## ATTACHMENT D

## REPORT LIMITATIONS AND GUIDELINES FOR USE

# ATTACHMENT D

## REPORT LIMITATIONS AND GUIDELINES FOR USE[1]

This attachment provides information to help you manage your risks with respect to the use of this report.

### GEOTECHNICAL SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES, PERSONS AND PROJECTS

This report has been prepared for the exclusive use of our client and their authorized agents. This report may be made available to regulatory agencies for review. This report is not intended for use by others, and the information contained herein is not applicable to other sites.

Insight Geologic Inc. structures our services to meet the specific needs of our clients. For example, a geotechnical or geologic study conducted for a civil engineer or architect may not fulfill the needs of a construction contractor or even another civil engineer or architect that are involved in the same project. Because each geotechnical or geologic study is unique, each geotechnical engineering or geologic report is unique, prepared solely for the specific client and project site. Our report is prepared for the exclusive use of our Client. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and generally accepted geotechnical practices in this area at the time this report was prepared. This report should not be applied for any purpose or project except the one originally contemplated.

### A GEOTECHNICAL ENGINEERING OR GEOLOGIC REPORT IS BASED ON A UNIQUE SET OF PROJECT-SPECIFIC FACTORS

Insight Geologic, Inc. considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless Insight Geologic specifically indicates otherwise, do not rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

For example, changes that can affect the applicability of this report include those that affect:

[1] Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org .

- the function of the proposed structure;
- elevation, configuration, location, orientation or weight of the proposed structure;
- composition of the design team; or
- project ownership.

If important changes are made after the date of this report, Insight Geologic should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

## SUBSURFACE CONDITIONS CAN CHANGE

This geotechnical or geologic report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, or by natural events such as floods, earthquakes, slope instability or ground water fluctuations. Always contact Insight Geologic before applying a report to determine if it remains applicable.

## MOST GEOTECHNICAL AND GEOLOGIC FINDINGS ARE PROFESSIONAL OPINIONS

Our interpretations of subsurface conditions are based on field observations from widely spaced sampling locations at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Insight Geologic reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ, sometimes significantly, from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

## GEOTECHNICAL ENGINEERING REPORT RECOMMENDATIONS ARE NOT FINAL

Do not over-rely on the preliminary construction recommendations included in this report. These recommendations are not final, because they were developed principally from Insight Geologic's professional judgment and opinion. Insight Geologic's recommendations can be finalized only by observing actual subsurface conditions revealed during construction. We recommend that Insight Geologic be retained to perform construction monitoring. Alternatively, if Insight Geologic is not retained for construction observation, a full and complete record of construction activity including compaction measurements by a qualified individual should be retained by the client.

Sufficient monitoring, testing and consultation by Insight Geologic or other qualified individual should be provided during construction to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide

recommendations for design changes should the conditions revealed during the work differ from those anticipated, and to evaluate whether or not earthwork activities are completed in accordance with our recommendations. Retaining Insight Geologic for construction observation for this project is the most effective method of managing the risks associated with unanticipated conditions.

## A GEOTECHNICAL ENGINEERING OR GEOLOGIC REPORT COULD BE SUBJECT TO MISINTERPRETATION

Misinterpretation of this report by other design team members can result in costly problems. You could lower that risk by having Insight Geologic confer with appropriate members of the design team after submitting the report. Also retain Insight Geologic to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering or geologic report. Reduce that risk by having Insight Geologic participate in pre-bid and pre-construction conferences, and by providing construction observation.

## DO NOT REDRAW THE EXPLORATION LOGS

Geotechnical engineers and geologists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering or geologic report should never be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, but recognize that separating logs from the report can elevate risk.

## GIVE CONTRACTORS A COMPLETE REPORT AND GUIDANCE

Some owners and design professionals believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering or geologic report, but preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with Insight Geologic and/or to conduct additional study to obtain the specific types of information they need or prefer. A pre-bid conference can also be valuable. Be sure contractors have sufficient time to perform additional study. Only then might an owner be in a position to give contractors the best information available, while requiring them to at least share the financial responsibilities stemming from unanticipated conditions. Further, a contingency for unanticipated conditions should be included in your project budget and schedule.

## CONTRACTORS ARE RESPONSIBLE FOR SITE SAFETY ON THEIR OWN CONSTRUCTION PROJECTS

Our geotechnical recommendations are not intended to direct the contractor's procedures, methods, schedule or management of the work site. The contractor is solely responsible for job site safety and for managing construction operations to minimize risks to on-site personnel and to adjacent properties.

## READ THESE PROVISIONS CLOSELY

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering or geology) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. Insight Geologic includes these explanatory "limitations" provisions in our reports to help reduce such risks. Please confer with Insight Geologic if you are unclear how these "Report Limitations and Guidelines for Use" apply to your project or site.

## GEOTECHNICAL, GEOLOGIC AND ENVIRONMENTAL REPORTS SHOULD NOT BE INTERCHANGED

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

INSIGHT GEOLOGIC, INC.

1015 East 4th Avenue
Olympia, Washington 98506
Telephone: (360) 754-2128
Fax: (360) 754-9299

# MEMORANDUM

**TO**: Torben Nelson

**FROM**: William Halbert, L.E.G., L.Hg.

**DATE**: January 4, 2022

**PROJECT**: Kingswood Property, Tumwater, Washington

**SUBJECT: Fill Evaluation**

Insight Geologic conducted an evaluation of deleterious material within the fill area of the Kingswood property located southeast of the intersection between Littlerock Road SW and Kingswood Drive SW in Tumwater, Washington. Based on our previous work on the site, it appears that the northern portion of the property was mined for topsoil. The excavation from the mining operation was subsequently backfilled with imported material of varying quality. Our subsurface investigations at the site encountered woody debris as well as metal and concrete. Our concern is that the woody debris which we encountered is of sufficient size that it would cause subsidence of overlying structures as it decays over time.

The purpose of our evaluation was to locate woody debris in the fill section using ground penetrating radar (GPR). The GPR has the ability to penetrate the 10 foot thick fill section using multiple frequency antennae and identify "targets" which were then subsequently excavated using a track-mounted backhoe.

We subcontracted Mt. View Locating Services, LLC to provide the GPR unit and operator. The fill area was scanned by traversing the site with the GPR in swaths about 5 feet apart. Areas on the site having large soil stockpiles were not scanned. Subsurface targets identified by the operator were located using pin flags and subsequently excavated using the backhoe. Due to time and budget constraints, not all targets were able to be excavated and the 20-30 pin flag locators for those targets remain on site.

The subsurface targets identified by the GPR were generally within 5 feet of ground surface and consisted of large woody debris such as logs and stumps, metal debris including corrugated piping, and concrete debris. The excavated targets were left at the surface for removal and disposal, and the excavations were backfilled using the excavated soil. Photographs of typical debris found during our evaluation are attached.

Based on our evaluation, it appears that the unsuitable materials within the fill can be identified using GPR and excavated and removed using a backhoe. We recommend that all remaining identified targets be excavated. Once the deleterious materials have been removed, the area should be re-scanned using GPR to make sure no previously un-identified targets remain. Areas beneath soil stockpiles located onsite should also be scanned once the stockpiles have been removed.

The fill soil consists of silt, sand and gravel and should be adequate for use as structural fill beneath the parking lot of the proposed development. We recommend that the soil be excavated to a depth of 36 inches, checked for deleterious materials and clasts larger than about 3 inches, then replaced and properly compacted prior to construction of the parking lot.

# ATTACHMENT 4:

## MAINTENANCE AND SOUCE CONTROL MANUAL

TO BE INCLUDED AS PART OF THE CONSTRUCTION DOCUMENT SUBMITTAL

# ATTACHMENT 5:

## ESTABLISHMENT OF MAINTENANCE COVENANT

TO BE INCLUDED AS PART OF THE CONSTRUCTION DOCUMENT SUBMITTAL

Exhibit 17

INSIGHT GEOLOGIC, INC.

# *Geotechnical & Stormwater Evaluation*

## *Proposed Retail Development*
## *1401 & 1551 Kingswood Drive SW*

***Prepared For:***

*Kingswood Capital, Inc.*

INSIGHT GEOLOGIC, INC.

April 19, 2011

Pacland
606 Columbia Street NW, Suite 106
Olympia, WA 98501

Attention: Nick Taylor

Report
Geotechnical and Stormwater Evaluation
Proposed Retail Development
Kingswood Drive
Tumwater, Washington
File No. 519-001-01

## INTRODUCTION

Insight Geologic, Inc. is pleased to provide this report of our evaluation of site soil conditions as they relate to geotechnical properties and infiltration and disposal of stormwater from the retail developments to be located at the properties currently identified as 1401 and 1551 Kingswood Drive SW in Tumwater, Washington.

The Kingswood Drive properties consist of two parcels comprising approximately 9 acres. We understand that the proposed development project will include several single-story commercial buildings, paved parking and driveway areas and appurtenant stormwater facilities. No excess loads for the buildings are anticipated. We understand that stormwater from the proposed development is to be infiltrated to the subsurface through an infiltration facility located on the northeastern portion of the property.

Our proposal was requested by Pacland in their Request for Proposal dated February 4, 2011 and authorized by Pacland on March 24, 2011.

## SCOPE OF SERVICES

The purpose of our services was to evaluate subsurface soil conditions as they relate to foundation and pavement design as well as the infiltration and disposal of stormwater from the proposed development. The specific tasks performed are outlined below.

1. Conduct a Phase I Environmental Site Assessment for the property in general accordance with ASTM methodology. This report is being provided under separate cover.
2. Conduct a site reconnaissance to evaluate and mark proposed test pit and boring locations at the site.

1015 East 4th Avenue, Olympia, Washington 98506
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3. Provide for clearing needed to access the property and test pit locations.
4. Perform utility location at the site to evaluate the presence of subsurface obstructions.
5. Excavate as many as 19 exploratory test pits at the site using a small, track-mounted excavator. The test pits extended to a depth of about 10 feet below ground surface.
6. Drill 3 exploratory borings in the area of the proposed stormwater infiltration pond and underground gallery. The borings were drilled to a depth of 24 feet or five times the depth of the proposed structure as required under the City of Tumwater 2009 Drainage Manual.
7. Collect representative soil samples from the borings for evaluation of grain size distribution.
8. Maintain logs of the soil encountered in the test pits and borings in general accordance with the Unified Soil Classification System.
9. Conduct appropriate laboratory testing on soil samples collected from the test pits and borings to evaluate design infiltration rates and geotechnical properties including bearing capacity and suitability of site soils for use as fill.
10. Prepare a report containing the results of our assessment and including recommendations for site preparation, evaluation of site soils for use as fill, recommended stripping depths, building slab and foundation recommendations, building drainage, cut and fill slope recommendations, and light- and heavy-duty pavement preparation and design as well as design stormwater infiltration rates and identified seasonal high groundwater elevations.

## SITE CONDITIONS

### GENERAL

The site is located east of Littlerock Road SW and south of Kingswood Drive within the City of Tumwater. The site is shown relative to surrounding physical features in Figure 1. The site is bordered to the east by a Home Depot store and to the north by a WalMart store currently under construction. Properties to the west and south are occupied by single and multi-family housing.

A Bonneville Power Administration (BPA) high-voltage transmission line traverses the northern third of the property within an easement area. Four metal towers are located on the property.

A groundwater monitoring well (MW-1) is located adjacent to Littlerock Road between the western-most power line towers. This groundwater monitoring well appears to have been installed during a previous geotechnical investigation centered on the Walmart Property to the north. Monitoring well MW-1 was used to calculate historic high groundwater elevations for the property and will be discussed later.

Historically a number of residences were located on the western parcel of property fronting Littlerock Road. Additionally, the central portion of the properties was used as a borrow source for topsoil to depth of about 12 feet. The excavation remaining after the borrow operations was filled with a mixture of debris including bricks, concrete, metal, composite shingles and wood waste. This uncontrolled fill material was then covered with soil and moderately compacted. A discussion of this uncontrolled fill is included later in this report.

Several piles of fill material are also located on the property. The origin of the fill is unknown. The soils in the piles appear to be somewhat high in the percentage of fines, but appear to be suitable for use as fill, or in landscape areas at the site.

The property is roughly rectangular in shape and comprises approximately 9 acres. The site is generally flat with an elevation ranging between approximately 188 and 180 feet above mean sea level (MSL) measured to the NGVD 29 datum. The property is currently undeveloped.

## SURFICIAL SOIL CONDITIONS

Surficial soil conditions were evaluated by reviewing the U.S. Department of Agriculture Soil Survey of Thurston County, Washington dated 1979. According to the soil survey report, the site is underlain by Nisqually loamy fine sand. This soil exhibits rapid permeability, slow water runoff and a slight hazard of erosion.

# SUBSURFACE EXPLORATIONS

## GENERAL

Subsurface conditions at the site were explored by advancing 3 borings and 19 test pits at the approximate locations shown in Figure 2 on March 28 and 29 2011. The test pits were excavated using a small, track-mounted backhoe. The test pits were completed to depths ranging between 5 and 11 feet below ground surface. Borings were conducted using a truck mounted probe rig to obtain subsurface samples continuously to the total depth of the borehole.

A geologist from Insight Geologic, monitored the excavation of the test pits and borings and maintained logs of the soils encountered. The soils were visually classified in general accordance with the system described in ASTM D2487-06. Logs of the exploratory test pits and borings are contained in Attachment A of this report.

The exploratory test pits were backfilled using the soil removed from the test pit. Backfilled soil was tamped in place using the bucket of the backhoe. The backfilled soil was not compacted as structural fill and should be expected to settle over time. If structures are intended to be placed over the test pit areas, the soil should be over-excavated and compacted.

## SUBSURFACE CONDITIONS

Native soil exposed in the test pits consisted of about 1 foot of dark brown silty fine to medium sand (SM) overlying fine to medium sand (SP) with trace amounts of silt. We encountered fill soil in the middle and north central portions of the site that consisted of between 2 and 7 feet of light brown fine to coarse sand with silt and cobbles overlying waste materials consisting of brick, concrete, metal, composite shingles, wood-waste and other debris that is unsuitable for construction at the site. Our estimate of the volume of unsuitable fill material at the site is approximately 80,000 cubic yards based on a nominal thickness of 14 feet, although it is likely that much of this material may be screened and reused as structural fill. Unsuitable fill materials such as trash and wood debris should be excavated and removed from the site. Overlying material and some material within the fill such as brick and concrete debris may be reused as structural fill provided they meet the requirements of structural fill as detailed later in this report. The general area of unsuitable and uncontrolled fill found at the site is shown in Figure 2.

Groundwater was encountered in the borings at a depth of about 15 feet below existing grade. Given the time of year the borings were drilled, this depth may be considered as the seasonal high groundwater level for the purposes of stormwater system design.

## LABORATORY TESTING

Four soil samples from the borings in the area of the proposed stormwater infiltration structure and two soil samples from test pits TP-6 and TP-9 were submitted for gradation analysis in general accordance with ASTM methodology. The results of the gradation analyses are contained in Attachment B.

The gradation analyses indicated that the soils exposed in boring B-2 at depths of between 0 and 10 feet consisted of poorly graded sand with silt and gravel (SP-SM) and silty sand with gravel (SM). This soil appears to be imported fill material and not soil native to the site. The sample from boring B-2 representative of the 10 to 25 foot interval consisted of poorly graded sand (SP). The sample from boring B-3 collected from a depth between 7 and 15 feet also consisted of poorly graded sand (SP). These materials appear to be representative of native soils on the site.

The samples from test pit TP-6 and TP-9 were collected from stockpiled soils on the site. The sample from TP-6 consists of silt (ML) and the sample from TP-9 was classified as silty sand (SM).

Four soil samples collected from native as well as stockpiled soils were tested for moisture-density relationships using the Modified Proctor Method (ASTM D1557). Testing indicates that the maximum dry density of native soils is 114 pounds per cubic foot

at a moisture content of 11 percent. Laboratory results for Proctor tests are included in Attachment B.

## CONCLUSIONS AND RECOMMENDATIONS

### GENERAL

The test pits and borings conducted for our study revealed the presence of native silty sand and poorly graded sand to the maximum depth explored. These soils appear to be suitable for the proposed commercial development planned for the site.

Our explorations also revealed the presence of a large area of uncontrolled, undocumented fill that will be unsuitable for bearing structures or parking areas on. We encountered fill soil in the middle and north central portions of the site that consisted of between 2 and 7 feet of light brown fine to coarse sand with silt and cobbles overlying waste materials consisting of brick, concrete, wood-waste and other debris that is unsuitable for construction at the site. Our estimate of the volume of unsuitable fill material at the site is approximately 80,000 cubic yards based on a nominal thickness of 14feet.

Unsuitable fill materials such as trash and wood debris should be excavated and removed from the site. Overlying material and some material within the fill such as brick and concrete debris may be reused as structural fill provided they meet the requirements of structural fill as detailed later in this report. The general area of unsuitable and uncontrolled fill found at the site is shown in Figure 2.

### EARTHWORK

#### General

We expect that site grading may be accomplished using conventional earthmoving equipment. The soils in the upper 2 feet of the site contain a moderate amount of fines and organics and may be moisture sensitive during wet weather. These materials may be difficult to operate on or compact during wet weather. Operation of heavy equipment at the site under wet conditions or when the soils are above optimum moisture content can be expected to result in considerable disturbance to the exposed subgrade soils. We recommend that earthwork be undertaken during periods of dry weather to reduce grading costs.

#### Clearing and Site Preparation

All areas to be graded should be cleared of surface and subsurface deleterious materials including trees, sod, brush, debris and other unsuitable or organic materials. We expect that stripping depths of between 6 and 12 inches will be required at the site to remove the surficial soils containing substantial amounts of organic material. Deeper stripping depths

will be required in areas of heavy vegetation or, if the clearing operations cause excessive disturbance to the surficial soils, or if additional unsuitable soils are exposed during stripping operations.

We recommend that any trees be removed by overturning so that a majority of the tree roots are removed. Excavations from tree removal operations should be backfilled with structural fill compacted to the densities indicated in the "Structural Fill" section of this report.

The stripped material may be stockpiled and used later in nonstructural applications (e.g. landscape areas). Materials that cannot be used for landscaping should be removed from the project site and wasted.

### Removal of Uncontrolled Fill

Significant quantities of uncontrolled and unsuitable fill were encountered in test pits and borings conducted in the north-central portion of the site extending to depths of 14 feet. The unsuitable fill materials consisted of brick, concrete, wood-waste, construction debris and trash. Uncontrolled fill, particularly fill containing significant quantities of wood and wood-waste such as logs and stumps, can be expected to settle over time as the wood decays. Long-term settlement can result in pavement distress or failure, utility disruption or deflection of floor slabs.

We recommend that the unsuitable fill material be removed and replaced with appropriate structural fill. Properly screened fill soil may be used as structural fill as long as it meets the specifications in the "Structural Fill" section of this report. All organic materials and refuse removed during the remediation process should be hauled from the site and disposed of at an approved facility. Masonry brick and concrete materials encountered during removal may be reused as structural fill provided they are reduced to fragments 3 inches or smaller in diameter. Oversize material that is screened out during the process should be hauled to an approved landfill and disposed of.

It should be noted that during a previous geotechnical investigation focused on the property immediately north of the subject site, soil samples collected and analyzed for the presence of heavy metals indicated the presence of chromium and lead at concentrations exceeding the Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) Method A cleanup levels for unrestricted land use (WAC 173-340-740). Therefore, it is possible that other soils imported to the site for use as fill may contain concentrations of hazardous or potentially hazardous materials. We recommend that additional sampling and appropriate laboratory testing be undertaken to evaluate the potential of hazardous materials on the property prior to the commencement of grading efforts.

### Subgrade Preparation

We recommend that a representative of Insight Geologic be present to observe and evaluate the exposed subgrade conditions after stripping is completed and prior to placement of any structural fill. The exposed subgrade soil should be evaluated by proof rolling with heavy rubber tired equipment during dry weather or by probing with a ½ inch diameter steel rod during wet weather.

Any soft, loose or otherwise unsuitable areas delineated during proof rolling or probing should be recompacted, if practical, or over-excavated and replaced by structural fill.

After completing the proof rolling, the subgrade areas should be recompacted to a firm and unyielding condition. We recommend that Insight Geologic or a qualified testing firm evaluate the compaction effort and any compacted soils. A full and complete record of all observations and compaction measurements should be retained by the client. We recommend that all subgrade areas beneath roadways be compacted to at least 95 percent of the soil maximum dry density (MDD) in accordance with ASTM D1557 test procedure.

## STRUCTURAL FILL

### General

All fill that is placed at the site beneath structures and/or pavements should be placed as structural fill. We recommend that structural fill be free of debris, significant organic materials and rock fragments larger than about 6 inches. The workability of materials for use as structural fill depends on the gradation and moisture content of the soil. As the amount of fines increases, soil becomes increasingly more sensitive to small changes in moisture content. Compaction of native soils in accordance with the recommendations provided in this report then becomes difficult or impossible to achieve if the soil is above the optimum moisture content.

All fill and backfill beneath buildings should be compacted to at least 95 percent of soil MDD, based on ASTM D1557 (modified Proctor) testing procedure. Pavement subgrade soils and utility trench backfill should be compacted to at least 90 percent of the MDD up to within 2 feet of design grades; the upper 2 feet should be compacted to at least 95 percent of the MDD.

The lift thickness used during placement and compaction of structural fill will depend on the moisture and gradation characteristics of the soil and the type of equipment being used. If necessary, the material should be moisture conditioned to near-optimum moisture content prior to compaction. During fill and backfill placement, sufficient testing of in-place density should be performed to verify that adequate compaction is being achieved. The required frequency of density testing should be determined by the on-site testing professional. We recommend a lift thickness of no greater than 6 inches be placed and compacted for each compaction run.

### Suitability of On-Site Materials as Fill

During dry weather construction, any non-organic (generally less than 30 percent organics) onsite soil may be considered for use as structural fill, provided it meets the criteria described in the Structural Fill section of this report and can be compacted as recommended. If the native material is over optimum moisture content when excavated, it will be necessary to aerate or dry the soil prior to placement as structural fill.

The site soils which contain moderate amounts of silt may be moisture sensitive. These materials may not be suitable for use as fill under wet weather conditions.

### Cut Slopes

Temporary cut slopes are anticipated for construction of underground utilities. All temporary cut slopes and shoring must comply with the provisions of Washington Administrative Code (WAC) Title 296, Part N, "Excavation, Trenching and Shoring." The contractor performing the work has the primary responsibility for protection of workers and adjacent improvements, deciding whether to use shoring, and for establishing the safe inclination for open-cut slopes.

Temporary unsupported cut slopes more than 4 feet high may be inclined to 1.5H:1V maximum steepness in the native soils. Cut slopes in the unconsolidated fill should be 2H:1V or flatter. This guideline assumes that all surface loads are kept at a minimum distance of at least one half the depth of the cut away from the top of the slope and that significant seepage is not present in the slope face. Flatter slopes will be necessary where significant seepage occurs. Some sloughing and raveling of the cut slopes should be expected over time. Temporary covering with heavy plastic sheeting should be used to protect these slopes during periods of wet weather.

Cut slopes for long term structures such as stormwater ponds should be inclined to 2H:1V or flatter for long term stability.

## FOUNDATION SUPPORT

The soils at the site are generally in a loose condition. Spread footings are appropriate for the soils encountered if anticipated footing loads do not exceed 2,000 pounds per square foot (psf) for combined dead and long-term live loads, exclusive of the weight of the footing and overlying backfill. This value may be increased by one third for transient loads such as those induced by seismic events or wind loadings. If higher loads are anticipated, deep foundations or removal of unsuitable soil and replacement with structural fill should be considered.

We estimate that settlement of footings designed as recommended will be less than 1 inch for the anticipated load conditions, with differential settlements of less than 1 inch

between comparably loaded footings. Most of the settlements should essentially occur as loads are being applied. However, disturbance of the foundation subgrade during construction or the presence of loose or soft soils below the foundation could result in larger settlements than predicted.

### Footing Depths and Widths

For frost and erosion protection, the base of all exterior footings should bear at least 24 inches below adjacent outside grades. To limit post-construction settlements, continuous (wall) and isolated (column) footings should be at least 18 and 24 inches wide, respectively.

### Bearing Subgrades

At least 12 inches of structural fill, compacted to a density of at least 95 percent (based on ASTM:D-1557), should underlie spread footings on this site that bear on the silty sand (SM) and poorly graded sand (SP) soils.

### Lateral Overexcavation

Because foundation stresses are transferred outward as well as downward into the bearing soils, all structural fill placed under footings, up to 3 feet in thickness, should extend horizontally outward from the edge of each footing a distance equal to the depth of placed fill. Fill should extend a minimum of 12 inches below the footing base and should also extend a minimum of 12 inches outward from the footing edges.

### Subgrade Observation

All footing subgrades should consist of either firm, unyielding, native soils or suitable structural fill materials. Footings should never be cast atop loose, soft, or frozen soil, slough, debris, existing uncontrolled fill, or surfaces covered by standing water. We recommend that the condition of all subgrades be observed by a representative of Insight Geologic or other qualified testing firm before any concrete is placed.

### Bearing Pressures

In our opinion, for static loading, footings that bear on properly prepared, structural fill subgrades can be designed for a maximum allowable soil bearing pressures of 2,000 psf.

### Footing Settlement

We estimate that total post-construction settlements of properly designed footings bearing on properly prepared subgrades will not exceed 1 inch. Differential settlements for

comparably loaded elements may approach one-half of this value over horizontal distances of approximately 50 feet.

### Footing and Stemwall Backfill

To provide erosion protection and lateral load resistance, we recommend that all footing excavations be backfilled on both sides of the footings, retaining walls, and stemwalls after the concrete has cured. Either imported structural fill or non-organic (generally less than 30 percent organics) on-site soils can be used for this purpose, contingent on a suitable moisture content at the time of placement. Regardless of soil type, all footing backfill soil should be compacted to a density of at least 90 percent (based on ASTM:D-1557).

## BUILDING FLOOR SLABS

The maximum allowable soil bearing pressure for site soils is 2,000 psf. We recommend that preparations for the floor slabs for the proposed commercial structures adhere to the subgrade preparation and structural fill recommendations presented in this report. The slab base section should consist of a minimum 6-inch thick layer of crushed base course per WSDOT Standard Specification Section 9-03.9(3). The slab base material should be compacted to a minimum of 95 percent of their modified proctor maximum dry density per ASTM D1557.

To reduce the transmission of water vapor through the floor slab, we recommend the use of suitable vapor retarders such as plastic sheeting placed between the slab base and the floor slab and/or specially formulated concrete mixtures. At a minimum, a sheet of 6-mil polyethylene sheeting should be placed on top of the prepared base course and 2 inches of builders sand be placed atop the plastic sheeting and compacted to 90 percent MDD.

The identification of alternatives to prevent vapor transmission is outside of our expertise. A qualified architect or building envelope consultant can make recommendations for reducing vapor transmission through the slab based on the building use and flooring specifications. Our investigation addresses present subgrade conditions for slab support only and does not evaluate future potential conditions unless specifically stated otherwise.

## PAVEMENT

All pavement designs were developed assuming a 20-year design life and a usage factor of 7-days-a-week.

Our pavement design recommendations were developed using the AASHTO method for flexible and rigid pavement designs. Our pavement sections are based on the following assumptions and design information:

- An assumed subgrade CBR of 20

- Standard-Duty Paving Equivalent Single Axle Loading (ESAL) 54,000
- Heavy-Duty Paving ESAL 270,800
- Pavement sections should be placed on a subgrade that has been proof-rolled, determined by a qualified person to be firm and unyielding and is compacted to at least 95 percent of the modified proctor MDD in accordance with ASTM D1557.
- All asphalt edges shall be supported by adjacent structure, curb, or compacted gravel shoulder
- Paved surfaces should be adequately sloped to direct surface water runoff away from the building.

The standard-duty pavement section shall consist of subgrade material compacted to 95 percent MDD overlain by 8 inches of gravel base course conforming to section 9-03.10 of the WSDOT Standard Specifications and compacted to 95 percent MDD. A minimum of 2 inches of crushed surfacing Top Course conforming to Section 9-03.9(3) of the WSDOT Standard Specifications shall be placed atop the prepared base course and compacted to a minimum density of 95 percent MDD. The wearing course shall consist of a minimum of 3 inches of Commercial Hot Mix Asphalt sloped to provide adequate drainage.

Heavy-duty pavement areas shall consist of subgrade material compacted to 95 percent MDD overlain by 8 inches of gravel base course conforming to section 9-03.10 of the WSDOT Standard Specifications and compacted to 95 percent MDD. A minimum of 2 inches of crushed surfacing Top Course conforming to Section 9-03.9(3) of the WSDOT Standard Specifications shall be placed atop the prepared base course and compacted to a minimum density of 95 percent MDD. The wearing course shall consist of a minimum of 5 inches of Commercial Hot Mix Asphalt sloped to provide adequate drainage.

## SEISMIC AND GEOLOGIC HAZARDS

### IBC Seismic Design Criteria

The subject property is located in an area designated as Site Class D is appropriate for design based on the 2006 IBC. Based on our experience in this area, a 100-foot boring was not required in order to provide a recommended Site Classification.

### Seismicity and Faulting

The Puget Lowland is located in an area of frequent earthquakes of moderate to strong intensity. It lies over an active subduction zone, where the oceanic Juan de Fuca plate is being subducted beneath the North American plate. Areas adjacent to subduction zones are capable of generating very high magnitude earthquakes. Three earthquakes within the Puget Sound area in the last 55 years have caused significant damage. The April 13, 1949 earthquake is the largest recorded earthquake in the region having a moment magnitude

(Mm) of 7.1. Other lesser, but still significant earthquakes in 1965 and 2001 were had magnitudes of 6.5 and 6.8, respectively.

Moment magnitude is only one measure of earthquake intensity. Even moderate earthquakes can produce structural damage on poorly consolidated soils.

No mapped active faults are located within 5 miles of the project site; therefore, we estimate the ground rupture hazard at the site to be low.

### Liquefaction

The probability of liquefaction occurring on the site during a design-level earthquake is low, based on the granular nature of the soils and on the depth to groundwater beneath the site.

### Other Geologic Hazards

No other potential geologic hazards such as landslides or subsidence were identified on, or near the subject site.

## DRAINAGE CONSIDERATIONS

The native soils on the site classify as Hydrologic Group A soils to a depth of 60 inches below existing grade. Foundation drains should be used where (1) crawl spaces or basements will be below a structure, (2) a slab is below the outside grade, or (3) the outside grade does not slope downward from a building. Drains should also be placed at the base of all earth-retaining walls. These drains should be surrounded by at least 6 inches of 1-inch-minus, washed rock and then wrapped in non-woven, geotextile filter fabric. At its highest point, a perforated pipe invert should be at least 6 inches below the bottom of a slab floor, and it should be sloped for drainage. All roof and surface water drains must be kept separate from the foundation drain system. Final site grading in areas adjacent to the buildings should slope away at least 2 percent for a distance of at least 10 feet, except where the area is paved.

## STORMWATER INFILTRATION

Stormwater runoff from the site is proposed to be infiltrated into a pond or subsurface infiltration structure located in the northeastern portion of the site. Soil samples collected from the exploratory borings in this area and subjected to gradation analysis indicate the presence of fill soils (SP-SM and SM) overlying native SP soils at about 7 feet in depth.

We utilized the “Simple Method” identified in Table A.2 of the City of Tumwater Drainage Design and Erosion Control Manual (2009) to develop the design (long-term) infiltration rate for the proposed infiltration facility. Based on our gradation analyses, the native soils have a $D_{10}$ of about 0.10 millimeters and a corresponding design infiltration rate of 2.0 inches per hour. This infiltration rate includes a safety factor of 2. We

recommend that any fill soils removed from this area as a part of grading efforts be replaced with suitably coarse material having a $D_{10}$ grain size that is 0.10 millimeters or greater.

Seasonal high groundwater can be expected to occur at a depth of about 15 feet below ground surface in this portion of the site based on groundwater observed in the borings. This seasonal high groundwater elevation provides a vertical separation of greater than three feet between the base of the proposed infiltration structure and seasonal high groundwater assuming an infiltration structure depth of 5 feet below existing grade in accordance with Tumwater's design guidelines. The seasonal high groundwater elevation should not be confused with the historic high groundwater elevation, which is discussed in detail below.

## HISTORIC HIGH GROUNDWATER ELEVATIONS

The proposed project sites lie within an area designated by the City of Tumwater as an area of high groundwater concern due to flooding in 1996 and 1999. Tumwater promulgated Ordinance No. O2004-003 "Site Development Standards for New Development in the Salmon Creek Basin and other High Groundwater Areas in 2004. These standards outline the steps necessary to evaluate the effect of stormwater infiltration on proposed development prior to beginning construction.

The first step in the evaluation is to estimate the depth to historical high groundwater beneath the site. Sites with historic high groundwater levels within 6 feet of the base of a proposed infiltration facility require further evaluation and modeling. We have reviewed the figure titled "Estimated Depth to Water, Winter 1999" contained in the report "Salmon Creek Drainage Basin Conceptual Hydrogeologic Model" dated June 2001, to evaluate the depth to high groundwater beneath the proposed project site. The estimated depth to the historic groundwater table beneath the site appears to be less than 6 feet below ground surface and therefore requires further evaluation to resolve the high groundwater issue.

A groundwater monitoring well located on the western portion of the property (MW-1) was installed by Kleinfelder and Associates in 2005 as a part of a study that included the WalMart property to the north of Kingswood Drive. As a part of the WalMart project, Pacific Groundwater Group (PGG) conducted an analysis of the groundwater data collected by Kleinfelder to establish the historic high groundwater elevation beneath the property.

While data from MW-1 was not used for the WalMart project, PGG performed the required regression analysis of the collected data and established a historic high groundwater elevation at the location of MW-1 of 173.2 feet (NGVD 29) or approximately 11 feet below ground surface. The regression analysis was performed by plotting groundwater elevation data for the City's reference well (LRS-O1A) against monitoring

data obtained from Kleinfelder for MW-1. A line of best fit was generated for each data set. The equation of the best-fit line and the R-squared value were also generated.

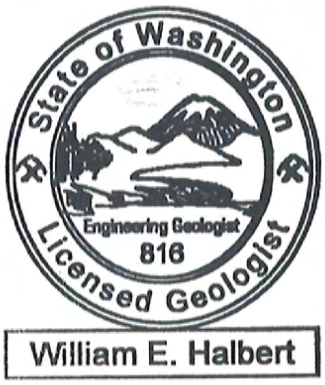
The historic high groundwater elevations for each monitoring well were calculated by using the known 1999 high groundwater elevation for the reference wells in the linear equations generated in the regression analyses. The depth to the calculated historic high groundwater table was obtained by subtracting the calculated groundwater elevation from the surveyed ground surface elevation at each monitoring well. PGG's Technical Memorandum dated March 5, 2010 prepared for the proposed WalMart store immediately north of the subject property and including data for the subject site is included in Attachment C to this report. The data derived by PGG and presented in their technical memorandum will be used to complete the necessary mounding analysis.

## LIMITATIONS

We have prepared this geological report for use by Pacland and their client, Kingswood Capital for the proposed commercial development to be located at 1401 and 1551 Kingswood Drive SW in Tumwater, Washington.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of geological engineering and in accordance with the City of Tumwater's Drainage Manual at the time this report was prepared. No warranty or other conditions express or implied, should be understood.

We appreciate the opportunity to assist you with this project. Please contact us if you have questions regarding the information presented in this report or if we can provide additional services.

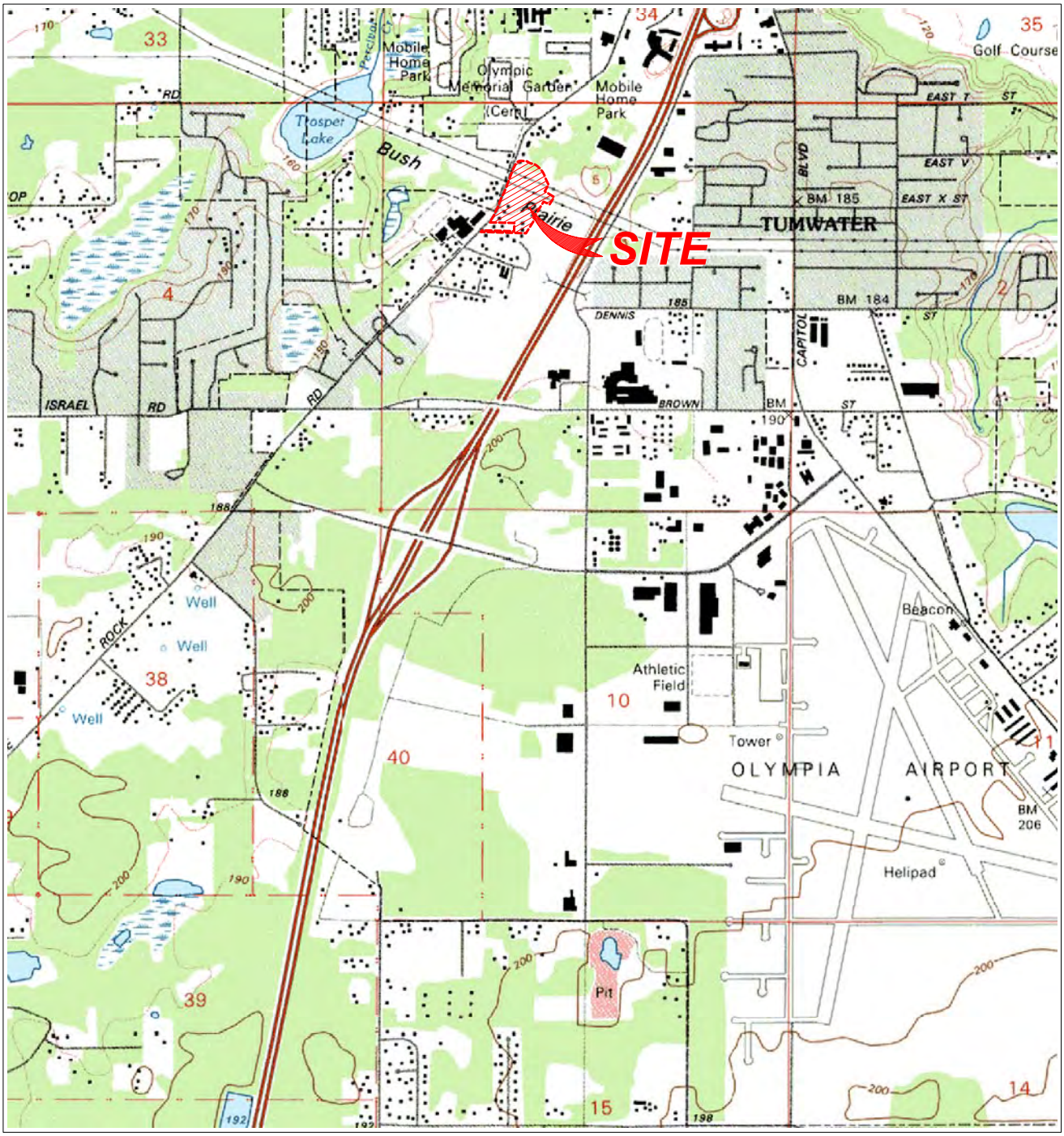



Very truly yours,
INSIGHT GEOLOGIC, INC.

William E. Halbert, L.G., L.E.G.
Principal

Attachments

# FIGURES




Source: Maptech, Inc. (C) 1997

*MAYTOWN, WASHINGTON*
*7.5 MINUTE QUADRANGLE*
*Year Created 1990*

SCALE: 1: 24000

## *KINGSWOOD CAPITAL*

TUMWATER, WASHINGTON

INSIGHT GEOLOGIC, INC.

# Figure 1
# Vicinity Map

FILE INFO: \\lg-s01\company\Insight\519-001-01 Kingswood Capital\Figures\Figure 1 - Vicinity Map.dwg PLOTTED: Apr 08, 2011 4:47pm BY:reneeb

Source: U.S. Geological Survey & PacLand (c) 2011

0 25 50 100
SCALE: 1" = 100'

***LEGEND:***

- **B-1** — BORING LOCATION
- **TP-1** — TEST PIT LOCATION
- **MW-1** — MONITORING WELL LOCATION
- FILL PILE BOUNDARY
- BURIED FILL BOUNDARY
- PROJECT BOUNDARY

***KINGSWOOD CAPITAL***

TUMWATER, WASHINGTON

INSIGHT GEOLOGIC, INC.

Figure 2
Site Plan

FILE INFO: \\fp-s01\company\Insight\1519-001-01 Kingswood Capital\Figures\Geo Rpt - Figure 2 - Site Plan.dwg PLOTTED: Aug 22, 2011 12:02pm BY:reneeb

# ATTACHMENT A

# EXPLORATION LOGS

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# B-1

DATE: **3/28/11**
TOTAL DEPTH:**20 Feet**

| DEPTH (FT) | SAMPLE NO. | SAMPLE INTERVAL | INCHES DRIVEN/ RECOVERED | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | 1 | | 48/26 | SM | | Dark brown fine to coarse sand with silt, occasional fine to medium gravel, brick and wood, loose, moist (Fill). | |
| 5 | 2 | | 48/18 | | | | |
| | 3 | | 48/13 | | | Grades to fine to medium sand with silt, occasional wood, loose, moist (Fill). | |
| 10 | 4 | | 48/35 | | | | |
| 15 | 5 | | 48/48 | SP | | Gray green fine to medium sand, medium dense, moist to wet. | Groundwater at 17 Feet |
| 20 | | | | | | | |
| 25 | | | | | | | |

Drilling Contractor: **NW Probe**
Drilling Equipment: **AMS Power Probe 9630**
Logged By: **Kevin V.**
Driller: **Jason R.**
Drilling Method: **Direct Push**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# B-2

DATE: **3/28/11**
TOTAL DEPTH: **24 Feet**

| DEPTH (FT) | SAMPLE NO. | SAMPLE INTERVAL | INCHES DRIVEN/ RECOVERED | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | 1 | | 48/36 | SP-SM | | Dark brown fine to coarse sand with silt, occasional fine gravel, loose, moist (Fill). | |
| 5 | 2 | | 48/12 | SM | | Dark brown fine to coarse silty sand with fine to medium gravel, loose, moist (Fill). | |
| 10 | 3 | | 48/30 | SP | | Light gray fine to medium sand, trace silt, medium dense, moist to wet. | |
| 15 | 4 | | 48/46 | | | | |
| | 5 | | 48/48 | | | | Groundwater at 17 Feet |
| 20 | 6 | | 48/48 | | | | |
| 25 | | | | | | | |

Drilling Contractor: **NW Probe**
Drilling Equipment: **AMS Power Probe 9630**
Logged By: **Kevin V.**
Driller: **Jason R.**
Drilling Method: **Direct Push**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# B-3

DATE: **3/28/11**
TOTAL DEPTH: **24 Feet**

| DEPTH (FT) | SAMPLE NO. | SAMPLE INTERVAL | INCHES DRIVEN/ RECOVERED | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | 1 | | 48/36 | SM | | Dark brown silty fine to coarse sand, occasional fine to medium gravel and wood, loose, moist (Fill). | |
| 5 | 2 | | 48/12 | | | | |
| | 3 | | 48/30 | SP | | Gray green fine to coarse sand with trace silt, occasional fine gravel, medium dense, moist to wet. | |
| 10 | 4 | | 48/46 | | | | |
| 15 | 5 | | 48/48 | | ▼ | Grades to fine to medium sand with trace silt, medium dense, wet. | Groundwater at 17 Feet |
| 20 | 6 | | 48/48 | | | | |
| 25 | | | | | | | |

Drilling Contractor: **NW Probe**
Driller: **Jason R.**
Drilling Equipment: **AMS Power Probe 9630**
Drilling Method: **Direct Push**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-1

DATE: **3/28/11**
TOTAL DEPTH: **10 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Dark brown silt with fine to medium sand, loose, moist. | |
| | SP | | Light brown fine to medium sand with silt, loose, moist. | |
| 5 | | | Grades to light gray fine to medium sand with trace silt, loose, moist. | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-2

DATE: **3/28/11**
TOTAL DEPTH: **10 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Light brown fine to coarse sand and silt, occasional cobbles, loose, moist (Fill). | |
| | | | Grades to dark brown fine to medium sand and silt, loose, moist. | |
| 5 | SP | | Light brown fine to medium sand and silt, loose, moist. | |
| | | | Grades to light gray fine to medium sand and trace silt, loose, moist. | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-3

DATE: **3/28/11**
TOTAL DEPTH: **9.5 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Light brown fine to coarse sand and silt with fine to coarse gravel, occasional cobbles, medium dense, moist (Fill). | |
| | | | Grades to gray fine to coarse sand and silt with fine to coarse gravel, occasional cobbles, wood and brick debris, medium dense, moist (Fill). | |
| 5 | | | | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-4

DATE: **3/28/11**
TOTAL DEPTH: **6 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Light brown fine to coarse sand and silt with fine to coarse gravel, occasional cobbles, medium dense, moist (Fill). | |
| 5 | SP | | Gray fine to coarse sand and silt with wood and construction debris, medium dense, moist (Fill). | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-5

DATE: **3/28/11**
TOTAL DEPTH: **8 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Light brown to light gray silty fine to coarse sand and gravel, dense, moist (Fill). | |
| | | | Grades to gray silt with fine to coarse sand and fine to coarse gravel with wood debris (Fill). | |
| 5 | | | | Groundwater at 8 Feet |
| 10 | | | | |
| 15 | | | | |

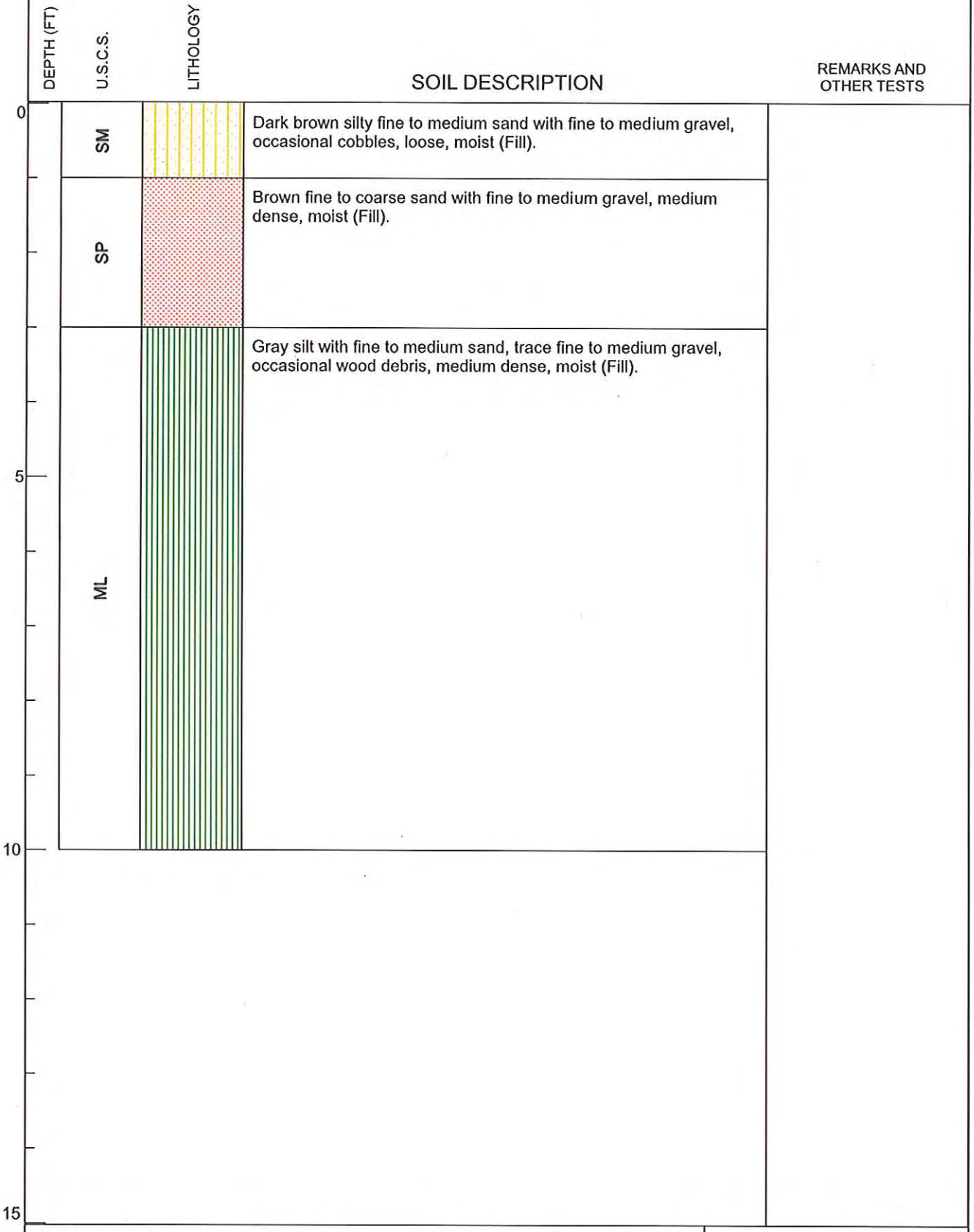
Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-6

DATE: **3/28/11**
TOTAL DEPTH: **10 Feet**




Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-7

DATE: **3/29/11**
TOTAL DEPTH: **11.5 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Dark brown silty fine to medium sand, loose, moist. | |
| | | | Grades to light brown silty fine to coarse sand, occasional fine to coarse gravel, medium dense, moist (Fill). | |
| 5 | SP | | Dark brown silty fine to medium sand, loose, moist. | |
| | | | Grades to light brown fine to coarse sand with silt, loose, moist. | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-8

DATE: **3/29/11**
TOTAL DEPTH: **11.5 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Dark brown silty fine to medium sand, loose, moist. | |
| 5 | SP | | Light brown fine to medium sand with silt, loose, moist. | |
| 10 | | | Grades to light gray fine to coarse sand with trace silt, loose, moist. | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-9

DATE: **3/29/11**
TOTAL DEPTH: **12 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Brown fine to coarse silty sand with fine to coarse gravel, loose, moist (Fill). | |
| 5 | | | Grades to dark brown silty fine to medium sand, loose, moist. | |
| 10 | | | Grades to light brown fine to coarse sand with silt, loose, moist. | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-10

DATE: **3/29/11**
TOTAL DEPTH: **11.5 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Dark brown silty fine to medium sand, loose, moist. | |
| 5 | SP | | Light brown fine to coarse sand with trace silt, loose, moist. | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-11

DATE: **3/29/11**
TOTAL DEPTH: **9 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Dark brown silty fine to medium sand, loose, moist. | |
| 5 | SP | | Light brown fine to coarse sand with trace silt, loose, moist. | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-12

DATE: **3/29/11**
TOTAL DEPTH: **9 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Brown silty fine to medium sand, occasional fine to medium gravel, loose, moist (Fill). | |
| | SP | | Light brown fine to coarse sand with fine to coarse gravel and silt, occasional cobbles and boulders, medium dense, moist (Fill). | |
| 5 | | | Grades to fine to coarse sand with silt, loose, moist. | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-13

DATE: **3/29/11**
TOTAL DEPTH: **8 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Brown silty fine to medium sand, occasional fine to medium gravel, loose, moist (Fill). | |
| | SP | | Light gray to brown fine to coarse sand with fine to coarse gravel and silt, occasional cobbles and boulders, medium dense, moist (Fill). | |
| | SM | | Blue gray silt with fine to medium sand, loose, moist. | |
| 5 | | | Grades to fine to coarse sand with fine to coarse gravel and wood debris, loose, moist (Fill). | Note: wood debris created void containing water at 5 feet |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-14

DATE: **3/29/11**
TOTAL DEPTH: **10 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SP | | Brown to dark brown fine to coarse sand with fine to coarse gravel and wood, concrete, metal and plastic debris, loose, moist (Fill). | |
| 5 | | | | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-15

DATE: **3/29/11**
TOTAL DEPTH: **9 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SP | | Gray fine to coarse sand with fine to coarse gravel and silt, occasional wood, concrete, and boulder debris, medium dense, moist (Fill). | |
| 5 | | | | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-16

DATE: **3/29/11**
TOTAL DEPTH: **10 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SP | | Brown fine to coarse sand with fine to coarse gravel and silt, occasional wood debris, loose, moist (Fill). | |
| 5 | | | Grades to light brown fine to coarse sand with trace silt, loose, moist. | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-17

DATE: **3/29/11**
TOTAL DEPTH: **10 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Dark brown silty fine to medium sand, loose, moist. | |
| 5 | SP | | Light brown fine to coarse sand with trace silt, loose, moist. | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-18

DATE: **3/29/11**
TOTAL DEPTH: **6 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SM | | Dark brown silty fine to medium sand, loose, moist. | |
| 5 | | | | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

PROJECT: **Kingswood Capital**
PROJECT NO.: **519-001-01**
LOCATION: **1401 & 1551 Kingswood Drive SW, Tumwater, WA**

# TP-19

DATE: **3/29/11**
TOTAL DEPTH: **5 Feet**

| DEPTH (FT) | U.S.C.S. | LITHOLOGY | SOIL DESCRIPTION | REMARKS AND OTHER TESTS |
|---|---|---|---|---|
| 0 | SP | | Gray brown fine to coarse sand with fine to coarse gravel and silt, occasional wood, brick and concrete debris, loose, moist (Fill). | |
| 5 | | | | |
| 10 | | | | |
| 15 | | | | |

Contractor: **Hill Excavating**
Equipment: **Trackhoe**
Logged By: **Kevin V.**

INSIGHT GEOLOGIC, INC.

# ATTACHMENT B

# LABORATORY ANALYSES

# Gradation Analysis Summary Data

**Job Name:** Kingswood Capital
**Job Number:** 519-001-01
**Date Tested:** 3/28/11
**Tested By:** Kevin V.

**Boring #:** B-2
**Sample #:** B-2 0' - 4'
**Depth:** 0 - 4 Feet

Moisture Content (%) 14.4%

| Sieve Size | Percent Passing |
|---|---|
| 3.0 in. (75.0) | 100.0 |
| 1.5 in. (37.5) | 100.0 |
| 3/4 in. (19.0) | 94.8 |
| 3/8 in. (9.5-mm) | 85.1 |
| No. 4 (4.75-mm) | 79.6 |
| No. 10 (2.00-mm) | 75.7 |
| No. 20 (.850-mm) | 71.2 |
| No. 40 (.425-mm) | 58.8 |
| No. 60 (.250-mm) | 34.7 |
| No. 100 (.150-mm) | 16.2 |
| No. 200 (.075-mm) | 7.9 |

| Size Fraction | Percent by Weight |
|---|---|
| Coarse Gravel | 5.2 |
| Fine Gravel | 15.2 |
| Coarse Sand | 3.9 |
| Medium Sand | 16.9 |
| Fine Sand | 50.9 |
| Fines | 7.9 |
| **Total** | **100.0** |

| | |
|---|---|
| **LL** | - - |
| **PL** | - - |
| **PI** | - - |
| $D_{10}$ | 0.091 |
| $D_{30}$ | 0.230 |
| $D_{60}$ | 0.460 |
| $D_{90}$ | 15.000 |
| **Cc** | 1.264 |
| **Cu** | 5.055 |

ASTM Classification
Group Name: **Poorly Graded Sand with Silt and Gravel**
Symbol: **SP-SM**

INSIGHT GEOLOGIC, INC.

# Gradation Analysis Summary Data

**Job Name:** Kingswood Capital
**Job Number:** 519-001-01
**Date Tested:** 3/28/11
**Tested By:** Kevin V.

**Boring #:** B-2
**Sample #:** B-2 4' - 10'
**Depth:** 4 - 10 Feet

Moisture Content (%) 10.1%

| Sieve Size | Percent Passing |
|---|---|
| 3.0 in. (75.0) | 100.0 |
| 1.5 in. (37.5) | 100.0 |
| 3/4 in. (19.0) | 85.5 |
| 3/8 in. (9.5-mm) | 74.7 |
| No. 4 (4.75-mm) | 67.8 |
| No. 10 (2.00-mm) | 62.1 |
| No. 20 (.850-mm) | 55.4 |
| No. 40 (.425-mm) | 42.6 |
| No. 60 (.250-mm) | 28.4 |
| No. 100 (.150-mm) | 19.3 |
| No. 200 (.075-mm) | 12.7 |

| Size Fraction | Percent by Weight |
|---|---|
| Coarse Gravel | 14.5 |
| Fine Gravel | 17.7 |
| Coarse Sand | 5.7 |
| Medium Sand | 19.5 |
| Fine Sand | 29.9 |
| Fines | 12.7 |
| **Total** | **100.0** |

| | |
|---|---|
| **LL** | - - |
| **PL** | - - |
| **PI** | - - |
| $D_{10}$ | 0.000 |
| $D_{30}$ | 0.275 |
| $D_{60}$ | 1.600 |
| $D_{90}$ | 24.000 |
| **Cc** | - - |
| **Cu** | - - |

ASTM Classification
Group Name: **Silty Sand with Gravel**
Symbol: **SM**

INSIGHT GEOLOGIC, INC.

# Gradation Analysis Summary Data

**Job Name:** Kingswood Capital
**Job Number:** 519-001-01
**Date Tested:** 3/28/11
**Tested By:** Kevin V.

**Boring #:** B-2
**Sample #:** B-2 10' - 24'
**Depth:** 10 - 24 Feet

Moisture Content (%) 14.7%

| Sieve Size | Percent Passing |
|---|---|
| 3.0 in. (75.0) | 100.0 |
| 1.5 in. (37.5) | 100.0 |
| 3/4 in. (19.0) | 100.0 |
| 3/8 in. (9.5-mm) | 100.0 |
| No. 4 (4.75-mm) | 100.0 |
| No. 10 (2.00-mm) | 100.0 |
| No. 20 (.850-mm) | 99.9 |
| No. 40 (.425-mm) | 96.3 |
| No. 60 (.250-mm) | 61.5 |
| No. 100 (.150-mm) | 16.3 |
| No. 200 (.075-mm) | 4.9 |

| Size Fraction | Percent by Weight |
|---|---|
| Coarse Gravel | 0.0 |
| Fine Gravel | 0.0 |
| Coarse Sand | 0.0 |
| Medium Sand | 3.7 |
| Fine Sand | 91.4 |
| Fines | 4.9 |
| **Total** | **100.0** |

| | |
|---|---|
| **LL** | - - |
| **PL** | - - |
| **PI** | - - |
| $D_{10}$ | 0.130 |
| $D_{30}$ | 0.180 |
| $D_{60}$ | 0.250 |
| $D_{90}$ | 0.350 |
| **Cc** | 0.997 |
| **Cu** | 1.923 |

ASTM Classification
Group Name: **Poorly Graded Sand**
Symbol: **SP**

INSIGHT GEOLOGIC, INC.

# Gradation Analysis Summary Data

**Job Name:** Kingswood Capital
**Job Number:** 519-001-01
**Date Tested:** 3/28/11
**Tested By:** Kevin V.

**Boring #:** B-3
**Sample #:** B-3 7' - 15'
**Depth:** 7 - 15 Feet

Moisture Content (%) 12.4%

| Sieve Size | Percent Passing |
|---|---|
| 3.0 in. (75.0) | 100.0 |
| 1.5 in. (37.5) | 100.0 |
| 3/4 in. (19.0) | 100.0 |
| 3/8 in. (9.5-mm) | 100.0 |
| No. 4 (4.75-mm) | 100.0 |
| No. 10 (2.00-mm) | 100.0 |
| No. 20 (.850-mm) | 99.7 |
| No. 40 (.425-mm) | 93.7 |
| No. 60 (.250-mm) | 42.6 |
| No. 100 (.150-mm) | 10.4 |
| No. 200 (.075-mm) | 3.4 |

| Size Fraction | Percent by Weight |
|---|---|
| Coarse Gravel | 0.0 |
| Fine Gravel | 0.0 |
| Coarse Sand | 0.0 |
| Medium Sand | 6.3 |
| Fine Sand | 90.3 |
| Fines | 3.4 |
| **Total** | **100.0** |

| | |
|---|---|
| **LL** | - - |
| **PL** | - - |
| **PI** | - - |
| $D_{10}$ | 0.160 |
| $D_{30}$ | 0.220 |
| $D_{60}$ | 0.299 |
| $D_{90}$ | 0.400 |
| **Cc** | 1.012 |
| **Cu** | 1.869 |

ASTM Classification
Group Name: **Poorly Graded Sand**
Symbol: **SP**

INSIGHT GEOLOGIC, INC.

# Gradation Analysis Summary Data

**Job Name:** Kingswood Capital
**Job Number:** 519-001-01
**Date Tested:** 3/28/11
**Tested By:** Kevin V.

**Boring #:** TP-6
**Sample #:** TP-6 3' - 10'
**Depth:** 3 - 10 Feet

Moisture Content (%) 18.6%

| Sieve Size | Percent Passing |
|---|---|
| 3.0 in. (75.0) | 100.0 |
| 1.5 in. (37.5) | 100.0 |
| 3/4 in. (19.0) | 100.0 |
| 3/8 in. (9.5-mm) | 100.0 |
| No. 4 (4.75-mm) | 99.7 |
| No. 10 (2.00-mm) | 99.3 |
| No. 20 (.850-mm) | 98.8 |
| No. 40 (.425-mm) | 98.5 |
| No. 60 (.250-mm) | 97.9 |
| No. 100 (.150-mm) | 95.2 |
| No. 200 (.075-mm) | 85.5 |

| Size Fraction | Percent by Weight |
|---|---|
| Coarse Gravel | 0.0 |
| Fine Gravel | 0.3 |
| Coarse Sand | 0.5 |
| Medium Sand | 0.7 |
| Fine Sand | 13.1 |
| Fines | 85.5 |
| **Total** | **100.0** |

| | |
|---|---|
| **LL** | - - |
| **PL** | - - |
| **PI** | - - |
| $D_{10}$ | 0.000 |
| $D_{30}$ | 0.000 |
| $D_{60}$ | 0.000 |
| $D_{90}$ | 0.110 |
| **Cc** | - - |
| **Cu** | - - |

ASTM Classification
Group Name: **Silt**
Symbol: **ML**

INSIGHT GEOLOGIC, INC.

# Gradation Analysis Summary Data

**Job Name:** Kingswood Capital
**Job Number:** 519-001-01
**Date Tested:** 3/28/11
**Tested By:** Kevin V.

**Boring #:** TP-9
**Sample #:** TP-9 0' - 4'
**Depth:** 0 - 4 Feet

Moisture Content (%) 17.9%

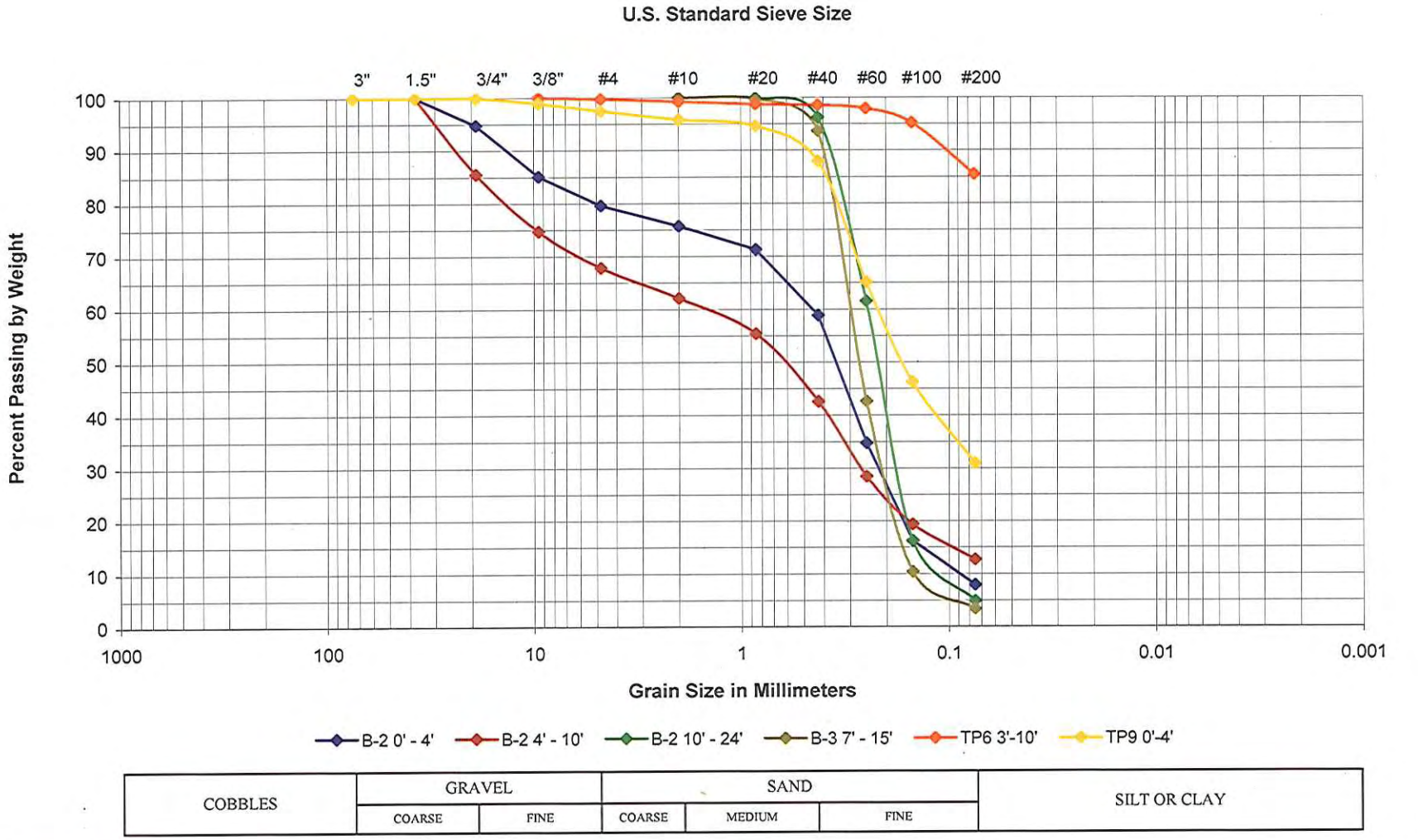
| Sieve Size | Percent Passing |
|---|---|
| 3.0 in. (75.0) | 100.0 |
| 1.5 in. (37.5) | 100.0 |
| 3/4 in. (19.0) | 100.0 |
| 3/8 in. (9.5-mm) | 99.0 |
| No. 4 (4.75-mm) | 97.5 |
| No. 10 (2.00-mm) | 95.9 |
| No. 20 (.850-mm) | 94.6 |
| No. 40 (.425-mm) | 88.0 |
| No. 60 (.250-mm) | 65.1 |
| No. 100 (.150-mm) | 46.3 |
| No. 200 (.075-mm) | 31.0 |

| Size Fraction | Percent by Weight |
|---|---|
| Coarse Gravel | 0.0 |
| Fine Gravel | 2.5 |
| Coarse Sand | 1.6 |
| Medium Sand | 7.9 |
| Fine Sand | 57.0 |
| Fines | 31.0 |
| **Total** | **100.0** |

| | |
|---|---|
| **LL** | - - |
| **PL** | - - |
| **PI** | - - |
| $D_{10}$ | 0.000 |
| $D_{30}$ | 0.000 |
| $D_{60}$ | 0.230 |
| $D_{90}$ | 0.480 |
| **Cc** | - - |
| **Cu** | - - |

ASTM Classification
Group Name: **Silty Sand**
Symbol: **SM**

INSIGHT GEOLOGIC, INC.




INSIGHT GEOLOGIC, INC.

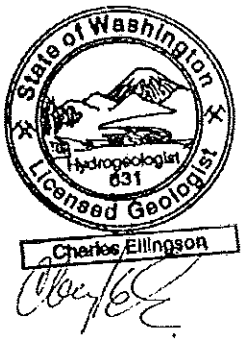
Gradation Analysis Results
Graph 1

## ATTACHMENT C

## PACIFIC GROUNDWATER GROUP – TECHNICAL MEMORANDUM

PACIFIC groundwater GROUP

# Technical Memorandum




**To:** Nick Tayor, Pacland Engineering

**From:** Pony Ellingson, Pacific Groundwater Group

**Re:** Design Groundwater Elevation at proposed Walmart Store 3850

**Date:** March 5, 2010

This memo summarizes Pacific Groundwater Group's recommended design groundwater elevation for the indicated project, and opinions on the extent to which the hydrogeologic work performed to obtain the water level data conform to the letter, and intent, of Tumwater City Ordinance O2005-003. Our work was authorized by Pacland Engineering on March 1, 2010.

## DESIGN GROUNDWATER ELEVATION

Design groundwater elevations were calculated for the following wells and infiltration galleries:

Table 1. Design Groundwater Elevations Compared to Preliminary Gallery Bottoms

| Well/Gallery Pair | Recommended design groundwater elevations at wells and nearby galleries, feet NGVD29 | Predicted minimum depth to water below proposed infiltration surface in gallery, feet (see note) |
|---|---|---|
| MW-2/Gallery 2 | 171.5 / 171.5 | -1.5 |
| MW-3/Gallery 3 | 170.4 / 169.9 | -0.9 |
| MW-4/Gallery 1 | 172.2 / 173.2 | -2.6 |

Note negative depth to water indicates water is above the bottom of the infiltration gallery.

The elevations are an estimate of the maximum historic groundwater elevation at these locations, based on correlation of the on-site groundwater level data to Thurston County Control wells (Table 2, Figure 1). County control well LRS-01A was the only control well used because it is the closest well (~7000 feet southwest of Walmart) and the only well to have current data, continuous data throughout the 1999 high water event, and to have not been flooded during 1999. The predicted maximum groundwater elevations at the wells are 4.5 to 5.5 higher than the maximum

elevations recorded in on-site wells on February 18, 2006. The calculations indicate that the design groundwater elevations estimated for the gallery locations are 0.9 to 2.6 feet *above* the bottoms of the infiltration galleries based on the preliminary designs provided to us (Grading and Drainage Plan C-20, issued 9/18/09).

The materials provided to PGG indicate that the site survey by ALTA was to the NGVD29 datum, but no specific reference for the datum used for wellheads was provided, thus we assumed the wellheads were also surveyed to NGVD29. The wellhead survey datum should be confirmed.

Table 2. Correlations to County Control Well Data

| On-site Well | Correlation Eqn | Max groundwater elevation at LRS-01A (NGVD29) | Predicted max groundwater elevation at site well (NGVD29) | Groundwater elevation adjustment for off-set between well and gallery (ft) | | Predicted max groundwater elevation at nearest gallery (NGVD29) | Infiltration surface elevation of nearest gallery (NGVD29) | Minimum depth to groundwater below gallery (ft) |
|---|---|---|---|---|---|---|---|---|
| MW-1 | y = 0.6485x + 51.782 | 187.19 | 173.2 | not applicable | | | | |
| MW-2 | y = 0.6515x + 49.551 | 187.19 | 171.5 | 0.0 | (gallery 2) | 171.5 | 170.0 | -1.5 |
| MW-3 | y = 0.6415x + 50.352 | 187.19 | 170.4 | -0.5 | (gallery 3) | 169.9 | 169.0 | -0.9 |
| MW-4 | y = 0.6674x + 47.303 | 187.19 | 172.2 | 1.0 | (gallery 1) | 173.2 | 170.7 | -2.6 |
| MW-5 | y = 0.6386x + 50.038 | 187.19 | 169.6 | not applicable | | | | |
| | | | | | | | | |
| | y = on-site elevation | | | | | | | |
| | x = LRS-01A elevation | | | | | | | |

## CONFIDENCE IN CALCULATIONS

City ordinance O2005-003 refers to well installation, survey, and measurement guidance that should maximize confidence in these calculations. Table 3 below summarizes our comparison of key aspects of the guidance to this project's data, and our opinion on the impact to confidence. Although the letter of the guidance was not met, our opinion is that the data are sufficient to meet the intent of the ordinance. Any model used to calculate groundwater mounding will require the thickness of the upper aquifer to be specified. That information will have to be generated by data from surrounding wells and projects.

Table 3. Comparison of Project Data to City Guidance

| Topic (not comprehensive) | City Guidance (not comprehensive) | Project Data | Opinion / Confidence |
|---|---|---|---|
| Well Drilling | Drill to 50 feet depth or to till, whichever is shallower.<br><br>Screen at the water table. | Numerous borings and test pits. Maximum depth 31.5 ft. No till encountered. Screens at water table. | Good wells. Bottom of upper aquifer not documented (no till). Till can be interpreted from other nearby well logs. |
| Survey and Precision | Survey to NGVD29 with wellhead precision of 0.01 ft.<br><br>Measure and record water level data to 0.01 ft precision. | Metadata for wellhead survey not provided.<br><br>Water level data recorded to 0.1 ft precision but derived water elevation improperly reported to 0.01 ft precision. | Confirm NGVD29 survey of wellheads (monitoring point), and precision.<br><br>Precision of 0.1 ft is probably OK. |
| Water Level Monitoring | Twelve monthly measurements or weekly for four months over winter-spring. | Eight measurements over 12 months, not equally spaced. | Documented 4.5 to 5 feet of on-site groundwater fluctuation. Five of eight measurements in generally high water table months although one value much higher than other s (Figure 1). Highly correlated to County data. Conclude data meet intent but not letter of the ordinance. |

## COMPARISON TO SIMILAR CALCULATIONS NEARBY

As a reality check on the design groundwater elevations, we compared the elevations for this project to those for nearby projects. The Walmart site lies about 1500 feet north of the northernmost well at which previous calculations are known to us (We are not aware of similar calculations performed at Home Depot directly south of Walmart). The elevation at that prior location (Mountain View Church of the Nazarene) is 177.5 ft. or about 4 feet higher than the maximum design elevation calculated at Walmart (Table 2, Well 1). Given the northerly groundwater gradient in this vicinity, the lower elevation at Walmart is expected.

The Thurston County GeoData Center website does not indicate the presence of nearby areas that were flooded with groundwater during the high water table events of 1997 and 1999.

*water level memo v1*

*JE1002*

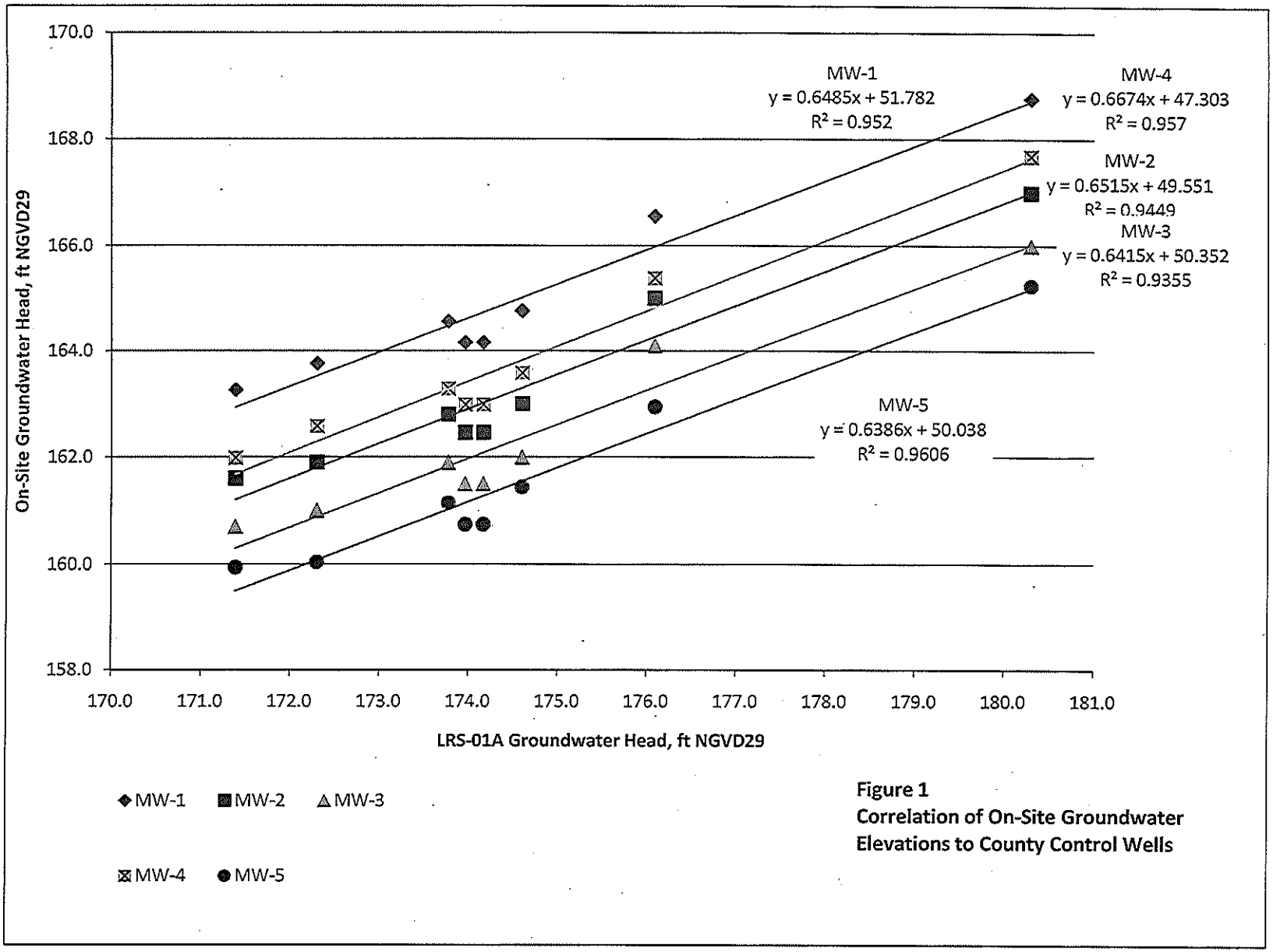
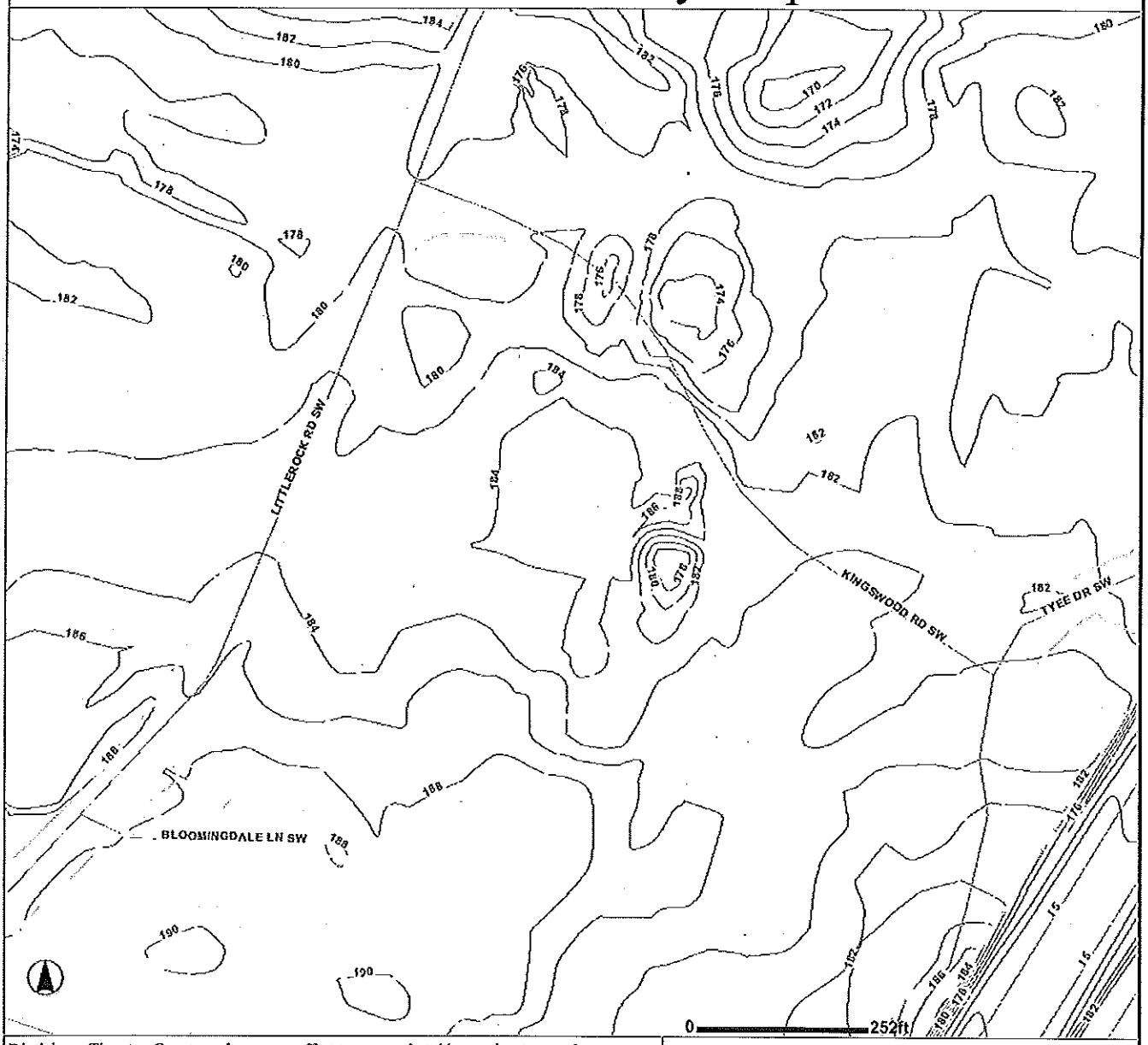



**Figure 1**
**Correlation of On-Site Groundwater Elevations to County Control Wells**

# Thurston County Map




Disclaimer: Thurston County makes every effort to ensure that this map is a true and accurate representation of the work of County government. However, the County and all related personnel make no warranty, expressed or implied, regarding the accuracy, completeness or convenience of any information disclosed on this map. Nor does the County accept liability for any damage or injury caused by the use of this map.
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Thurston GeoData Center
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929 Lakeridge Drive SW, Suite 216, 3rd Floor
Olympia, WA 98502-6031

## LEGEND

- Major Roads
- Roads
- Streams
- Contours
- Wetlands
- Wetland Buffers
- Flood Zones
- Water Bodies
- Zoning
- Cities
- Parcels

# Table 1
## Depth to Water Measurements
## Proposed Commercial Site
## East of Littlerock Road S.W.
## Tumwater, Washington

| Groundwater Monitoring Well | Well Elevation from Top of PVC Well Casing (Feet) | Dates Water Level Measured | Depth to Water from Below Top of PVC Well Casing (Feet) | Water Level Elevation (Feet) | Groundwater Flow Direction | Comments |
|---|---|---|---|---|---|---|
| MW-1 | 184.46 | 3/3/2005 | 20.3 | 164.16 | Northeast | First Water Level Measurement |
| | | 3/10/2005 | 20.3 | 164.16 | Northeast | Obtained During GPR Investigation |
| | | 4/8/2005 | 19.9 | 164.56 | Northeast | Second Water Level Measurement |
| | | 6/8/2005 | 19.7 | 164.76 | Northeast | Third Water Level Measurement |
| | | 8/15/2005 | 20.7 | 163.76 | North-Northeast | Fourth Water Level Measurement |
| | | 12/15/2005 | 21.2 | 163.26 | Northeast | Fifth Water Level Measurement |
| | | 1/19/2006 | 17.9 | 166.56 | Northeast | Sixth Water Level Measurement |
| | | 2/18/2006 | 15.7 | 168.76 | Northeast | Seventh Water Level Measurement |
| MW-2 | 185.30 | 3/3/2005 | 22.9 | 162.46 | Northeast | First Water Level Measurement |
| | | 3/10/2005 | 22.9 | 162.46 | Northeast | Obtained Druing GPR Investigation |
| | | 4/8/2005 | 22.5 | 162.80 | Northeast | Second Water Level Measurement |
| | | 6/8/2005 | 22.3 | 163.00 | Northeast | Third Water Level Measurement |
| | | 8/15/2005 | 23.4 | 161.90 | North-Northeast | Fourth Water Level Measurement |
| | | 12/15/2005 | 23.7 | 161.60 | Northeast | Fifth Water Level Measurement |
| | | 1/19/2006 | 20.3 | 165.00 | Northeast | Sixth Water Level Measurement |
| | | 2/18/2006 | 18.3 | 167.00 | Northeast | Seventh Water Level Measurement |
| MW-3 | 175.50 | 3/3/2005 | 14.0 | 161.50 | Northeast | First Water Level Measurement |
| | | 3/10/2005 | 14.0 | 161.50 | Northeast | Obtained Druing GPR Investigation |
| | | 4/8/2005 | 13.6 | 161.90 | Northeast | Second Water Level Measurement |
| | | 6/8/2005 | 13.5 | 162.00 | Northeast | Third Water Level Measurement |
| | | 8/15/2005 | 14.5 | 161.00 | North-Northeast | Fourth Water Level Measurement |
| | | 12/15/2005 | 14.8 | 160.70 | Northeast | Fifth Water Level Measurement |
| | | 1/19/2006 | 11.4 | 164.10 | Northeast | Sixth Water Level Measurement |
| | | 2/18/2006 | 9.5 | 166.00 | Northeast | Seventh Water Level Measurement |
| MW-4 | 184.38 | 3/3/2005 | 21.4 | 162.98 | Northeast | First Water Level Measurement |
| | | 3/10/2005 | 21.4 | 162.98 | Northeast | Obtained Druing GPR Investigation |
| | | 4/8/2005 | 21.1 | 163.28 | Northeast | Second Water Level Measurement |
| | | 6/8/2005 | 20.8 | 163.58 | Northeast | Third Water Level Measurement |
| | | 8/15/2005 | 21.8 | 162.58 | North-Northeast | Fourth Water Level Measurement |
| | | 12/15/2005 | 22.4 | 161.98 | Northeast | Fifth Water Level Measurement |
| | | 1/19/2006 | 19.0 | 165.38 | Northeast | Sixth Water Level Measurement |
| | | 2/18/2006 | 16.7 | 167.68 | Northeast | Seventh Water Level Measurement |
| MW-5 | 181.54 | 3/3/2005 | 20.8 | 160.74 | Northeast | First Water Level Measurement |
| | | 3/10/2005 | 20.8 | 160.74 | Northeast | Obtained Druing GPR Investigation |
| | | 4/8/2004 | 20.4 | 161.14 | Northeast | Second Water Level Measurement |
| | | 6/8/2005 | 20.1 | 161.44 | Northeast | Third Water Level Measurement |
| | | 8/15/2005 | 21.5 | 160.04 | North-Northeast | Fourth Water Level Measurement |
| | | 12/15/2005 | 21.6 | 159.94 | Northeast | Fifth Water Level Measurement |
| | | 1/19/2006 | 18.6 | 162.94 | Northeast | Sixth Water Level Mearuement |
| | | 2/18/2006 | 16.3 | 165.24 | Northeast | Seventh Water Level Measurement |

Note: Depth to water measurements were obtained after the monitoring wells were developed on February 28, 2005.


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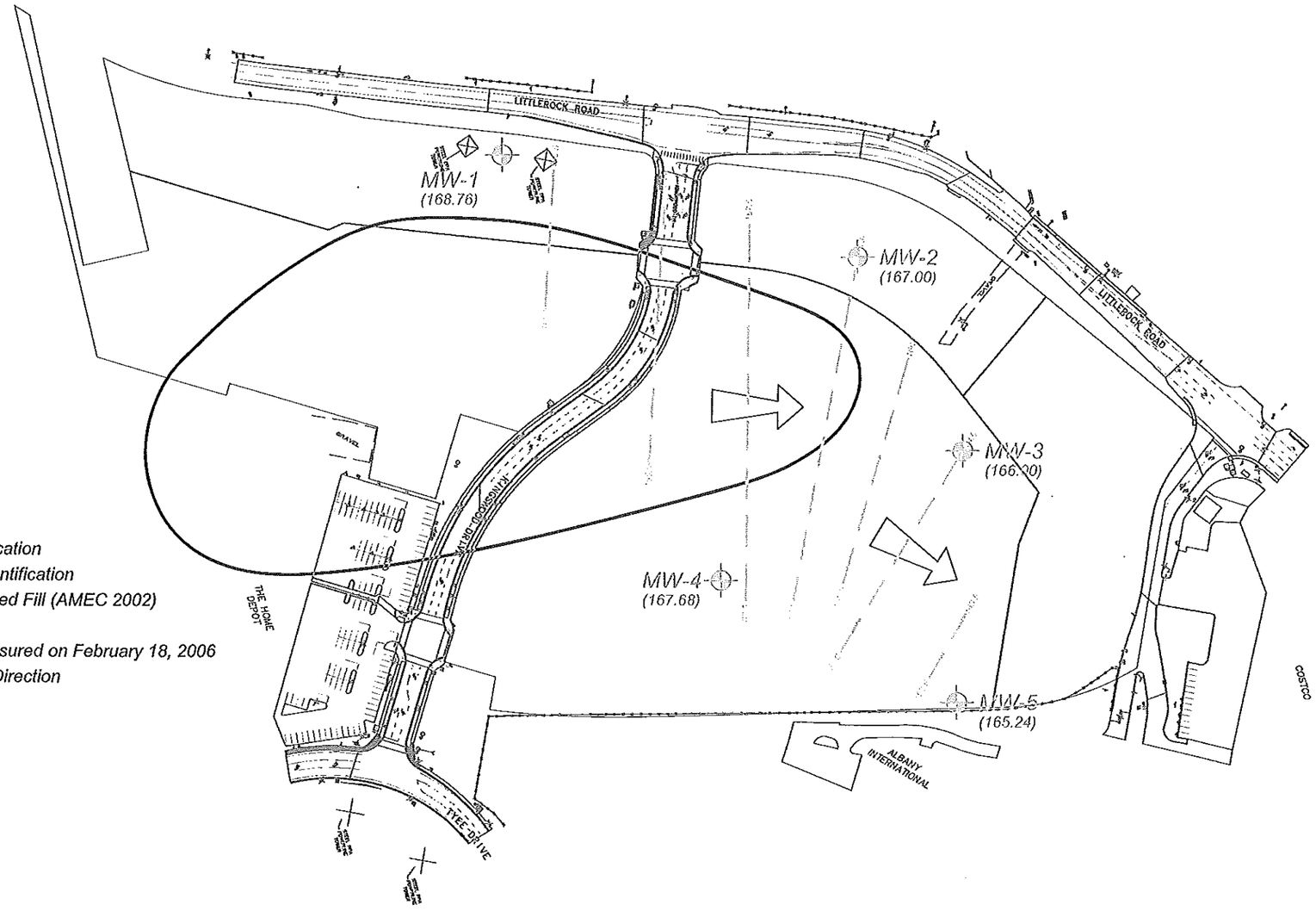
# February 18, 2006




## Legend

- Groundwater Monitoring Well Location
- MW-1 Groundwater Monitoring Well Identification
- Approximate Limits of Uncontrolled Fill (AMEC 2002)
- Water Level Contour (Ft.)
- (168.76) Groundwater Elevation (Ft.) measured on February 18, 2006
- Generalized Groundwater Flow Direction

N

0 200 400

Scale1" = 200'

Source: PacLand (March 2005)

KLEINFELDER

Proposed Commercial Site
East of Littlerock Road S.W.
Tumwater, Washington

Project: 50431 February 2006

Well Locations with Groundwater Elevations

FIGURE 1

## ATTACHMENT D

## REPORT LIMITATIONS AND GUIDELINES FOR USE

# ATTACHMENT D

## REPORT LIMITATIONS AND GUIDELINES FOR USE[1]

This attachment provides information to help you manage your risks with respect to the use of this report.

### GEOTECHNICAL SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES, PERSONS AND PROJECTS

This report has been prepared for the exclusive use of our client and their authorized agents. This report may be made available to regulatory agencies for review. This report is not intended for use by others, and the information contained herein is not applicable to other sites.

Insight Geologic Inc. structures our services to meet the specific needs of our clients. For example, a geotechnical or geologic study conducted for a civil engineer or architect may not fulfill the needs of a construction contractor or even another civil engineer or architect that are involved in the same project. Because each geotechnical or geologic study is unique, each geotechnical engineering or geologic report is unique, prepared solely for the specific client and project site. Our report is prepared for the exclusive use of our Client. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and generally accepted geotechnical practices in this area at the time this report was prepared. This report should not be applied for any purpose or project except the one originally contemplated.

### A GEOTECHNICAL ENGINEERING OR GEOLOGIC REPORT IS BASED ON A UNIQUE SET OF PROJECT-SPECIFIC FACTORS

Insight Geologic, Inc. considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless Insight Geologic specifically indicates otherwise, do not rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

For example, changes that can affect the applicability of this report include those that affect:

[1] Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org .

- the function of the proposed structure;
- elevation, configuration, location, orientation or weight of the proposed structure;
- composition of the design team; or
- project ownership.

If important changes are made after the date of this report, Insight Geologic should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

## SUBSURFACE CONDITIONS CAN CHANGE

This geotechnical or geologic report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, or by natural events such as floods, earthquakes, slope instability or ground water fluctuations. Always contact Insight Geologic before applying a report to determine if it remains applicable.

## MOST GEOTECHNICAL AND GEOLOGIC FINDINGS ARE PROFESSIONAL OPINIONS

Our interpretations of subsurface conditions are based on field observations from widely spaced sampling locations at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Insight Geologic reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ, sometimes significantly, from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

## GEOTECHNICAL ENGINEERING REPORT RECOMMENDATIONS ARE NOT FINAL

Do not over-rely on the preliminary construction recommendations included in this report. These recommendations are not final, because they were developed principally from Insight Geologic's professional judgment and opinion. Insight Geologic's recommendations can be finalized only by observing actual subsurface conditions revealed during construction. We recommend that Insight Geologic be retained to perform construction monitoring. Alternatively, if Insight Geologic is not retained for construction observation, a full and complete record of construction activity including compaction measurements by a qualified individual should be retained by the client.

Sufficient monitoring, testing and consultation by Insight Geologic or other qualified individual should be provided during construction to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide

recommendations for design changes should the conditions revealed during the work differ from those anticipated, and to evaluate whether or not earthwork activities are completed in accordance with our recommendations. Retaining Insight Geologic for construction observation for this project is the most effective method of managing the risks associated with unanticipated conditions.

## A GEOTECHNICAL ENGINEERING OR GEOLOGIC REPORT COULD BE SUBJECT TO MISINTERPRETATION

Misinterpretation of this report by other design team members can result in costly problems. You could lower that risk by having Insight Geologic confer with appropriate members of the design team after submitting the report. Also retain Insight Geologic to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering or geologic report. Reduce that risk by having Insight Geologic participate in pre-bid and pre-construction conferences, and by providing construction observation.

## DO NOT REDRAW THE EXPLORATION LOGS

Geotechnical engineers and geologists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering or geologic report should never be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, but recognize that separating logs from the report can elevate risk.

## GIVE CONTRACTORS A COMPLETE REPORT AND GUIDANCE

Some owners and design professionals believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering or geologic report, but preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with Insight Geologic and/or to conduct additional study to obtain the specific types of information they need or prefer. A pre-bid conference can also be valuable. Be sure contractors have sufficient time to perform additional study. Only then might an owner be in a position to give contractors the best information available, while requiring them to at least share the financial responsibilities stemming from unanticipated conditions. Further, a contingency for unanticipated conditions should be included in your project budget and schedule.

## CONTRACTORS ARE RESPONSIBLE FOR SITE SAFETY ON THEIR OWN CONSTRUCTION PROJECTS

Our geotechnical recommendations are not intended to direct the contractor's procedures, methods, schedule or management of the work site. The contractor is solely responsible for job site safety and for managing construction operations to minimize risks to on-site personnel and to adjacent properties.

## READ THESE PROVISIONS CLOSELY

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering or geology) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. Insight Geologic includes these explanatory "limitations" provisions in our reports to help reduce such risks. Please confer with Insight Geologic if you are unclear how these "Report Limitations and Guidelines for Use" apply to your project or site.

## GEOTECHNICAL, GEOLOGIC AND ENVIRONMENTAL REPORTS SHOULD NOT BE INTERCHANGED

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

Exhibit 18



# KINGSWOOD COMMERCIAL
# TRAFFIC IMPACT ANALYSIS

*City of Tumwater, WA*

05/23/2022

Prepared for: Mr. Trevor Colby
KCI Commercial, Inc.
PO Box 6979
Tacoma, WA 98417

May 2022

KINGSWOOD COMMERCIAL
TRAFFIC IMPACT ANALYSIS

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KINGSWOOD COMMERCIAL
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 and baseline vehicular volumes. 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

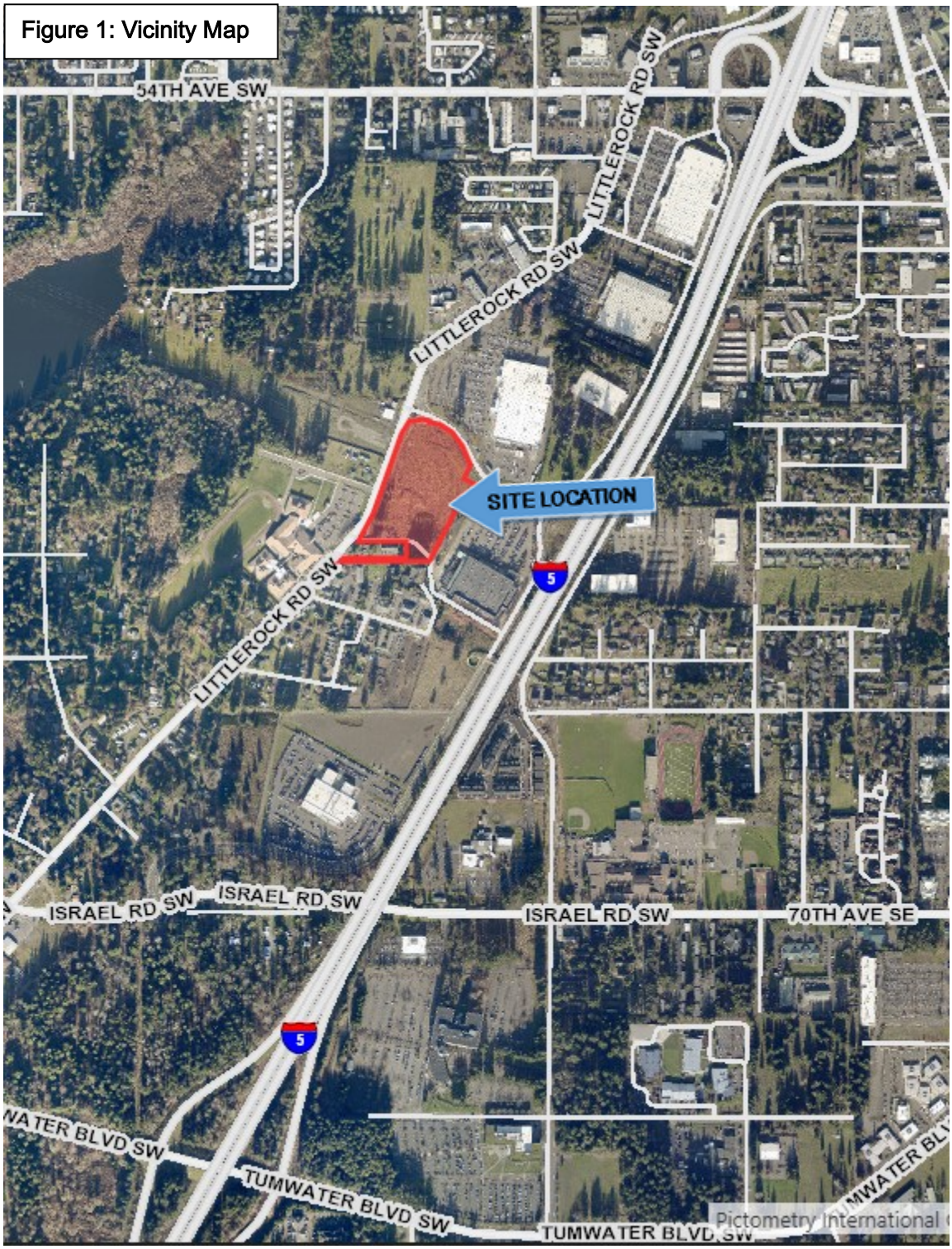
Kingswood Commercial is a proposed mixed-use development located in the city of Tumwater. The subject site, bordered to the north by Kingswood Road SW and to the west by Littlerock Road SW is situated on 8.97-acres of undeveloped land within tax parcel #'s: 127032404-04; -03. Access to and from the site is proposed via three new driveway connections, the first which is to extend south from Kingswood Road SW and opposite a driveway presently serving a Walmart. The remaining two access points are located on Littlerock Road SW and would be restricted to right-turn movements only given the center raised median along the roadway. Cross access and interconnectivity to the west of the site would also be provided.

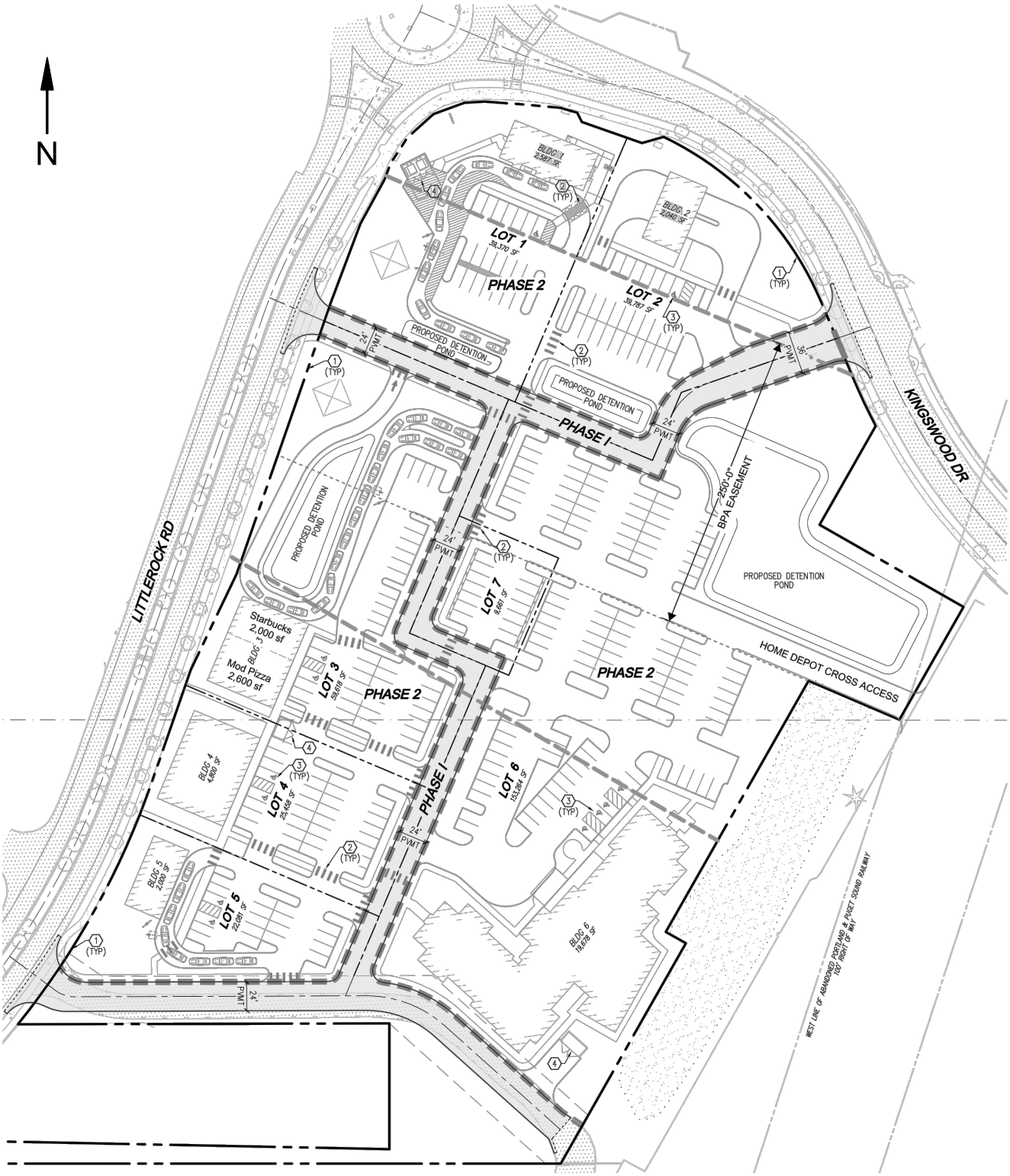
This analysis is intended to support the proposed Binding Site Plan (BSP) for the commercial development. At the time of this report, not all proposed buildings have defined uses/tenants. However, in discussion with the applicant, received letters of interest, and building layouts, the following is a summary of the tenant assumptions used for evaluation:

- Lot 1 - Fast-Food Restaurant with Drive-Through (2,587 sq. ft.)
- Lot 2 - Quick Lube Auto Center (2,040 sq. ft.)
- Lot 3 - Coffee Shop with Drive-Through (2,000 sq. ft.) & Fast Casual Restaurant (2,600 sq. ft.)
- Lot 4 - General Retail (4,800 sq. ft. unknown tenant)
- Lot 5 - Fast-Food Restaurant with Drive-Through (2,000 sq. ft.)
- Lot 6 - Hotel (121 Rooms)
- Lot 7 - 14 EV Charging Stations

Shown below is the subject property in red and the adjacent roadway system. A conceptual site plan illustrating the proposed site layout including all access points is presented in Figure 2.

Figure 1: Vicinity Map






HEATH & ASSOCIATES

TRAFFIC AND CIVIL ENGINEERING

KINGSWOOD COMMERCIAL

SITE PLAN
FIGURE 2

## 3. EXISTING CONDITIONS

### 3.1 Existing Roadway Characteristics

The major roadways serving the subject site are listed and described in Table 1 below.

**Table 1: Roadway Network**

| Functional Classification | Roadway | Speed Limit | Lanes | Street Parking | Sidewalk | Bike Facilities |
|---|---|---|---|---|---|---|
| **Arterial** | Littlerock Rd SW | 20*-30 mph | 2-5 | No | Yes | Yes |
| **Collector** | Kingswood Rd SW | 25 mph | 3 | No | Yes | No |
| **Commercial Collector** | Tyee Dr SW | 25 mph | 2-3 | No | Yes | Yes |

*20 mph posted near school when flashing

### 3.2 Study Intersections & Existing Peak Hour Volumes

A total of four intersections adjacent or near the site were examined for evaluation.

- Littlerock Road SW & Kingswood Drive SW (Roundabout)
- Kingswood Drive SW & Walmart East Access (Stop)
- Kingswood Drive SW & Walmart West Access (Stop)
- Tyee Drive SW & Kingswood Drive SW (Stop)

Turning movement counts were conducted in May of 2022 between the peak period of 4:00-6:00 PM to determine existing traffic volumes near the subject property at all above locations with the exception of Littlerock Road SW & Kingswood Drive SW where count data were available pre-COVID (2/4/2020). In discussion with the City of Tumwater, the city is still experiencing pandemic effects with lower than normal traffic volumes. Therefore, historic traffic volumes (pre-pandemic) were reviewed and compared to data collected in 2022 by the following method.

- Adjust 2020 traffic volumes up via 2% per year to establish 2022 “pre-COVID” traffic volumes.
- Compare volumes along Kingswood Drive SW east of Littlerock Road SW from adjusted 2022 volumes to existing 2022.
- Develop a growth adjustment factor to apply to all counts collected in 2022 to account for COVID influence.

Table 2: PM Peak Hour Summary – COVID Adjustment

| Roadway | Adjusted 2022 (Pre-COVID) PM Peak Hour Volume | Existing 2022 PM Peak Hour Volumes | Adjustment Factor |
|---|---|---|---|
| Kingswood Drive SW | 370 veh. | 320 veh. | 15.6% |

Based on the above review and comparison of pre-pandemic and existing traffic counts, an adjustment factor of 15.6 percent was identified. This adjustment factor has been applied to all traffic volumes collected in 2022 to establish “baseline 2022” PM peak hour volumes. Refer to appendix for unadjusted count sheet data.

Figure 3 on the following page illustrates baseline (adjusted) 2022 PM peak hour volumes that will be used in capacity and operational analysis.

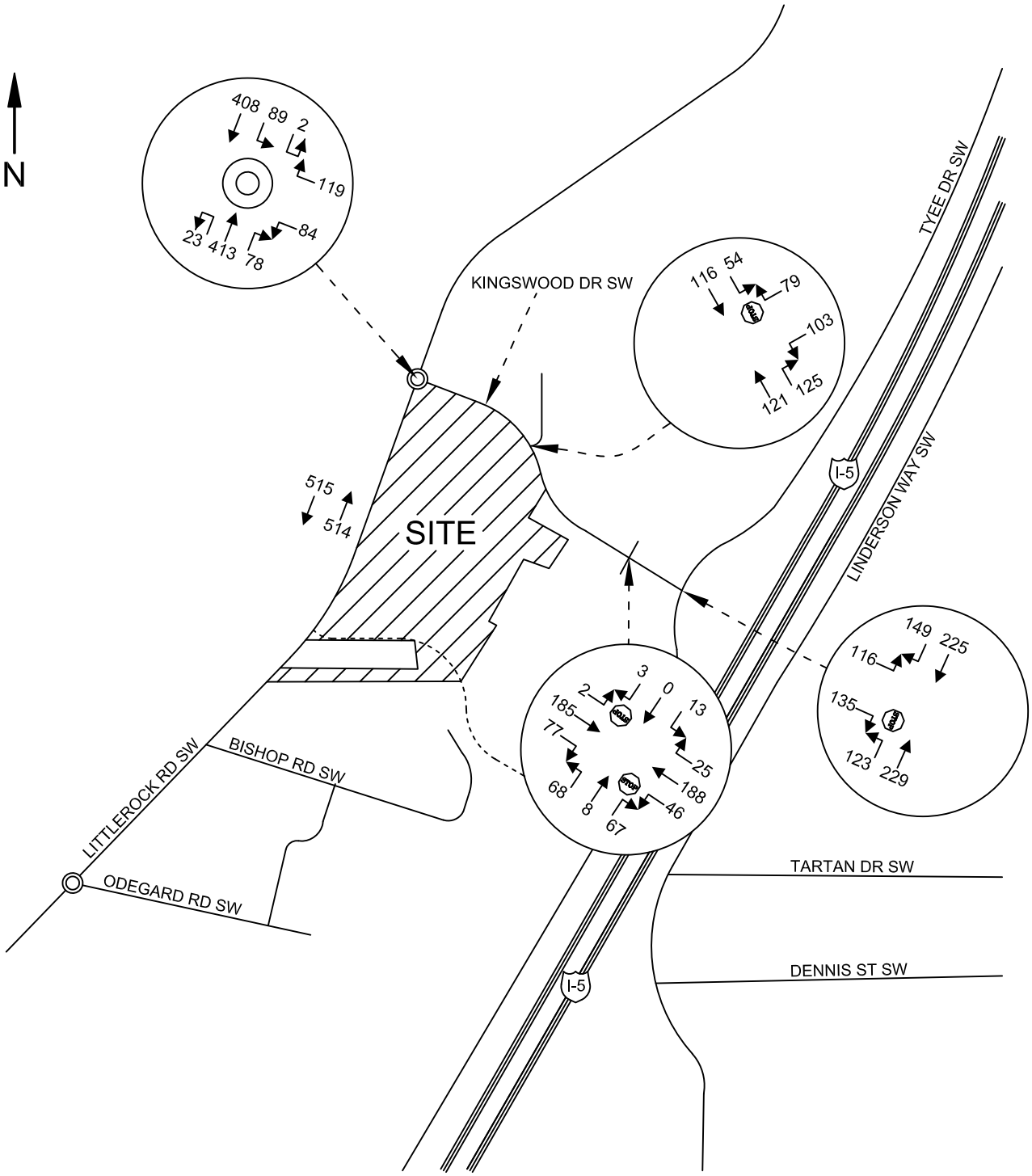
### 3.3 Non-Motorist Traffic

Non-motorist traffic were observed and identified for all locations reviewed in 2022. The table below summarizes the pedestrian movements at the study intersections during the PM peak travel hour. No bicycle activity was noted at any study intersection.

Table 3: PM Peak Hour Non-Motorist Movements

| Intersections | Peak Hour | Movement | Intersection Leg | | | |
|---|---|---|---|---|---|---|
| | | | N | E | S | W |
| Kingswood Dr SW & Walmart West Access | 4:00-5:00 PM | Pedestrians | 3 | 0 | 1 | 0 |
| Kingswood Dr SW & Walmart East Access | 4:00-5:00 PM | Pedestrians | 1 | 1 | 1 | 0 |
| Kingswood Dr SW & Tyee Dr SW | 4:30-5:30 PM | Pedestrians | 1 | 0 | 0 | 3 |

The adjacent and fronting roadways with respect to the subject property offer complete, detached sidewalk infrastructure. Moreover, dedicated bike lanes are available along Littlerock Road SW and Tyee Drive SW. The proposed commercial project, with additional nearby residential development, is expected to generate non-motorist activity.

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TRAFFIC AND CIVIL ENGINEERING

KINGSWOOD COMMERCIAL

BASELINE 2022 PM PEAK HOUR VOLUMES
FIGURE 3

## 3.4 Level of Service

Baseline intersection 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 the worst conditions with heavy control delays. Detailed descriptions of intersection LOS are given in the 2016 Highway Capacity Manual. Level of service calculations were made through the use of the *Synchro 11* analysis program for stop-controlled intersections and *SIDRA* for roundabout analysis. Delays presented represent overall weighted average delays for roundabout control. For side-street, stop-controlled intersections, LOS is determined by the approach with the highest delay. Table 4 below portrays baseline 2022 LOS delays for the key intersections of study.

**Table 4: Baseline 2022 PM Peak Hour Level of Service**

*Delays given in seconds per vehicle*

| Intersection | Control | LOS | Delay |
|---|---|---|---|
| Littlerock Rd SW & Kingswood Dr SW | RAB* | A | 5.4 |
| Kingswood Dr SW & Walmart West Access | Stop | B | 11.7 |
| Kingswood Dr SW & Walmart East Access | Stop | B | 14.4 |
| Kingswood Dr SW & Tyee Dr SW | Stop | C | 20.0 |

*RAB-Roundabout

Baseline 2022 PM peak hour delays are all shown to calculate within the LOS C or better range indicating stable operations during the critical peak hour of travel. All intersections meet the city of Tumwater's level of service standard of LOS D or better.

---

[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

### 3.5 Transit Service

The Intercity Transit regional bus schedule was reviewed in terms of transit available in the vicinity of the subject site. The nearest available transit stops are provided at Tumwater Middle School located on the west side of Littlerock Road SW or at the intersection of Litterock Road SW & Kingswood Drive SW. The aforementioned bus stops provide service via Route 12-West Tumwater. Route 12-West Tumwater provides service from the Olympia Transit Center to The Tumwater Labors Industries Building located south of Israel Road. Weekday service is provided from 5:39 AM – 8:25 PM with approximately 30-minute headways. Weekend service is provided from 7:30 AM – 8:25 PM with approximately 30-minute headways. Please refer to the Intercity Transit website for more detailed information.

### 3.6 Roadway Improvements

A review of the City of Tumwater's Six Year Transportation Improvement Program 2022-2027 indicates that improvement projects are planned in the vicinity. Descriptions and summaries of each project are provided in Table 5 below.

**Table 5: Transportation Improvement Projects**

| Name | Location | Improvement | Cost |
|---|---|---|---|
| I-5/Trosper Rd/Capitol Blvd Reconfiguration (Map ID# 1) | I-5 Ramps at Trosper Rd | Realign NB I-5 Ramps, construct new 6th Ave extension (Trosper to Lee) and construct three roundabouts | $6,750,000 |
| Capitol Blvd/Linwood Ave Roundabout (Map ID# 8) | Intersection | Property acquisition for future replacement of existing signal with a roundabout | $80,000 |
| Tumwater Blvd Interchange (Map ID# 9) | I-5 SB ramp to I-5 NB ramp | Design, acquire ROW, and construct improvements (roundabouts). | $6,650,000 |
| Capitol Blvd Corridor (Map ID#11) | Israel Rd to M St | Construct roundabouts, provide access control/continuous median, reconfigure lanes to accommodate bikes lanes, provide enhanced ped crossing safety features and reconstruct curb/ramps/sidewalks. | $800,000 |
| Tumwater Town Center Connection (Map ID# 13) | Tumwater Blvd to Israel Rd | Portion of new street connection and associated improvements from Tumwater Blvd to Israel Rd. | $350,000 |
| X Street Roundabout (Map ID# 17) | X St & Capitol Blvd | Construct roundabout in keeping with the Capitol Blvd Corridor Plan. | $5,060,000 |

# 4. FUTURE TRAFFIC CONDITIONS

## 4.1 Trip Generation

Trip generation is defined as the number of vehicle movements that enter or exit a site during a designated time period such as a specific peak hour or an entire day. Data presented in this analysis were derived from the Institute of Transportation Engineer's (ITE) publication *Trip Generation,* 11th Edition. As the proposed Kingswood Commercial project is a mixed use development, several land use codes (LUC) were utilized in order to determine the projected number of trips the subject site will receive.

Selected LUC's were matched with that of the respective user/tenant occupying each building. However, instances such as Building 4 and Building 5 are generally unknown at this time and were therefore assigned with *LUC 822 – Strip Retail* and *LUC Fast-Food Restaurant with Drive-Through,* respectively, so as to allow for tenant flexibility and generally present conservatively with higher-producing assumptions. Remaining LUC's consist of:

Building 1: *LUC 934-Fast-Food Restaurant with Drive-Through*
Building 2: *LUC 941 – Quick Lubrication Vehicle Shop*
Building 3: *LUC 937 – Coffee Shop with Drive-Through* & *LUC 930 – Fast Casual Restaurant*, and
Building 6*: LUC 310 – Hotel*

Internal Trips

With a large mixed-use development containing several complimentary uses, there are typically shared-trip reductions in the form of internal-linked trips. This occurrence is when one driver may frequent two or more services in a single trip internal to the shopping center. For example, a motorist purchases a coffee before getting oil changed or a hotel guest walks over to use the dining services. Internal trips do not create additional demand on the City's system as they remain on-site. Internal trip reductions were estimated through *NCHRP 8-51 Internal Trip Capture Estimation Tool* which yielded a 3 percent reduction in the AM peak hour and 19 percent reduction in the PM peak hour. These reductions were applied to ITE's trip rates for each aforementioned use.

Pass-by Trips

Moreover, pass-by trips were considered. Pass-by trips are vehicles already traveling along the roadway who decide to make an intermediary stop before continuing to their primary destination. These trip types are common at commercial facilities and are not considered new to the city's system but do impact the site's accesses (see table for pass-by percentages for each use).

Table 6 below summarizes AM and PM peak hour trips associated with each building and then in aggregate. Taken into consideration are internal-link trip reductions. Pass-by percentages are displayed in the table.

**Table 6: Project Trip Generation**

| | | | | | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Lot # | Land Use | Input Variable | Trip Type | AWDT | In | Out | Total | In | Out | Total |
| 1 | Fast- Food w/ DT LUC - 934 | 2.58 KSF | Primary | 510 | 28 | 27 | 55 | 16 | 15 | 31 |
| | *Pass-By (ADT:52.5% AM: 50% PM:55%)* | | Pass-by | 563 | 29 | 27 | 56 | 19 | 19 | 38 |
| 2 | Quick Lube LUC - 941 | 2.04 KSF | Primary | 126 | 9 | 3 | 12 | 6 | 9 | 15 |
| | *Pass-By (0%)* | | Pass-by | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | Coffee Shop w/ DT LUC - 937 | 2.00 KSF | Primary | 451 | 42 | 40 | 82 | 14 | 14 | 28 |
| | *Pass-By (ADT: 52.5% AM: 50% PM: 55%)** | | Pass-by | 499 | 43 | 41 | 84 | 18 | 18 | 36 |
| 3 | Fast Casual Restaurant LUC - 930 | 2.6 KSF | Primary | 128 | 1 | 1 | 2 | 9 | 7 | 16 |
| | *Pass-By (ADT:43% AM: 43% PM: 43%)* | | Pass-by | 97 | 1 | 1 | 2 | 6 | 5 | 11 |
| 4 | Strip Retail LUC - 822 | 4.8 ksf | Primary | 139 | 4 | 3 | 7 | 8 | 8 | 16 |
| | *Pass-By (ADT: 40% AM: 40% PM: 40%)* | | Pass-by | 93 | 2 | 2 | 4 | 5 | 5 | 10 |
| 5 | Fast-Food w/ DT LUC - 934 | 2.0 ksf | Primary | 395 | 22 | 21 | 43 | 13 | 12 | 25 |
| | *Pass-By (ADT:52.5% AM: 50% PM:55%)* | | Pass-by | 437 | 22 | 22 | 44 | 14 | 15 | 29 |
| 6 | Hotel LUC - 310 | 121 Rooms | Primary | 861 | 30 | 24 | 54 | 29 | 28 | 57 |
| | *Pass-By (0%)* | | Pass-by | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | **Total Primary Trips** | | **2610** | **136** | **119** | **255** | **95** | **93** | **188** |
| | | **Total Pass-By Trips** | | **1689** | **97** | **93** | **190** | **62** | **62** | **124** |
| | | **Total Drive Trips** | | **4299** | **233** | **212** | **445** | **157** | **155** | **312** |

*Pass-by rates were derived from LUC 934 for estimations

Based on the data presented in Table 6, the project is anticipated to generate 2,610 new (primary) average weekday daily trips with 255 primary trips (136 inbound/119 outbound) in the AM peak hour and 188 primary trips (95 inbound/93 outbound) in the PM peak hour. In total, the site is estimated to generate 4,299 daily trips with 445 occurring in the AM peak hour and 312 in the PM peak hour.

## 4.2 Trip Distribution and Assignment

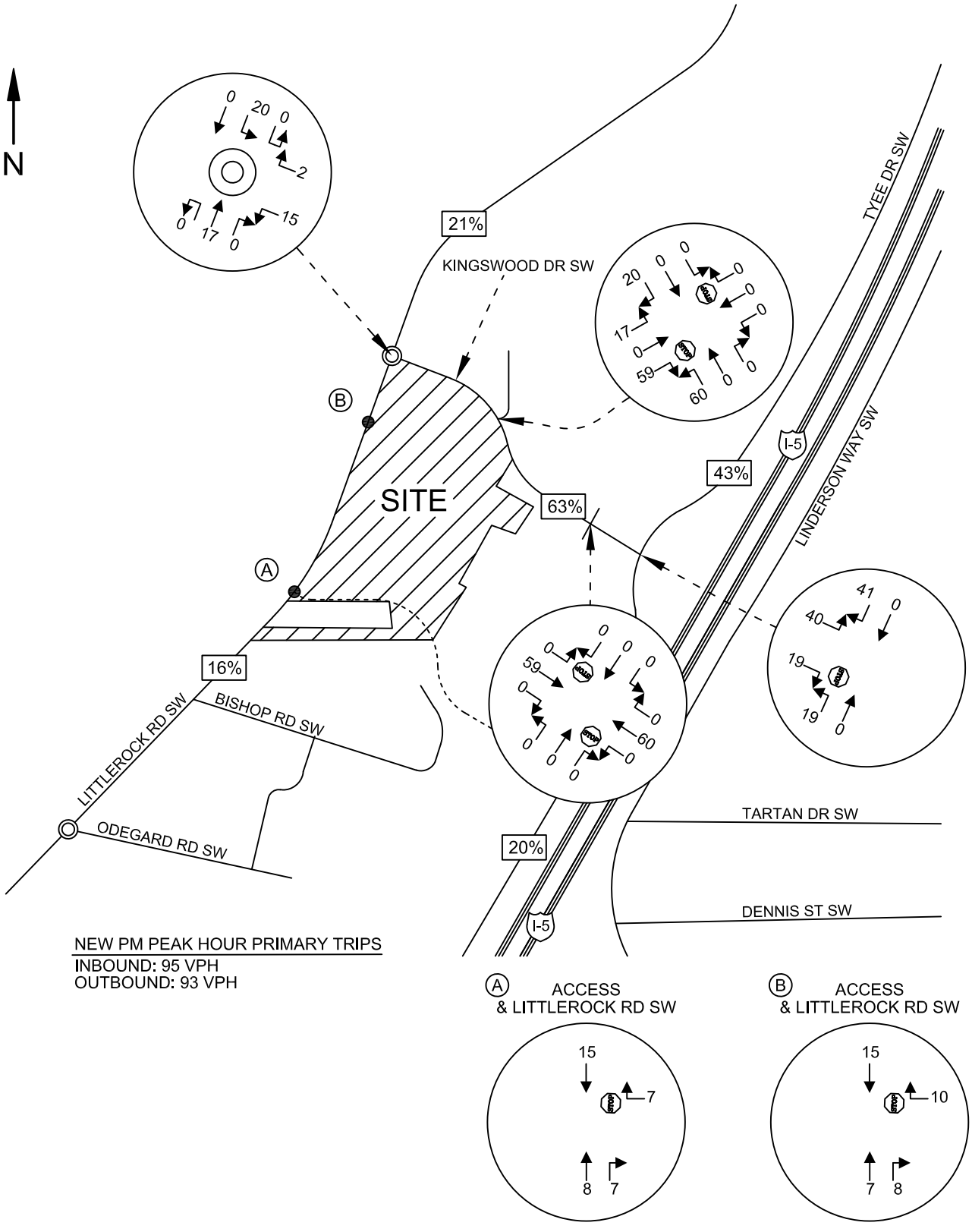
Trip distribution describes the anticipated travel routes for inbound and outbound project traffic during the peak hour study period. The specific destinations and origins of the generated traffic primarily influences the key intersections, which will effectively receive the bulk of project impacts. Anticipated distribution percentages and travel routes for the PM peak hour are illustrated in Figures 4 and 5 for the primary trips and the pass-by trips, respectively.

Percentages for primary trips are based on Thurston Regional Planning Council (TRPC) TAZ 930 Distribution Map. See appendix for complete TAZ map. Percentages for pass-by trips are based on existing travel patterns identified from the turning movement counts. It is important to note that pass-by trips are convenience based stops. Right-turns are generally more convenient and result in lower driver delays. Therefore a greater proportion of pass-by was assigned from the south by way of Littlerock Road SW.

Moreover, project-generated trips anticipated to travel through the Tumwater I-5 Interchange to the south as identified from the TAZ 930 map are outlined in Figures A-F (an exhibit for each use) in the appendix. It should also be noted that the development would have interconnectivity to/from the east via Home Depot; however, trips using this connection are expected to be minor and were not reflected or taken into account in the trip distribution modeling.

## 4.3 Future Peak Hour Volumes

A 5-year horizon of 2027 was used for future traffic delay analysis. Forecast 2027 background traffic volumes were derived by applying a 4 percent compound annual growth rate to the baseline volumes shown in Figure 3. This growth rate was utilized as directed by the City and is expected to account for miscellaneous growth near the subject site. Moreover, pipeline volumes associated with the adjacent Bishop Road Apartments project and the Kingswood Apartments project were included in forecast analysis. PM peak hour pipeline volumes are illustrated in Figure 6. Forecast 2027 PM peak hour volumes without and with project-generated traffic are illustrated in Figures 7 and 8.

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TRAFFIC AND CIVIL ENGINEERING

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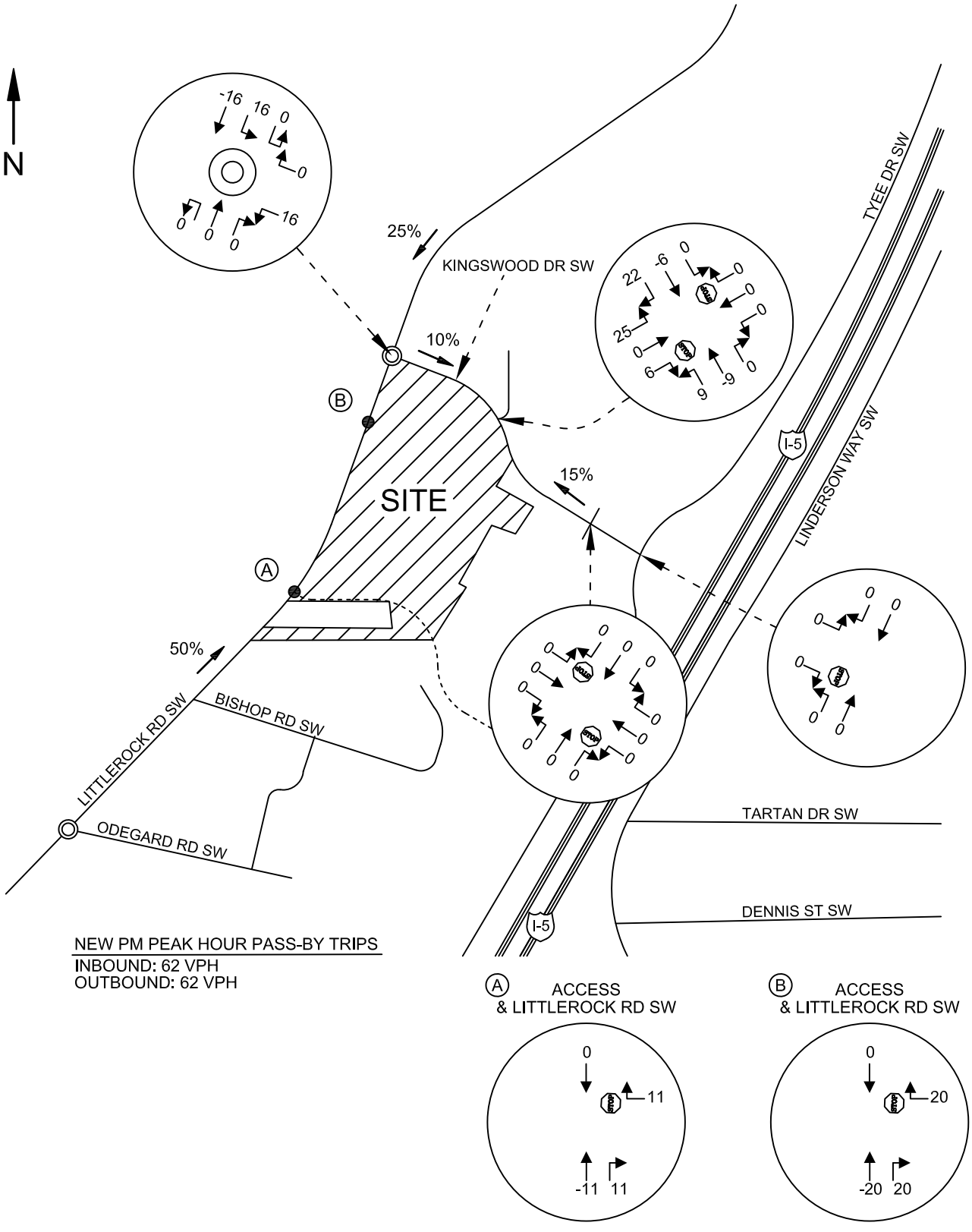
PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT (PRIMARY TRIPS)
FIGURE 4

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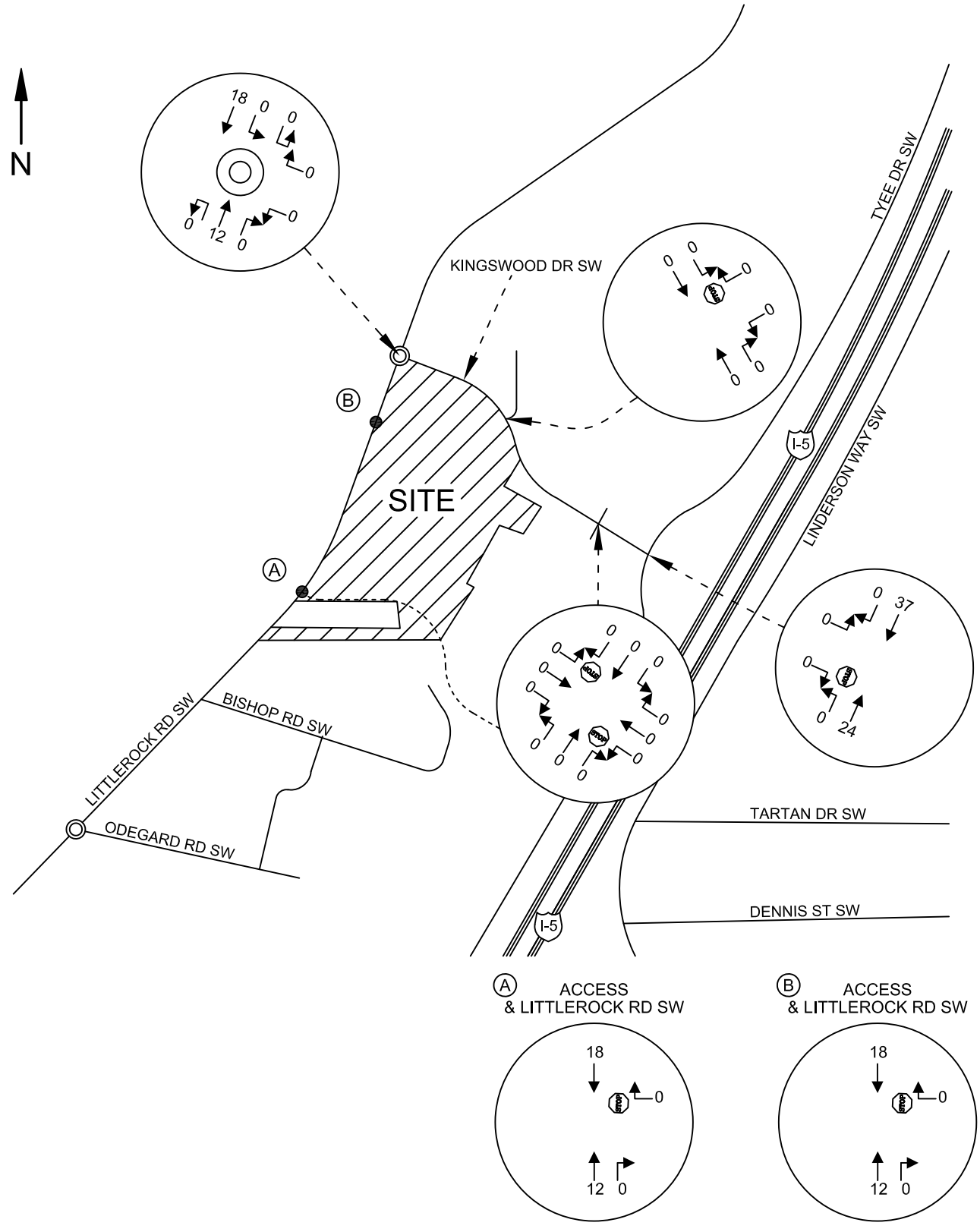
PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT (PASS-BY TRIPS)
FIGURE 5

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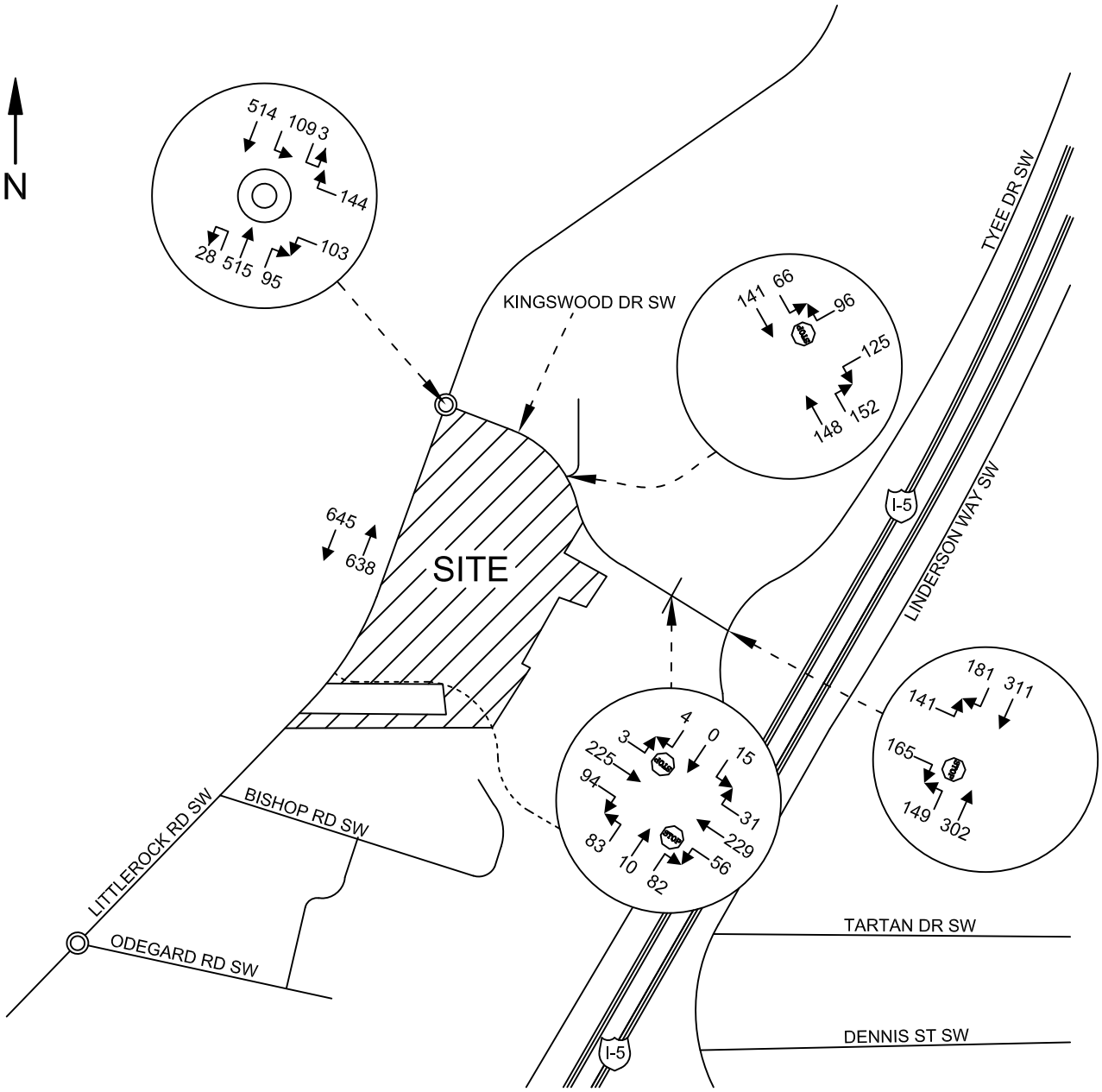
PM PEAK HOUR PIPELINE VOLUMES
FIGURE 6

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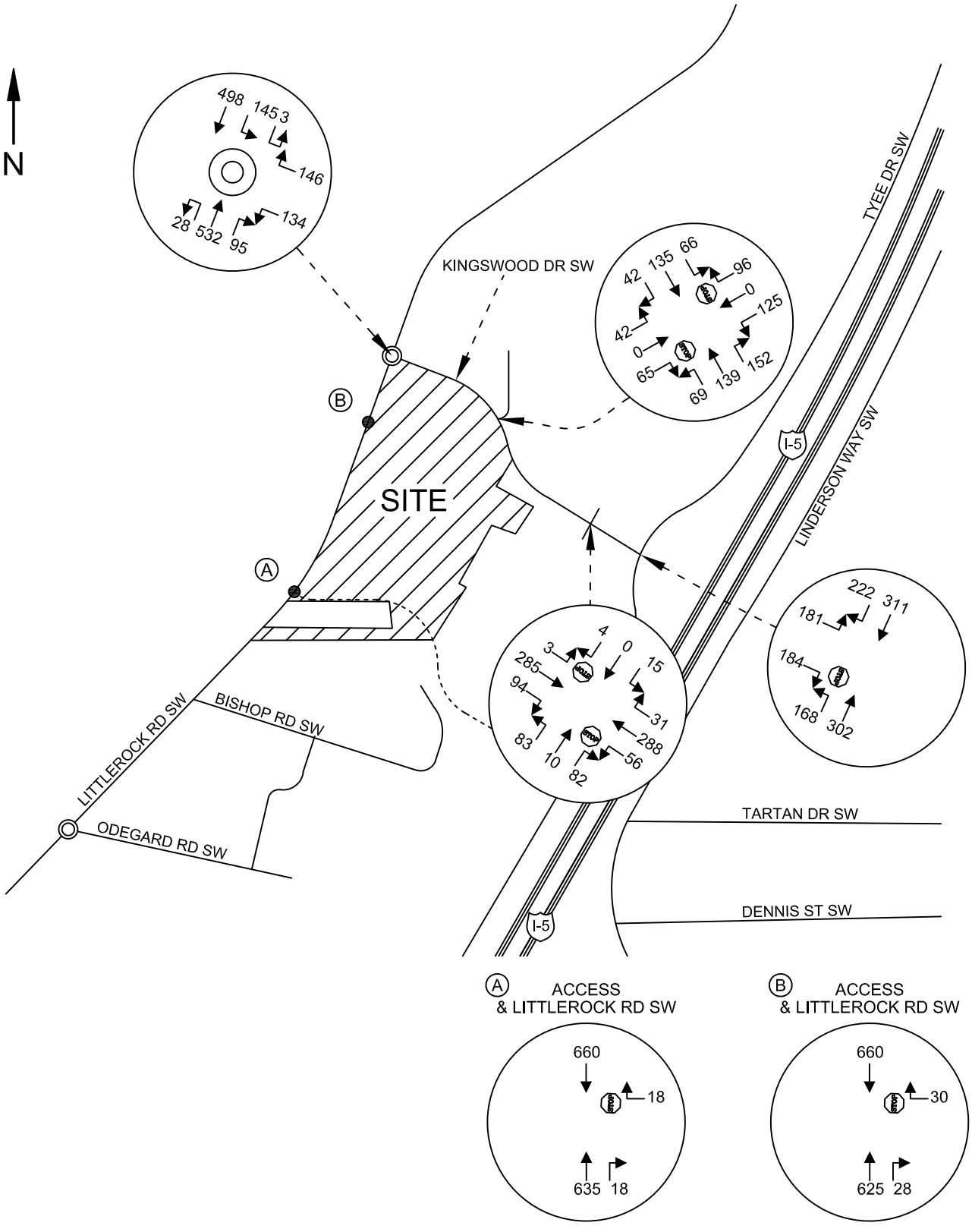
FORECAST 2027 PM PEAK HOUR VOLUMES WITHOUT PROJECT
FIGURE 7

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FORECAST 2027 PM PEAK HOUR VOLUMES WITH PROJECT

FIGURE 8

## 4.4 Future Level of Service

A level of service analysis was made of the future PM peak hour volumes without (background) and with project-generated trips. Results for intersection delay conditions were again determined using the *Synchro 11* and *SIDRA* analysis programs. A summary of the results are shown in Table 7 for the forecast 2027 PM peak travel hour.

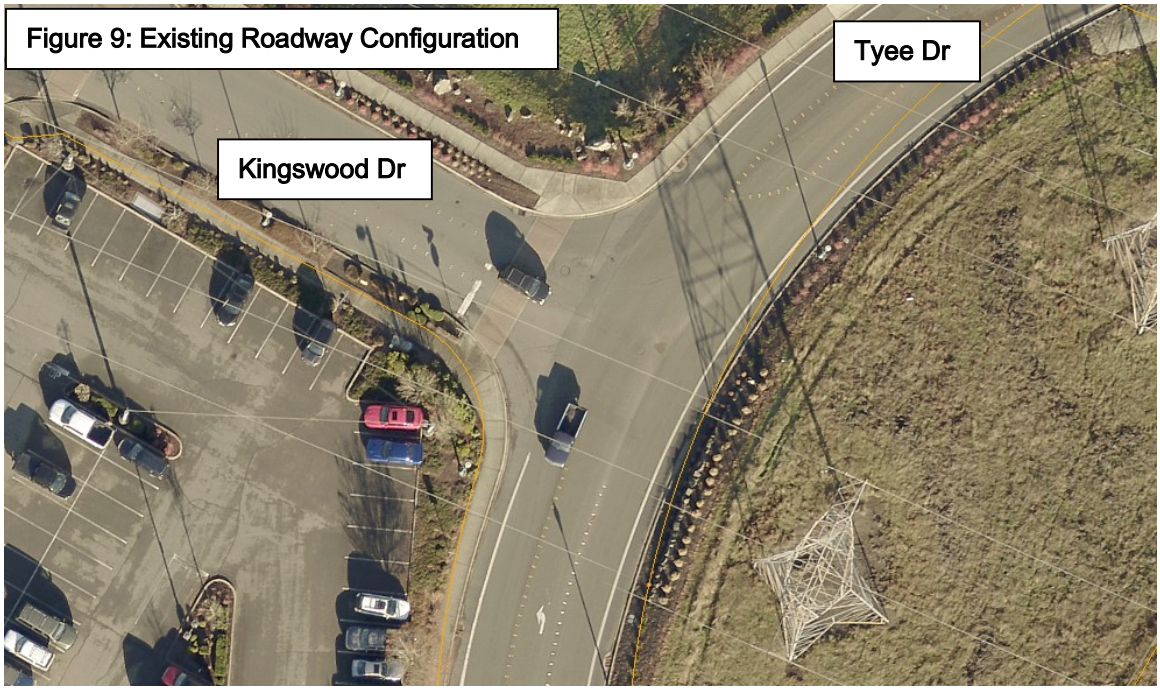
**Table 7: Forecast 2027 PM Peak Hour Level of Service**

*Delays given in seconds per vehicle*

| | | Background | | With Project | |
|---|---|---|---|---|---|
| **Intersection** | **Control** | **LOS** | **Delay** | **LOS** | **Delay** |
| Littlerock Rd SW & Kingswood Rd SW | RAB | A | 5.5 | A | 6.0 |
| Kingswood Dr SW & Walmart Access/Project Access | Stop | B | 12.9 | D | 25.2 |
| Kingswood Dr SW & Walmart East Access | Stop | C | 18.0 | C | 22.3 |
| Kingswood Dr SW & Tyee Dr SW | Stop | E | 38.0 | F | 86.1 |
| Littlerock Rd SW & North Access | Stop | - | - | B | 13.8 |
| Littlerock Rd SW & South Access | Stop | - | - | B | 13.6 |

Forecast 2027 PM peak hour delays are shown to operate acceptably—meeting City LOS D standards—at all study intersections and access points with the exception of Kingswood Drive SW & Tyee Drive SW.

**Kingswood Drive SW & Tyee Drive SW:** is shown to operate with deficient conditions in the forecast horizon year both without (LOS E) and with (LOS F) project. The three-leg intersection is stop-controlled at Kingswood Drive SW. With the additional background growth and pipeline development, Tyee Drive SW is shown to result in higher north/south volumes in the future thereby reducing the number of available gaps for the stop-controlled approach. Shown on the following page is an aerial image of the intersection and existing configuration.




Kingswood Drive SW accommodates separate left- and right-turn lanes at the intersection with Tyee Drive SW. Tyee Drive SW contains a northbound left-turn lane and a single travel lane in either direction. The north leg of Tyee Drive SW has a tapered off center lane. A potential mitigation could be opening up the center turn lane with restriping thereby allowing two-stage entries. Drivers currently need to negotiate an appropriate gap in both north and south travel lanes for permitted entry onto Tyee Drive SW. The restriping could allow a driver to perform their movement in two-steps. Table 8 below summarizes LOS with restriping.

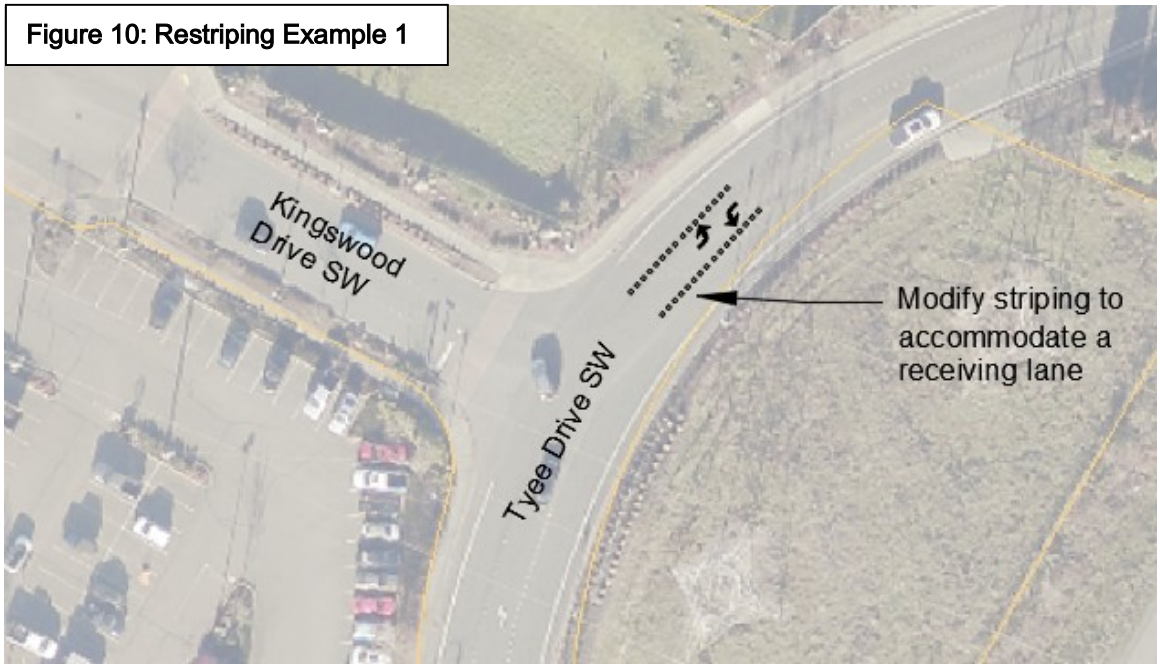
**Table 8: Forecast 2027 PM Peak Hour Level of Service with Mitigation**

*Delays given in seconds per vehicle*

| | | Existing Int. Configuration | | With Restriping Mitigation | |
|---|---|---|---|---|---|
| **Intersection** | **Control** | **LOS** | **Delay** | **LOS** | **Delay** |
| Kingswood Dr SW & Tyee Dr SW | Stop | F | 86.1 | C | 24.4 |

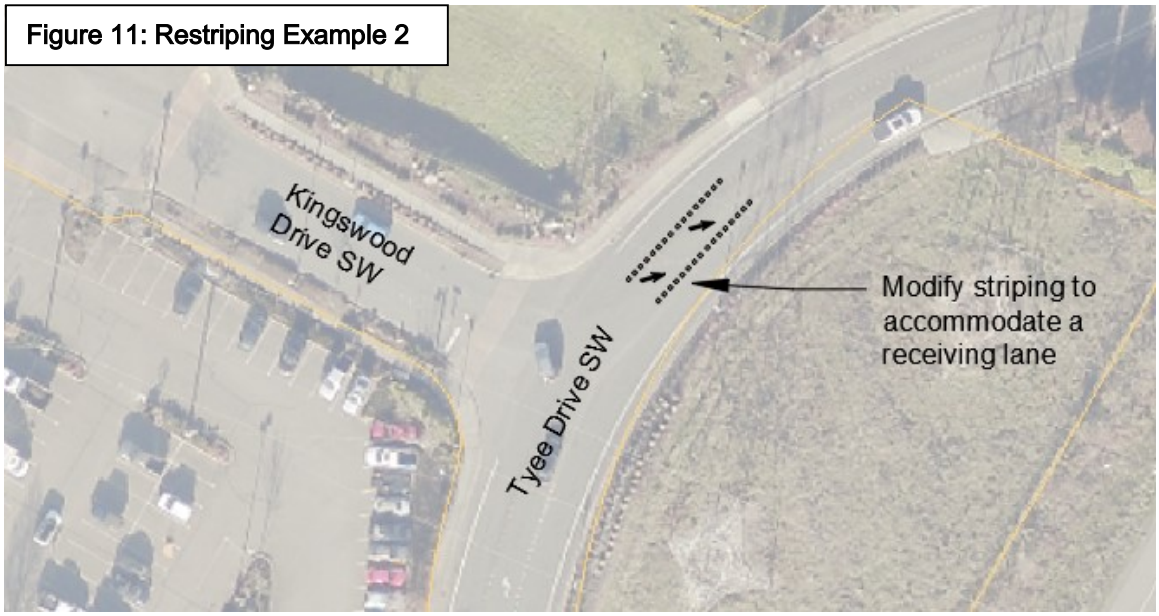
The mitigation improvement is shown to improve delays from LOS F (86.1 sec) to LOS C (24.4 sec) meeting City standards and lowering the delay at the intersection when compared to Forecast 2027 without project conditions. Shown on the following page are two restriping examples.

Figure 10: Restriping Example 1




Above is a two-way left-turn lane example that indicates to the side-street driver (Kingswood Drive SW) that two-stage movements are permitted.

Figure 11: Restriping Example 2




Example two illustrates a receiving acceleration lane as a potential alternative design. Either example is expected to improve conditions and reduce driver delays.

## 5. SUMMARY

Kingswood Commercial is a proposed mixed-use commercial development encompassing six proposed buildings of varying uses. Expected tenants range from a 121-room hotel, fast-food restaurants with drive-throughs, quick lube, and general strip retail space. Refer to site plan (Figure 2) for site layout and building sizes. The subject property, situated on 8.97-acres of undeveloped property within tax parcels: 127032404-04; -03, is bordered to the north by Kingwood Drive SW and to the west by Littlerock Road SW. Primary ingress and egress is proposed via a single access on Kingswood Drive SW and two accesses on Littlerock Road SW.

In total, the project is expected to generate 2,610 primary average weekday daily trips with 255 trips occurring in the AM peak hour and 188 trips in the PM peak hour. Additional trips in the form of pass-by and internal-linked are also expected but are not considered new trips to the City's system. Refer to Table 6 for building uses and trip generate values for each respective lot.

Baseline 2022 Level of Service (LOS) is summarized in Table 4 and indicates intersections operating with delays in the LOS C or better range after taking into account a 15.6 percent COVID adjustment factor. A five-year horizon of 2027 was utilized for forecast analysis, which included a compound annual growth rate of 4 percent and the addition of pipeline volumes from nearby in-process projects. Forecast 2027 PM peak hour LOS without and with the addition of project generated traffic is provided in Table 7. All study intersections and project accesses are expected to meet City standards of LOS D or better with the exception of Kingswood Drive SW & Tyee Drive SW which is shown to operate at LOS E without project traffic and LOS F with project traffic. Restriping the north leg of Tyee Drive SW to accommodate a receiving lane thereby permitting two-step entries from Kingswood Drive SW is shown to reduce delays and improve conditions to LOS C with the addition of project generated traffic. No other intersection deficiencies are mitigations are identified at this time.

Based on the analysis above, the following mitigation is recommended for the Kingswood Apartments project.

1. Kingswood Drive SW & Tyee Drive SW is shown to have deficient LOS under forecast 2027 PM peak hour conditions with project. Recommended mitigations is to modify the existing striping to accommodate a center receiving lane. This improvement is shown to improve operations to acceptable LOS C conditions with

project traffic. See Figures 10 and 11 for potential restriping examples. Actual design and improvements shall adhere to City standards and are subject to City review and approval.

2. Pay Traffic Impact Fees (TIF) as required by the City of Tumwater. Impact fees are based on the City's current fee schedule in effect at time of review. Fees are assessed and based on each proposed use. See table below for preliminary fee summary.

3. Pay SEPA Mitigation Fee for project traffic entering the Tumwater/I-5 Interchanges as required by the City of Tumwater. Fees have been calculated for each building based on their respective trip generation. See table below for preliminary fee summary.

**Table 9: Transportation Impact Fees/SEPA Mitigation Fees**

| Lot # | Land Use | Unit | $ Per Unit | Total City TIF | $ Per Tum. Blvd/ I-5 Trip | Tumwater Blvd Trips | SEPA Mit. Fee | Total TIF |
|---|---|---|---|---|---|---|---|---|
| 1 | LUC 934-Wendy's | 2,587 Sq Ft | $41.75 | $108,007.25 | | 2 | $8,438.00 | $116,445.25 |
| 2 | LUC 941-Valvoline | 3 Bays | $6,082.17 | $18,246.51 | | 1 | $4,219.00 | $22,465.51 |
| 3 | LUC 937-Starbucks | 2,000 Sq Ft | $51.92 | $103,840.00 | | 2 | $8,438.00 | $112,278.00 |
| | LUC 930-Mod Pizza | 2,600 Sq Ft | $26.14 | $67,964.00 | $4,219.00 | 2 | $8,438.00 | $76,402.00 |
| 4 | LUC 822-Retail | 4,800 Sq Ft | $6.63 | $31,824.00 | | 2 | $8,438.00 | $40,262.00 |
| 5 | LUC 934-Fast Food | 2,000 Sq Ft | $41.75 | $83,500.00 | | 2 | $8,438.00 | $91,938.00 |
| 6 | LUC 310-Hotel | 121 Rooms | $2,854.18 | $345,355.78 | | 4 | $16,876.00 | $362,231.78 |

Actual fees are based on final tenant occupancy and would be calculated by the City prior to building permit issuance.

No other mitigation is identified at this time.

KINGSWOOD COMMERCIAL
TRAFFIC IMPACT ANALYSIS

*APPENDIX*
*Tumwater BLVD/I-5 Interchange Figures*

# LEVEL OF SERVICE

The following are excerpts from the *2016 Highway Capacity Manual - Transportation Research Board Special Report 209.*

Quality of service requires quantitative measures to characterize operational conditions within a traffic stream. Level of service (LOS) is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.

Six LOS are defined for each type of facility that has analysis procedures available. Letters designate each level, from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each level of service represents a range of operating conditions and the driver's perception of those conditions.

## Level-of-Service definitions

The following definitions generally define the various levels of service for arterials.

*Level of service A represents* primarily free-flow operations at average travel speeds, usually about 90 percent of the free-flow speed for the arterial classification. Vehicles are seldom impeded in their ability to maneuver in the traffic stream. Delay at signalized intersections is minimal.

*Level of service B* represents reasonably unimpeded operations at average travel speeds, usually about 70 percent of the free-flow speed for the arterial classification. The ability to maneuver in the traffic stream is only slightly restricted and delays are not bothersome.

*Level of service C* represents stable operations; however, ability to maneuver and change lanes in midblock locations may be more restricted than in LOS B, and longer queues, adverse signal coordination, or both may contribute to lower average travel speeds of about 50 percent of the average free-flow speed for the arterial classification.

*Level of service D* borders on a range in which small increases in flow may cause substantial increases in approach delay and hence decreases in arterial speed. LOS D may be due to adverse signal progression, inappropriate signal timing, high volumes, or some combination of these. Average travel speeds are about 40 percent of free-flow speed.

*Level of service E* is characterized by significant delays and average travel speeds of one-third the free-flow speed or less. Such operations are caused by some combination of adverse progression, high signal density, high volumes, extensive delays at critical intersections, and inappropriate signal timing.

*Level of service F* characterizes arterial flow at extremely low speeds, from less than one-third to one-quarter of the free-flow speed. Intersection congestion is likely at critical signalized locations, with long delays and extensive queuing.

These definitions are general and conceptual in nature, and they apply primarily to uninterrupted flow. Levels of service for interrupted flow facilities vary widely in terms of both the user's perception of service quality and the operational variables used to describe them.

For each type of facility, levels of service are defined based on one or more operational parameters that best describe operating quality for the subject facility type. While the concept of level of service attempts to address a wide range of operating conditions, limitations on data collection and availability make it impractical to treat the full range of operational parameters for every type of facility. The parameters selected to define levels of service for each facility type are called "measures of effectiveness" or "MOE's", and represent available measures that best describe the quality of operation on the subject facility type.

Each level of service represents a range of conditions, as defined by a range in the parameters given. Thus, a level of service is not a discrete condition, but rather a range of conditions for which boundaries are established.

KINGSWOOD COMMERCIAL
TRAFFIC IMPACT ANALYSIS

*APPENDIX*
*2020 Historic Count*

# Heath & Associates

2214 Tacoma Rd E
Puyallup, WA, 98371

File Name : 4415d
Site Code : 00004415
Start Date : 2/4/2020
Page No : 1

Groups Printed- Passenger - Heavy Vehicles

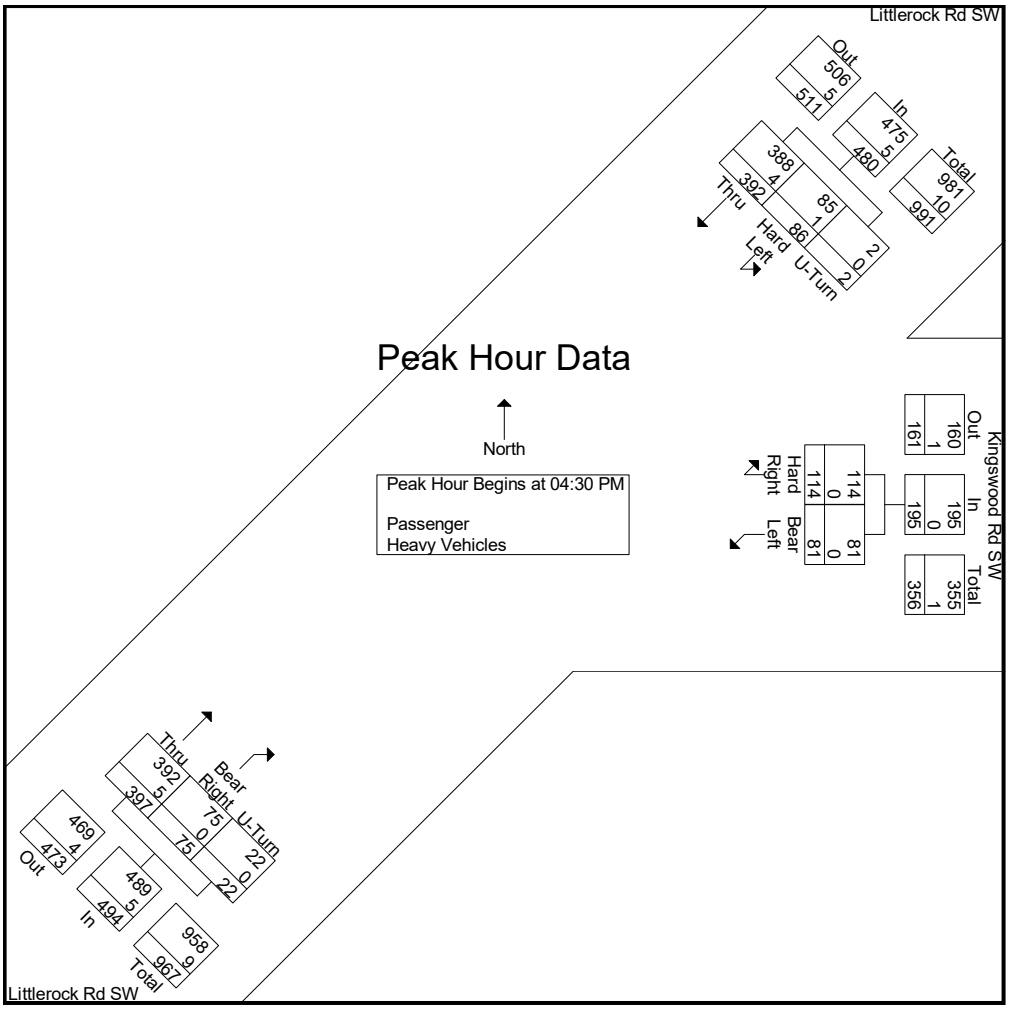
| | Littlerock Rd SW From Northeast | | | | Littlerock Rd SW From Southwest | | | | Kingswood Rd SW Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Thru | Hard Left | U-Turn | App. Total | Bear Right | Thru | U-Turn | App. Total | Hard Right | Bear Left | App. Total | Int. Total |
| 04:00 PM | 102 | 25 | 2 | 129 | 19 | 71 | 10 | 100 | 32 | 19 | 51 | 280 |
| 04:15 PM | 88 | 29 | 1 | 118 | 15 | 100 | 6 | 121 | 22 | 18 | 40 | 279 |
| 04:30 PM | 104 | 22 | 1 | 127 | 16 | 82 | 7 | 105 | 35 | 22 | 57 | 289 |
| 04:45 PM | 87 | 24 | 1 | 112 | 21 | 104 | 2 | 127 | 24 | 23 | 47 | 286 |
| Total | 381 | 100 | 5 | 486 | 71 | 357 | 25 | 453 | 113 | 82 | 195 | 1134 |
| | | | | | | | | | | | | |
| 05:00 PM | 94 | 19 | 0 | 113 | 23 | 115 | 12 | 150 | 27 | 17 | 44 | 307 |
| 05:15 PM | 107 | 21 | 0 | 128 | 15 | 96 | 1 | 112 | 28 | 19 | 47 | 287 |
| 05:30 PM | 120 | 13 | 0 | 133 | 17 | 61 | 4 | 82 | 16 | 18 | 34 | 249 |
| 05:45 PM | 77 | 15 | 2 | 94 | 12 | 57 | 6 | 75 | 17 | 17 | 34 | 203 |
| Total | 398 | 68 | 2 | 468 | 67 | 329 | 23 | 419 | 88 | 71 | 159 | 1046 |
| | | | | | | | | | | | | |
| Grand Total | 779 | 168 | 7 | 954 | 138 | 686 | 48 | 872 | 201 | 153 | 354 | 2180 |
| Apprch % | 81.7 | 17.6 | 0.7 | | 15.8 | 78.7 | 5.5 | | 56.8 | 43.2 | | |
| Total % | 35.7 | 7.7 | 0.3 | 43.8 | 6.3 | 31.5 | 2.2 | 40 | 9.2 | 7 | 16.2 | |
| Passenger | 771 | 166 | 7 | 944 | 138 | 678 | 48 | 864 | 199 | 153 | 352 | 2160 |
| % Passenger | 99 | 98.8 | 100 | 99 | 100 | 98.8 | 100 | 99.1 | 99 | 100 | 99.4 | 99.1 |
| Heavy Vehicles | 8 | 2 | 0 | 10 | 0 | 8 | 0 | 8 | 2 | 0 | 2 | 20 |
| % Heavy Vehicles | 1 | 1.2 | 0 | 1 | 0 | 1.2 | 0 | 0.9 | 1 | 0 | 0.6 | 0.9 |

# Heath & Associates

2214 Tacoma Rd E
Puyallup, WA, 98371

File Name : 4415d
Site Code : 00004415
Start Date : 2/4/2020
Page No : 3

| | Littlerock Rd SW From Northeast | | | | Littlerock Rd SW From Southwest | | | | Kingswood Rd SW Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Thru | Hard Left | U-Turn | App. Total | Bear Right | Thru | U-Turn | App. Total | Hard Right | Bear Left | 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 | 104 | 22 | **1** | 127 | 16 | 82 | 7 | 105 | **35** | 22 | **57** | 289 |
| 04:45 PM | 87 | **24** | 1 | 112 | 21 | 104 | 2 | 127 | 24 | **23** | 47 | 286 |
| 05:00 PM | 94 | 19 | 0 | 113 | **23** | **115** | **12** | **150** | 27 | 17 | 44 | **307** |
| 05:15 PM | **107** | 21 | 0 | **128** | 15 | 96 | 1 | 112 | 28 | 19 | 47 | 287 |
| Total Volume | 392 | 86 | 2 | 480 | 75 | 397 | 22 | 494 | 114 | 81 | 195 | 1169 |
| % App. Total | 81.7 | 17.9 | 0.4 | | 15.2 | 80.4 | 4.5 | | 58.5 | 41.5 | | |
| PHF | .916 | .896 | .500 | .938 | .815 | .863 | .458 | .823 | .814 | .880 | .855 | .952 |
| Passenger | 388 | 85 | 2 | 475 | 75 | 392 | 22 | 489 | 114 | 81 | 195 | 1159 |
| % Passenger | 99.0 | 98.8 | 100 | 99.0 | 100 | 98.7 | 100 | 99.0 | 100 | 100 | 100 | 99.1 |
| Heavy Vehicles | 4 | 1 | 0 | 5 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 10 |
| % Heavy Vehicles | 1.0 | 1.2 | 0 | 1.0 | 0 | 1.3 | 0 | 1.0 | 0 | 0 | 0 | 0.9 |

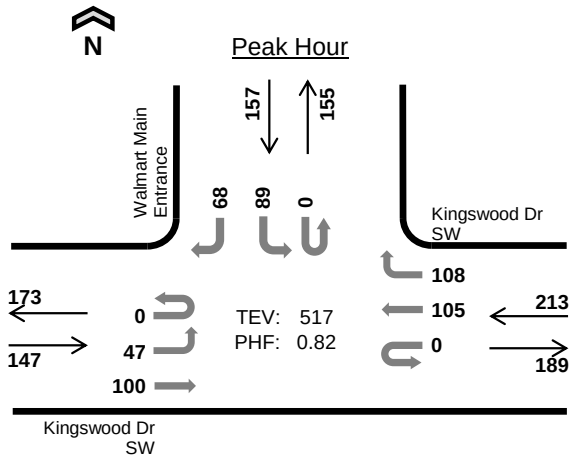


KINGSWOOD COMMERCIAL
TRAFFIC IMPACT ANALYSIS

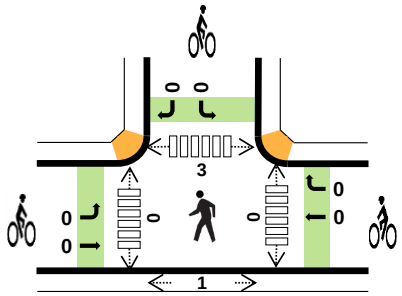
*APPENDIX*
*2022 Count Sheets*

www.idaxdata.com

# Walmart Main Entrance
# Kingswood Dr SW




**Date: 05/11/2022**
**Count Period: 4:00 PM to 6:00 PM**
**Peak Hour: 4:00 PM to 5:00 PM**




| | HV %: | PHF |
|---|---|---|
| EB | 1.4% | 0.92 |
| WB | 0.0% | 0.81 |
| NB | - | - |
| SB | 0.0% | 0.77 |
| TOTAL | 0.4% | 0.82 |

## Two-Hour Count Summaries

| Interval Start | | Kingswood Dr SW Eastbound | | | | Kingswood Dr SW Westbound | | | | 0 Northbound | | | | Walmart Main Entrance 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** | **11** | **29** | **0** | **0** | **0** | **29** | **37** | **0** | **0** | **0** | **0** | **0** | **31** | **0** | **20** | **157** | 0 |
| **4:15 PM** | | **0** | **7** | **26** | **0** | **0** | **0** | **21** | **26** | **0** | **0** | **0** | **0** | **0** | **17** | **0** | **16** | **113** | 0 |
| **4:30 PM** | | **0** | **15** | **22** | **0** | **0** | **0** | **26** | **19** | **0** | **0** | **0** | **0** | **0** | **21** | **0** | **16** | **119** | 0 |
| **4:45 PM** | | **0** | **14** | **23** | **0** | **0** | **0** | **29** | **26** | **0** | **0** | **0** | **0** | **0** | **20** | **0** | **16** | **128** | **517** |
| 5:00 PM | | 0 | 8 | 30 | 0 | 0 | 0 | 32 | 30 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 14 | 133 | 493 |
| 5:15 PM | | 0 | 7 | 26 | 0 | 0 | 0 | 36 | 30 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 21 | 135 | 515 |
| 5:30 PM | | 0 | 11 | 28 | 0 | 0 | 0 | 14 | 24 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 11 | 106 | 502 |
| 5:45 PM | | 0 | 7 | 17 | 0 | 0 | 0 | 14 | 23 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 17 | 98 | 472 |
| Count Total | | 0 | 80 | 201 | 0 | 0 | 0 | 201 | 215 | 0 | 0 | 0 | 0 | 0 | 161 | 0 | 131 | 989 | 0 |
| **Peak Hour** | **All** | **0** | **47** | **100** | **0** | **0** | **0** | **105** | **108** | **0** | **0** | **0** | **0** | **0** | **89** | **0** | **68** | **517** | **0** |
| | **HV** | **0** | **0** | **2** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **2** | **0** |
| | **HV%** | **-** | **0%** | **2%** | **-** | **-** | **-** | **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 | | | | | Bicycles | | | | | Pedestrians (Crossing Leg) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EB | WB | NB | SB | Total | EB | WB | NB | SB | Total | East | West | North | South | Total |
| **4:00 PM** | **2** | **0** | **0** | **0** | ***2*** | **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** | **3** | **1** | *4* |
| **4:30 PM** | **0** | **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** | ***0*** |
| 5:00 PM | 0 | 0 | 0 | 0 | *0* | 0 | 0 | 0 | 0 | *0* | 0 | 0 | 0 | 1 | *1* |
| 5:15 PM | 0 | 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 | *0* |
| 5:45 PM | 0 | 0 | 0 | 0 | *0* | 0 | 0 | 0 | 0 | *0* | 0 | 0 | 1 | 0 | *1* |
| Count Total | 2 | 0 | 0 | 0 | *2* | 0 | 0 | 0 | 0 | *0* | 0 | 0 | 4 | 2 | *6* |
| **Peak Hr** | **2** | **0** | **0** | **0** | ***2*** | **0** | **0** | **0** | **0** | ***0*** | **0** | **0** | **3** | **1** | ***4*** |

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## Two-Hour Count Summaries - Heavy Vehicles

| Interval Start | Kingswood Dr SW Eastbound | | | | Kingswood Dr SW Westbound | | | | 0 Northbound | | | | Walmart Main Entrance 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** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **2** | 0 |
| **4:15 PM** | **0** | **0** | **0** | **0** | **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** | **0** | **0** | **0** | 0 |
| **4:45 PM** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **2** |
| 5:00 PM | 0 | 0 | 0 | 0 | 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 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Count Total | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| **Peak Hour** | **0** | **0** | **2** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **2** | **0** |

## Two-Hour Count Summaries - Bikes

| Interval Start | Kingswood Dr SW Eastbound | | | Kingswood Dr SW Westbound | | | 0 Northbound | | | Walmart Main Entrance 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 | 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 | 0 | 0 | 0 | 0 | 0 | 0 | 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.*

# Heath & Associates

PO Box 397
Puyallup, WA 98371

File Name : 4870a
Site Code : 00004870
Start Date : 5/19/2022
Page No : 1

Groups Printed- Passenger + - Heavy

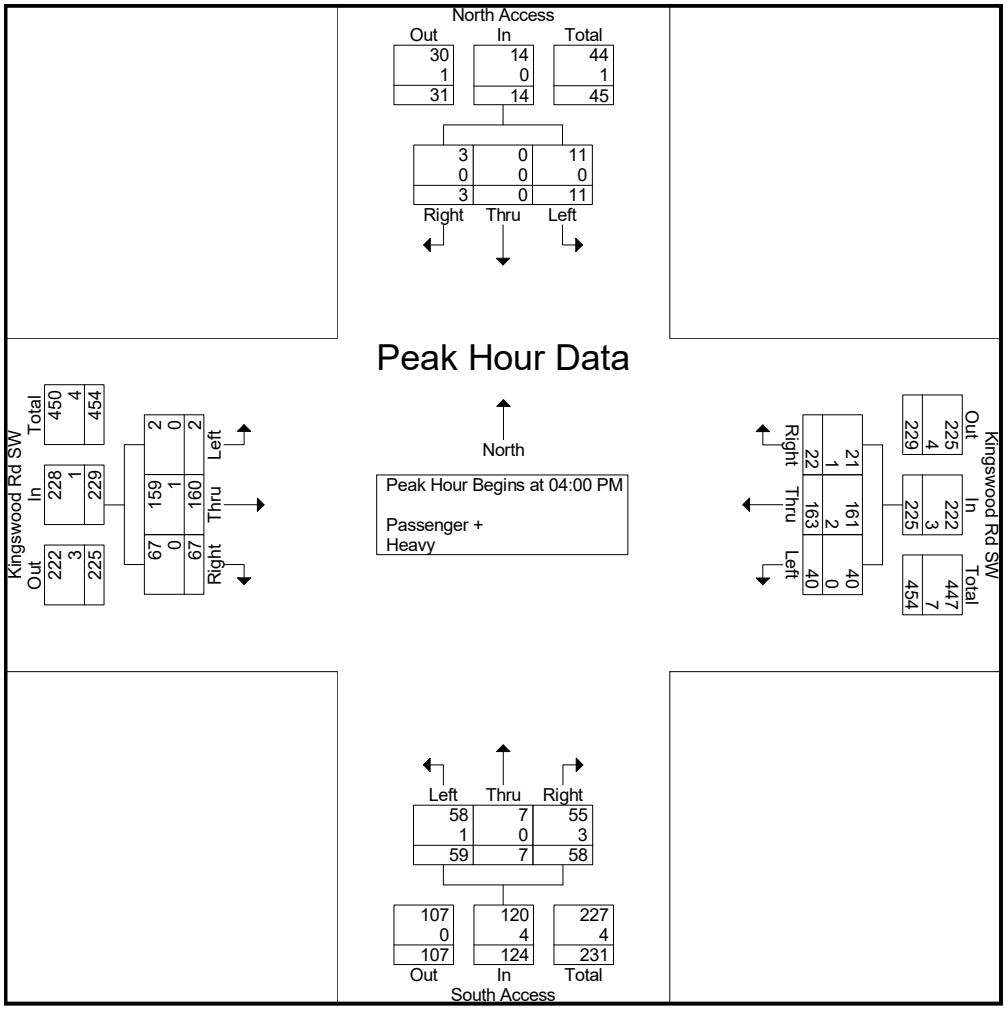
| | North Access Southbound | | | | Kingswood Rd SW Westbound | | | | South Access Northbound | | | | Kingswood Rd SW Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 4 | 4 | 1 | 46 | 17 | 64 | 17 | 1 | 14 | 32 | 22 | 35 | 0 | 57 | 157 |
| 04:15 PM | 0 | 0 | 4 | 4 | 4 | 31 | 10 | 45 | 15 | 3 | 22 | 40 | 16 | 31 | 1 | 48 | 137 |
| 04:30 PM | 0 | 0 | 2 | 2 | 9 | 42 | 6 | 57 | 11 | 2 | 18 | 31 | 16 | 46 | 0 | 62 | 152 |
| 04:45 PM | 3 | 0 | 1 | 4 | 8 | 44 | 7 | 59 | 15 | 1 | 5 | 21 | 13 | 48 | 1 | 62 | 146 |
| Total | 3 | 0 | 11 | 14 | 22 | 163 | 40 | 225 | 58 | 7 | 59 | 124 | 67 | 160 | 2 | 229 | 592 |
| | | | | | | | | | | | | | | | | | |
| 05:00 PM | 0 | 1 | 3 | 4 | 10 | 42 | 7 | 59 | 20 | 2 | 4 | 26 | 13 | 39 | 0 | 52 | 141 |
| 05:15 PM | 0 | 1 | 2 | 3 | 6 | 53 | 4 | 63 | 17 | 2 | 10 | 29 | 17 | 37 | 0 | 54 | 149 |
| 05:30 PM | 0 | 1 | 1 | 2 | 8 | 32 | 8 | 48 | 16 | 4 | 6 | 26 | 16 | 40 | 0 | 56 | 132 |
| 05:45 PM | 2 | 1 | 3 | 6 | 4 | 29 | 7 | 40 | 14 | 1 | 7 | 22 | 9 | 32 | 0 | 41 | 109 |
| Total | 2 | 4 | 9 | 15 | 28 | 156 | 26 | 210 | 67 | 9 | 27 | 103 | 55 | 148 | 0 | 203 | 531 |
| | | | | | | | | | | | | | | | | | |
| Grand Total | 5 | 4 | 20 | 29 | 50 | 319 | 66 | 435 | 125 | 16 | 86 | 227 | 122 | 308 | 2 | 432 | 1123 |
| Apprch % | 17.2 | 13.8 | 69 | | 11.5 | 73.3 | 15.2 | | 55.1 | 7 | 37.9 | | 28.2 | 71.3 | 0.5 | | |
| Total % | 0.4 | 0.4 | 1.8 | 2.6 | 4.5 | 28.4 | 5.9 | 38.7 | 11.1 | 1.4 | 7.7 | 20.2 | 10.9 | 27.4 | 0.2 | 38.5 | |
| Passenger + | 5 | 4 | 20 | 29 | 49 | 316 | 66 | 431 | 121 | 16 | 84 | 221 | 121 | 307 | 2 | 430 | 1111 |
| % Passenger + | 100 | 100 | 100 | 100 | 98 | 99.1 | 100 | 99.1 | 96.8 | 100 | 97.7 | 97.4 | 99.2 | 99.7 | 100 | 99.5 | 98.9 |
| Heavy | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 4 | 4 | 0 | 2 | 6 | 1 | 1 | 0 | 2 | 12 |
| % Heavy | 0 | 0 | 0 | 0 | 2 | 0.9 | 0 | 0.9 | 3.2 | 0 | 2.3 | 2.6 | 0.8 | 0.3 | 0 | 0.5 | 1.1 |

# Heath & Associates

PO Box 397
Puyallup, WA 98371

File Name : 4870a
Site Code : 00004870
Start Date : 5/19/2022
Page No : 2

| | North Access Southbound | | | | Kingswood Rd SW Westbound | | | | South Access Northbound | | | | Kingswood Rd SW Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | 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 04:00 PM | | | | | | | | | | | | | | | | | |
| 04:00 PM | 0 | 0 | **4** | **4** | 1 | **46** | **17** | **64** | **17** | 1 | 14 | 32 | **22** | 35 | 0 | 57 | **157** |
| 04:15 PM | 0 | 0 | 4 | 4 | 4 | 31 | 10 | 45 | 15 | **3** | **22** | **40** | 16 | 31 | **1** | 48 | 137 |
| 04:30 PM | 0 | 0 | 2 | 2 | **9** | 42 | 6 | 57 | 11 | 2 | 18 | 31 | 16 | 46 | 0 | **62** | 152 |
| 04:45 PM | **3** | 0 | 1 | 4 | 8 | 44 | 7 | 59 | 15 | 1 | 5 | 21 | 13 | **48** | 1 | 62 | 146 |
| Total Volume | 3 | 0 | 11 | 14 | 22 | 163 | 40 | 225 | 58 | 7 | 59 | 124 | 67 | 160 | 2 | 229 | 592 |
| % App. Total | 21.4 | 0 | 78.6 | | 9.8 | 72.4 | 17.8 | | 46.8 | 5.6 | 47.6 | | 29.3 | 69.9 | 0.9 | | |
| PHF | .250 | .000 | .688 | .875 | .611 | .886 | .588 | .879 | .853 | .583 | .670 | .775 | .761 | .833 | .500 | .923 | .943 |
| Passenger + | 3 | 0 | 11 | 14 | 21 | 161 | 40 | 222 | 55 | 7 | 58 | 120 | 67 | 159 | 2 | 228 | 584 |
| % Passenger + | 100 | 0 | 100 | 100 | 95.5 | 98.8 | 100 | 98.7 | 94.8 | 100 | 98.3 | 96.8 | 100 | 99.4 | 100 | 99.6 | 98.6 |
| Heavy | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 3 | 3 | 0 | 1 | 4 | 0 | 1 | 0 | 1 | 8 |
| % Heavy | 0 | 0 | 0 | 0 | 4.5 | 1.2 | 0 | 1.3 | 5.2 | 0 | 1.7 | 3.2 | 0 | 0.6 | 0 | 0.4 | 1.4 |



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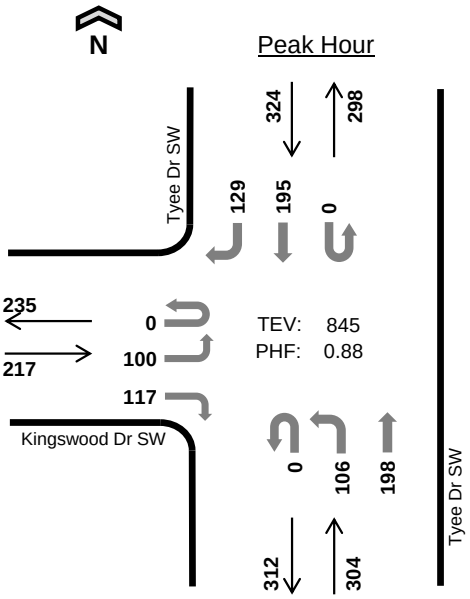
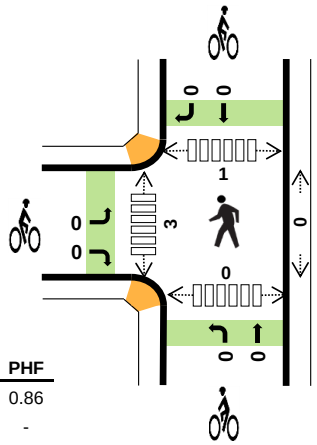
# Tyee Dr SW
# Kingswood Dr SW




**Date: 05/11/2022**
**Count Period: 4:00 PM to 6:00 PM**
**Peak Hour: 4:30 PM to 5:30 PM**




| | HV %: | PHF |
|---|---|---|
| EB | 0.5% | 0.86 |
| WB | - | - |
| NB | 0.0% | 0.86 |
| SB | 0.3% | 0.90 |
| TOTAL | 0.2% | 0.88 |

## Two-Hour Count Summaries

| Interval Start | | Kingswood Dr SW Eastbound | | | | 0 Westbound | | | | Tyee Dr SW Northbound | | | | Tyee Dr SW 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 | 23 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 21 | 54 | 0 | 0 | 0 | 64 | 34 | 226 | 0 |
| 4:15 PM | | 0 | 30 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 15 | 40 | 0 | 0 | 0 | 37 | 24 | 162 | 0 |
| **4:30 PM** | | **0** | **28** | **0** | **35** | **0** | **0** | **0** | **0** | **0** | **21** | **53** | **0** | **0** | **0** | **42** | **30** | **209** | 0 |
| **4:45 PM** | | **0** | **19** | **0** | **26** | **0** | **0** | **0** | **0** | **0** | **20** | **51** | **0** | **0** | **0** | **48** | **36** | **200** | 797 |
| **5:00 PM** | | **0** | **31** | **0** | **31** | **0** | **0** | **0** | **0** | **0** | **33** | **55** | **0** | **0** | **0** | **59** | **31** | **240** | 811 |
| **5:15 PM** | | **0** | **22** | **0** | **25** | **0** | **0** | **0** | **0** | **0** | **32** | **39** | **0** | **0** | **0** | **46** | **32** | **196** | **845** |
| 5:30 PM | | 0 | 29 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 11 | 37 | 0 | 0 | 0 | 39 | 31 | 174 | 810 |
| 5:45 PM | | 0 | 26 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 18 | 24 | 0 | 0 | 0 | 50 | 22 | 159 | 769 |
| Count Total | | 0 | 208 | 0 | 209 | 0 | 0 | 0 | 0 | 0 | 171 | 353 | 0 | 0 | 0 | 385 | 240 | 1,566 | 0 |
| **Peak Hour** | **All** | **0** | **100** | **0** | **117** | **0** | **0** | **0** | **0** | **0** | **106** | **198** | **0** | **0** | **0** | **195** | **129** | **845** | **0** |
| | **HV** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **2** | **0** |
| | **HV%** | **-** | **1%** | **-** | **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 | | | | | Bicycles | | | | | Pedestrians (Crossing Leg) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EB | WB | NB | SB | Total | EB | WB | NB | SB | Total | East | West | North | South | Total |
| 4:00 PM | 1 | 0 | 1 | 1 | *3* | 0 | 0 | 0 | 1 | *1* | 0 | 1 | 0 | 0 | *1* |
| 4:15 PM | 0 | 0 | 0 | 1 | *1* | 0 | 0 | 0 | 0 | *0* | 0 | 0 | 0 | 0 | *0* |
| **4:30 PM** | **1** | **0** | **0** | **0** | ***1*** | **0** | **0** | **0** | **0** | ***0*** | **0** | **0** | **0** | **0** | *0* |
| **4:45 PM** | **0** | **0** | **0** | **1** | ***1*** | **0** | **0** | **0** | **0** | ***0*** | **0** | **1** | **0** | **0** | *1* |
| **5:00 PM** | **0** | **0** | **0** | **0** | ***0*** | **0** | **0** | **0** | **0** | ***0*** | **0** | **2** | **1** | **0** | *3* |
| **5:15 PM** | **0** | **0** | **0** | **0** | ***0*** | **0** | **0** | **0** | **0** | ***0*** | **0** | **0** | **0** | **0** | ***0*** |
| 5:30 PM | 1 | 0 | 0 | 1 | *2* | 0 | 0 | 0 | 0 | *0* | 0 | 0 | 0 | 0 | *0* |
| 5:45 PM | 0 | 0 | 1 | 1 | *2* | 0 | 0 | 0 | 0 | *0* | 0 | 0 | 0 | 0 | *0* |
| Count Total | 3 | 0 | 2 | 5 | *10* | 0 | 0 | 0 | 1 | *1* | 0 | 4 | 1 | 0 | *5* |
| **Peak Hr** | **1** | **0** | **0** | **1** | ***2*** | **0** | **0** | **0** | **0** | ***0*** | **0** | **3** | **1** | **0** | ***4*** |

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## Two-Hour Count Summaries - Heavy Vehicles

| Interval Start | Kingswood Dr SW | | | | 0 | | | | Tyee Dr SW | | | | Tyee Dr SW | | | | 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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 3 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| **4:30 PM** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | 0 |
| **4:45 PM** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **1** | 6 |
| **5:00 PM** | **0** | **0** | **0** | **0** | **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** | **0** | **0** | **0** | **0** | **2** |
| 5:30 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 4 |
| Count Total | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 2 | 10 | 0 |
| **Peak Hour** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **2** | **0** |

## Two-Hour Count Summaries - Bikes

| Interval Start | Kingswood Dr SW | | | 0 | | | Tyee Dr SW | | | Tyee Dr SW | | | 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 | 1 | 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 | 0 | 0 | 0 | 1 | 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.*

KINGSWOOD COMMERCIAL
TRAFFIC IMPACT ANALYSIS

*APPENDIX*
*ITE Sheets*

# Fast-Food Restaurant with Drive-Through Window
(934)

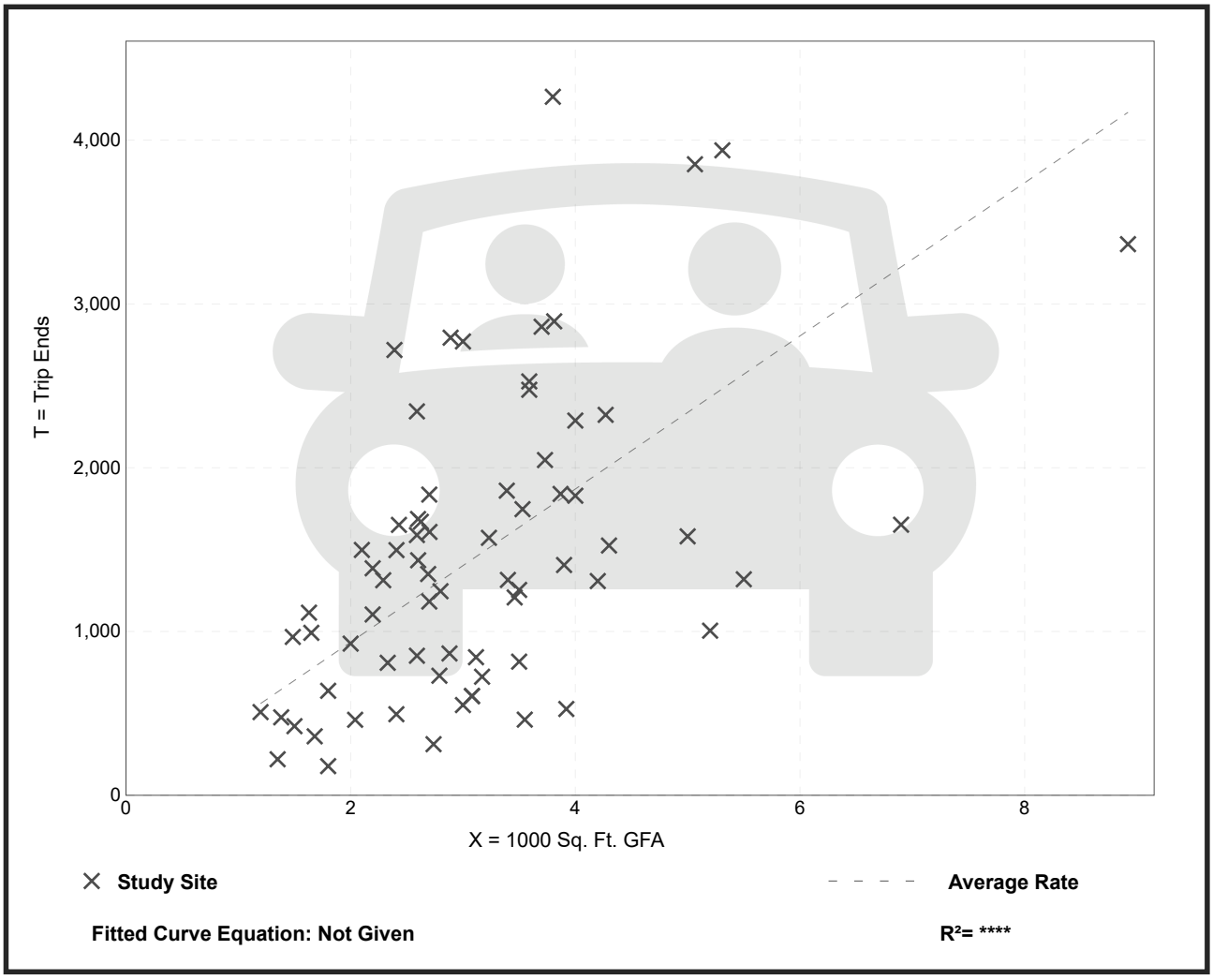
**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday**

**Setting/Location:** **General Urban/Suburban**
Number of Studies: 71
Avg. 1000 Sq. Ft. GFA: 3
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 467.48 | 98.89 - 1137.66 | 238.62 |

## Data Plot and Equation

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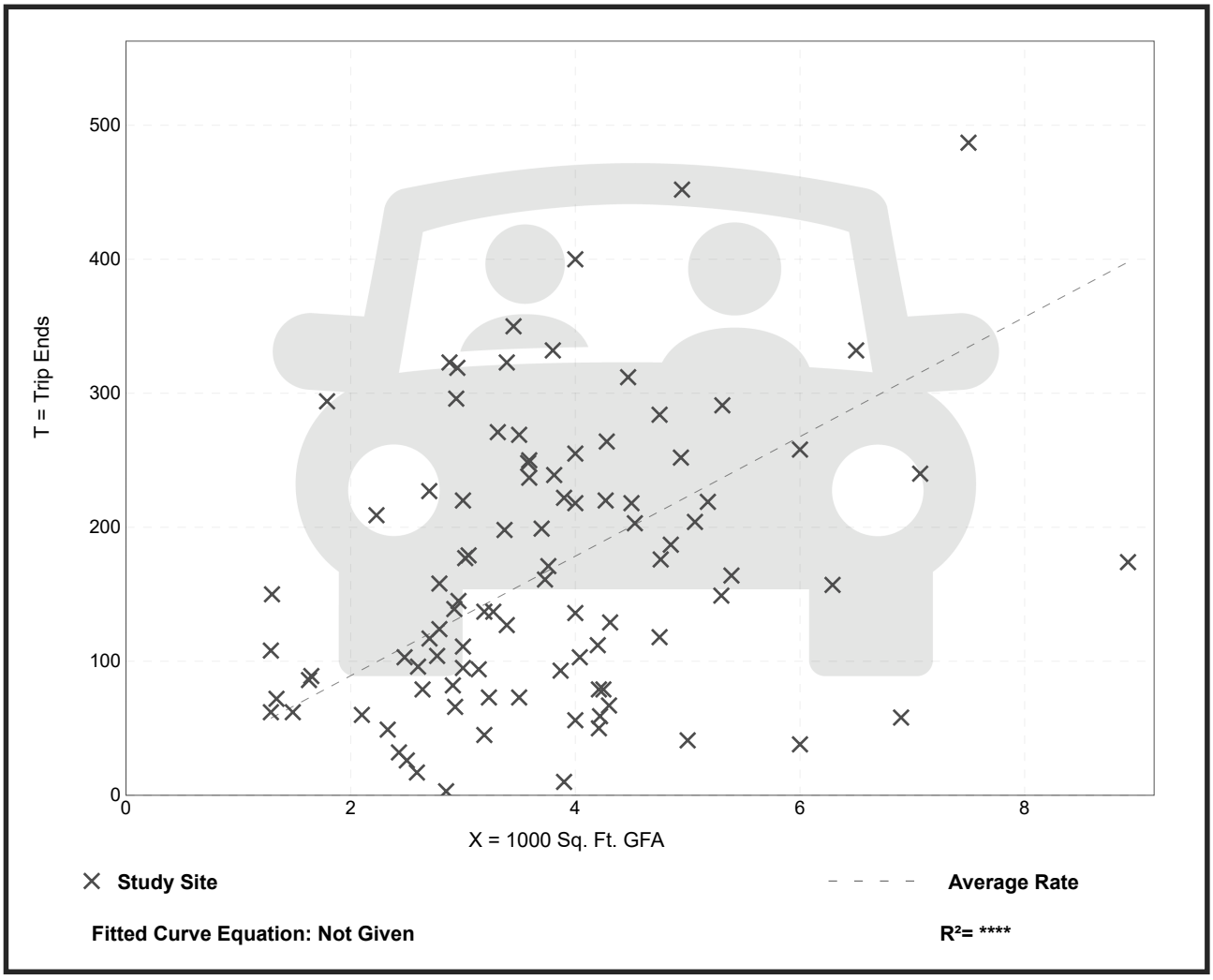
# Fast-Food Restaurant with Drive-Through Window
(934)

**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 7 and 9 a.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 96
Avg. 1000 Sq. Ft. GFA: 4
Directional Distribution: 51% entering, 49% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 44.61 | 1.05 - 164.25 | 27.14 |

## Data Plot and Equation

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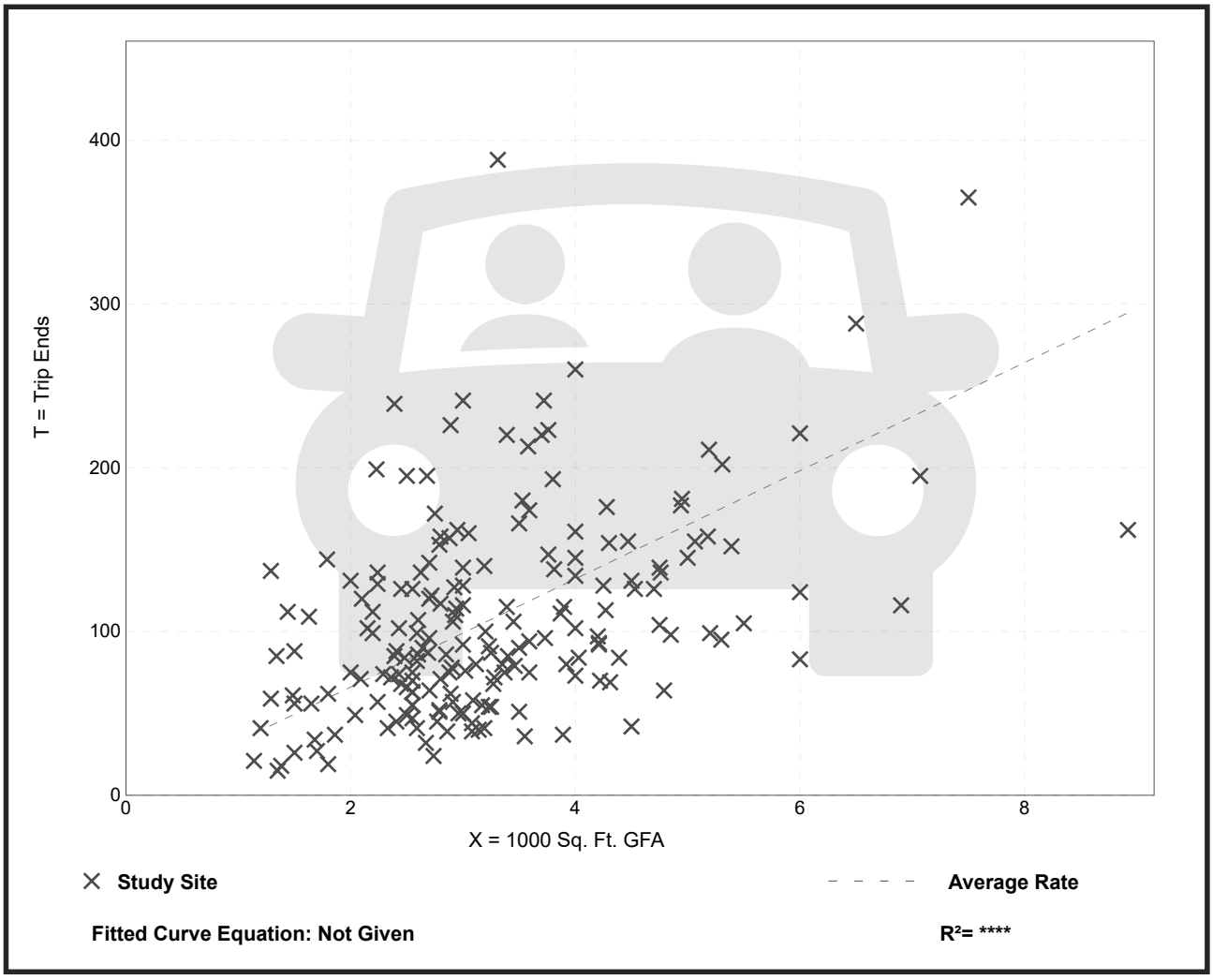
# Fast-Food Restaurant with Drive-Through Window
(934)

**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 4 and 6 p.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 190
Avg. 1000 Sq. Ft. GFA: 3
Directional Distribution: 52% entering, 48% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 33.03 | 8.77 - 117.22 | 17.59 |

## Data Plot and Equation

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# Quick Lubrication Vehicle Shop
(941)

**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday**

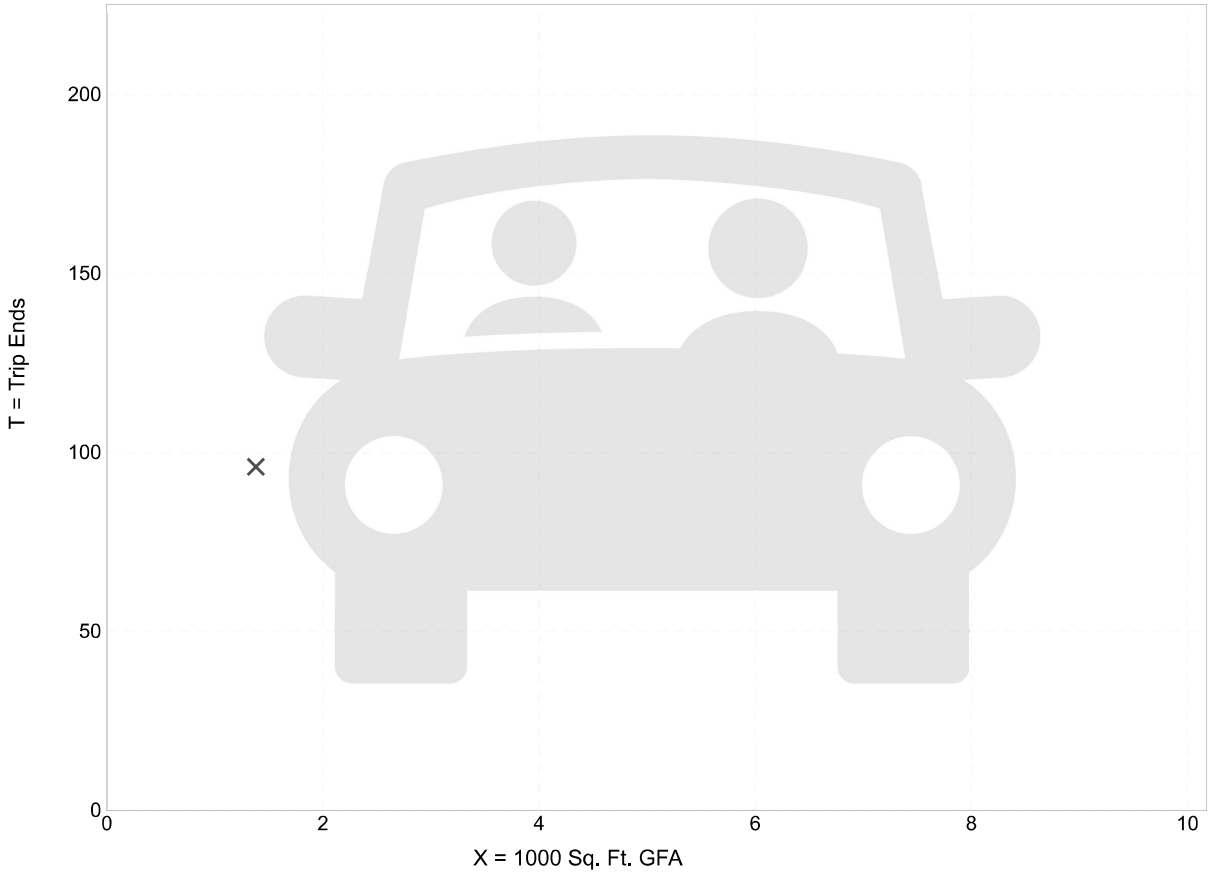
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 1
Avg. 1000 Sq. Ft. GFA: 1
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 69.57 | 69.57 - 69.57 | * |

## Data Plot and Equation

***Caution – Small Sample Size***




**Fitted Curve Equation: Not Given** **$R^2$= ****

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# Quick Lubrication Vehicle Shop
(941)

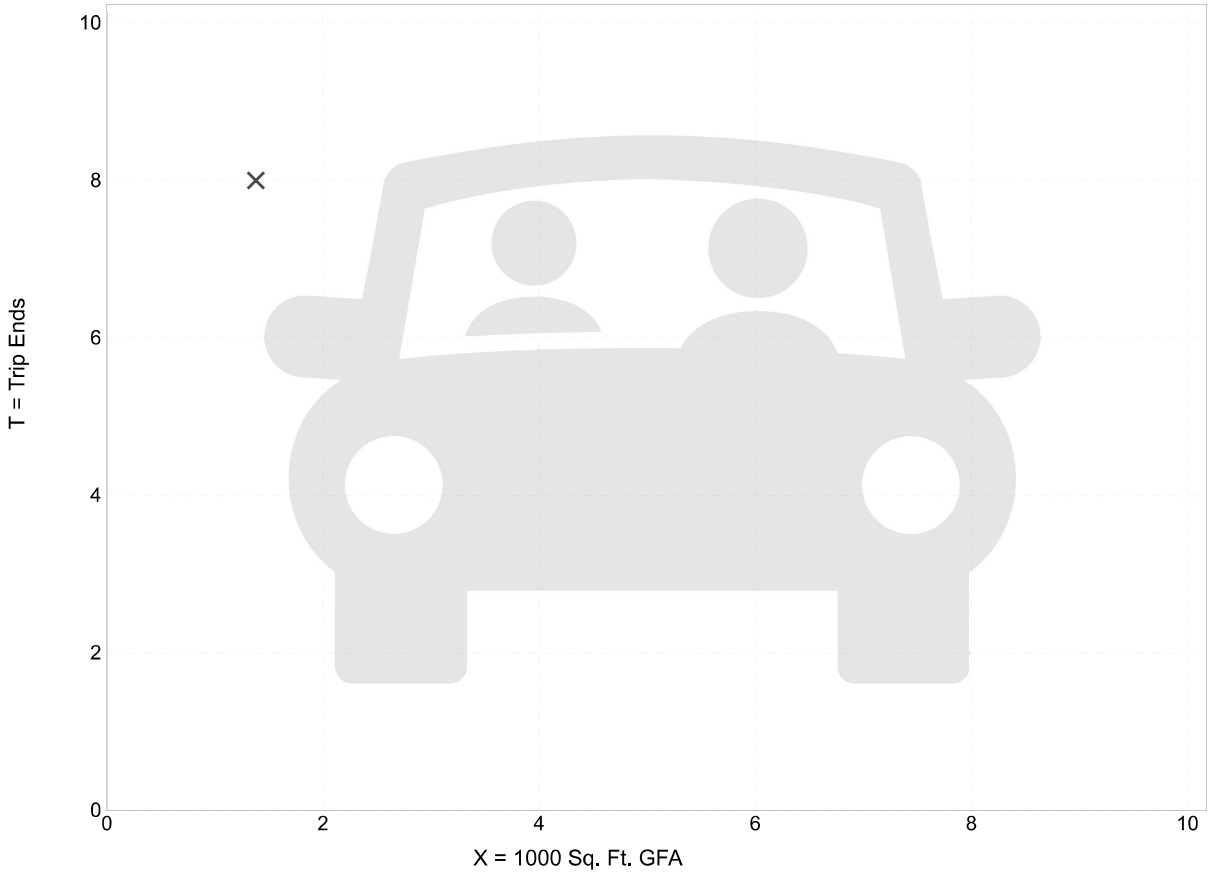
**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 7 and 9 a.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 1
Avg. 1000 Sq. Ft. GFA: 1
Directional Distribution: 75% entering, 25% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 5.80 | 5.80 - 5.80 | * |

## Data Plot and Equation

***Caution – Small Sample Size***

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# Quick Lubrication Vehicle Shop
(941)

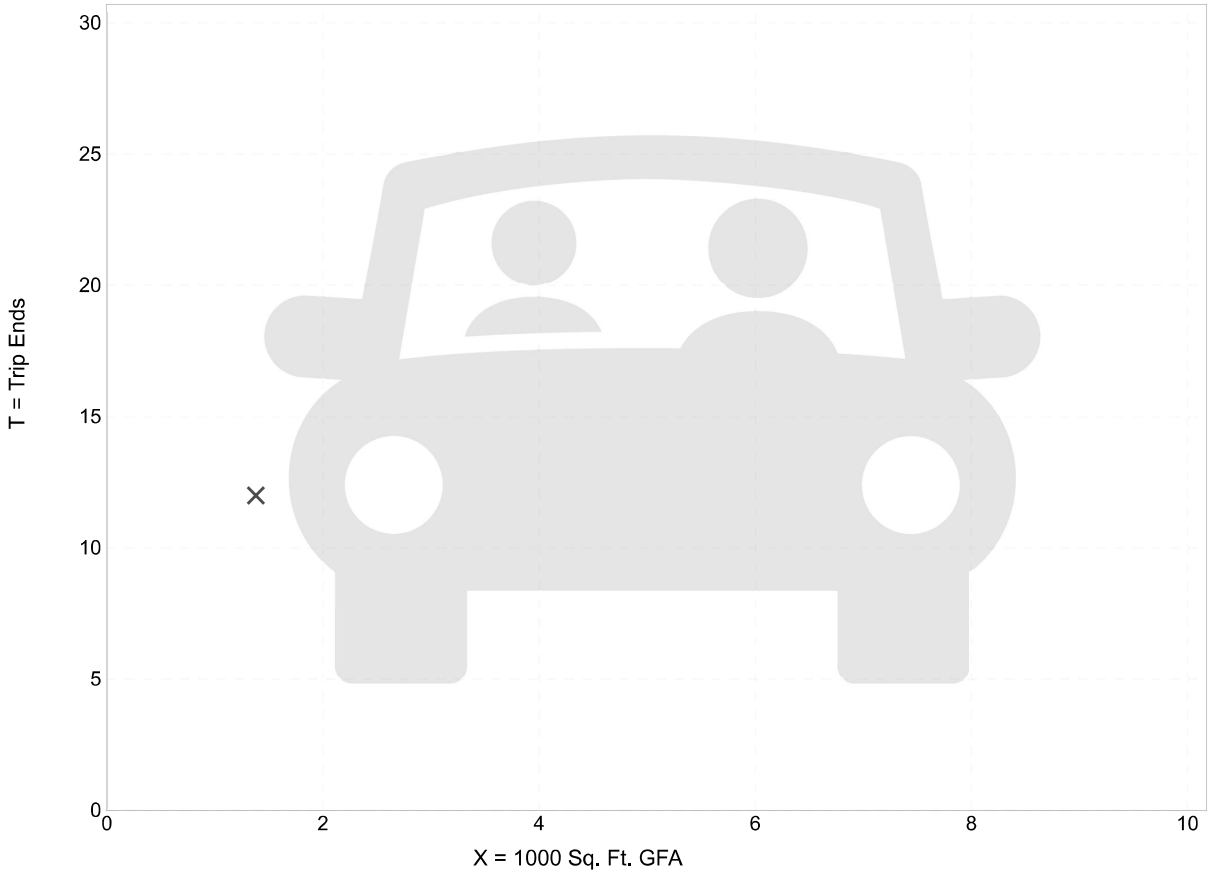
**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 4 and 6 p.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 1
Avg. 1000 Sq. Ft. GFA: 1
Directional Distribution: 42% entering, 58% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 8.70 | 8.70 - 8.70 | * |

## Data Plot and Equation

***Caution – Small Sample Size***




**Fitted Curve Equation: Not Given** **$R^2$= ****

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# Coffee/Donut Shop with Drive-Through Window
(937)

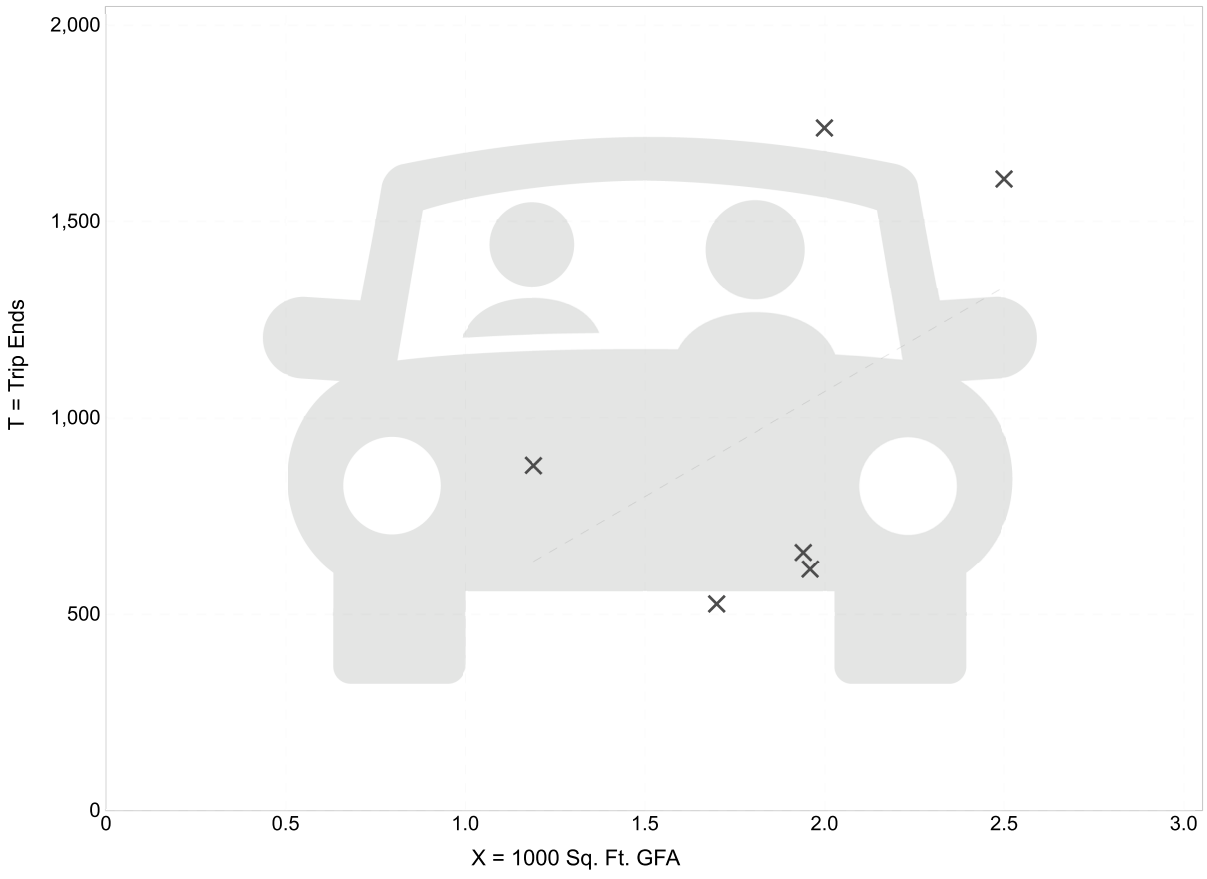
**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday**

**Setting/Location:** **General Urban/Suburban**
Number of Studies: 6
Avg. 1000 Sq. Ft. GFA: 2
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 533.57 | 309.41 - 869.00 | 243.65 |

## Data Plot and Equation




**Fitted Curve Equation: Not Given**

**$R^2$= ****

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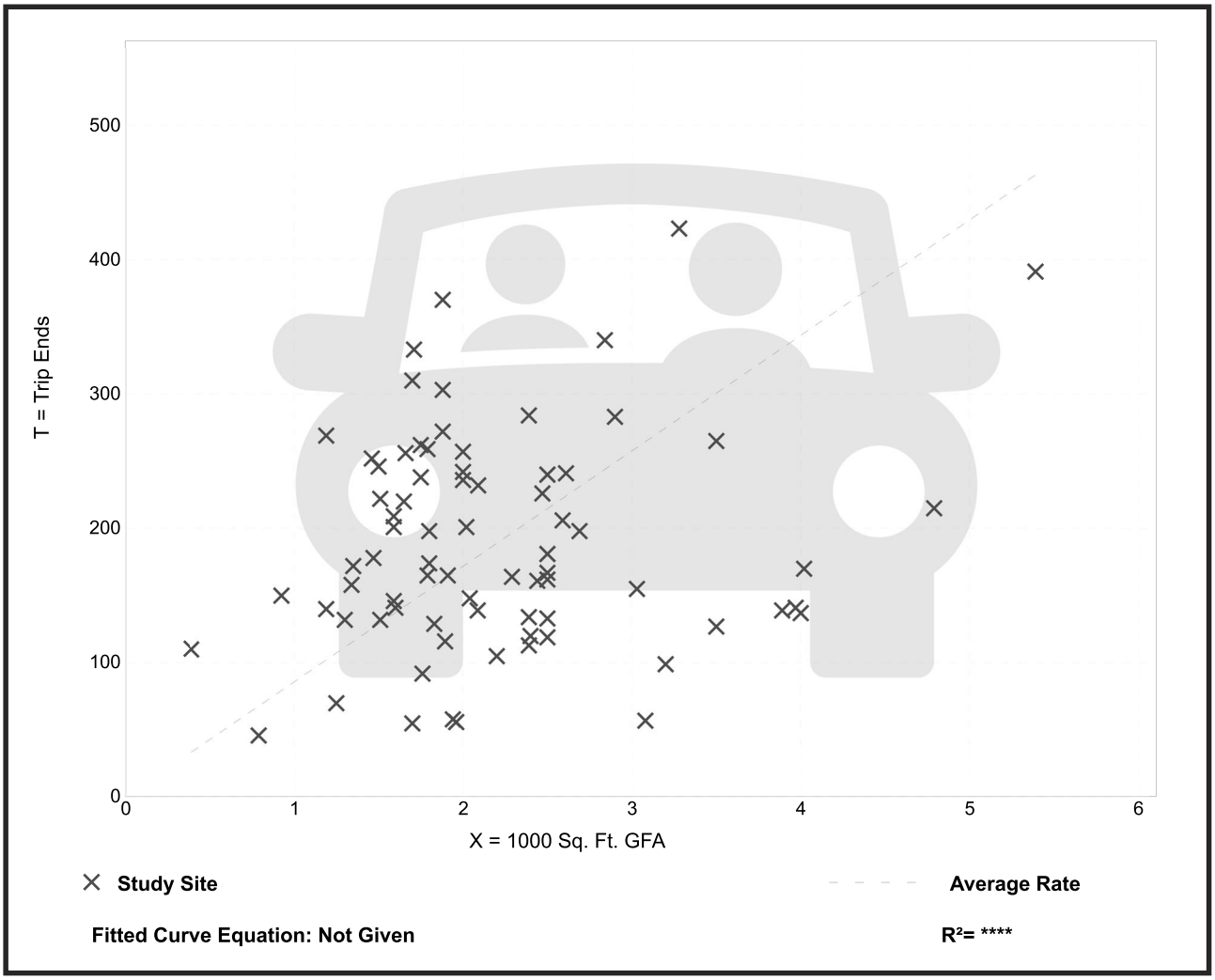
# Coffee/Donut Shop with Drive-Through Window
(937)

**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 7 and 9 a.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 78
Avg. 1000 Sq. Ft. GFA: 2
Directional Distribution: 51% entering, 49% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 85.88 | 18.51 - 282.05 | 44.92 |

## Data Plot and Equation

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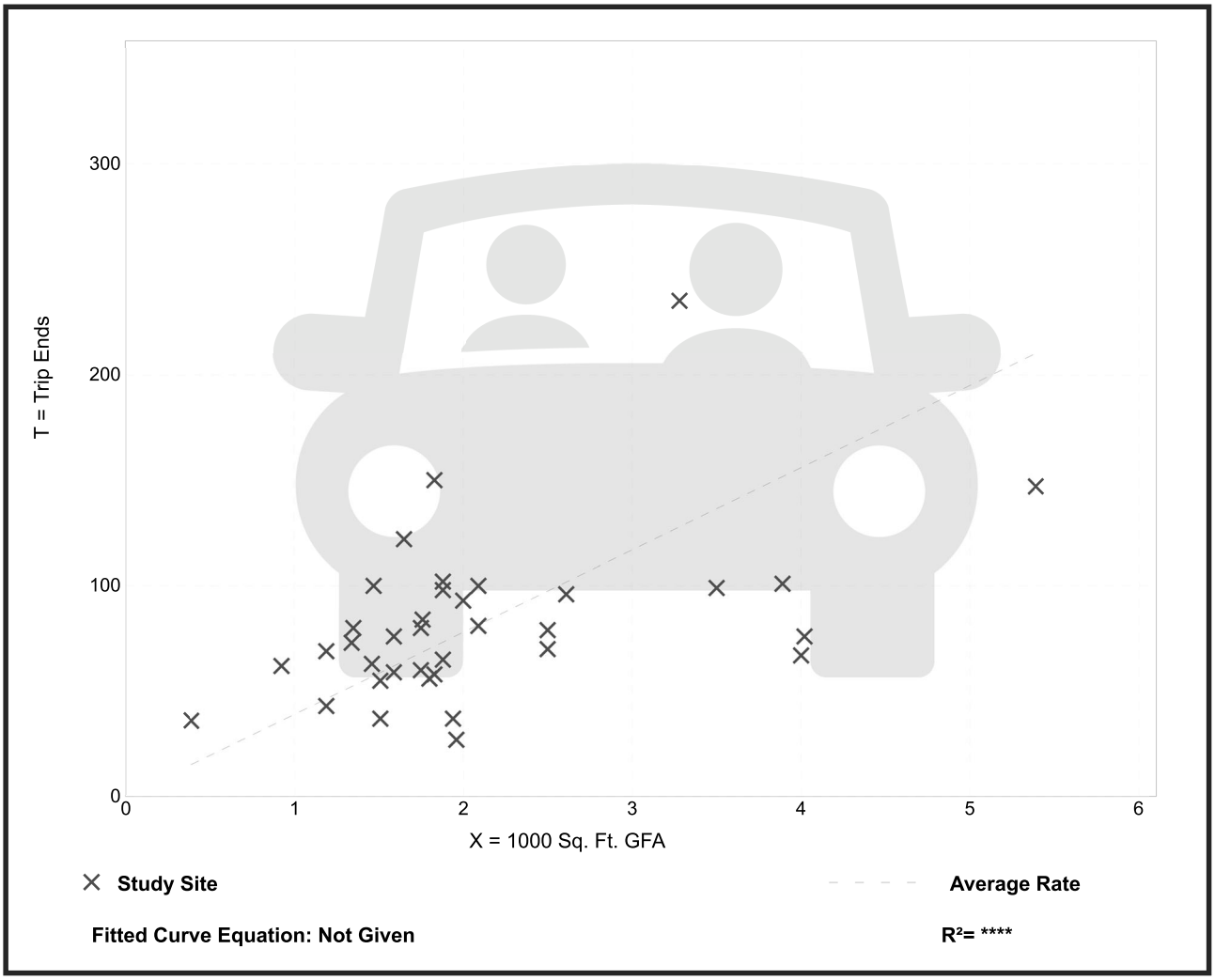
# Coffee/Donut Shop with Drive-Through Window
(937)

**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 4 and 6 p.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 36
Avg. 1000 Sq. Ft. GFA: 2
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 38.99 | 13.78 - 92.31 | 17.79 |

## Data Plot and Equation

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# Fast Casual Restaurant
(930)

**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday**

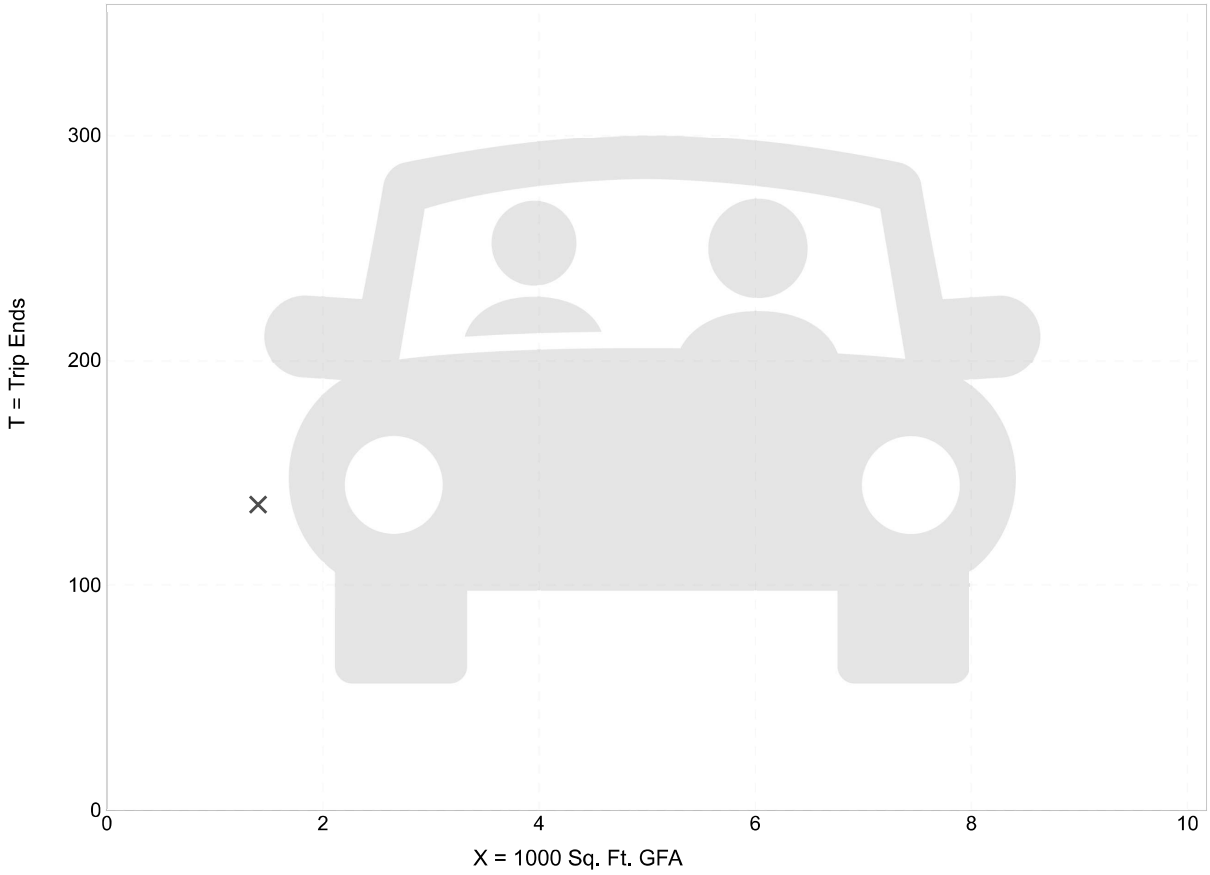
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 1
Avg. 1000 Sq. Ft. GFA: 1
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 97.14 | 97.14 - 97.14 | * |

## Data Plot and Equation

***Caution – Small Sample Size***




**Fitted Curve Equation: Not Given**

**$R^2$= ****

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# Fast Casual Restaurant
(930)

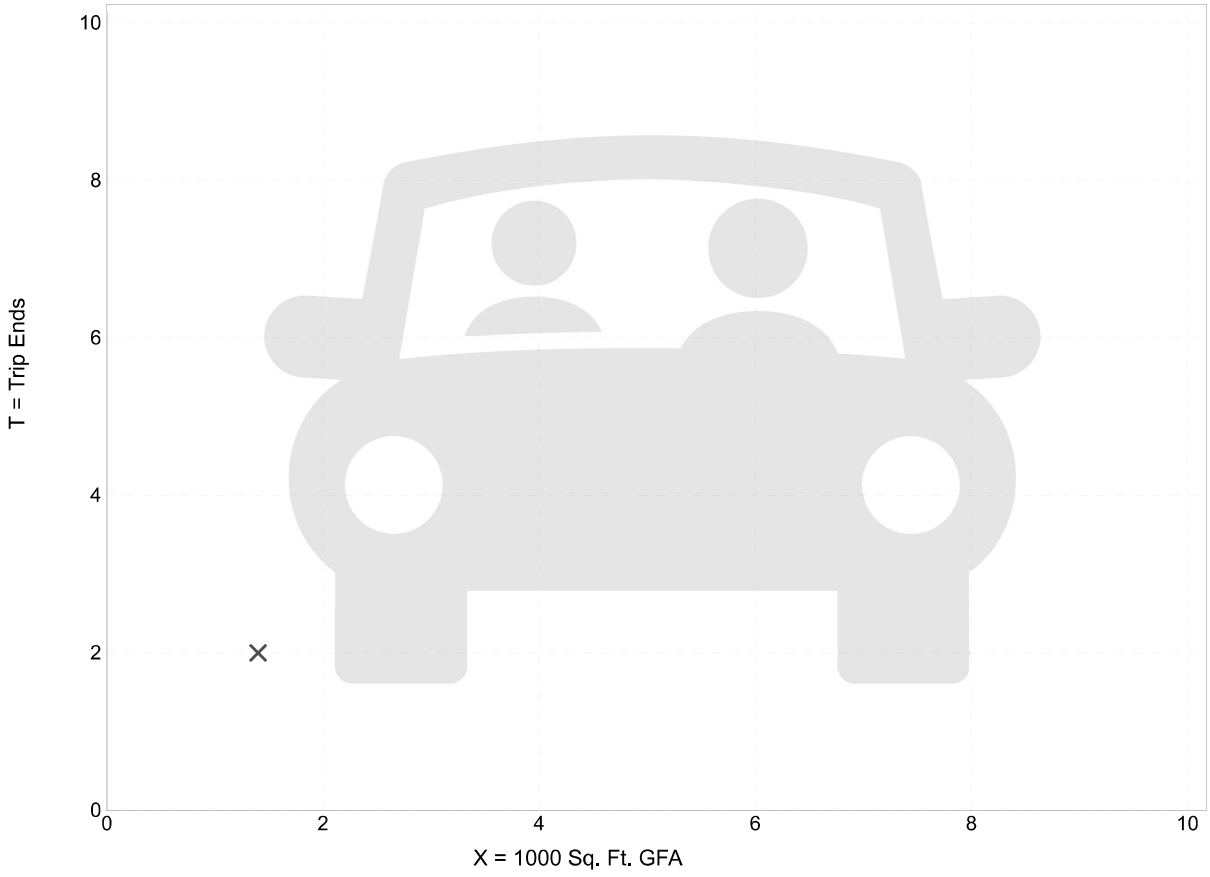
**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 7 and 9 a.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 1
Avg. 1000 Sq. Ft. GFA: 1
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 1.43 | 1.43 - 1.43 | * |

## Data Plot and Equation

***Caution – Small Sample Size***

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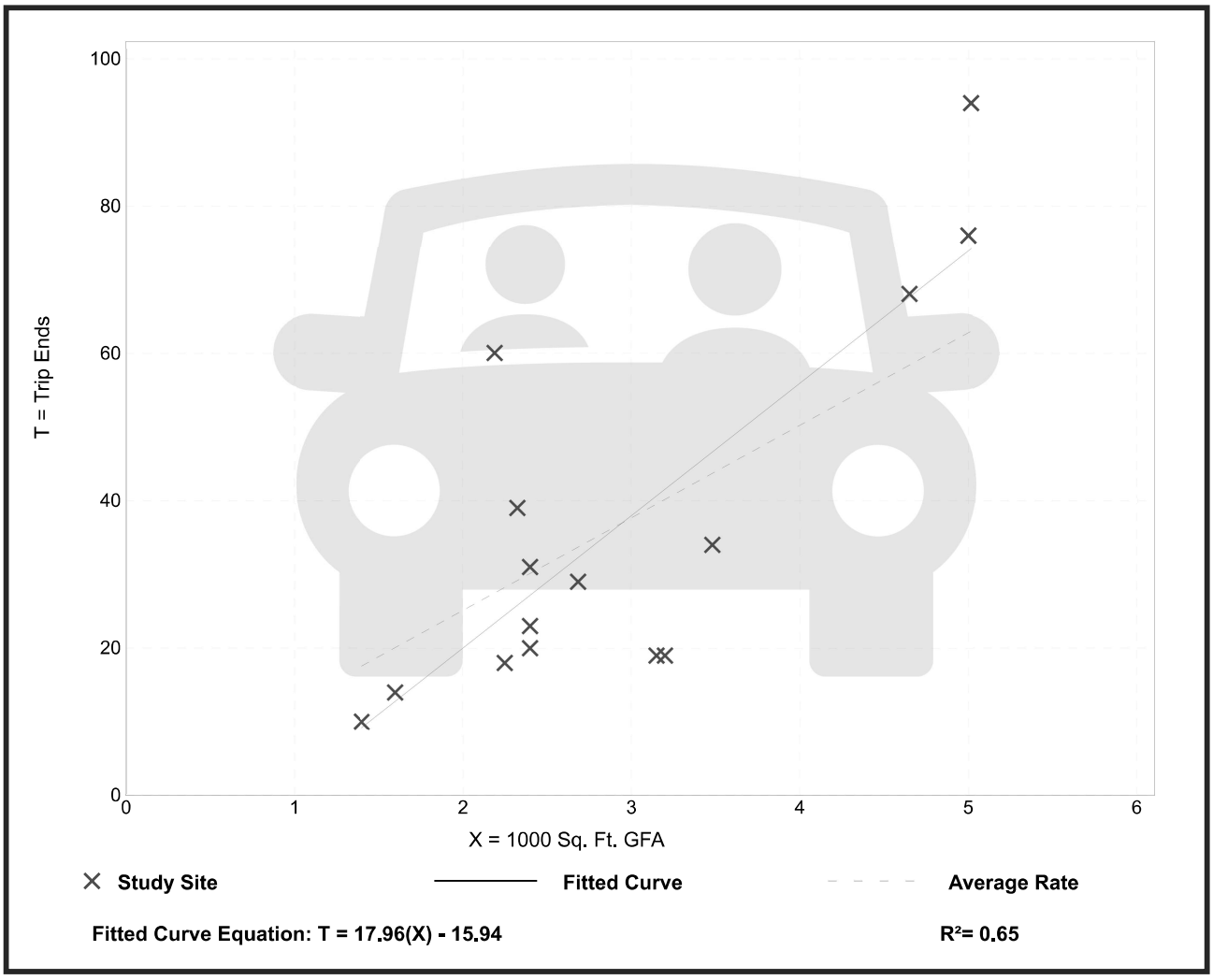
# Fast Casual Restaurant
(930)

**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 4 and 6 p.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 15
Avg. 1000 Sq. Ft. GFA: 3
Directional Distribution: 55% entering, 45% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 12.55 | 5.94 - 27.40 | 5.52 |

## Data Plot and Equation

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# Strip Retail Plaza (<40k)
(822)

**Vehicle Trip Ends vs:** **1000 Sq. Ft. GLA**
**On a:** **Weekday**

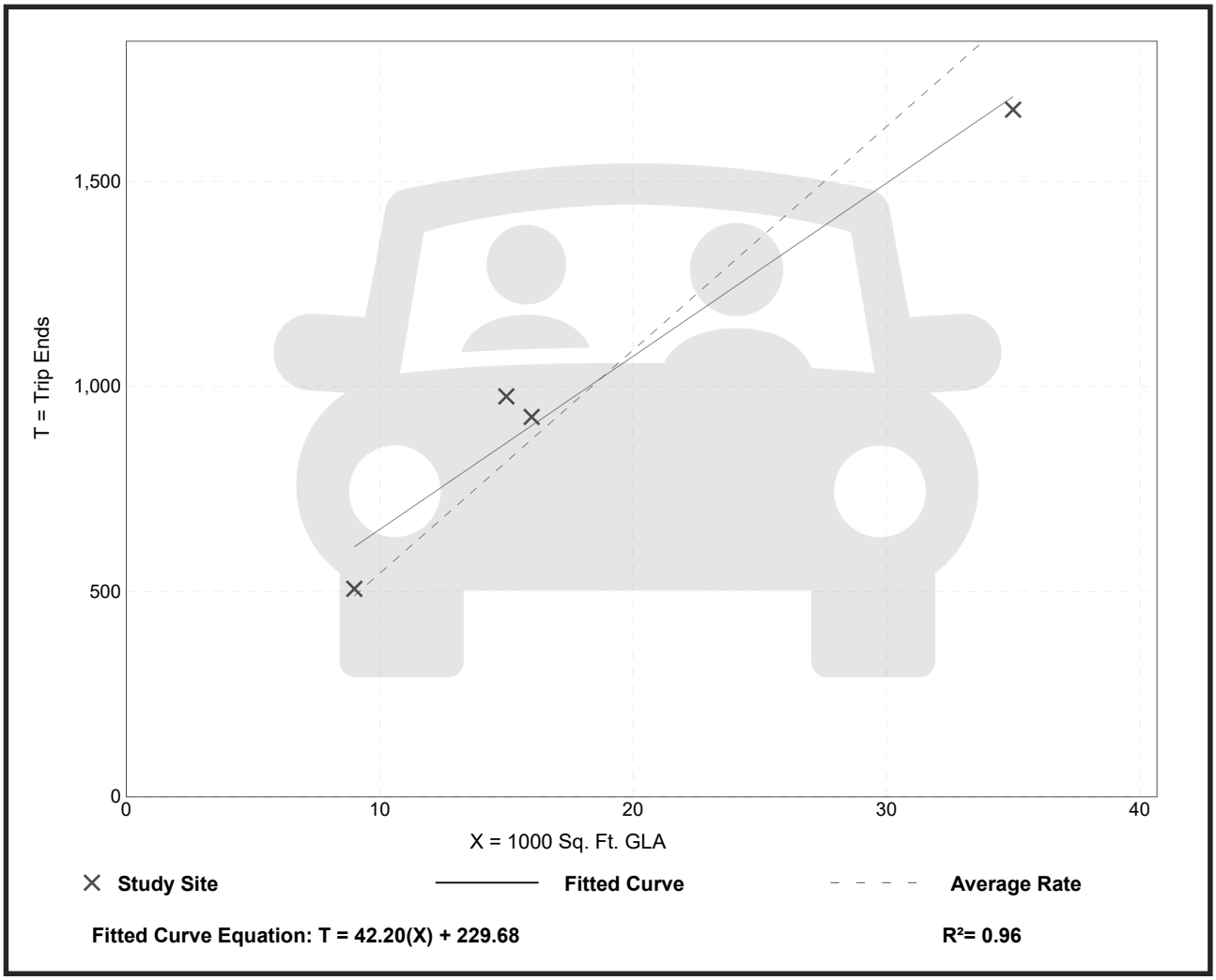
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 4
Avg. 1000 Sq. Ft. GLA: 19
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GLA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 54.45 | 47.86 - 65.07 | 7.81 |

## Data Plot and Equation

***Caution – Small Sample Size***




**Fitted Curve Equation: T = 42.20(X) + 229.68**

**$R^2$= 0.96**

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# Strip Retail Plaza (<40k)
(822)

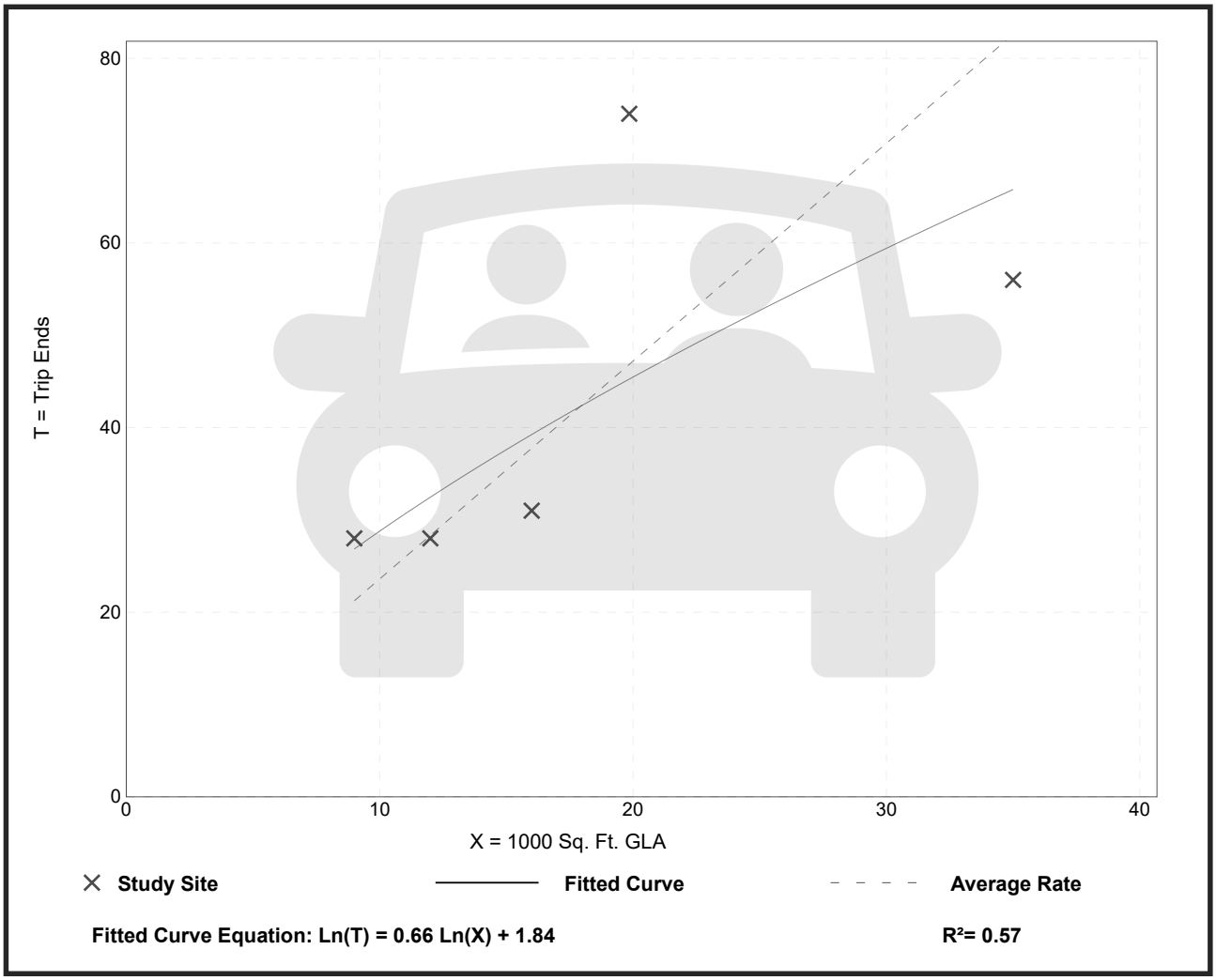
**Vehicle Trip Ends vs:** **1000 Sq. Ft. GLA**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 7 and 9 a.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 5
Avg. 1000 Sq. Ft. GLA: 18
Directional Distribution: 60% entering, 40% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GLA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 2.36 | 1.60 - 3.73 | 0.94 |

## Data Plot and Equation

***Caution – Small Sample Size***

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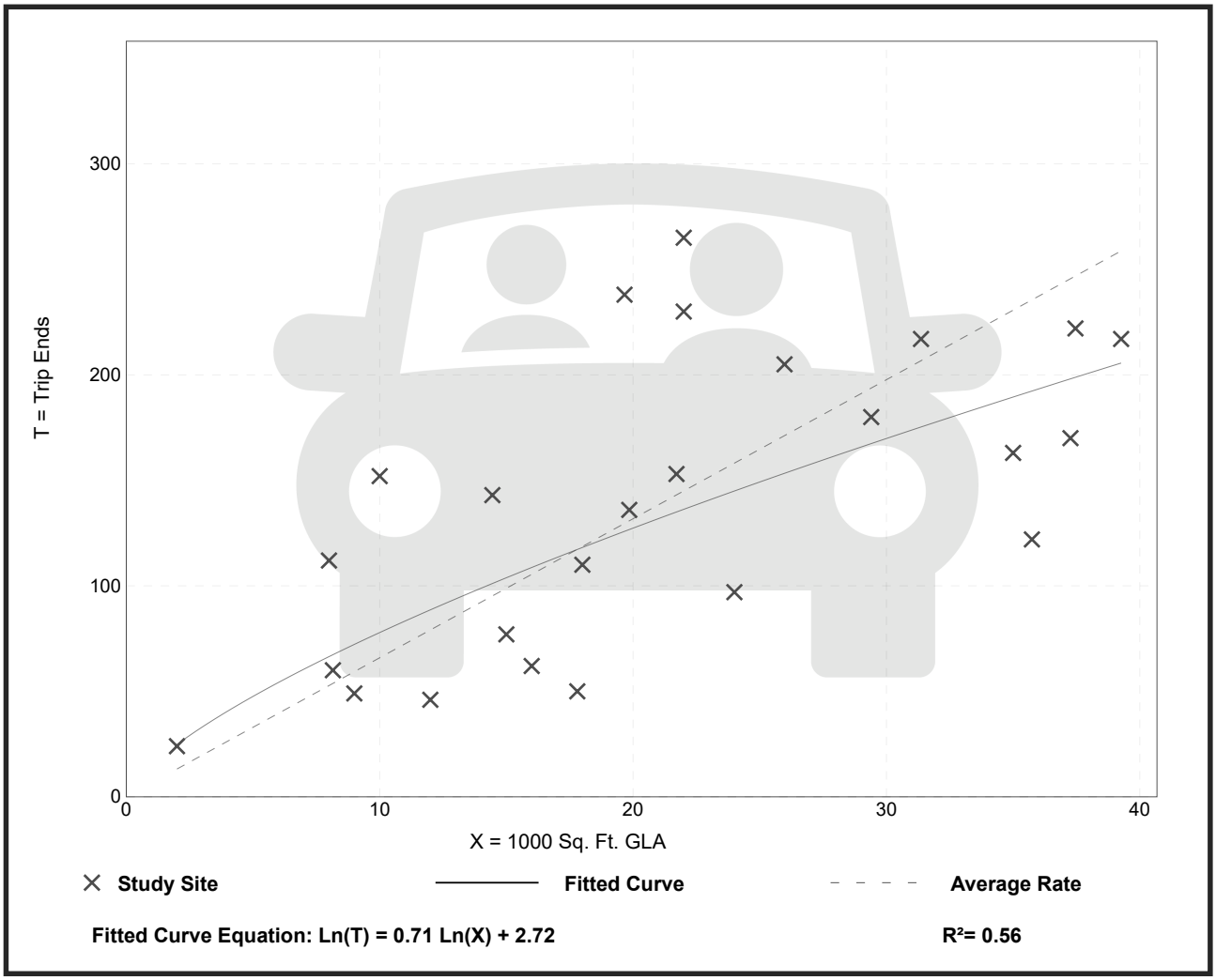
# Strip Retail Plaza (<40k)
(822)

**Vehicle Trip Ends vs:** **1000 Sq. Ft. GLA**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 4 and 6 p.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 25
Avg. 1000 Sq. Ft. GLA: 21
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GLA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 6.59 | 2.81 - 15.20 | 2.94 |

## Data Plot and Equation

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# Hotel
(310)

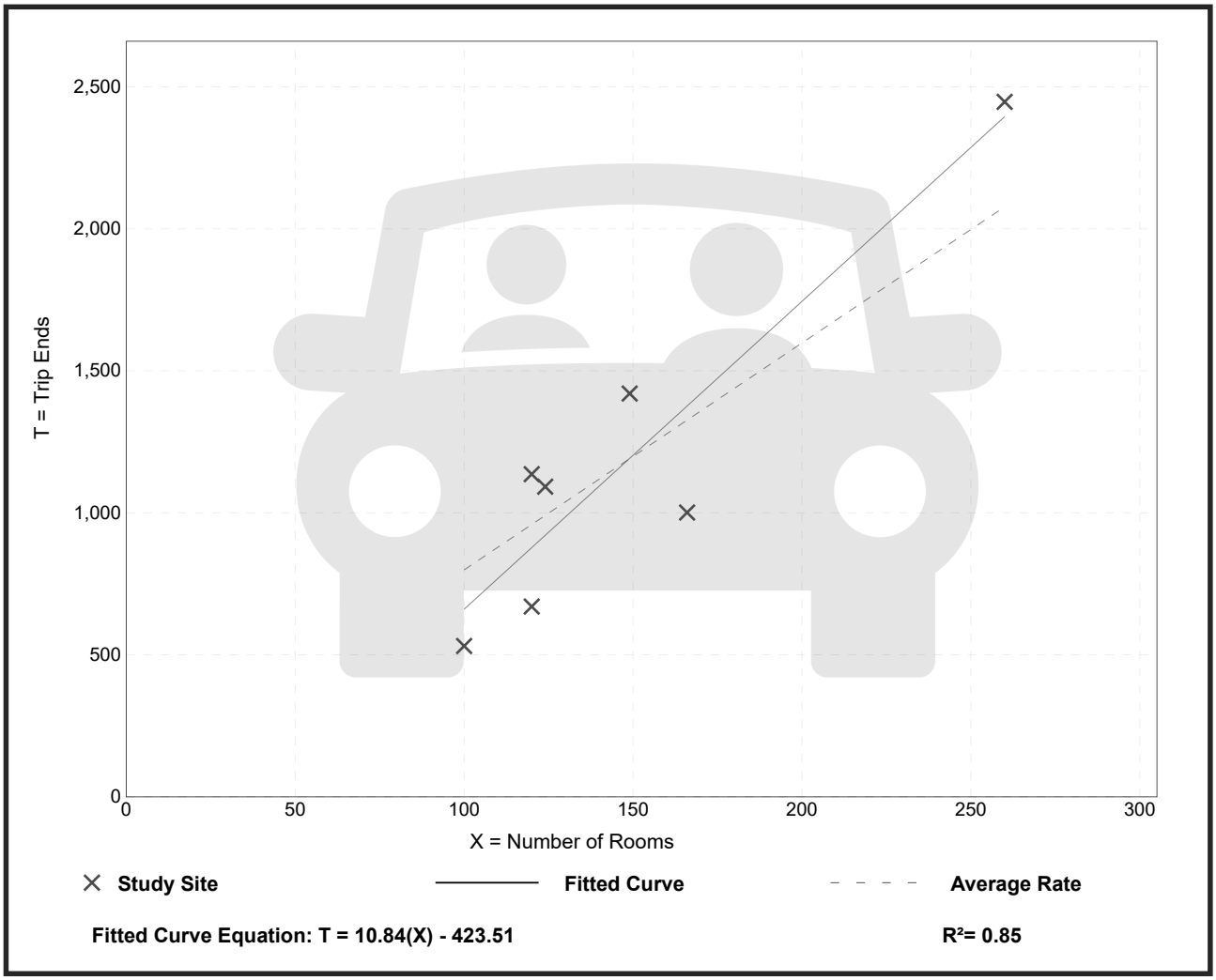
**Vehicle Trip Ends vs:** **Rooms**
**On a:** **Weekday**

**Setting/Location:** **General Urban/Suburban**
Number of Studies: 7
Avg. Num. of Rooms: 148
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Room

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 7.99 | 5.31 - 9.53 | 1.92 |

## Data Plot and Equation

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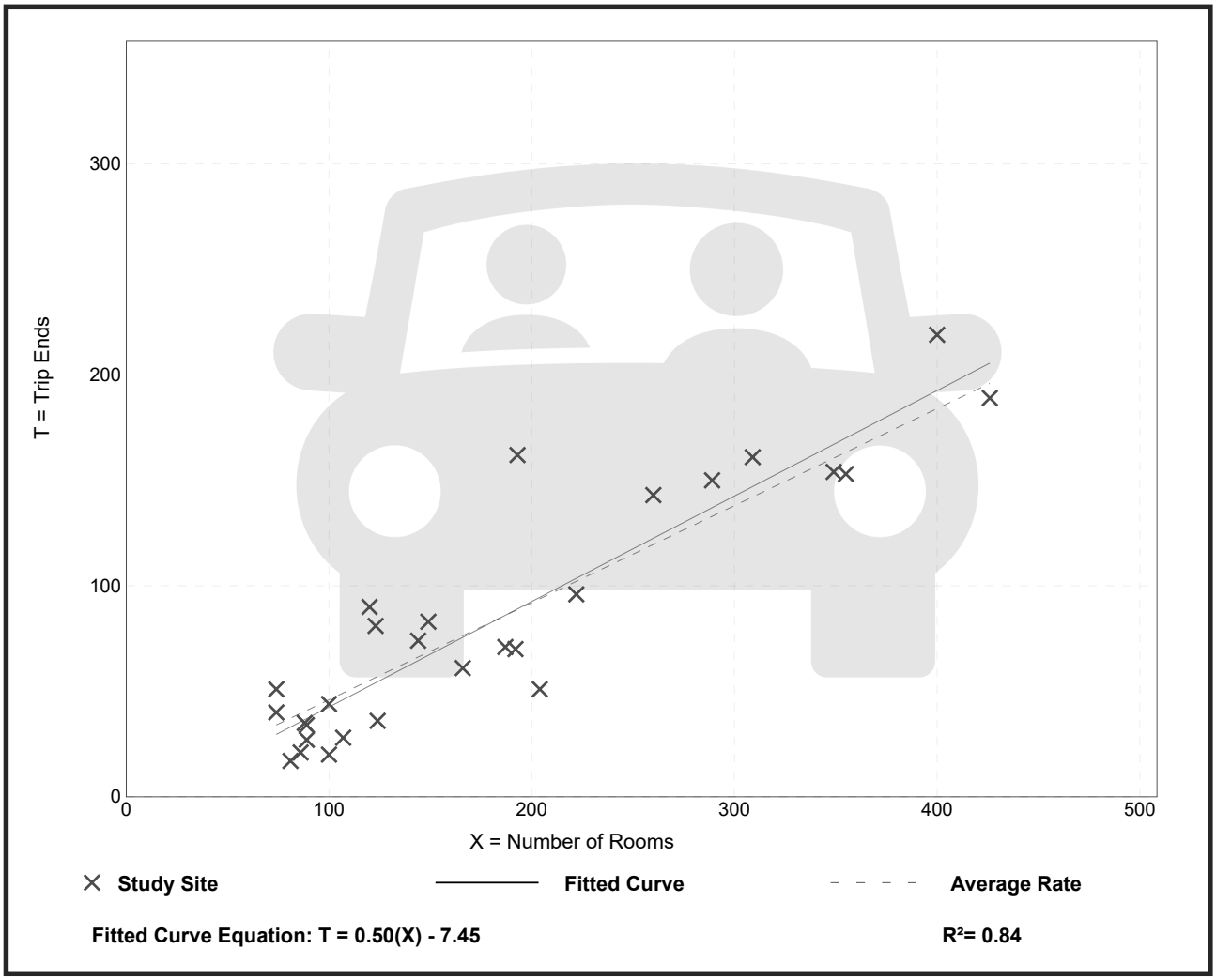
# Hotel
(310)

**Vehicle Trip Ends vs:** **Rooms**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 7 and 9 a.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 28
Avg. Num. of Rooms: 182
Directional Distribution: 56% entering, 44% exiting

## Vehicle Trip Generation per Room

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 0.46 | 0.20 - 0.84 | 0.14 |

## Data Plot and Equation

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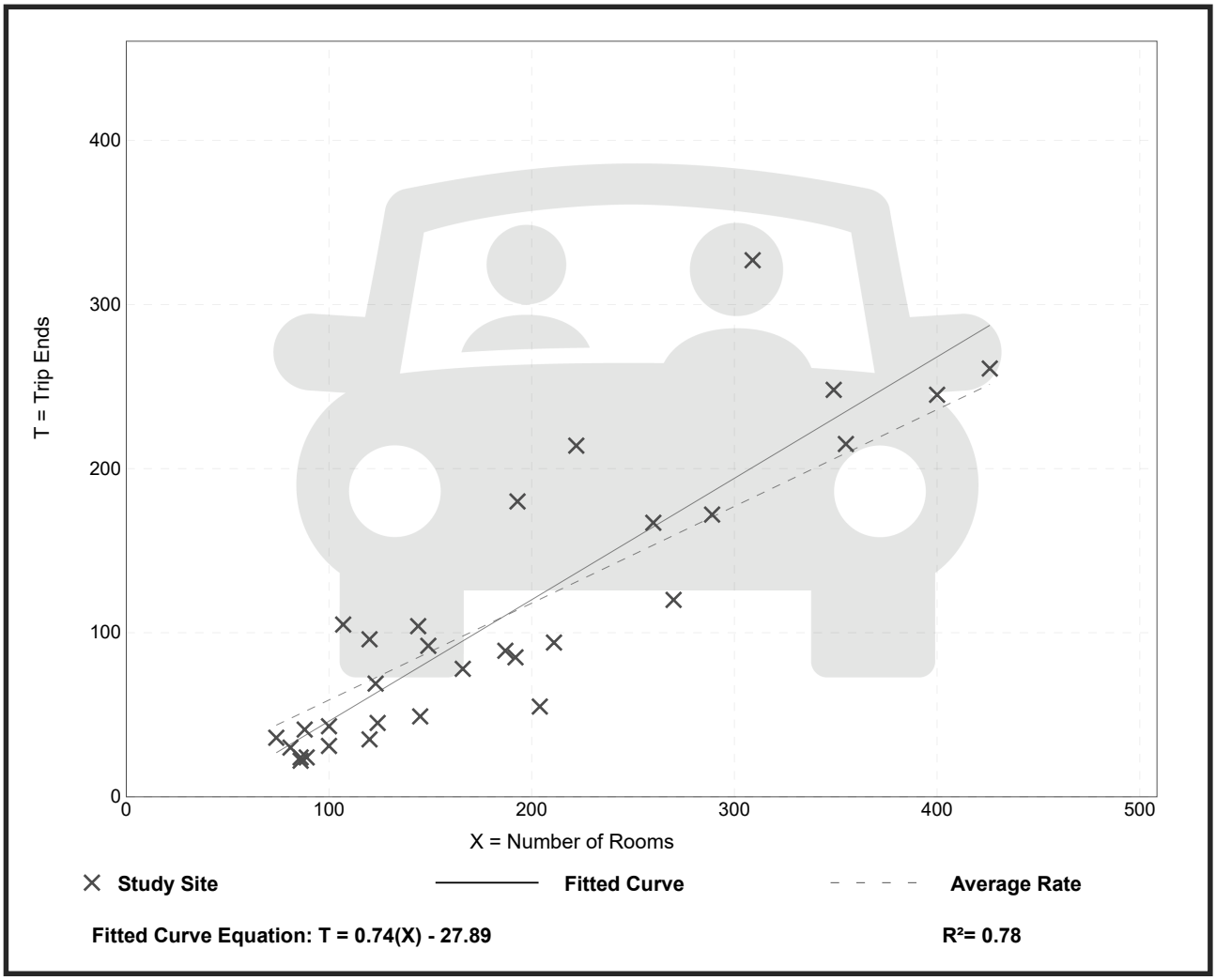
# Hotel
(310)

**Vehicle Trip Ends vs:** **Rooms**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 4 and 6 p.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 31
Avg. Num. of Rooms: 186
Directional Distribution: 51% entering, 49% exiting

## Vehicle Trip Generation per Room

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 0.59 | 0.26 - 1.06 | 0.22 |

## Data Plot and Equation

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KINGSWOOD COMMERCIAL
TRAFFIC IMPACT ANALYSIS

*APPENDIX*
*Trip Generation Excel Sheets*

**RAW NUMBERS**

| Lot # | Land Use | Input Variable | AWDT | AM Peak Hour In | AM Peak Hour Out | AM Peak Hour Total | PM Peak Hour In | PM Peak Hour Out | PM Peak Hour Total |
|---|---|---|---|---|---|---|---|---|---|
| 1 | LUC 934 - Fast-Food Restaurar | 2.58 KSF | 1206 | 59 | 56 | 115 | 44 | 41 | 85 |
| 2 | LUC - 941 Quick Lubrication Ve | 2.04 KSF | 142 | 9 | 3 | 12 | 7 | 11 | 18 |
| 3 | LUC - 937 Coffee Shop With Dr | 2.00 KSF | 1067 | 88 | 84 | 172 | 39 | 39 | 78 |
| | LUC - 930 Fast Casual Restaura | 2.6 KSF | 253 | 2 | 2 | 4 | 18 | 15 | 33 |
| 4 | LUC - 822 Strip Retail | 4.8 ksf | 261 | 6 | 5 | 11 | 16 | 16 | 32 |
| 5 | LUC 934 - Fast-Food Restaurar | 2.0 ksf | 935 | 45 | 44 | 89 | 34 | 32 | 66 |
| 6 | LUC 310 - Hotel | 121 Rooms | 967 | 31 | 25 | 56 | 36 | 35 | 71 |
| | | **Total** | **4831** | 240 | 219 | **459** | 194 | 189 | **383** |
| | | **Retail** | 403 | 15 | 8 | 23 | 23 | 27 | 50 |
| | | **Restaurant** | 3461 | 194 | 186 | 380 | 135 | 127 | 262 |
| | | **Hotel** | 967 | 31 | 25 | 56 | 36 | 35 | 71 |

*** These Number were input into the Internal Capture sheet Please see excel calcs.**

**Trip Generation With Internal Capture**

| Lot # | Land Use | Input Variable | AWDT | AM Peak Hour In | AM Peak Hour Out | AM Peak Hour Total | PM Peak Hour In | PM Peak Hour Out | PM Peak Hour Total |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Fast-Food Restaurant With Driv | 2.58 KSF | 1073 | 57 | 54 | 111 | 36 | 33 | 69 |
| 2 | · 941 Quick Lubrication Vehicle | 2.04 KSF | 126 | 9 | 3 | 12 | 6 | 9 | 15 |
| 3 | 937 Coffee Shop With Drive-Th | 2.00 KSF | 950 | 85 | 81 | 166 | 32 | 32 | 64 |
| 3 | .UC - 930 Fast Casual Restaurar | 2.6 KSF | 225 | 2 | 2 | 4 | 15 | 12 | 27 |
| 4 | LUC - 822 Strip Retail | 4.8 ksf | 232 | 6 | 5 | 11 | 13 | 13 | 26 |
| 5 | LUC 934 - Fast-Food Restaurar | 2.0 ksf | 832 | 44 | 43 | 87 | 28 | 26 | 54 |
| 6 | LUC 310 - Hotel | 121 Rooms | 861 | 30 | 24 | 54 | 29 | 28 | 57 |
| | | **Total** | **4299** | 233 | 212 | **445** | 159 | 153 | **312** |

**Trip Generation With Internal Capture and Pass-By**

| Lot # | Land Use | Input Variable | AWDT | AM Peak Hour In | AM Peak Hour Out | AM Peak Hour Total | PM Peak Hour In | PM Peak Hour Out | PM Peak Hour Total |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Fast-Food Restaurant With Driv | 2.58 KSF | 510 | 28 | 27 | 55 | 16 | 15 | 31 |
| | | *Pass-By* | 563 | 29 | 27 | 56 | 19 | 19 | 38 |
| 2 | · 941 Quick Lubrication Vehicle | 2.04 KSF | 126 | 9 | 3 | 12 | 6 | 9 | 15 |
| | | *Pass-By* | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 937 Coffee Shop With Drive-Th | 2.00 KSF | 451 | 42 | 40 | 82 | 14 | 14 | 28 |
| | | *Pass-By* | 499 | 43 | 41 | 84 | 18 | 18 | 36 |
| 3 | .UC - 930 Fast Casual Restaurar | 2.6 KSF | 128 | 1 | 1 | 2 | 9 | 7 | 16 |
| | | *Pass-By* | 97 | 1 | 1 | 2 | 6 | 5 | 11 |
| 4 | LUC - 822 Strip Retail | 4.8 ksf | 139 | 4 | 3 | 7 | 8 | 8 | 16 |
| | | *Pass-By* | 93 | 2 | 2 | 4 | 5 | 5 | 10 |
| 5 | LUC 934 - Fast-Food Restaurar | 2.0 ksf | 395 | 22 | 21 | 43 | 13 | 12 | 25 |
| | | *Pass-By* | 437 | 22 | 22 | 44 | 14 | 15 | 29 |
| 6 | LUC 310 - Hotel | 121 Rooms | 861 | 30 | 24 | 54 | 29 | 28 | 57 |
| | | *Pass-By* | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | **Total Primary Trips** | **2610** | **136** | **119** | **255** | **95** | **93** | **188** |
| | | **Total Pass-By Trips** | **1689** | **97** | **93** | **190** | **62** | **62** | **124** |

KINGSWOOD COMMERCIAL
TRAFFIC IMPACT ANALYSIS

*APPENDIX*
*Internal Capture Rates*

| NCHRP 8-51 Internal Trip Capture Estimation Tool | | | |
|---|---|---|---|
| **Project Name:** | Kingswood Commercial | **Organization:** | Heath & Associates |
| **Project Location:** | Tumwater | **Performed By:** | AV |
| **Scenario Description:** | Full Buildout | **Date:** | 4/18/2022 |
| **Analysis Year:** | 2027 | **Checked By:** | |
| **Analysis Period:** | **AM Street Peak Hour** | **Date:** | |

**Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)**

| Land Use | Development Data (*For Information Only*) | | | Estimated Vehicle-Trips | | |
|---|---|---|---|---|---|---|
| | ITE LUCs[1] | Quantity | Units | Total | Entering | Exiting |
| Office | | | | 0 | | |
| Retail | 822, 941 | 6,840 | SF | 23 | 15 | 8 |
| Restaurant | 930, 934, 937 | 9,187 | SF | 380 | 194 | 186 |
| Cinema/Entertainment | | | | 0 | | |
| Residential | | | | 0 | | |
| Hotel | 310 | 121 | Rooms | 56 | 31 | 25 |
| All Other Land Uses[2] | | | SF | 0 | | |
| Total | | | | 459 | 240 | 219 |

**Table 2-A: Mode Split and Vehicle Occupancy Estimates**

| Land Use | Entering Trips | | | Exiting Trips | | |
|---|---|---|---|---|---|---|
| | Veh. Occ. | % Transit | % Non-Motorized | Veh. Occ. | % Transit | % Non-Motorized |
| Office | | | | | | |
| Retail | | | | | | |
| Restaurant | | | | | | |
| Cinema/Entertainment | | | | | | |
| Residential | | | | | | |
| Hotel | | | | | | |
| All Other Land Uses[2] | | | | | | |

**Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)**

| Origin (From) | Destination (To) | | | | | |
|---|---|---|---|---|---|---|
| | Office | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office | | | | | | |
| Retail | | | | | | |
| Restaurant | | | | | | |
| Cinema/Entertainment | | | | | | |
| Residential | | | | | | |
| Hotel | | | | | | |

**Table 4-A: Internal Person-Trip Origin-Destination Matrix***

| Origin (From) | Destination (To) | | | | | |
|---|---|---|---|---|---|---|
| | Office | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office | | 0 | 0 | 0 | 0 | 0 |
| Retail | 0 | | 1 | 0 | 0 | 0 |
| Restaurant | 0 | 1 | | 0 | 0 | 1 |
| Cinema/Entertainment | 0 | 0 | 0 | | 0 | 0 |
| Residential | 0 | 0 | 0 | 0 | | 0 |
| Hotel | 0 | 1 | 2 | 0 | 0 | |

**Table 5-A: Computations Summary**

| | Total | Entering | Exiting |
|---|---|---|---|
| All Person-Trips | 459 | 240 | 219 |
| Internal Capture Percentage | 3% | 3% | 3% |
| | | | |
| External Vehicle-Trips[3] | 447 | 234 | 213 |
| External Transit-Trips[4] | 0 | 0 | 0 |
| External Non-Motorized Trips[4] | 0 | 0 | 0 |

**Table 6-A: Internal Trip Capture Percentages by Land Use**

| Land Use | Entering Trips | Exiting Trips |
|---|---|---|
| Office | N/A | N/A |
| Retail | 13% | 13% |
| Restaurant | 2% | 1% |
| Cinema/Entertainment | N/A | N/A |
| Residential | N/A | N/A |
| Hotel | 3% | 12% |

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

*Estimation Tool Developed by the Texas Transportation Institute*

| NCHRP 8-51 Internal Trip Capture Estimation Tool | | | |
|---|---|---|---|
| **Project Name:** | Kingswood Commercial | **Organization:** | Heath & Associates |
| **Project Location:** | Tumwater | **Performed By:** | AV |
| **Scenario Description:** | Full Buildout | **Date:** | 4/18/2022 |
| **Analysis Year:** | 2027 | **Checked By:** | |
| **Analysis Period:** | **PM Street Peak Hour** | **Date:** | |

**Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)**

| Land Use | Development Data (*For Information Only*) | | | Estimated Vehicle-Trips | | |
|---|---|---|---|---|---|---|
| | ITE LUCs[1] | Quantity | Units | Total | Entering | Exiting |
| Office | | | | 0 | | |
| Retail | 822, 941 | 6,840 | SF | 50 | 23 | 27 |
| Restaurant | 930, 934, 937 | 9,187 | SF | 262 | 135 | 127 |
| Cinema/Entertainment | | | | 0 | | |
| Residential | | | | 0 | | |
| Hotel | 310 | 121 | Rooms | 71 | 36 | 35 |
| All Other Land Uses[2] | | | SF | 0 | | |
| Total | | | | 383 | 194 | 189 |

**Table 2-P: Mode Split and Vehicle Occupancy Estimates**

| Land Use | Entering Trips | | | Exiting Trips | | |
|---|---|---|---|---|---|---|
| | Veh. Occ. | % Transit | % Non-Motorized | Veh. Occ. | % Transit | % Non-Motorized |
| Office | | | | | | |
| Retail | | | | | | |
| Restaurant | | | | | | |
| Cinema/Entertainment | | | | | | |
| Residential | | | | | | |
| Hotel | | | | | | |
| All Other Land Uses[2] | | | | | | |

**Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)**

| Origin (From) | Destination (To) | | | | | |
|---|---|---|---|---|---|---|
| | Office | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office | | | | | | |
| Retail | | | | | | |
| Restaurant | | | | | | |
| Cinema/Entertainment | | | | | | |
| Residential | | | | | | |
| Hotel | | | | | | |

**Table 4-P: Internal Person-Trip Origin-Destination Matrix***

| Origin (From) | Destination (To) | | | | | |
|---|---|---|---|---|---|---|
| | Office | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office | | 0 | 0 | 0 | 0 | 0 |
| Retail | 0 | | 8 | 0 | 0 | 1 |
| Restaurant | 0 | 12 | | 0 | 0 | 9 |
| Cinema/Entertainment | 0 | 0 | 0 | | 0 | 0 |
| Residential | 0 | 0 | 0 | 0 | | 0 |
| Hotel | 0 | 0 | 7 | 0 | 0 | |

**Table 5-P: Computations Summary**

| | Total | Entering | Exiting |
|---|---|---|---|
| All Person-Trips | 383 | 194 | 189 |
| Internal Capture Percentage | 19% | 19% | 20% |
| | | | |
| External Vehicle-Trips[3] | 309 | 157 | 152 |
| External Transit-Trips[4] | 0 | 0 | 0 |
| External Non-Motorized Trips[4] | 0 | 0 | 0 |

**Table 6-P: Internal Trip Capture Percentages by Land Use**

| Land Use | Entering Trips | Exiting Trips |
|---|---|---|
| Office | N/A | N/A |
| Retail | 52% | 33% |
| Restaurant | 11% | 17% |
| Cinema/Entertainment | N/A | N/A |
| Residential | N/A | N/A |
| Hotel | 28% | 20% |

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

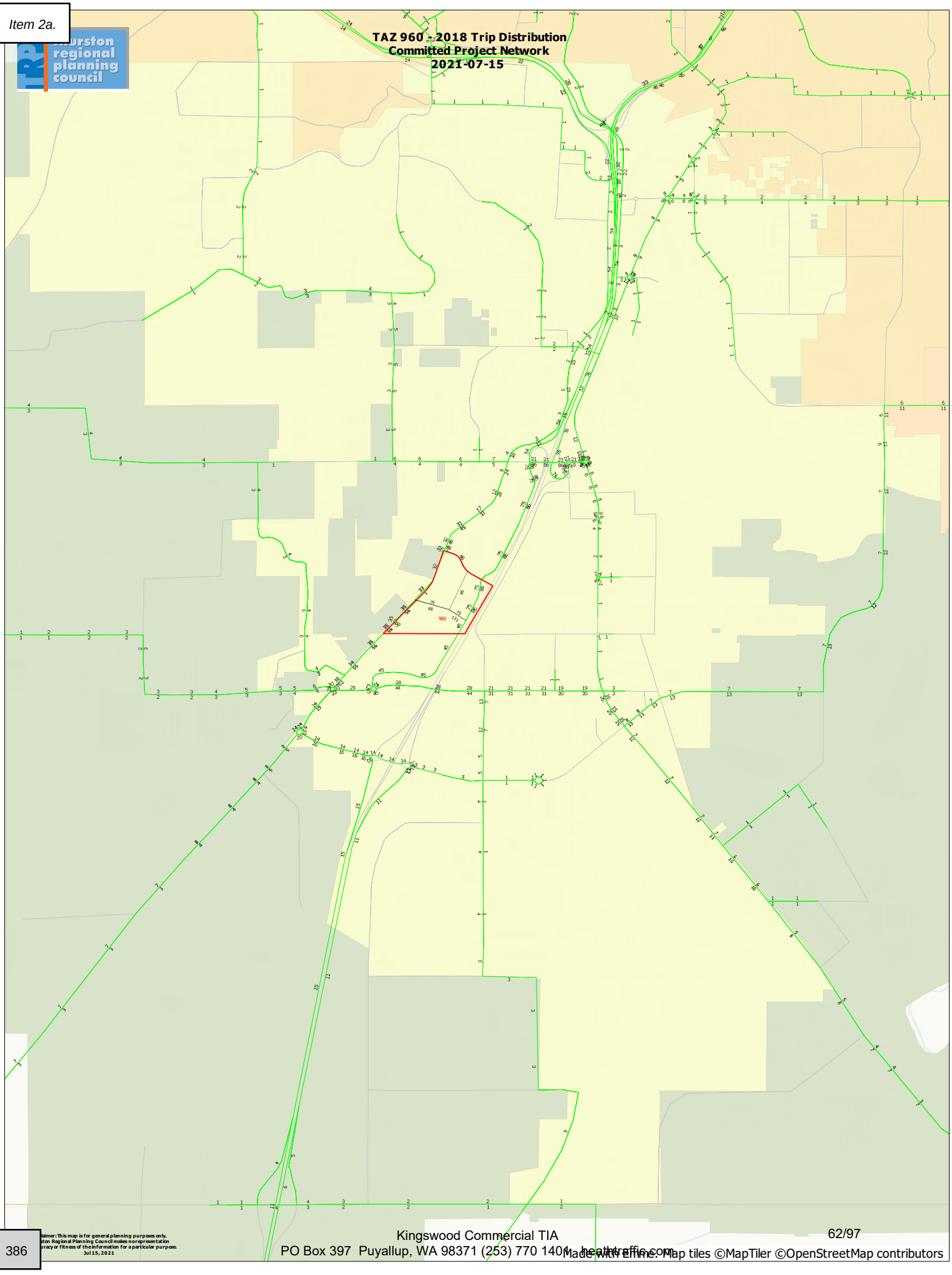
*Indicates computation that has been rounded to the nearest whole number.

*Estimation Tool Developed by the Texas Transportation Institute*

KINGSWOOD COMMERCIAL
TRAFFIC IMPACT ANALYSIS

*APPENDIX*
*TRPC TAZ Map*

**TAZ 960 - 2018 Trip Distribution**
**Committed Project Network**
**2021-07-15**




Disclaimer: This map is for general planning purposes only.
Thurston Regional Planning Council makes no representation
or accuracy or fitness of the information for a particular purpose.
Jul 15, 2021



Kingswood Commercial TIA
PO Box 397 Puyallup, WA 98371 (253) 770 1401 healthtraffic.com



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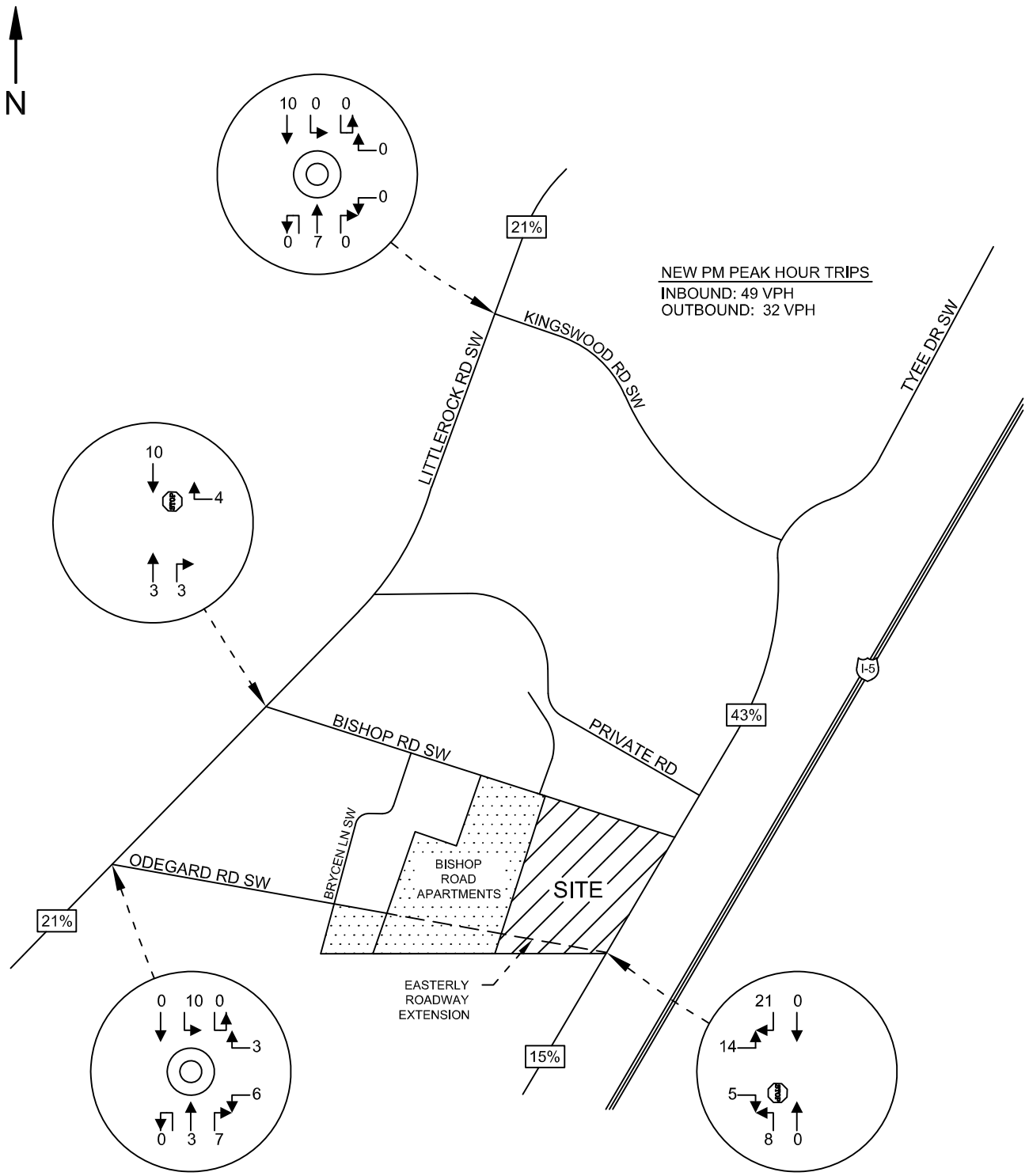
KINGSWOOD COMMERCIAL
TRAFFIC IMPACT ANALYSIS

*APPENDIX*
*Pipeline Projects*

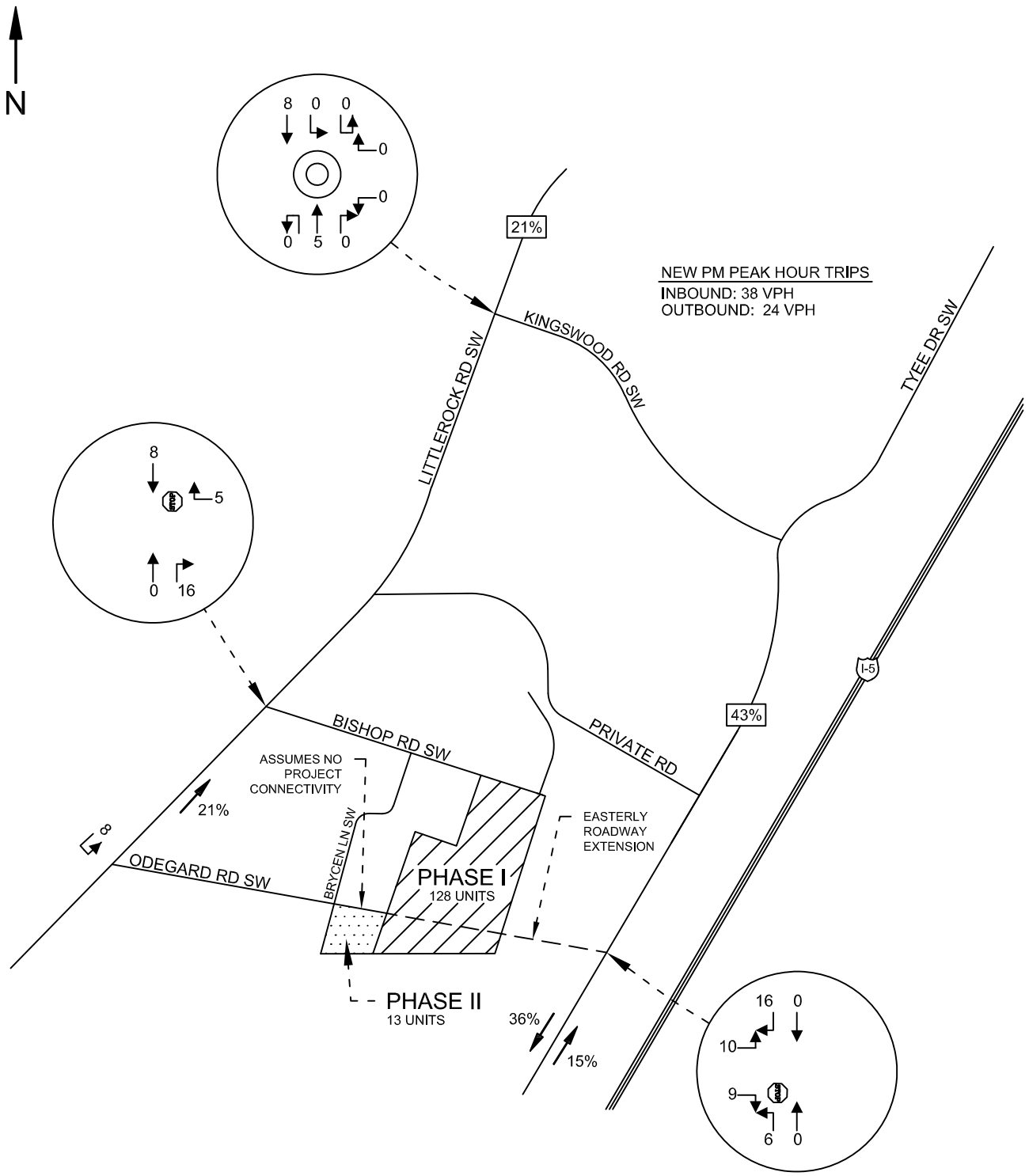



HEATH & ASSOCIATES

TRAFFIC AND CIVIL ENGINEERING

KINGSWOOD APARTMENTS

PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT
FIGURE 4

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TRAFFIC AND CIVIL ENGINEERING

BISHOP ROAD APARTMENTS

PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT
FIGURE 4

KINGSWOOD COMMERCIAL
TRAFFIC IMPACT ANALYSIS

*APPENDIX*
*Forecast Excel*

*Heath & Associates, Inc*
*Kingswood Commercial TIA-5-13-22*

## Peak Hour Forecast Intersection Volumes

Annual Growth Rate: 4 % 15.6 % 2 % 2027
# of Years to Horizon: 5 1 yrs 2 yrs

**PM**

**1. Kingswood Rd SW & Littlerock Rd SW**

| | SBR | SBT | SBL | WBR | WBT | WBL | NBR | NBT | NBL | EBR | EBT | EBL | NB u-Turns | SB u-Turns | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Existing 2020 | 0 | 392 | 86 | 114 | 0 | 81 | 75 | 397 | 0 | 0 | 0 | 0 | 22 | 2 | |
| Baseline 2022 | 0 | 408 | 89 | 119 | 0 | 84 | 78 | 413 | 0 | 0 | 0 | 0 | 23 | 2 | |
| Project Trips | 0 | -16 | 36 | 2 | 0 | 31 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Pipeline | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Without | 0 | 514 | 109 | 144 | 0 | 103 | 95 | 515 | 0 | 0 | 0 | 0 | 28 | 3 | Without |
| With | 0 | 498 | 145 | 146 | 0 | 134 | 95 | 532 | 0 | 0 | 0 | 0 | 28 | 3 | With |

**2. Kingswood Rd SW & Tyee Dr SW**

| | SBR | SBT | SBL | WBR | WBT | WBL | NBR | NBT | NBL | EBR | EBT | EBL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Existing 2022 | 129 | 195 | 0 | 0 | 0 | 0 | 0 | 198 | 106 | 117 | 0 | 100 |
| Baseline 2022 | 149.1 | 225.4 | 0 | 0 | 0 | 0 | 0 | 229 | 122.5 | 135.3 | 0 | 115.6 |
| Project Trips | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 19 | 0 | 40 |
| Pipeline | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 0 |
| Without | 181 | 311 | 0 | 0 | 0 | 0 | 0 | 302 | 149 | 165 | 0 | 141 |
| With | 222 | 311 | 0 | 0 | 0 | 0 | 0 | 302 | 168 | 184 | 0 | 181 |

**3. Kingswood Rd SW & Walmart Access**

| | SBR | SBT | SBL | WBR | WBT | WBL | NBR | NBT | NBL | EBR | EBT | EBL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Existing 2022 | 68 | 0 | 89 | 108 | 105 | 0 | 0 | 0 | 0 | 0 | 100 | 47 |
| Baseline 2022 | 79 | 0 | 103 | 125 | 121 | 0 | 0 | 0 | 0 | 0 | 116 | 54 |
| Project Trips | 0 | 0 | 0 | 0 | -9 | 69 | 65 | 0 | 42 | 42 | -6 | 0 |
| Pipeline | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Without | 96 | 0 | 125 | 152 | 148 | 0 | 0 | 0 | 0 | 0 | 141 | 66 |
| With | 96 | 0 | 125 | 152 | 139 | 69 | 65 | 0 | 42 | 42 | 135 | 66 |

**4. Kingswood Rd SW & Walmart Access/Home Depot Access**

| | SBR | SBT | SBL | WBR | WBT | WBL | NBR | NBT | NBL | EBR | EBT | EBL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Existing 2022 | 3 | 0 | 11 | 22 | 163 | 40 | 58 | 7 | 59 | 67 | 160 | 2 |
| Baseline 2022 | 3 | 0 | 13 | 25 | 188 | 46 | 67 | 8 | 68 | 77 | 185 | 2 |
| Project Trips | 0 | 0 | 0 | 0 | 59 | 0 | 0 | 0 | 0 | 0 | 60 | 0 |
| Pipeline | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Without | 4 | 0 | 15 | 31 | 229 | 56 | 82 | 10 | 83 | 94 | 225 | 3 |
| With | 4 | 0 | 15 | 31 | 288 | 56 | 82 | 10 | 83 | 94 | 285 | 3 |

KINGSWOOD COMMERCIAL
TRAFFIC IMPACT ANALYSIS

*APPENDIX*
*Tumwater BLVD/I-5 Interchange Figures*

## HEATH & ASSOCIATES

TRAFFIC AND CIVIL ENGINEERING

## KINGSWOOD COMMERCIAL

PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT-LOT 1-WENDY'S
FIGURE A

## HEATH & ASSOCIATES

TRAFFIC AND CIVIL ENGINEERING

## KINGSWOOD COMMERCIAL

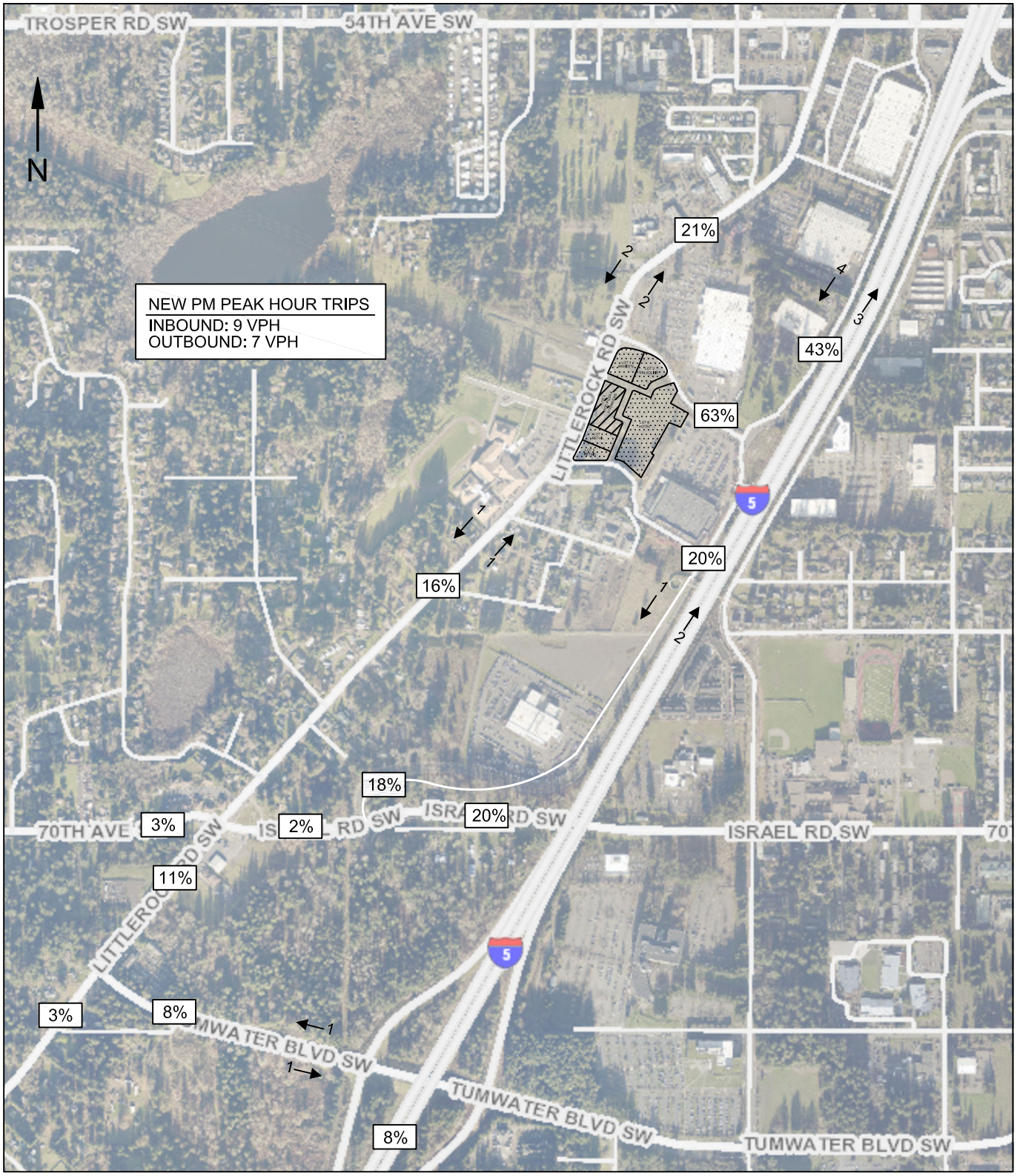
PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT-LOT 2-VAVOLINE
FIGURE B

HEATH & ASSOCIATES

TRAFFIC AND CIVIL ENGINEERING

KINGSWOOD COMMERCIAL

PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT-LOT 3-STARBUCKS
FIGURE C




HEATH & ASSOCIATES

TRAFFIC AND CIVIL ENGINEERING

KINGSWOOD COMMERCIAL

PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT-LOT 3-MOD PIZZA
FIGURE D

## HEATH & ASSOCIATES

TRAFFIC AND CIVIL ENGINEERING

## KINGSWOOD COMMERCIAL

PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT-LOT 4-RETAIL
FIGURE E

HEATH & ASSOCIATES

TRAFFIC AND CIVIL ENGINEERING

KINGSWOOD COMMERCIAL

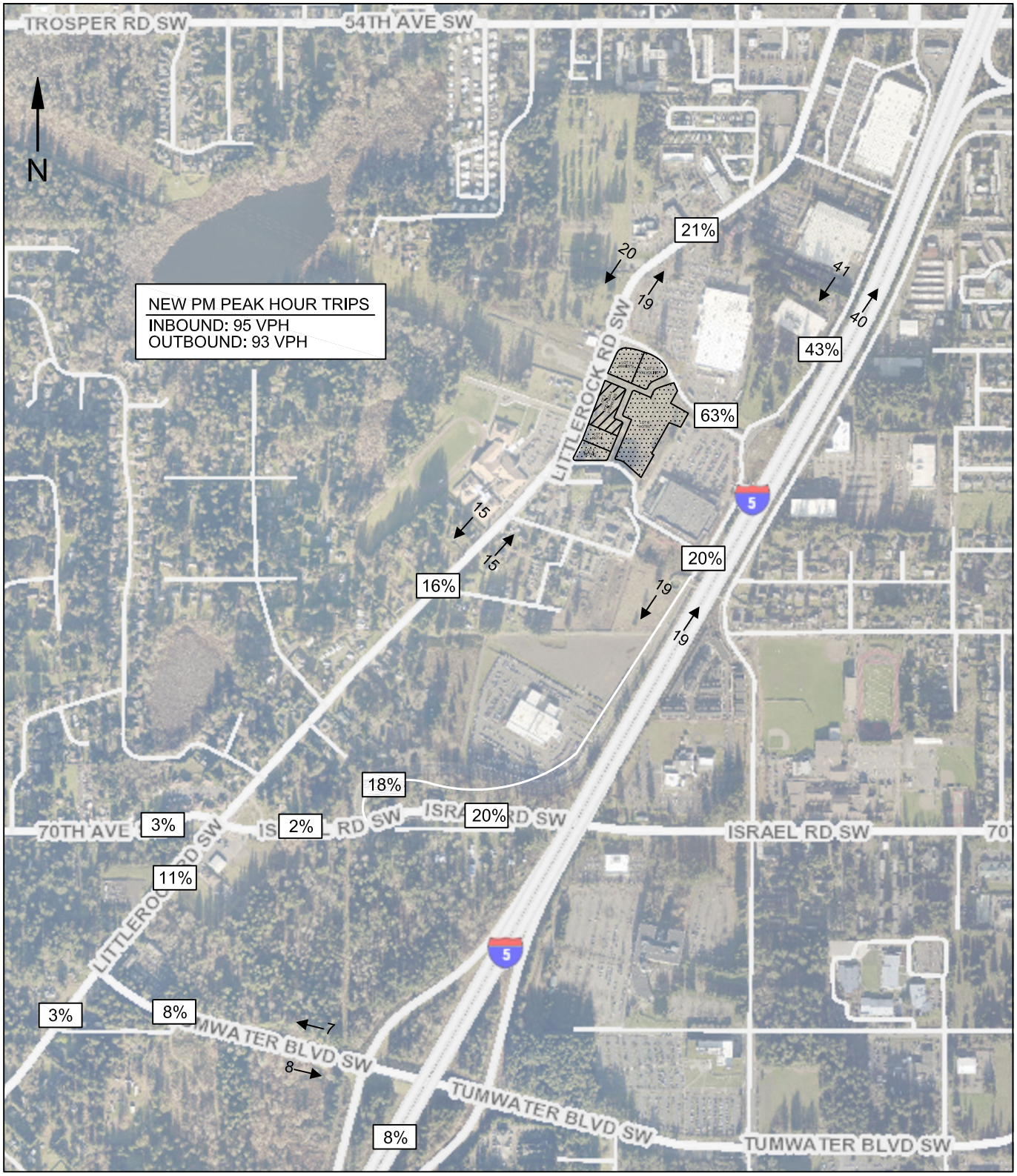
PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT-LOT 5-FAST FOOD
FIGURE F

HEATH & ASSOCIATES

TRAFFIC AND CIVIL ENGINEERING

KINGSWOOD COMMERCIAL

PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT-LOT 6-HOTEL
FIGURE G




HEATH & ASSOCIATES

TRAFFIC AND CIVIL ENGINEERING

KINGSWOOD COMMERCIAL

PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT-TOTAL
FIGURE H

KINGSWOOD COMMERCIAL
TRAFFIC IMPACT ANALYSIS

*APPENDIX*
*Level of Service Sheets*

# MOVEMENT SUMMARY

## Site: 1 [Littlerock Rd SW & Kingswood Dr SW (Site Folder: General)]

Kingswood Commercial
Site Category: Existing PM Peak Hour
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: Littlerock Rd SW | | | | | | | | | | | | | | |
| 3u | U | 23 | 1.0 | 24 | 1.0 | 0.445 | 13.0 | LOS B | 3.2 | 79.6 | 0.36 | 0.44 | 0.36 | 38.3 |
| 8 | T1 | 413 | 1.0 | 435 | 1.0 | 0.445 | 4.1 | LOS A | 3.2 | 79.6 | 0.36 | 0.44 | 0.36 | 37.1 |
| 18 | R2 | 78 | 1.0 | 82 | 1.0 | 0.445 | 4.4 | LOS A | 3.2 | 79.6 | 0.36 | 0.44 | 0.36 | 35.9 |
| Approach | | 514 | 1.0 | 541 | 1.0 | 0.445 | 4.5 | LOS A | 3.2 | 79.6 | 0.36 | 0.44 | 0.36 | 37.0 |
| East: Kingswood Dr SW | | | | | | | | | | | | | | |
| 1 | L2 | 84 | 1.0 | 88 | 1.0 | 0.094 | 12.1 | LOS B | 0.5 | 12.6 | 0.55 | 0.71 | 0.55 | 33.8 |
| 16 | R2 | 119 | 1.0 | 125 | 1.0 | 0.111 | 5.7 | LOS A | 0.6 | 15.7 | 0.54 | 0.60 | 0.54 | 35.5 |
| Approach | | 203 | 1.0 | 214 | 1.0 | 0.111 | 8.3 | LOS A | 0.6 | 15.7 | 0.54 | 0.64 | 0.54 | 34.7 |
| North: Littlerock Rd SW | | | | | | | | | | | | | | |
| 7u | U | 2 | 1.0 | 2 | 1.0 | 0.125 | 13.2 | LOS B | 0.5 | 12.8 | 0.28 | 0.64 | 0.28 | 35.2 |
| 7 | L2 | 89 | 1.0 | 94 | 1.0 | 0.125 | 10.7 | LOS B | 0.5 | 12.8 | 0.28 | 0.64 | 0.28 | 34.4 |
| 4 | T1 | 408 | 1.0 | 429 | 1.0 | 0.349 | 3.9 | LOS A | 1.9 | 48.1 | 0.30 | 0.41 | 0.30 | 37.5 |
| Approach | | 499 | 1.0 | 525 | 1.0 | 0.349 | 5.1 | LOS A | 1.9 | 48.1 | 0.30 | 0.45 | 0.30 | 36.9 |
| All Vehicles | | 1216 | 1.0 | 1280 | 1.0 | 0.445 | 5.4 | LOS A | 3.2 | 79.6 | 0.36 | 0.48 | 0.36 | 36.5 |

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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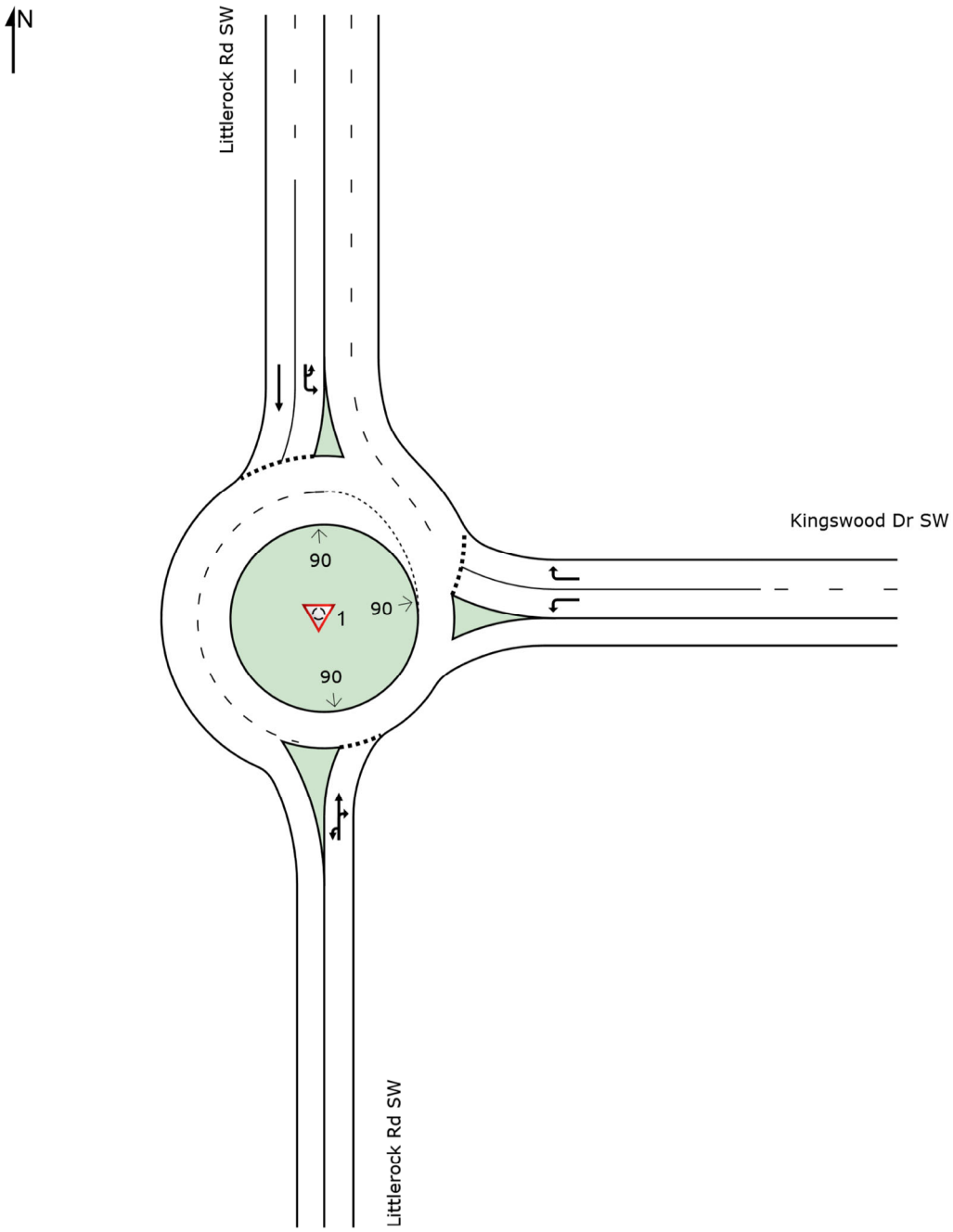
Organisation: HEATH & ASSOCIATES | Licence: PLUS / 1PC | Processed: Thursday, May 19, 2022 1:04:17 PM
Project: T:\Sidra\4870\Kingswood Commercial.sip9

# SITE LAYOUT

## Site: 1 [Littlerock Rd SW & Kingswood Dr SW (Site Folder: General)]

Kingswood Commercial
Site Category: Existing PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.

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| Intersection | |
|---|---|
| Int Delay, s/veh | 4.3 |

| Movement | SBL | SBR | SEL | SET | NWT | NWR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 103 | 79 | 54 | 116 | 121 | 125 |
| Future Vol, veh/h | 103 | 79 | 54 | 116 | 121 | 125 |
| Conflicting Peds, #/hr | 3 | 3 | 3 | 0 | 0 | 3 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 0 | 0 | - | - | - |
| Veh in Median Storage, # | 1 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 82 | 82 | 82 | 82 | 82 | 82 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 126 | 96 | 66 | 141 | 148 | 152 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 503 | 230 | 303 | 0 | - | 0 |
| Stage 1 | 227 | - | - | - | - | - |
| Stage 2 | 276 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 528 | 809 | 1258 | - | - | - |
| Stage 1 | 811 | - | - | - | - | - |
| Stage 2 | 771 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 497 | 804 | 1254 | - | - | - |
| Mov Cap-2 Maneuver | 577 | - | - | - | - | - |
| Stage 1 | 766 | - | - | - | - | - |
| Stage 2 | 769 | - | - | - | - | - |

| Approach | SB | SE | NW |
|---|---|---|---|
| HCM Control Delay, s | 11.7 | 2.6 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NWT | NWR | SEL | SET | SBLn1 | SBLn2 |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 1254 | - | 577 | 804 |
| HCM Lane V/C Ratio | - | - | 0.053 | - | 0.218 | 0.12 |
| HCM Control Delay (s) | - | - | 8 | - | 13 | 10.1 |
| HCM Lane LOS | - | - | A | - | B | B |
| HCM 95th %tile Q(veh) | - | - | 0.2 | - | 0.8 | 0.4 |

HCM 6th TWSC
3: Tyee Dr SW & Kingswood Dr SW

Existing PM Peak Hour
05/20/2022

| Intersection | |
|---|---|
| Int Delay, s/veh | 6.2 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 116 | 135 | 123 | 229 | 225 | 149 |
| Future Vol, veh/h | 116 | 135 | 123 | 229 | 225 | 149 |
| Conflicting Peds, #/hr | 3 | 3 | 3 | 0 | 0 | 3 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 75 | 0 | 100 | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 88 | 88 | 88 | 88 | 88 | 88 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 132 | 153 | 140 | 260 | 256 | 169 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 887 | 347 | 428 | 0 | - | 0 |
| Stage 1 | 344 | - | - | - | - | - |
| Stage 2 | 543 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 315 | 696 | 1131 | - | - | - |
| Stage 1 | 718 | - | - | - | - | - |
| Stage 2 | 582 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 274 | 692 | 1128 | - | - | - |
| Mov Cap-2 Maneuver | 274 | - | - | - | - | - |
| Stage 1 | 627 | - | - | - | - | - |
| Stage 2 | 580 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 20 | 3 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1128 | - | 274 | 692 | - | - |
| HCM Lane V/C Ratio | 0.124 | - | 0.481 | 0.222 | - | - |
| HCM Control Delay (s) | 8.6 | - | 29.7 | 11.7 | - | - |
| HCM Lane LOS | A | - | D | B | - | - |
| HCM 95th %tile Q(veh) | 0.4 | - | 2.4 | 0.8 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 3.6 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 2 | 185 | 77 | 46 | 188 | 25 | 68 | 8 | 67 | 13 | 0 | 3 |
| Future Vol, veh/h | 2 | 185 | 77 | 46 | 188 | 25 | 68 | 8 | 67 | 13 | 0 | 3 |
| Conflicting Peds, #/hr | 2 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 2 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 0 | - | - | 35 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 1 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 5 | 2 | 2 | 5 | 2 | 2 | 2 |
| Mvmt Flow | 2 | 197 | 82 | 49 | 200 | 27 | 72 | 9 | 71 | 14 | 0 | 3 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 229 | 0 | 0 | 281 | 0 | 0 | 559 | 571 | 242 | 598 | 599 | 218 |
| Stage 1 | - | - | - | - | - | - | 244 | 244 | - | 314 | 314 | - |
| Stage 2 | - | - | - | - | - | - | 315 | 327 | - | 284 | 285 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.25 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.345 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1339 | - | - | 1282 | - | - | 440 | 431 | 790 | 414 | 415 | 822 |
| Stage 1 | - | - | - | - | - | - | 760 | 704 | - | 697 | 656 | - |
| Stage 2 | - | - | - | - | - | - | 696 | 648 | - | 723 | 676 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1336 | - | - | 1280 | - | - | 423 | 412 | 787 | 359 | 397 | 819 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 514 | 487 | - | 359 | 397 | - |
| Stage 1 | - | - | - | - | - | - | 758 | 702 | - | 695 | 630 | - |
| Stage 2 | - | - | - | - | - | - | 665 | 622 | - | 647 | 674 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 1.4 | 12.8 | 14.4 |
| HCM LOS | | | B | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 611 | 1336 | - | - | 1280 | - | - | 401 |
| HCM Lane V/C Ratio | 0.249 | 0.002 | - | - | 0.038 | - | - | 0.042 |
| HCM Control Delay (s) | 12.8 | 7.7 | - | - | 7.9 | - | - | 14.4 |
| HCM Lane LOS | B | A | - | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 1 | 0 | - | - | 0.1 | - | - | 0.1 |

# MOVEMENT SUMMARY

## Site: 1 [Littlerock Rd SW & Kingswood Dr SW - 2027 PM Without (Site Folder: General)]

Kingswood Commercial
Site Category: Forecast 2027 PM Peak Hour Without Project
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: Littlerock Rd SW | | | | | | | | | | | | | | |
| 3u | U | 28 | 1.0 | 29 | 1.0 | 0.506 | 13.1 | LOS B | 3.9 | 98.9 | 0.41 | 0.46 | 0.41 | 38.1 |
| 8 | T1 | 515 | 1.0 | 542 | 1.0 | 0.506 | 4.2 | LOS A | 3.9 | 98.9 | 0.41 | 0.46 | 0.41 | 36.9 |
| 18 | R2 | 95 | 1.0 | 100 | 1.0 | 0.506 | 4.5 | LOS A | 3.9 | 98.9 | 0.41 | 0.46 | 0.41 | 35.7 |
| Approach | | 638 | 1.0 | 672 | 1.0 | 0.506 | 4.6 | LOS A | 3.9 | 98.9 | 0.41 | 0.46 | 0.41 | 36.8 |
| East: Kingswood Dr SW | | | | | | | | | | | | | | |
| 1 | L2 | 103 | 1.0 | 108 | 1.0 | 0.118 | 12.6 | LOS B | 0.7 | 17.2 | 0.63 | 0.74 | 0.63 | 33.6 |
| 16 | R2 | 144 | 1.0 | 152 | 1.0 | 0.128 | 6.1 | LOS A | 0.8 | 20.5 | 0.62 | 0.63 | 0.62 | 35.3 |
| Approach | | 247 | 1.0 | 260 | 1.0 | 0.128 | 8.8 | LOS A | 0.8 | 20.5 | 0.62 | 0.68 | 0.62 | 34.5 |
| North: Littlerock Rd SW | | | | | | | | | | | | | | |
| 7u | U | 3 | 1.0 | 3 | 1.0 | 0.136 | 13.2 | LOS B | 0.6 | 14.5 | 0.31 | 0.65 | 0.31 | 35.2 |
| 7 | L2 | 109 | 1.0 | 115 | 1.0 | 0.136 | 10.7 | LOS B | 0.6 | 14.5 | 0.31 | 0.65 | 0.31 | 34.3 |
| 4 | T1 | 514 | 1.0 | 541 | 1.0 | 0.403 | 3.9 | LOS A | 2.4 | 61.3 | 0.34 | 0.41 | 0.34 | 37.3 |
| Approach | | 626 | 1.0 | 659 | 1.0 | 0.403 | 5.2 | LOS A | 2.4 | 61.3 | 0.34 | 0.45 | 0.34 | 36.7 |
| All Vehicles | | 1511 | 1.0 | 1591 | 1.0 | 0.506 | 5.5 | LOS A | 3.9 | 98.9 | 0.41 | 0.49 | 0.41 | 36.4 |

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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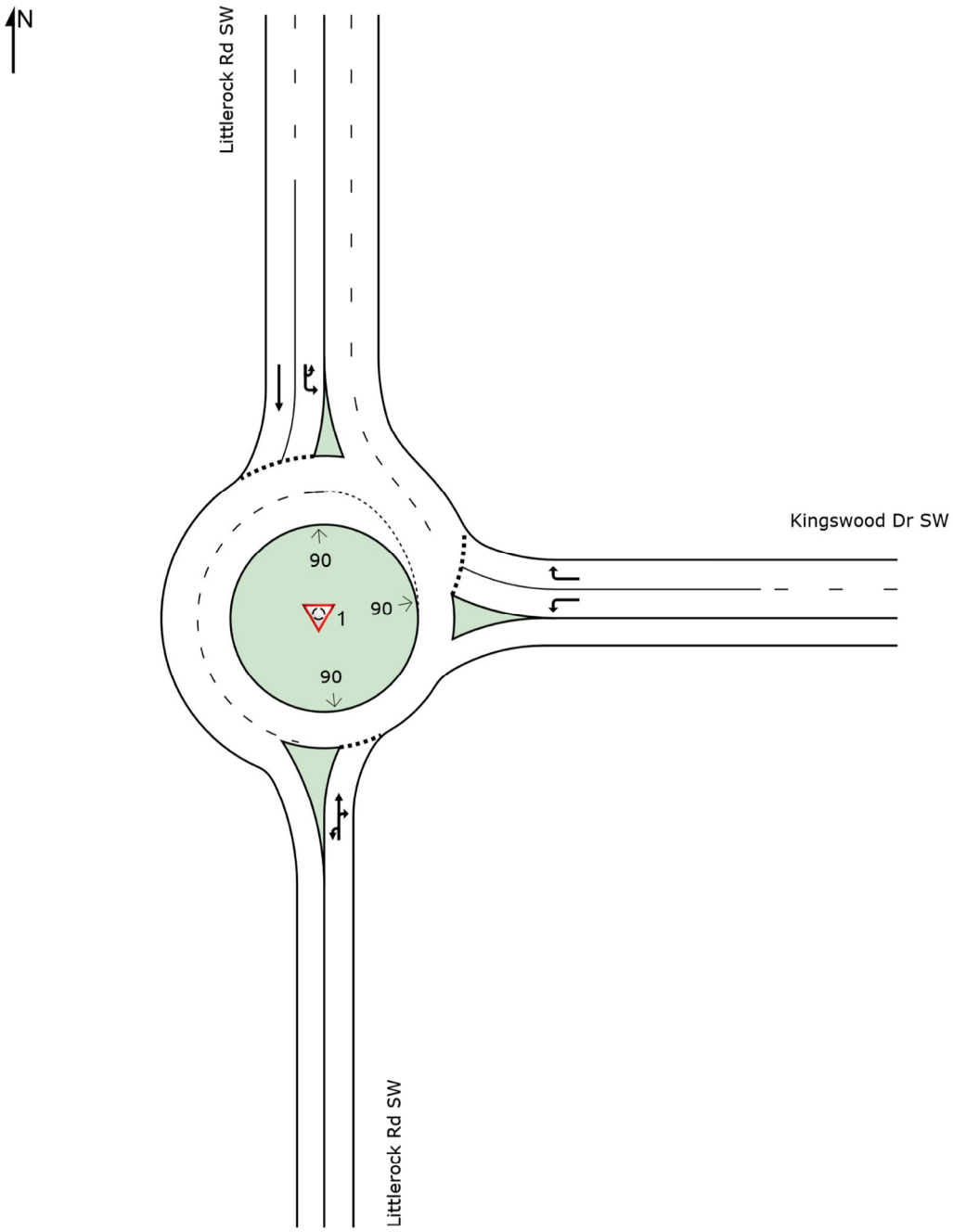
Project: T:\Sidra\4870\Kingswood Commercial.sip9

# SITE LAYOUT

## Site: 1 [Littlerock Rd SW & Kingswood Dr SW - 2027 PM Without (Site Folder: General)]

Kingswood Commercial
Site Category: Forecast 2027 PM Peak Hour Without Project
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.

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| Intersection | |
|---|---|
| Int Delay, s/veh | 4.7 |

| Movement | SBL | SBR | SEL | SET | NWT | NWR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 125 | 96 | 66 | 141 | 148 | 152 |
| Future Vol, veh/h | 125 | 96 | 66 | 141 | 148 | 152 |
| Conflicting Peds, #/hr | 3 | 3 | 3 | 0 | 0 | 3 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 0 | 0 | - | - | - |
| Veh in Median Storage, # | 1 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 82 | 82 | 82 | 82 | 82 | 82 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 152 | 117 | 80 | 172 | 180 | 185 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 611 | 279 | 368 | 0 | - | 0 |
| Stage 1 | 276 | - | - | - | - | - |
| Stage 2 | 335 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 457 | 760 | 1191 | - | - | - |
| Stage 1 | 771 | - | - | - | - | - |
| Stage 2 | 725 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 424 | 756 | 1188 | - | - | - |
| Mov Cap-2 Maneuver | 522 | - | - | - | - | - |
| Stage 1 | 717 | - | - | - | - | - |
| Stage 2 | 723 | - | - | - | - | - |

| Approach | SB | SE | NW |
|---|---|---|---|
| HCM Control Delay, s | 12.9 | 2.6 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NWT | NWR | SEL | SET | SBLn1 | SBLn2 |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 1188 | - | 522 | 756 |
| HCM Lane V/C Ratio | - | - | 0.068 | - | 0.292 | 0.155 |
| HCM Control Delay (s) | - | - | 8.2 | - | 14.7 | 10.6 |
| HCM Lane LOS | - | - | A | - | B | B |
| HCM 95th %tile Q(veh) | - | - | 0.2 | - | 1.2 | 0.5 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 10.4 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 141 | 165 | 149 | 302 | 311 | 181 |
| Future Vol, veh/h | 141 | 165 | 149 | 302 | 311 | 181 |
| Conflicting Peds, #/hr | 3 | 3 | 3 | 0 | 0 | 3 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 75 | 0 | 100 | - | - | - |
| 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 | 153 | 179 | 162 | 328 | 338 | 197 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1095 | 443 | 538 | 0 | - | 0 |
| Stage 1 | 440 | - | - | - | - | - |
| Stage 2 | 655 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 236 | 615 | 1030 | - | - | - |
| Stage 1 | 649 | - | - | - | - | - |
| Stage 2 | 517 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 198 | 611 | 1027 | - | - | - |
| Mov Cap-2 Maneuver | 198 | - | - | - | - | - |
| Stage 1 | 545 | - | - | - | - | - |
| Stage 2 | 515 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 38 | 3 | 0 |
| HCM LOS | E | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1027 | - | 198 | 611 | - | - |
| HCM Lane V/C Ratio | 0.158 | - | 0.774 | 0.294 | - | - |
| HCM Control Delay (s) | 9.2 | - | 66.8 | 13.3 | - | - |
| HCM Lane LOS | A | - | F | B | - | - |
| HCM 95th %tile Q(veh) | 0.6 | - | 5.3 | 1.2 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 4.7 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 3 | 225 | 94 | 56 | 229 | 31 | 83 | 10 | 82 | 15 | 0 | 4 |
| Future Vol, veh/h | 3 | 225 | 94 | 56 | 229 | 31 | 83 | 10 | 82 | 15 | 0 | 4 |
| Conflicting Peds, #/hr | 2 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 2 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 0 | - | - | 35 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 5 | 2 | 2 | 5 | 2 | 2 | 2 |
| Mvmt Flow | 3 | 239 | 100 | 60 | 244 | 33 | 88 | 11 | 87 | 16 | 0 | 4 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 279 | 0 | 0 | 341 | 0 | 0 | 682 | 696 | 293 | 729 | 730 | 265 |
| Stage 1 | - | - | - | - | - | - | 297 | 297 | - | 383 | 383 | - |
| Stage 2 | - | - | - | - | - | - | 385 | 399 | - | 346 | 347 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.25 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.345 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1284 | - | - | 1218 | - | - | 364 | 365 | 739 | 338 | 349 | 774 |
| Stage 1 | - | - | - | - | - | - | 712 | 668 | - | 640 | 612 | - |
| Stage 2 | - | - | - | - | - | - | 638 | 602 | - | 670 | 635 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1282 | - | - | 1216 | - | - | 347 | 345 | 736 | 279 | 330 | 771 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 347 | 345 | - | 279 | 330 | - |
| Stage 1 | - | - | - | - | - | - | 709 | 665 | - | 637 | 581 | - |
| Stage 2 | - | - | - | - | - | - | 602 | 571 | - | 579 | 632 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 1.4 | 18 | 16.9 |
| HCM LOS | | | C | C |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 461 | 1282 | - | - | 1216 | - | - | 322 |
| HCM Lane V/C Ratio | 0.404 | 0.002 | - | - | 0.049 | - | - | 0.063 |
| HCM Control Delay (s) | 18 | 7.8 | - | - | 8.1 | - | - | 16.9 |
| HCM Lane LOS | C | A | - | - | A | - | - | C |
| HCM 95th %tile Q(veh) | 1.9 | 0 | - | - | 0.2 | - | - | 0.2 |

# MOVEMENT SUMMARY

## Site: 1 [Littlerock Rd SW & Kingswood Dr SW - 2027 PM With (Site Folder: General)]

Kingswood Commercial
Site Category: Forecast 2027 PM Peak Hour With Project
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: Littlerock Rd SW | | | | | | | | | | | | | | |
| 3u | U | 28 | 1.0 | 29 | 1.0 | 0.536 | 13.4 | LOS B | 4.3 | 107.8 | 0.48 | 0.49 | 0.48 | 37.8 |
| 8 | T1 | 532 | 1.0 | 560 | 1.0 | 0.536 | 4.5 | LOS A | 4.3 | 107.8 | 0.48 | 0.49 | 0.48 | 36.7 |
| 18 | R2 | 95 | 1.0 | 100 | 1.0 | 0.536 | 4.8 | LOS A | 4.3 | 107.8 | 0.48 | 0.49 | 0.48 | 35.5 |
| Approach | | 655 | 1.0 | 689 | 1.0 | 0.536 | 4.9 | LOS A | 4.3 | 107.8 | 0.48 | 0.49 | 0.48 | 36.5 |
| East: Kingswood Dr SW | | | | | | | | | | | | | | |
| 1 | L2 | 134 | 1.0 | 141 | 1.0 | 0.157 | 12.7 | LOS B | 0.9 | 23.9 | 0.66 | 0.76 | 0.66 | 33.5 |
| 16 | R2 | 146 | 1.0 | 154 | 1.0 | 0.134 | 6.2 | LOS A | 0.9 | 22.1 | 0.65 | 0.64 | 0.65 | 35.2 |
| Approach | | 280 | 1.0 | 295 | 1.0 | 0.157 | 9.3 | LOS A | 0.9 | 23.9 | 0.65 | 0.70 | 0.65 | 34.3 |
| North: Littlerock Rd SW | | | | | | | | | | | | | | |
| 7u | U | 3 | 1.0 | 3 | 1.0 | 0.173 | 13.3 | LOS B | 0.8 | 19.4 | 0.35 | 0.66 | 0.35 | 35.1 |
| 7 | L2 | 145 | 1.0 | 153 | 1.0 | 0.173 | 10.8 | LOS B | 0.8 | 19.4 | 0.35 | 0.66 | 0.35 | 34.2 |
| 4 | T1 | 498 | 1.0 | 524 | 1.0 | 0.400 | 4.1 | LOS A | 2.4 | 61.1 | 0.39 | 0.43 | 0.39 | 37.2 |
| Approach | | 646 | 1.0 | 680 | 1.0 | 0.400 | 5.6 | LOS A | 2.4 | 61.1 | 0.38 | 0.48 | 0.38 | 36.4 |
| All Vehicles | | 1581 | 1.0 | 1664 | 1.0 | 0.536 | 6.0 | LOS A | 4.3 | 107.8 | 0.47 | 0.52 | 0.47 | 36.1 |

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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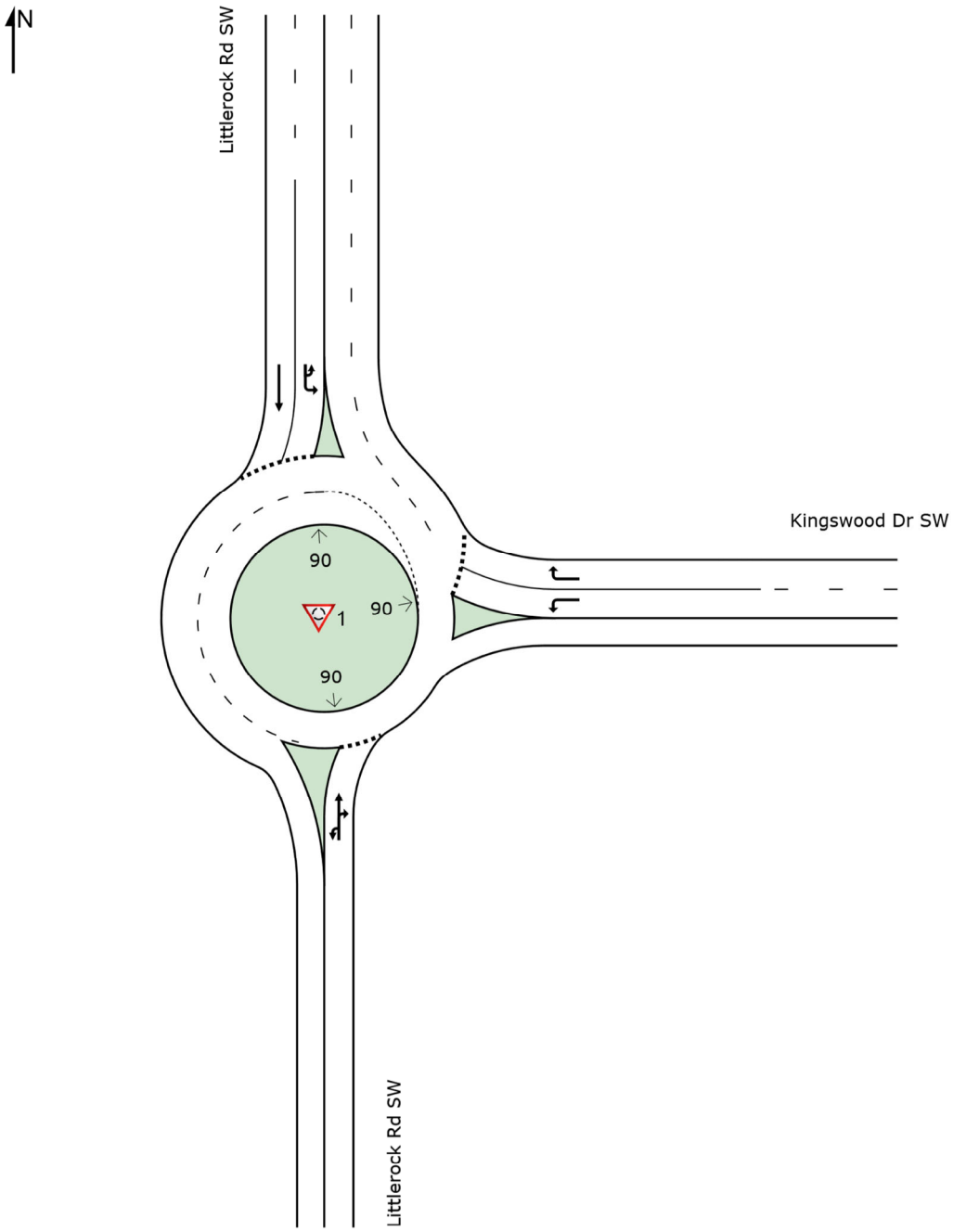
Organisation: HEATH & ASSOCIATES | Licence: PLUS / 1PC | Processed: Thursday, May 19, 2022 1:11:02 PM
Project: T:\Sidra\4870\Kingswood Commercial.sip9

# SITE LAYOUT

## Site: 1 [Littlerock Rd SW & Kingswood Dr SW - 2027 PM With (Site Folder: General)]

Kingswood Commercial
Site Category: Forecast 2027 PM Peak Hour With Project
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.

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| Intersection | |
|---|---|
| Int Delay, s/veh | 8.7 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 66 | 135 | 42 | 69 | 139 | 152 | 42 | 0 | 65 | 125 | 0 | 96 |
| Future Vol, veh/h | 66 | 135 | 42 | 69 | 139 | 152 | 42 | 0 | 65 | 125 | 0 | 96 |
| Conflicting Peds, #/hr | 3 | 0 | 3 | 3 | 0 | 3 | 3 | 0 | 3 | 3 | 0 | 3 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 0 | - | - | 0 | - | - | 70 | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 1 | - | - | 1 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 80 | 165 | 51 | 84 | 170 | 185 | 51 | 0 | 79 | 152 | 0 | 117 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 358 | 0 | 0 | 219 | 0 | 0 | 846 | 880 | 197 | 827 | 813 | 269 |
| Stage 1 | - | - | - | - | - | - | 354 | 354 | - | 434 | 434 | - |
| Stage 2 | - | - | - | - | - | - | 492 | 526 | - | 393 | 379 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1201 | - | - | 1350 | - | - | 282 | 286 | 844 | 291 | 313 | 770 |
| Stage 1 | - | - | - | - | - | - | 663 | 630 | - | 600 | 581 | - |
| Stage 2 | - | - | - | - | - | - | 558 | 529 | - | 632 | 615 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1198 | - | - | 1346 | - | - | 215 | 249 | 839 | 237 | 272 | 766 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 295 | 329 | - | 333 | 358 | - |
| Stage 1 | - | - | - | - | - | - | 617 | 586 | - | 559 | 543 | - |
| Stage 2 | - | - | - | - | - | - | 442 | 495 | - | 533 | 572 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 2.2 | 1.5 | 13.7 | 25.2 |
| HCM LOS | | | B | D |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 295 | 839 | 1198 | - | - | 1346 | - | - | 441 |
| HCM Lane V/C Ratio | 0.174 | 0.094 | 0.067 | - | - | 0.063 | - | - | 0.611 |
| HCM Control Delay (s) | 19.8 | 9.7 | 8.2 | - | - | 7.9 | - | - | 25.2 |
| HCM Lane LOS | C | A | A | - | - | A | - | - | D |
| HCM 95th %tile Q(veh) | 0.6 | 0.3 | 0.2 | - | - | 0.2 | - | - | 4 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 24.1 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 181 | 184 | 168 | 302 | 311 | 222 |
| Future Vol, veh/h | 181 | 184 | 168 | 302 | 311 | 222 |
| Conflicting Peds, #/hr | 3 | 3 | 3 | 0 | 0 | 3 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 75 | 0 | 100 | - | - | - |
| 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 | 197 | 200 | 183 | 328 | 338 | 241 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1159 | 465 | 582 | 0 | - | 0 |
| Stage 1 | 462 | - | - | - | - | - |
| Stage 2 | 697 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 216 | 597 | 992 | - | - | - |
| Stage 1 | 634 | - | - | - | - | - |
| Stage 2 | 494 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | ~ 175 | 594 | 989 | - | - | - |
| Mov Cap-2 Maneuver | ~ 175 | - | - | - | - | - |
| Stage 1 | 515 | - | - | - | - | - |
| Stage 2 | 493 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 86.1 | 3.4 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 989 | - | 175 | 594 | - | - |
| HCM Lane V/C Ratio | 0.185 | - | 1.124 | 0.337 | - | - |
| HCM Control Delay (s) | 9.5 | - | 159.3 | 14.1 | - | - |
| HCM Lane LOS | A | - | F | B | - | - |
| HCM 95th %tile Q(veh) | 0.7 | - | 10.1 | 1.5 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 30 | 625 | 28 | 0 | 660 |
| Future Vol, veh/h | 0 | 30 | 625 | 28 | 0 | 660 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| 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 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 33 | 679 | 30 | 0 | 717 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | - | 694 | 0 | 0 | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Critical Hdwy | - | 6.22 | - | - | - | - |
| Critical Hdwy Stg 1 | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - |
| Follow-up Hdwy | - | 3.318 | - | - | - | - |
| Pot Cap-1 Maneuver | 0 | 443 | - | - | 0 | - |
| Stage 1 | 0 | - | - | - | 0 | - |
| Stage 2 | 0 | - | - | - | 0 | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | - | 443 | - | - | - | - |
| Mov Cap-2 Maneuver | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 13.8 | 0 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBT |
|---|---|---|---|---|
| Capacity (veh/h) | - | - | 443 | - |
| HCM Lane V/C Ratio | - | - | 0.074 | - |
| HCM Control Delay (s) | - | - | 13.8 | - |
| HCM Lane LOS | - | - | B | - |
| HCM 95th %tile Q(veh) | - | - | 0.2 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.2 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 18 | 635 | 18 | 0 | 660 |
| Future Vol, veh/h | 0 | 18 | 635 | 18 | 0 | 660 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| 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 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 20 | 690 | 20 | 0 | 717 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | - | 700 | 0 | 0 | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Critical Hdwy | - | 6.22 | - | - | - | - |
| Critical Hdwy Stg 1 | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - |
| Follow-up Hdwy | - | 3.318 | - | - | - | - |
| Pot Cap-1 Maneuver | 0 | 439 | - | - | 0 | - |
| Stage 1 | 0 | - | - | - | 0 | - |
| Stage 2 | 0 | - | - | - | 0 | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | - | 439 | - | - | - | - |
| Mov Cap-2 Maneuver | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 13.6 | 0 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBT |
|---|---|---|---|---|
| Capacity (veh/h) | - | - | 439 | - |
| HCM Lane V/C Ratio | - | - | 0.045 | - |
| HCM Control Delay (s) | - | - | 13.6 | - |
| HCM Lane LOS | - | - | B | - |
| HCM 95th %tile Q(veh) | - | - | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 5 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 3 | 285 | 94 | 56 | 288 | 31 | 83 | 10 | 82 | 15 | 0 | 4 |
| Future Vol, veh/h | 3 | 285 | 94 | 56 | 288 | 31 | 83 | 10 | 82 | 15 | 0 | 4 |
| Conflicting Peds, #/hr | 2 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 2 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 0 | - | - | 35 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 5 | 2 | 2 | 5 | 2 | 2 | 2 |
| Mvmt Flow | 3 | 303 | 100 | 60 | 306 | 33 | 88 | 11 | 87 | 16 | 0 | 4 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 341 | 0 | 0 | 405 | 0 | 0 | 808 | 822 | 357 | 855 | 856 | 327 |
| Stage 1 | - | - | - | - | - | - | 361 | 361 | - | 445 | 445 | - |
| Stage 2 | - | - | - | - | - | - | 447 | 461 | - | 410 | 411 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.25 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.345 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1218 | - | - | 1154 | - | - | 299 | 309 | 680 | 278 | 295 | 714 |
| Stage 1 | - | - | - | - | - | - | 657 | 626 | - | 592 | 575 | - |
| Stage 2 | - | - | - | - | - | - | 591 | 565 | - | 619 | 595 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1216 | - | - | 1152 | - | - | 284 | 291 | 677 | 225 | 278 | 711 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 284 | 291 | - | 225 | 278 | - |
| Stage 1 | - | - | - | - | - | - | 654 | 623 | - | 590 | 544 | - |
| Stage 2 | - | - | - | - | - | - | 556 | 534 | - | 528 | 593 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 1.2 | 22.3 | 19.8 |
| HCM LOS | | | C | C |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 391 | 1216 | - | - | 1152 | - | - | 263 |
| HCM Lane V/C Ratio | 0.476 | 0.003 | - | - | 0.052 | - | - | 0.077 |
| HCM Control Delay (s) | 22.3 | 8 | - | - | 8.3 | - | - | 19.8 |
| HCM Lane LOS | C | A | - | - | A | - | - | C |
| HCM 95th %tile Q(veh) | 2.5 | 0 | - | - | 0.2 | - | - | 0.2 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 7.7 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 181 | 184 | 168 | 302 | 311 | 222 |
| Future Vol, veh/h | 181 | 184 | 168 | 302 | 311 | 222 |
| Conflicting Peds, #/hr | 3 | 3 | 3 | 0 | 0 | 3 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 75 | 0 | 100 | - | - | - |
| Veh in Median Storage, # | 1 | - | - | 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 | 197 | 200 | 183 | 328 | 338 | 241 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1159 | 465 | 582 | 0 | - | 0 |
| Stage 1 | 462 | - | - | - | - | - |
| Stage 2 | 697 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 216 | 597 | 992 | - | - | - |
| Stage 1 | 634 | - | - | - | - | - |
| Stage 2 | 494 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | ~ 175 | 594 | 989 | - | - | - |
| Mov Cap-2 Maneuver | 310 | - | - | - | - | - |
| Stage 1 | 515 | - | - | - | - | - |
| Stage 2 | 493 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 24.4 | 3.4 | 0 |
| HCM LOS | C | | |

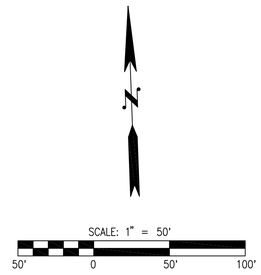
| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 989 | - | 310 | 594 | - | - |
| HCM Lane V/C Ratio | 0.185 | - | 0.635 | 0.337 | - | - |
| HCM Control Delay (s) | 9.5 | - | 34.8 | 14.1 | - | - |
| HCM Lane LOS | A | - | D | B | - | - |
| HCM 95th %tile Q(veh) | 0.7 | - | 4.1 | 1.5 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

KINGSWOOD COMMERCIAL
TRAFFIC IMPACT ANALYSIS

*APPENDIX*
*Site Plan*

## A PORTION OF SEC 03, TWN 17, RGE 2W, W.M., CITY OF TUMWATER, THURSTON COUNTY, WASHINGTON




### CONSTRUCTION NOTES

1. RIGHT OF WAY
2. ACCESSIBLE PATH
3. ACCESSIBLE PARKING
4. TRASH ENCLOSURE

### DISCLAIMER

*TOPOGRAPHIC SURVEY INFORMATION CONTAINED ON THESE PLANS HAS BEEN PROVIDED BY MTN 2 COAST, LLC. LDC, INC. (LAND DEVELOPMENT CONSULTANTS, INC.) ASSUMES NO LIABILITY AS TO THE ACCURACY AND COMPLETENESS OF THIS DATA. ANY DISCREPANCIES FOUND BETWEEN WHAT IS SHOWN ON THE PLANS AND WHAT IS NOTED IN THE FIELD SHOULD BE BROUGHT IMMEDIATELY TO THE ATTENTION OF THE ENGINEER.*

REVISIONS

| NO. | DATE | DESCRIPTION | BY |
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KCI COMMERCIAL, INC.

# KINGSWOOD COMMERCIAL

*PRELIMINARY SITE PLAN*

TYRELL E. BRADLEY
STATE OF WASHINGTON
21053
REGISTERED
PROFESSIONAL ENGINEER

| | |
|---|---|
| JOB NUMBER: | C22151 |
| DRAWING NAME: | C22151P-SP-PL |
| DESIGNER: | TEB |
| DRAFTING BY: | SEU |
| DATE: | |
| SCALE: | 1" =50' |
| JURISDICTION: | TUMWATER |

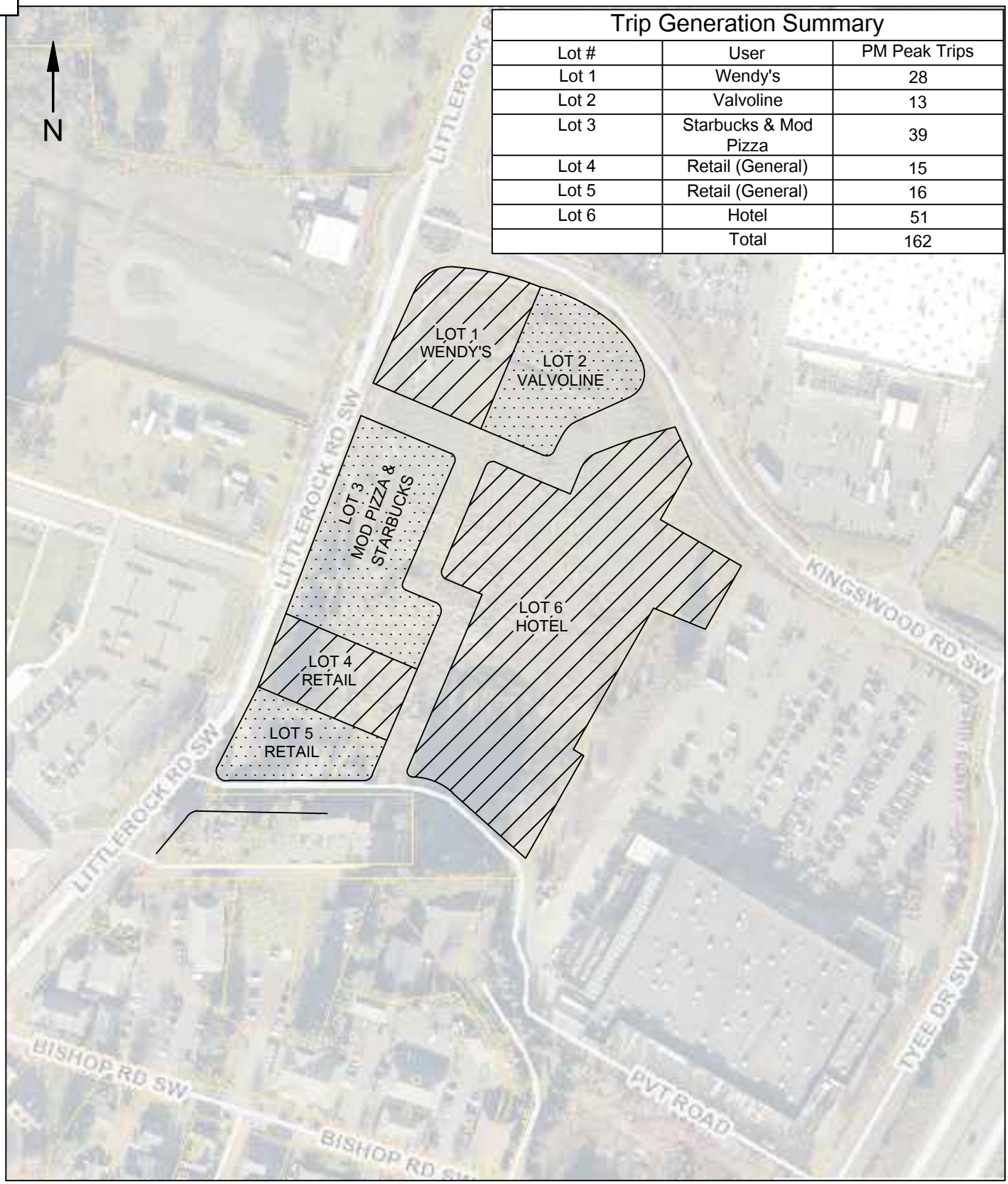
**SP-01**

SHEET 2 OF 5

97/97

Drawing: P:\Civil\2022\C22-151 Kingswood Commercial\Drawings\Preliminary\C22151P-SP-PL.dwg Plotted: Apr 29, 2022 - 11:53am

| Trip Generation Summary | | |
|---|---|---|
| Lot # | User | PM Peak Trips |
| Lot 1 | Wendy's | 28 |
| Lot 2 | Valvoline | 13 |
| Lot 3 | Starbucks & Mod Pizza | 39 |
| Lot 4 | Retail (General) | 15 |
| Lot 5 | Retail (General) | 16 |
| Lot 6 | Hotel | 51 |
| | Total | 162 |




HEATH & ASSOCIATES

TRAFFIC AND CIVIL ENGINEERING

KINGSWOOD COMMERCIAL

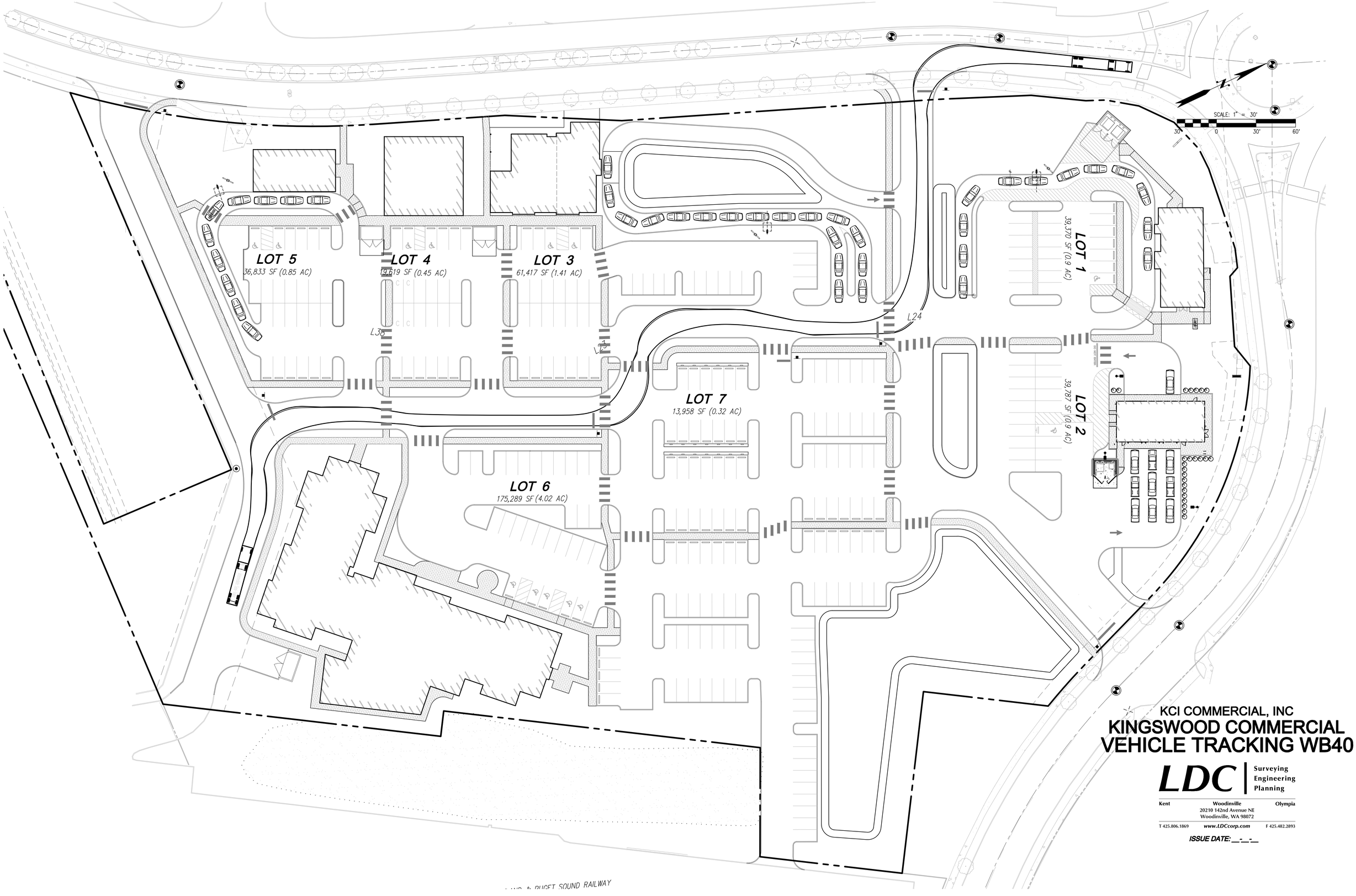
PRIMARY TRIP BREAKDOWN
FIGURE 1

| Lot # | Land Use | Input Variable | Trip Type | ADT | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | In | Out | Total | In | Out | Total |
| 1 | LUC 934 - Fast-Food Restaurant With Drive-Through | 2.58 KSF | Total | 1013 | 57 | 54 | 111 | 32 | 29 | 61 |
| | | | Pass-by | 532 | 28 | 27 | 55 | 17 | 16 | 33 |
| | | | Primary | 481 | 29 | 27 | 56 | 15 | 13 | 28 |
| 2 | LUC - 941 Quick Lubrication Vehicle Shop | 2.04 KSF | Total | 119 | 9 | 3 | 12 | 5 | 8 | 13 |
| | | | Pass-by | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | Primary | 119 | 9 | 3 | 12 | 5 | 8 | 13 |
| 3 | LUC - 937 Coffee Shop With Drive-Through | 2.00 KSF | Total | 896 | 84 | 80 | 164 | 28 | 28 | 56 |
| | | | Pass-by | 470 | 42 | 40 | 82 | 15 | 16 | 31 |
| | | | Primary | 426 | 42 | 40 | 82 | 13 | 12 | 25 |
| | LUC - 930 Fast Casual Restaurant | 2.6 KSF | Total | 213 | 2 | 2 | 4 | 13 | 11 | 24 |
| | | | Pass-by | 92 | 1 | 1 | 2 | 5 | 5 | 10 |
| | | | Primary | 121 | 1 | 1 | 2 | 8 | 6 | 14 |
| 4 & 5 | LUC - 822 Strip Retail | 10.8 KSF | Total | 494 | 14 | 9 | 23 | 25 | 26 | 51 |
| | | | Pass-by | 198 | 6 | 4 | 10 | 10 | 10 | 20 |
| | | | Primary | 296 | 8 | 5 | 13 | 15 | 16 | 31 |
| 6 | LUC 310 - Hotel | 121 Rooms | Total | 812 | 30 | 24 | 54 | 26 | 25 | 51 |
| | | | Pass-by | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | Primary | 812 | 30 | 24 | 54 | 26 | 25 | 51 |
| | | | Total Trips | 3547 | 196 | 172 | 368 | 129 | 127 | 256 |
| | | | Total Pass-by Trips | 1292 | 77 | 72 | 149 | 47 | 47 | 94 |
| | | | **Total Primary Trips** | **2255** | 119 | **100** | 219 | 82 | 80 | **162** |

**bers presented above reflect internal capture rates of 4% AM, 28% PM, 16% Daily (Average of AM/PM)**

**TIF Table Based on Use**

| Lot # | Land Use | Unit | $ Per Unit | Total City TIF | $ Per Tum. Blvd/ I-5 Trip | Tumwater Blvd Trips | SEPA Mit. Fee | Total TIF |
|---|---|---|---|---|---|---|---|---|
| 1 | LUC-934-Wendy's | 2,587 Sq Ft | $41.75 | $108,007.25 | $4,219.00 | 2 | $8,438.00 | $116,445.25 |
| 2 | LUC 941-Valvoline | 3 Bays | $6,082.17 | $18,246.51 | | 1 | $4,219.00 | $22,465.51 |
| 3 | LUC 937-Starbucks | 2,000 Sq Ft | $51.92 | $103,840.00 | | 2 | $8,438.00 | $108,059.00 |
| | LUC 930-Mod Pizza | 2,600 Sq Ft | $26.14 | $67,964 | | 1 | $4,219.00 | $72,183.00 |
| 4&5 | LUC 822-Retail | 10,800 Sq Ft | $6.63 | $71,604 | | 2 | $8,438.00 | $80,042.00 |
| 6 | LUC 310-Hotel | 121 Rooms | $2,854.18 | $345,355.78 | | 4 | $16,876.00 | $362,231.78 |




KCI COMMERCIAL, INC

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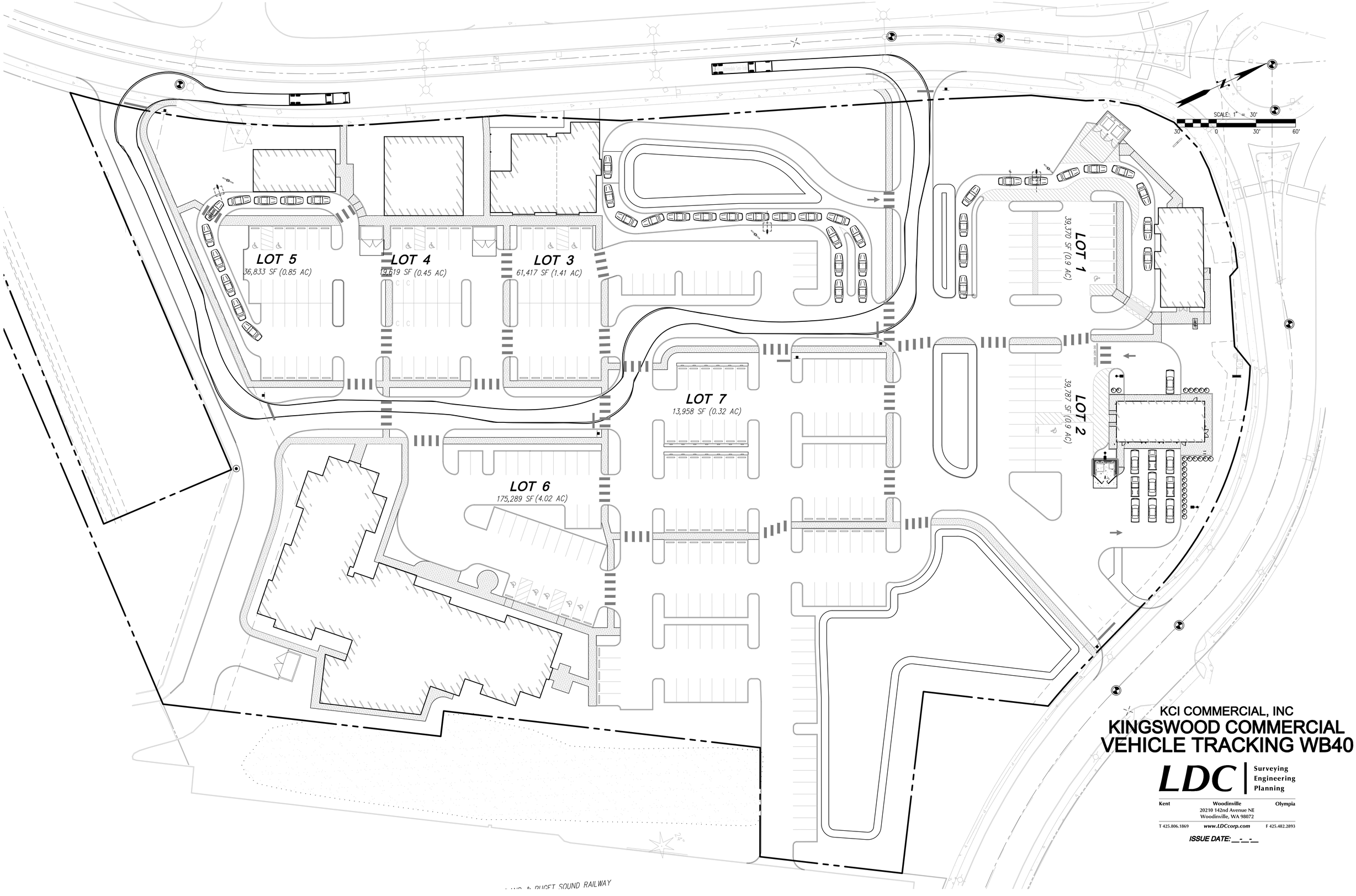
ISSUE DATE: __-__-__

Drawing: P:\Civil\2022\C22-151 Kingswood Commercial\Drawings\Exhibits\Vehicle Tracking\C22151 Vehicle Tracking.dwg Plotted: Sep 30, 2022 - 9:18am

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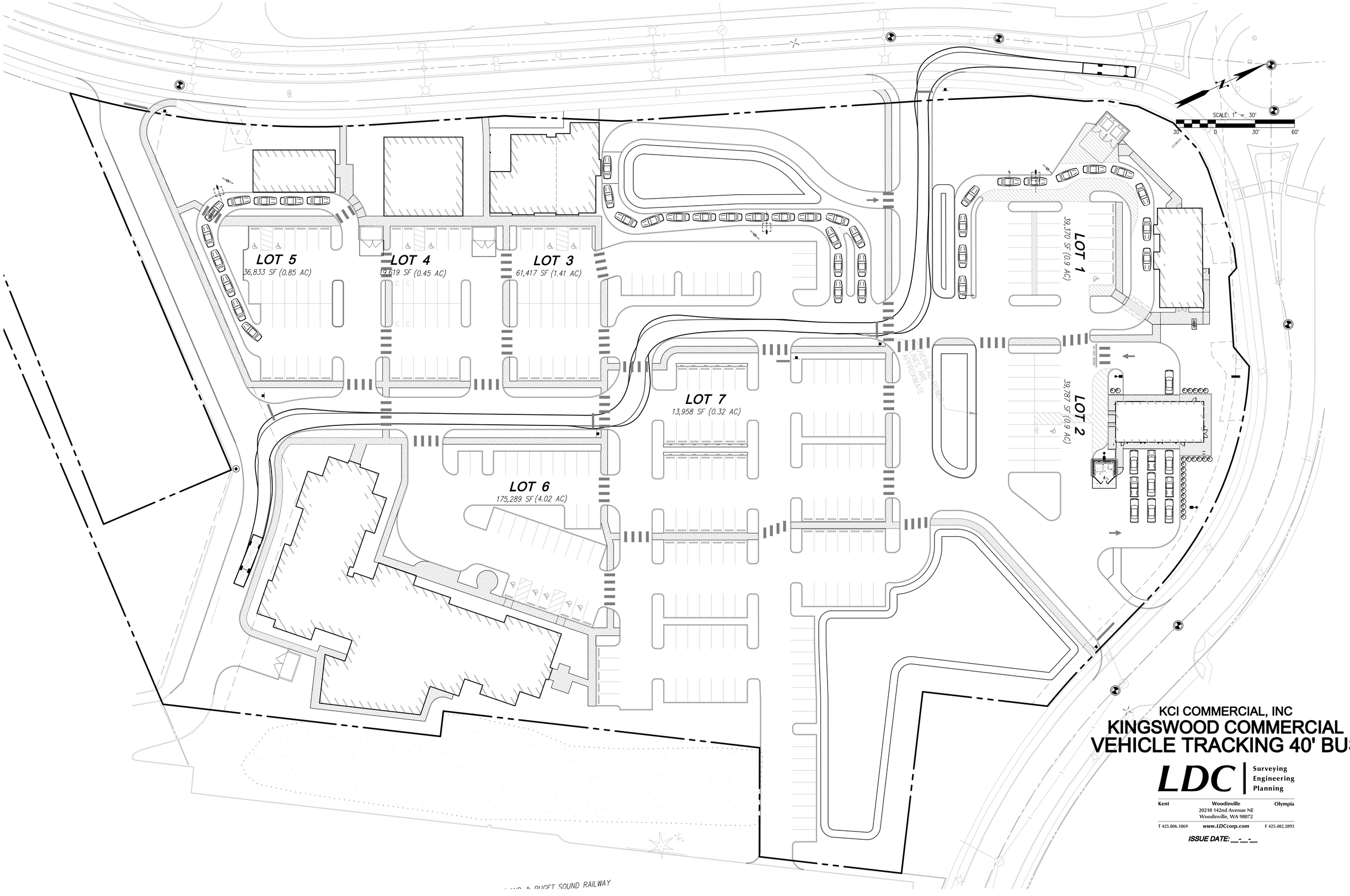
ISSUE DATE: __-__-__

Drawing: P:\Civil\2022\C22-151 Kingswood Commercial\Drawings\Exhibits\Vehicle Tracking\C22151 Vehicle Tracking.dwg Plotted: Sep 30, 2022 - 9:18am




KCI COMMERCIAL, INC

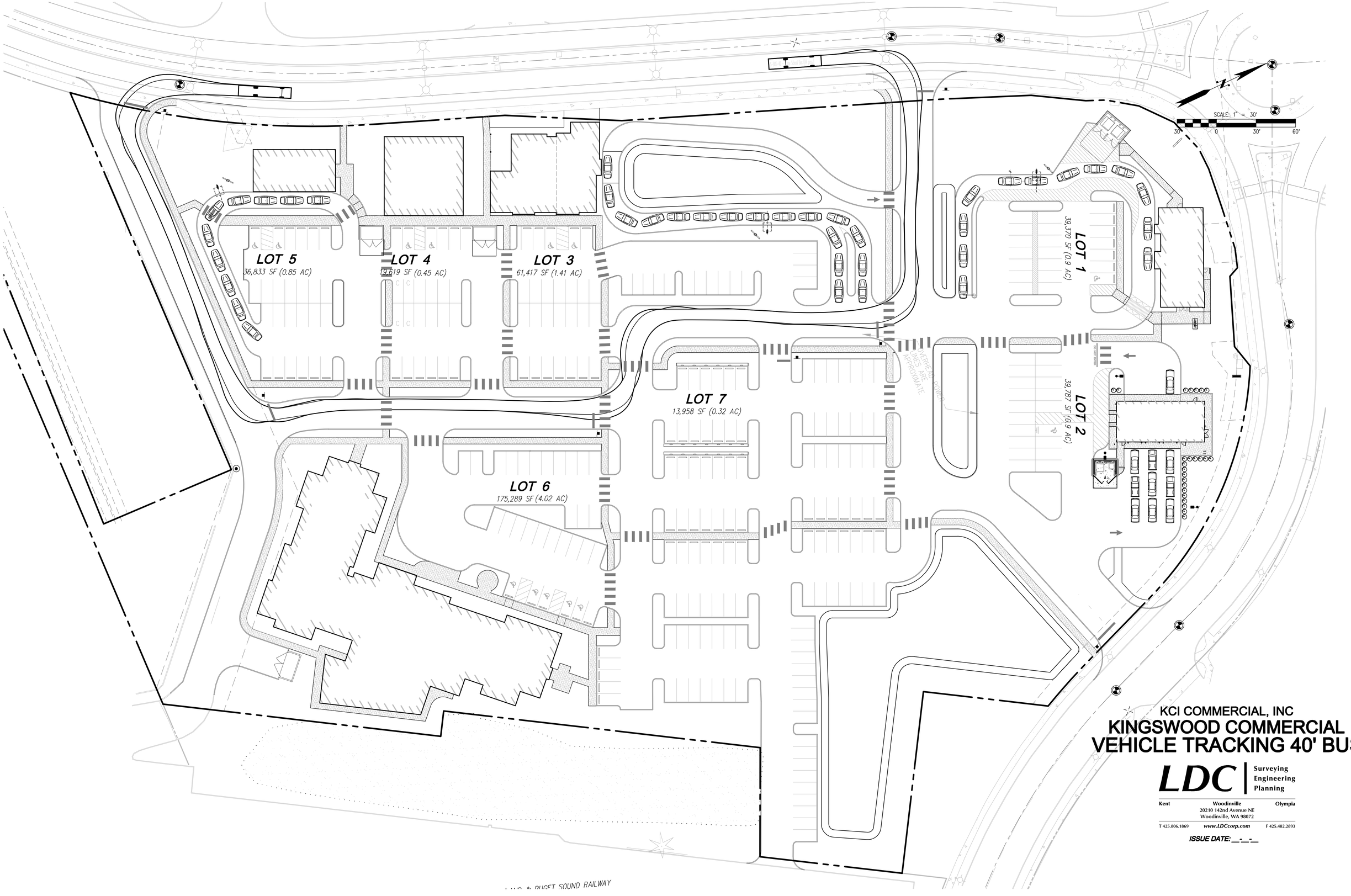
# KINGSWOOD COMMERCIAL
# VEHICLE TRACKING 40' BUS

LDC | Surveying Engineering Planning

Kent | Woodinville | Olympia
20210 142nd Avenue NE
Woodinville, WA 98072
T 425.806.1869 www.LDCcorp.com F 425.482.2893

ISSUE DATE: __-__-__

Drawing: P:\Civil\2022\C22-151 Kingswood Commercial\Drawings\Exhibits\VehicleTracking\C22151 Vehicle Tracking.dwg Plotted: Sep 30, 2022 - 9:19am

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ISSUE DATE: __-__-__

Drawing: P:\Civil\2022\C22-151 Kingswood Commercial\Drawings\Exhibits\Vehicle Tracking\C22151 Vehicle Tracking.dwg Plotted: Sep 30, 2022 - 9:23am

Exhibit 19

City Hall
555 Israel Road SW
Tumwater, WA 98501-6515
Phone: 360-754-5855
Fax: 360-754-4138

June 1, 2022

KCI Commercial, Inc.
P.O. Box 6979
Tacoma, WA 98417

RE: Water and Sewer Availability – Parcels #12703240403 and 12703240404
*Sent via email to trevor@kciwa.com and Samantha Adams sadams@ldccorp.com*

Dear KCI Commercial, Inc:

The City of Tumwater, WA PWSID #89700Q, is pleased to accommodate your request for water and sewer connection and service to the above parcel sited at 1401 Kingswood Drive SW. The parcel is zoned General Commercial. The requested services can be accommodated by the City under the following conditions:

1. Sewer and water extensions to serve the development will be per the City of Tumwater's comprehensive plans.
2. Easements necessary for utility maintenance shall be dedicated to the City of Tumwater in advance of making the physical connection to the water and sewer systems.
3. All connection/latecomer fees, if any, are due at time of building permit issuance.
4. Existing water wells or septic systems, if any, will be legally decommissioned.
5. Follow and comply with all standard City requirements.

This letter serves as the City's Certificate of Water and Sewer Availability for the proposed development of six buildings for restaurants, auto services, a 121-room hotel, and general retail for domestic and irrigation water and sewer uses. The project has been approved for **124.5 Water ERUs and 101.6 Wastewater ERUs**, per Tumwater Municipal Code (TMC) 13.08 and TMC 13.04. If additional consumptive needs for the project are identified, please notify us as soon as possible.

This agreement will expire 180 days from the date shown above. This agreement will remain valid for the duration of permit approval coverage, including extensions. Additional information may be required to accurately determine wastewater connection fees. If you have further questions, please contact Matt Webb at 360-754-4140.

Regards,

Carrie Gillum
Water Resources Specialist

cc: Dan Smith, Water Resources & Sustainability Director
Matt Webb, Engineer III
Jeff Query, Engineer II

Exhibit 20

# MAZAMA POCKET GOPHER (*Thomomys Mazama)* AND THURSTON COUNTY REGULATED PRAIRIE ABSENCE REPORT

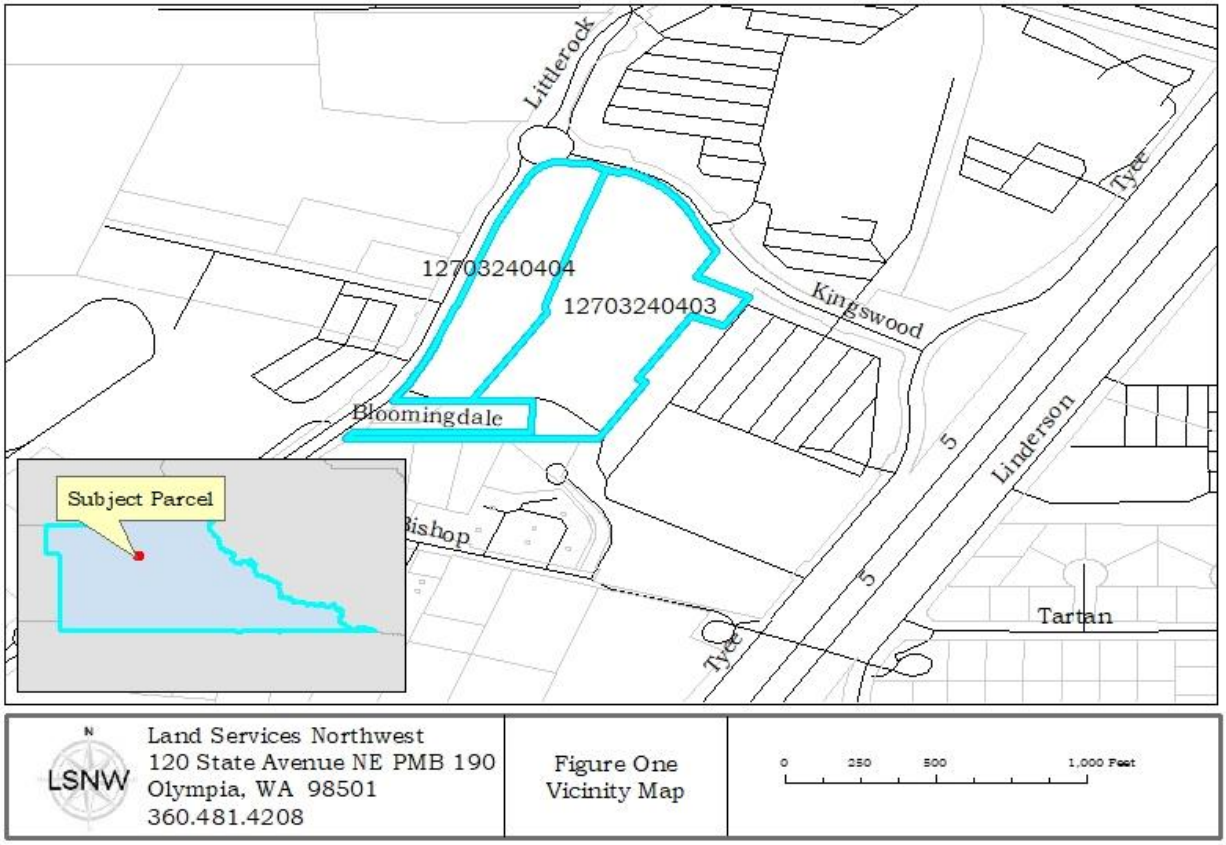
**Prepared for Kingswood Capital Inc.**

*Prepared By:*

ALEXANDER CALLENDER, M.S. PWS
LAND SERVICES NORTHWEST
OLYMPIA, WASHINGTON
OCTOBER 15,2021

# 1.0 INTRODUCTION

This report is the result of a Mazama Pocket Gopher and regulated prairie survey of the 5.76-acre and 3.24-acre parcel numbers 12703240403 and 12703240404 at 1401 KINGSWOOD DR SW and 1551 KINGSWOOD DR SW, with the legal descriptions of Section 03 Township 17 Range 2W Quarter NE NW & SE NW TR B BLA03744 3500815 EXCEPT PTN DEDICATED TO CITY OF TUMWATER PER AFN 3539066 and Section 03 Township 17 Range 2W Quarter NE NW BLA027432 TR D Document 3472425 EXC PTN TO CITY OF TUMWATER PER AFN:3539066; EXC PTN FOR RD PER AFN:3991167; ALSO EXC PTN FOR RD PER AFN:4158266 in the City of Tumwater, WA (**Figure 1**).




The Purpose of this report is to provide a study of the presence or absence of indicators of the Mazama Pocket Gopher (*Thomomys Mazama*) (MPG) and Regulated Prairie Under Tumwater City Code (TCC) Chapter 24**.**

## Mazama Pocket Gopher

Four subspecies of Mazama pocket gophers found in Thurston County are listed as threatened under the Endangered Species Act (ESA). Impacts to Mazama pocket gophers should be avoided or addressed through USFWS permitting processes**.** The presence of this species on a property may have regulatory implications that may limit the amount or type of development that can occur on a property in order to avoid "take" of the species. Take is defined under the ESA as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect any threatened or endangered species.

This study should allow the reader to assess whether the Mazama pocket gopher is likely to be found on site and what the implications of its presence or absence may have with regard to permitting a residence or other structures or development.

### Regulated Prairie, Garry Oaks and Mima Mounds

The parcel contains soil types associated with prairies as defined in the Thurston County Critical Areas Ordinance (CAO 24.25). Transects were walked throughout the parcel (or at least throughout the building envelope and 50-foot buffer area). A list of plant species encountered during the survey was recorded and CAO target prairie plants were noted. Regulated prairie can be either wet or dry outwash prairie and is critical habitat for the Taylors checkerspot butterfly and the Mardon skipper butterfly. Prairie habitat is regulated if three indictor species are found within 5 meters (15 feet) of each other with 25 or more of each species in the plot.

# 2.0 METHODS

## 2.1 Review of Existing Information

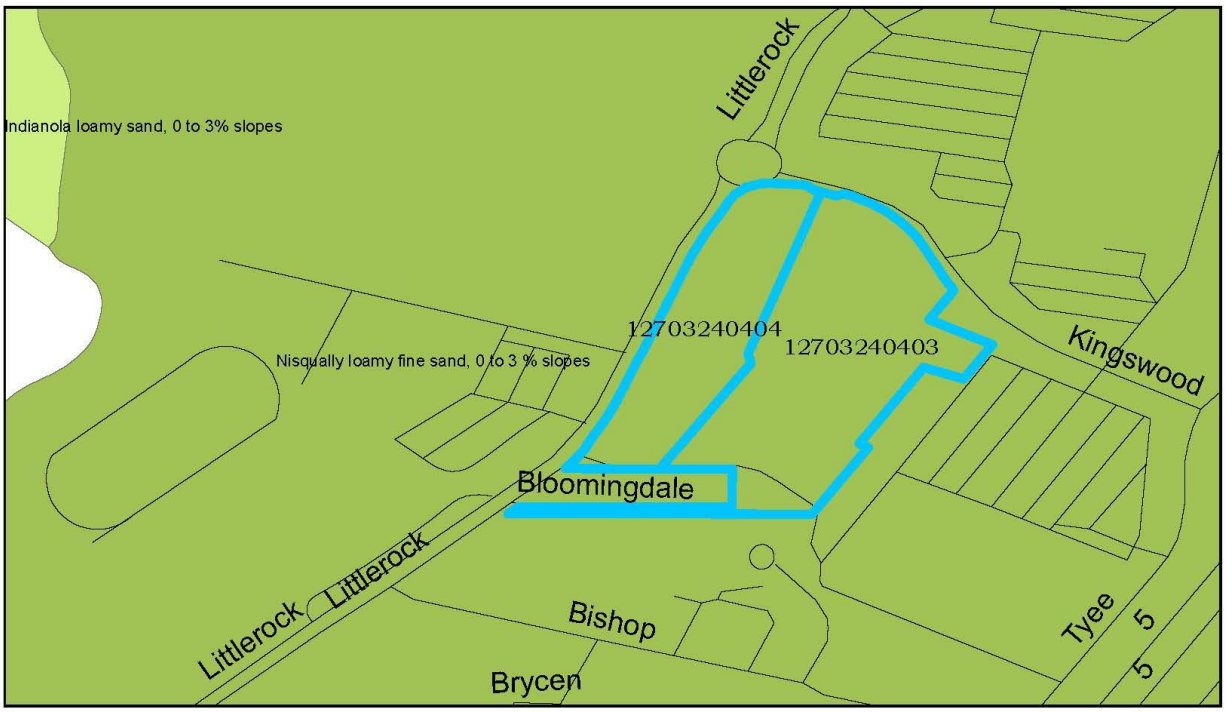
Background Review

Background information on the subject property was reviewed prior to field investigations and included the following:

- Thurston County Geodata Gopher Soils Shapefiles
- WDFW Priority Habitats and Species Information
- USFWS species list information
- WDFW species information

## 2.2 Summary of Existing Information

The existing information shows Nisqually loamy fine sand, 0 to 3 percent slopes, which is more preferred by the MPG, withing 300 feet of the subject parcel (**Figure 2) and (Attachment A).**




| | | |
|---|---|---|
| LSNW<br>Land Services Northwest<br>120 State Avenue NE PMB 190<br>Olympia, WA 98501<br>360.481.4208 | Figure Two<br>USDA Soil Survey | 0 187.5 375 750 Feet |

## Attachment A

Table 1. Soils known to be associated with Mazama pocket gopher occupancy.

| Mazama Pocket Gopher Preference | Soil Type |
|---|---|
| More Preferred<br><br>(formerly High and Medium Preference Soils) | Nisqually loamy fine sand, 0 to 3 percent slopes<br>Nisqually loamy fine sand, 3 to 15 percent slopes<br>Spanaway-Nisqually complex, 2 to 10 percent slopes<br>Cagey loamy sand<br>Indianola loamy sand, 0 to 3 percent slopes<br>Spanaway gravelly sandy loam, 0 to 3 percent slopes<br>Spanaway gravelly sandy loam, 3 to 15% slopes |
| Less Preferred<br><br>(formerly Low Preference Soils) | Alderwood gravelly sandy loam, 0 to 3 percent slopes<br>Alderwood gravelly sandy loam, 3 to 15 percent slopes<br>Everett very gravelly sandy loam, 0 to 3 percent slopes<br>Everett very gravelly sandy loam, 3 to 15 percent slopes<br>Indianola loamy sand, 3 to 15 percent slopes<br>Kapowsin silt loam, 3 to 15 percent slopes<br>McKenna gravelly silt loam, 0 to 5 percent slopes<br>Norma fine sandy loam<br>Norma silt loam<br>Spana gravelly loam<br>Spanaway stony sandy loam, 0 to 3 percent slopes<br>Spanaway stony sandy loam, 3 to 15 percent slopes<br>Yelm fine sandy loam, 0 to 3 percent slopes<br>Yelm fine sandy loam, 3 to 15 percent slopes |

The WDFW Priority Habitats and Species Map shows MPG occupancy in 1995 within 600 feet of the subject parcel. (**Appendix B**).

## 2.3 2021 Mazama Pocket Gopher Protocol

### A. General Information – 2021 Approach

1. The MPG review season will run June 1-October 31, 2021.

2. The protocol described in this memorandum will only apply to properties not known to be occupied by MPG since April 2014, the date of the federal listing.

The property was not known to be occupied by the MPG since April 2014.

3. Negative determinations will be valid for the length of the underlying County permit or approval, per County code.

The determination is negative.

4. Qualified consultants may perform field reviews and submit results for County evaluation, per the CAO. Consultants must have received training from USFWS at one of the two trainings offered in May/June 2021 and is certified to conduct these surveys.

Alex Callender is qualified as a consultant as he received training and certification during the May 2019 class conducted by the United States Fish and Wildlife Service.

## B. In-Office Procedures

1. Staff will review land use applications to determine if the MPG field screening protocols described in this memorandum must be initiated for the following:

a. Within 600 feet of a site known to have positive MPG occurrence ; or

The properties are within 600 feet of a site known to have a positive MPG occurrence.

b. On or within 300 feet of a soil type known to be associated with MPG occupancy.

The existing information shows Nisqually loamy fine sand, 0 to 3 percent slopes within 300 feet of the subject parcel.

2. County staff will determine if other factors preclude the need for field screening. See Preliminary assessment below.

3. County staff will notify applicants if their application cannot be excluded from further review.

4. Applicants may hire a consultant to perform field review, or may request that field review be conducted by County staff according to the protocol described in this memorandum.

5. County staff will review critical area reports submitted by consultants.

6. For sites to be screened by the County, staff will coordinate site visits with landowners/applicants, ensure advance notification and property access, and develop site visit schedules.

7. For sites where no MPG activity is observed, the County will provide applicants with a project condition that requires them to stop construction activity and alert the County and USFWS if evidence of MPG occupancy is observed.

N/A - No activity observed

8. Thurston County landowners who know or learn that Mazama pocket gophers are present on their property can move forward with their proposed development by: 1) proposing

mitigation to the County as directed in the County's Critical Areas Ordinance (Title 24 TCC); or 2) contacting USFWS directly to discuss the review, assessment, and mitigation process most appropriate for their site(s) and proposed activities; or 3) waiting to participate in the yet to be completed Thurston County HCP.

## C. Preliminary Assessment

As land use applications are received, properties mapped with or within 300 feet of gopher and/or prairie soils undergo the following preliminary assessment in-office.

1. For properties or project areas that appear to meet County criteria below, an internal review is conducted by staff biologist to determine if the project may be released from the full gopher review process. The following criteria may release a project from further gopher review:

- Locations west of the Black River, or on the Steamboat Island or Cooper Point peninsulas.
  N/A
- Sites submerged for 30 consecutive days or more since October 31, 2017.
  N/A
- Sites covered with impervious surfaces (as defined in CAO Chapter 17.15 and Title 24).
  N/A
- Fully forested (>30%) sites with shrub and fern understory.
  N/A
- Sites that consist of slopes greater than 40 percent, or that contain landslide hazard areas (per existing County regulations).
  N/A
- Sites on less preferred MPG soils north of Interstate 5.
  N/A
- Building to take place in the footprint of an existing structure (also mobile home replacements in the same footprint).
  N/A
- Mobile home replacements in existing lots in an existing mobile home park.
  N/A
- Heating oil tank removal
  **N/A**
- Foundation repair
  N/A
- Projects which lie >300 feet from mapped gopher soils.
  The parcel is within 300 feet of mapped gopher soils.

2. If a property and/or project area do not meet internal review criteria, the project is put on a list to be scheduled for full MPG review during the appropriate seasonal review period.

3. In addition to the in-office preliminary assessment, the County HCP biologist may, if time allows, visit properties prior to the first gopher review in order to screen for prairie habitat. This screening process focuses on the presence or absence of native prairie plants, Oregon white oak trees (Quercus garryana), or Mima mounds protected under the Critical Areas Ordinance (CAO).

The site was evaluated for Regulated prairie plants on August 27 and during the two gopher studies on September 14 and October 14, 2021. No CAO regulated prairie plants were found.

No Mima mounds were found.

Garry oaks were found and locations are shown on the transect maps in Appendix C.

## D. Implementation Measures

In order to ensure the review process runs efficiently, the following measures will be implemented as part of the 2021 screening approach. These are intended to reduce costs and staff time, and ensure that MPG screening requests, especially those associated with building permit applications, are screened during the screening season.

1. No soil verification will be required in conjunction with MPG field screening.

2. Site mowing or brushing will be required to initiate first site visits, where necessary and feasible, and completed two to four weeks in advance of the site visit.

   The ground was visible.

3. No further screening will be conducted in 2021 following the detection of MPG mounds on a property. The County will notify landowners that MPG evidence has been detected within two weeks.

   The Mazama pocket gopher mounds were **not** found.

4. At the end of the 2021 season, County staff will provide data regarding MPG occupancy to USFWS.

5. No additional site visit will be required if indeterminate mounds are detected, if the full number of required visits has been completed.

   N/A

6. The County will prioritize project specific applications over non-project applications. This will help ensure that applicants that have projects ready for construction will receive necessary permits and may initiate construction in a timely manner.

## E. Site Visit Overview

County field personnel or hired consultants will conduct field observations to determine MPG presence on sites with potential habitat. These site visits will be conducted as follows:

1. All valid site visits must be conducted from June 1 through October 31, 2021. Site visits outside that survey window will not be considered valid.

Site visits were conducted on September 14 and October 14, 2021.

2. A site or parcel is considered to be the entire property, not just the footprint of the proposed project.

A portion of the properties are excluded and is shown on the transect maps in Appendix C.

3. Sites with less preferred soils (see Attachment A) will be visited two (2) times, at least 30 days apart.

The site was visited to two times during the proper study period 30 days apart.

4. Sites with more preferred soils (see Attachment A) will be visited two (2) times, at least 30 days apart.

5. Site conditions must be recorded on a data sheet or similar information documented in narrative form. A template data sheet can be found on the County website at http://www.co.thurston.wa.us/permitting/gopher-reviews/index.html

The data sheets are provided in Appendix C.

6. Document and describe which areas of the parcel cannot be screened due to limited accessibility and/or dense understory. This should be depicted on an aerial or site plan submitted to the County.

The entire parcel was surveyed.

7. The ground must be easily visible to ensure mound observation and identification. Request mowing if necessary to ensure visibility. Wait two to three weeks after mowing before beginning screening.

The ground was visible.

http://www.co.thurston.wa.us/permitting/gopher-reviews/index.html F. Detailed Field Methodology

1. The survey crew orients themselves with the layout of the property using aerial maps, and strategizes their route for walking through the property.

2. Start GPS to record survey route.

3. Walk the survey transects methodically, slowly walking a straight line and scanning an area approximately 2-3 meters to the left and right as you walk, looking for mounds. Transects should be no more than five (5) meters apart when conducted by a single individual.

4. If the survey is performed by a team, walk together in parallel lines approximately 5 meters apart while you are scanning left to right for mounds.

The survey was conducted according to the protocol.

5. At each mound found, stop and identify it as a MPG or mole mound. If it is a MPG mound, identify it as a singular mound or a group (3 mounds or more) on a data sheet to be submitted to the County. (County has developed data sheets for your use on http://www.co.thurston.wa.us/permitting/gopher-reviews/index.html )

No MPG mounds were found. The mounds found on site were typical of moles which are round, clumpy and the show was in a linear fashion.

6. Record all positive MPG mounds, likely MPG mounds, and MPG mound groups in a GPS unit that provides a date, time, georeferenced point, and other required information in County GPS data instruction for each MPG mound. Submit GPS data in a form acceptable to the County. County GPS Data instruction can be found at http://www.co.thurston.wa.us/permitting/gopher-reviews/index.html

N /A

7. Photograph all MPG mounds or MPG mound groups. At a minimum, photograph MPG mounds or MPG mound groups representative of MPG detections on site.

**No MPG mounds found.**

8. Photos of mounds should include one that has identifiable landscape features for reference. In order to accurately depict the presence of gopher activity on a specific property, the following series of photos should be submitted to the County:
   - At least one up-close photo to depict mound characteristics
     **No MPG mounds were found.**
   - At least one photo depicting groups of mounds as a whole (when groups are encountered).
     N/A
   - At least one photo depicting gopher mounds with recognizable landscape features in the background, at each location where mounds are detected on a property
     N/A
   - Photos can be taken with the GPS unit or a separate, camera, preferably a camera with locational features (latitude, longitude)
     N/A
   - Photo point description or noteworthy landscape or other features to aid in relocation. Additional photos to be considered.
     N/A
   - The approximate building footprint location from at least two cardinal directions.
     N/A

- Landscape photos to depict habitat type and in some cases to indicate why not all portions of a property require gopher screening.
  Appendix A Photos

9. Describe and/or quantify what portion and proportion of the property was screened, and record your survey route and any MPG mounds found on either an aerial or parcel map.

A portion of the properties is excluded and is shown on the transect maps in Appendix C.

10. If MPG mounds are observed on a site, that day's survey effort should continue until the entire site is screened and all mounds present identified, but additional site visits are not required.

**No mounds were found.**

11. In order for the County to accurately review Critical Area Reports submitted in lieu of County field inspections the information collected in the field (GPS, data sheets, field notes, transect representations on aerial, etc.) shall be filed with the County. GPS

No mounds were found, the information was submitted in an acceptable format.

## 2021 Regulated Prairie, Garry Oaks and Mima Mounds Protocol

**The parcel contains soil types associated with prairies as defined in the Thurston County Critical Areas Ordinance (CAO 24.25).**

Transects were walked throughout the parcel. A list of plant species encountered during the survey was recorded and CAO target prairie plants were noted. Regulated prairie can be either wet or dry outwash prairie and is critical habitat for the Taylors checkerspot butterfly and the Mardon skipper butterfly. Prairie habitat is regulated if three indicator species are found within 5 meters (15 feet) of each other with 25 or more of each species in the plot.

The site was evaluated for Regulated prairie plants on August 27 during the gopher studies on September 14 and October 14, 2021.

No prairie plant species identified in the Thurston County CAO were detected on the parcel.

No Mima mounds were found.

Garry oaks were found and their locations are shown on the transect maps in Appendix C.

If prairie habitat is detected elsewhere on the property, the landowner must be informed in order to avoid future disturbance of this habitat. Target plant species may be hand-drawn on the aerial map or logged using GPS equipment, depending on availability. Existing and ongoing agricultural activities may continue.

The landowner was informed regarding the Garry oaks.

## 3.0 CURRENT CONDITIONS AND METHODS

Land Services Northwest conducted a survey on September 14 and October 14, 2021, walking the area and looking for signs of the MPG and regulated prairie in accordance with the protocol.

The 5.76-acre and 3.24-acre parcels are undeveloped vacant fields with uneven terrain. There are large retail stores to the north and east, small commercial businesses to the south and a school, single family residences and a commercial business to the west. The surveyed area unmowed prior to the prairie survey and then mowed according to the protocol in this document and left unmowed for three weeks.

## 4.0 RESULTS

**No Mazama pocket gophers were found on site.** The mounds found on site were typical of moles which are round, clumpy and the show was in a linear fashion.

No CAO prairie plants were found.

No Mima mounds were found.

Garry oaks were found and their locations are shown on the transect maps in Appendix C.

# Appendix A

# Photos

Latitude: 46.994115
Longitude: -122.921135
Elevation: 57.91±3 m
Accuracy: 32.4 m
Azimuth: 206° (SW)
Pitch: -1.8° (1.3°)
Time: 10-14-2021 16:07
Note: Kingswood
Powered by AngleCam

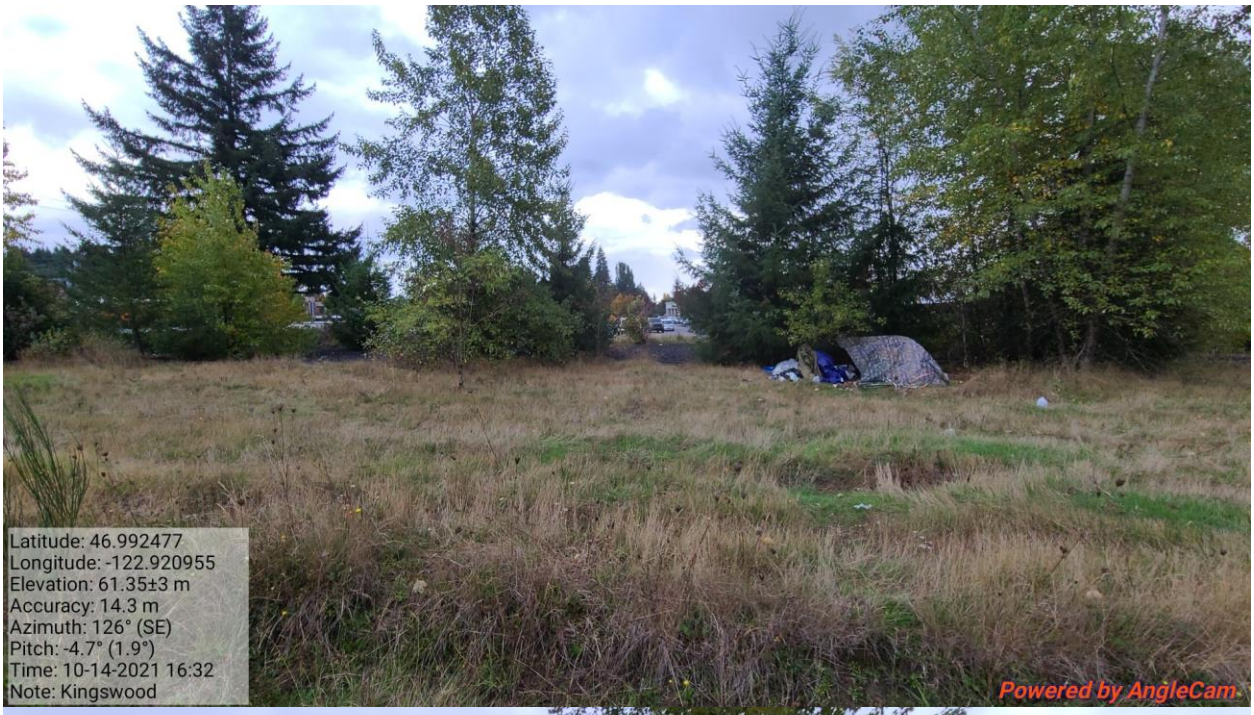
Latitude: 46.99404
Longitude: -122.921697
Elevation: 57.83±3 m
Accuracy: 13.4 m
Azimuth: 128° (SE)
Pitch: -4.5° (0.7°)
Time: 10-14-2021 16:08
Note: Kingswood
Powered by AngleCam

Latitude: 46.993524
Longitude: -122.921235
Elevation: 50.31±5 m
Accuracy: 9.3 m
Azimuth: 260° (W)
Pitch: -48.3° (2.8°)
Time: 10-14-2021 16:15
Note: Kingswood
Powered by AngleCam

Latitude: 46.993951
Longitude: -122.922052
Elevation: 56.05±3 m
Accuracy: 53.5 m
Azimuth: 193° (S)
Pitch: -2.2°
Time: 10-14-2021 16:17
Note: Kingswood
Powered by AngleCam

Latitude: 46.993252
Longitude: -122.922144
Elevation: 56.55±3 m
Accuracy: 9.2 m
Azimuth: 122° (SE)
Pitch: -4.7° (0.6°)
Time: 10-14-2021 16:28
Note: Kingswood
Powered by AngleCam

Latitude: 46.992477
Longitude: -122.920955
Elevation: 61.35±3 m
Accuracy: 14.3 m
Azimuth: 54° (NE)
Pitch: -6.0°
Time: 10-14-2021 16:32
Note: Kingswood
Powered by AngleCam


Latitude: 46.992477
Longitude: -122.920955
Elevation: 61.35±3 m
Accuracy: 14.3 m
Azimuth: 126° (SE)
Pitch: -4.7° (1.9°)
Time: 10-14-2021 16:32
Note: Kingswood
Powered by AngleCam

Latitude: 46.992537
Longitude: -122.921432
Elevation: 58.37±6 m
Accuracy: 12.3 m
Azimuth: 320° (NW)
Pitch: -4.5° (-0.9°)
Time: 10-14-2021 16:39
Note: Kingswood
Powered by AngleCam

Latitude: 46.992876
Longitude: -122.921926
Elevation: 60.04±3 m
Accuracy: 43.2 m
Azimuth: 326° (NW)
Pitch: 0.3° (0.5°)
Time: 10-14-2021 16:40
Note: Kingswood
Powered by AngleCam

Latitude: 46.992391
Longitude: -122.922044
Elevation: 60.15±3 m
Accuracy: 60.5 m
Azimuth: 82° (E)
Pitch: -51.0° (-1.3°)
Time: 10-14-2021 16:42
Note: Kingswood
Powered by AngleCam

Latitude: 46.992604
Longitude: -122.922413
Elevation: 58.99±3 m
Accuracy: 10.6 m
Azimuth: 50° (NE)
Pitch: -5.7° (0.6°)
Time: 10-14-2021 16:46
Note: Kingswood
Powered by AngleCam

Latitude: 46.992599
Longitude: -122.922419
Elevation: 59.72±3 m
Accuracy: 11.1 m
Azimuth: 340° (N)
Pitch: -6.0° (-1.7°)
Time: 10-14-2021 16:46
Note: Kingswood
Powered by AngleCam

Latitude: 46.992581
Longitude: -122.922429
Elevation: 58.99±3 m
Accuracy: 11.4 m
Azimuth: 277° (W)
Pitch: -0.9° (-1.3°)
Time: 10-14-2021 16:46
Note: Kingswood
Powered by AngleCam

Latitude: 46.992478
Longitude: -122.922455
Elevation: 59.02±3 m
Accuracy: 6.2 m
Azimuth: 125° (SE)
Pitch: -2.3° (-2.7°)
Time: 10-14-2021 16:46
Note: Kingswood
Powered by AngleCam

Latitude: 46.991658
Longitude: -122.920941
Elevation: 57.35±3 m
Accuracy: 41.6 m
Azimuth: 118° (SE)
Pitch: -2.0° (2.3°)
Time: 10-14-2021 16:54
Note: Kingswood
Powered by AngleCam

# Appendix B

# WDFW Priority Habitats and Species Map

10/12/21, 5:48 PM PHS Report

## Priority Habitats and Species on the Web

**Buffer radius: 600 Feet**

**Report Date: 10/12/2021**

PHS Species/Habitats Overview:

| Occurence Name | Federal Status | State Status | Sensitive Location |
|---|---|---|---|
| Mazama (Western) pocket gopher | Threatened | Threatened | No |
| Big brown bat | N/A | N/A | Yes |
| Townsend's Big-eared Bat | N/A | Candidate | Yes |

1/3

## PHS Species/Habitats Details:

| Mazama (Western) pocket gopher | |
|---|---|
| Scientific Name | *Thomomys mazama* |
| Priority Area | Occurrence |
| Site Name | BUSH PRAIRIE |
| Accuracy | 1/4 mile (Quarter Section) |
| Notes | WESTERN POCKET GOPHER MOUND SYSTEM CROSSING NEWLY CLEARED AREA FOR 3RD SOUTH LANE TO I-5. FINE DARK SOIL WITH V. LITTLE GRAVEL. MOUNDS 1/4 MILE SO. OF TYEE INN ALONG NEW CUT BANK ON W. SIDE OF I-5. LOC UPDATED FROM PHS POLY 2009. |
| Source Record | 3172 |
| Source Dataset | WS_OccurPolygon |
| Source Date | WS_OccurPolygon |
| Source Name | TAYLOR, DWDFW |
| Source Entity | WA Dept. of Fish and Wildlife |
| Federal Status | Threatened |
| State Status | Threatened |
| PHS Listing Status | PHS LISTED OCCURRENCE |
| Sensitive | N |
| SGCN | Y |
| Display Resolution | AS MAPPED |
| ManagementRecommendations | http://wdfw.wa.gov/publications/pub.php?id=01175 |
| Geometry Type | Polygons |

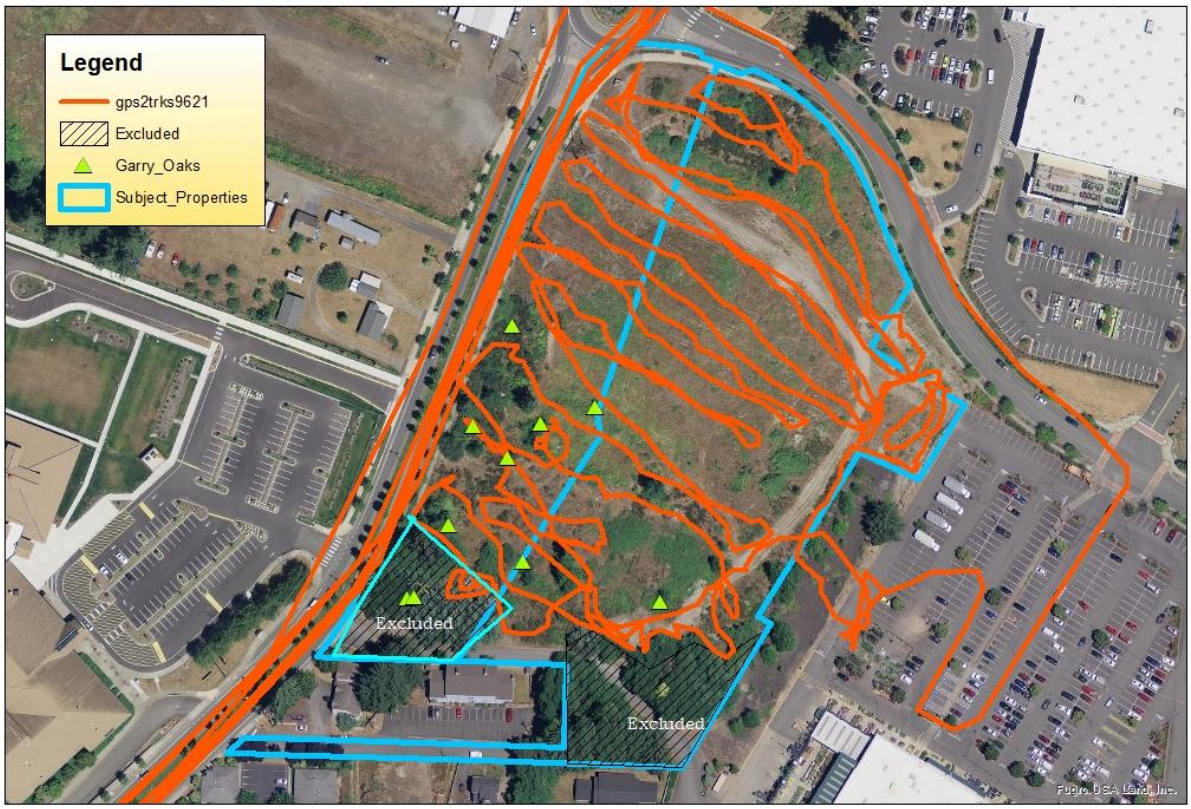
| Big brown bat | |
|---|---|
| Scientific Name | *Eptesicus fuscus* |
| Notes | This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release (360-902-2543) for obtaining information about masked sensitive species and habitats. |
| Federal Status | N/A |
| State Status | N/A |
| PHS Listing Status | PHS Listed Occurrence |
| Sensitive | Y |
| SGCN | N |
| Display Resolution | TOWNSHIP |
| ManagementRecommendations | http://wdfw.wa.gov/publications/pub.php?id=00605 |

| Townsend's Big-eared Bat | |
|---|---|
| Scientific Name | *Corynorhinus townsendii* |
| 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 | Candidate |
| PHS Listing Status | PHS Listed Occurrence |
| Sensitive | Y |
| SGCN | Y |
| Display Resolution | TOWNSHIP |
| ManagementRecommendations | http://wdfw.wa.gov/publications/pub.php?id=00027 |

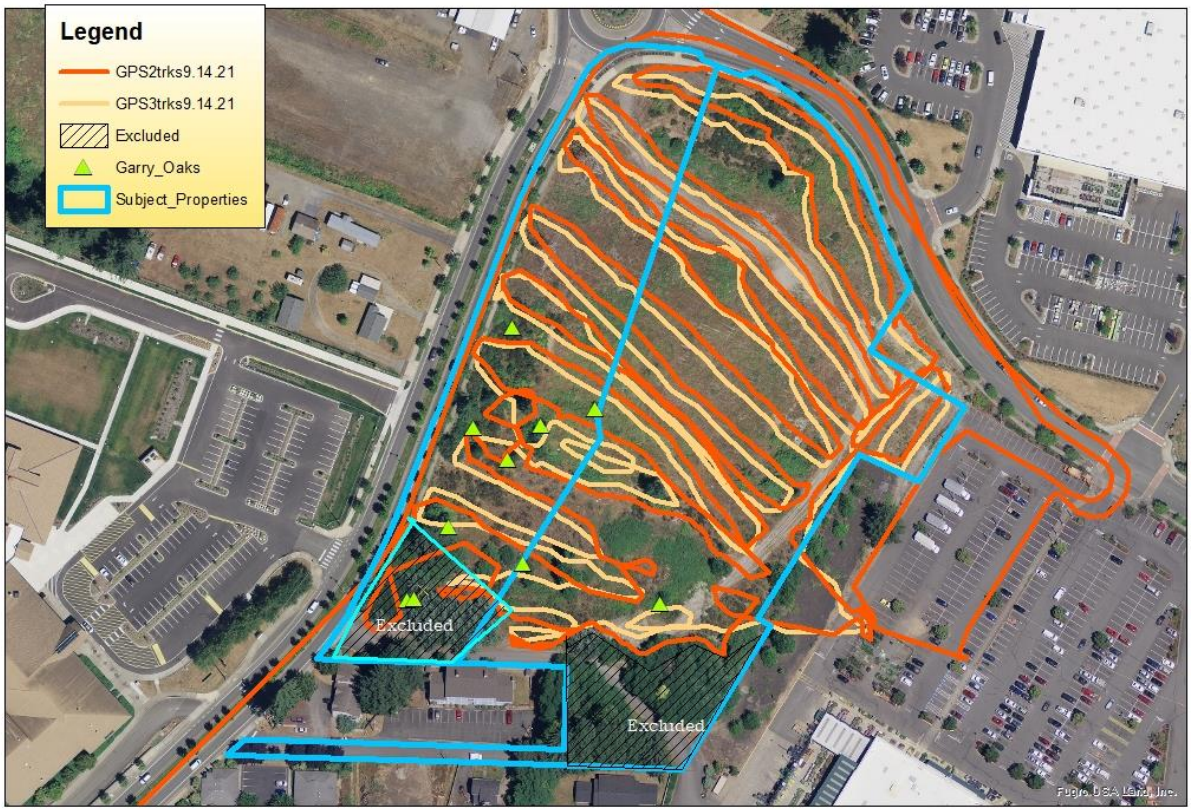
DISCLAIMER. This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents 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 necesssary 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 C

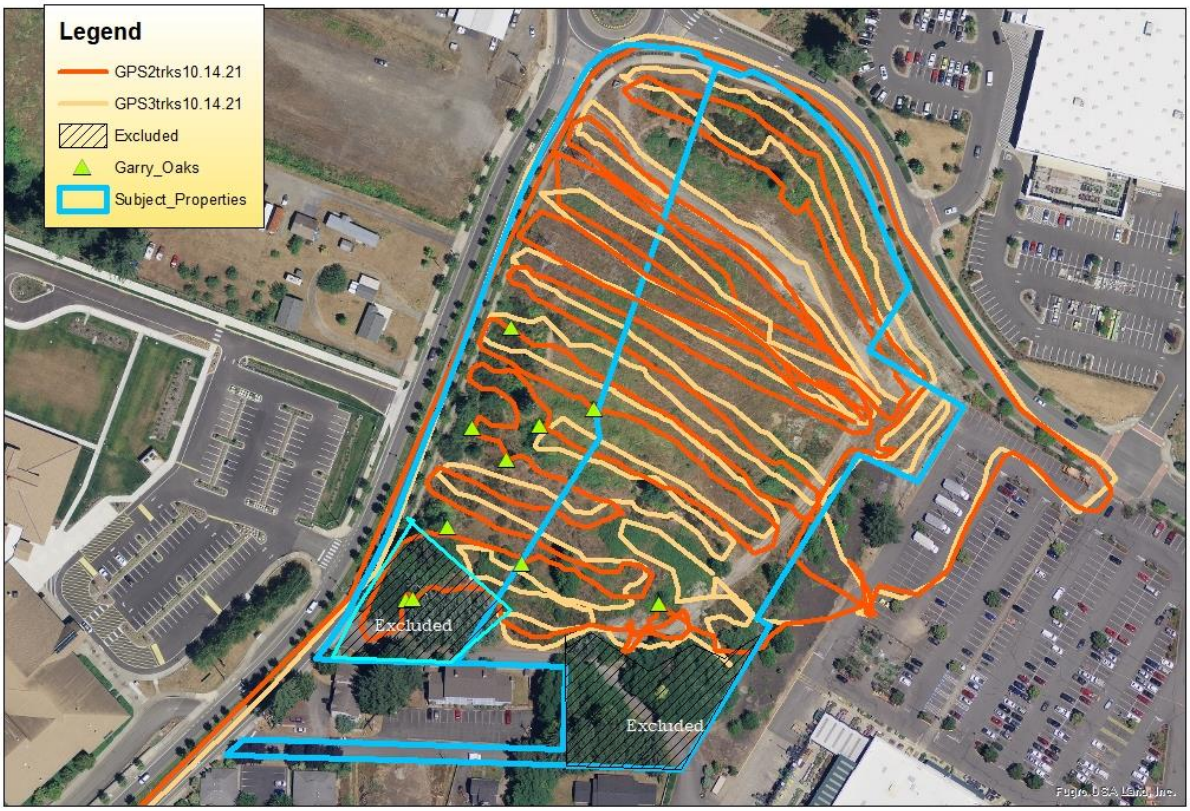
# MPG Survey Form and Transect Maps




| | | |
|---|---|---|
| LSNW<br>Land Services Northwest<br>120 State Avenue NE PMB 190<br>Olympia, WA 98501<br>360.481.4208 | SV1<br>Regulated Prairie Survey<br>8.27.2021 | 0 125 250 500 Feet |




| | | |
|---|---|---|
| N LSNW<br>Land Services Northwest<br>120 State Avenue NE PMB 190<br>Olympia, WA 98501<br>360.481.4208 | SV2<br>Regulated Prairie Survey<br>9.14.2021 | 0 125 250 500 Feet |


Legend
GPS2trks10.14.21
GPS3trks10.14.21
Excluded
Garry_Oaks
Subject_Properties
Excluded
Excluded
Land Services Northwest
120 State Avenue NE PMB 190
Olympia, WA 98501
360.481.4208
SV3
Regulated Prairie Survey
10.14.2021
0
125
250
500 Feet

**2020 Thurston County Mazama Pocket Gopher Screening Field Form  Site Visit Date: 9.14.2021**

| | |
|---|---|
| **Site Name and Parcel #** | **Parcel # 12703240403 and 12703240404**<br>**Project #:**<br>**Site/Landowner: Kingswood Capital Inc.** |
| **How were the data collected? (circle the method for each)** | **Transect: Trimble (Garmin) Aerial**<br>**Mounds Trimble Garmin Aerial**<br>**Notes: _____** |
| **Field Team Personnel:**<br>**(Indicate all staff present, CIRCLE who filled out form)** | **Name: Alex Callender**<br>**Name: (Susan Callender)**<br>**Name:** |
| **Others onsite (name/affiliation)** | |
| **Site visit #**<br>**(CIRCLE all that apply)** | **(1st) 2nd Unable to screen**<br>**Notes:** |
| **Do onsite conditions preclude the need for further visits?** | **Yes (No)**<br>**Dense woody cover that encompasses the entire site (trees/shrubs) that appears to preclude any potential MPG use.**<br>**Impervious Compacted Graveled Flooded**<br>**Other _____**<br>**Notes:** |
| **Describe visibility for mound detection:** | **Poor Fair (Good) Notes:** |
| **Request mowing?**<br>**(CIRCLE and DESCRIBE WHERE MOWING IS NEEDED and SHOW ON AERIAL PHOTO** | **(Yes) No N/A Notes:**<br>The area was mowed according to the protocol prior to the MPG surveys. |

| Mounds observed over the whole site are characteristic of:<br><br>Quantify or describe amount of each type and approx. # of mounds<br><br>*Group = 3 mounds or more* | MPG Mounds | Likely MPG Mounds | Indeterminate | Likely Mole Mounds | Mole Mounds |
|---|---|---|---|---|---|
| | 0 | 0 | 0 | 0 | 20 |
| | (No MPG mounds (circle)) | | | | |
| MPG mounds in GPS?<br><br>(CIRCLE and DESCRIBE)<br><br>If MPG mounds present, entered in GPS? | None All Most Some<br><br>Notes:<br><br>Yes No (N/A) | | | | |
| Does woody vegetation onsite match aerial photo? | (Yes) No - describe differences and show on parcel map/aerial: | | | | |
| What portion(s) of the property was screened?<br><br>(CIRCLE and DESCRIBE) | All (Part) - describe and show on parcel map/aerial:<br><br>Portions of the parcels are excluded and shown on the transcect maps in Appendix C | | | | |
| Notes - | Describe, and show on parcel map/aerial if applicable: | | | | |
| Team reviewed and agreed to data recorded on form?<br><br>(CIRCLE, and EXPLAIN if "No") | (Yes) No Reviewed by initials: AC, SC<br><br>Notes: | | | | |

**2020 Thurston County Mazama Pocket Gopher Screening Field Form  Site Visit Date: 10.14.2021**

| | |
|---|---|
| **Site Name and Parcel #** | **Parcel # 12703240403 and 12703240404**<br>**Project #:**<br>**Site/Landowner: Kingswood Capital Inc.** |
| **How were the data collected? (circle the method for each)** | **Transect: Trimble (Garmin) Aerial**<br>**Mounds Trimble Garmin Aerial**<br>**Notes: _____** |
| **Field Team Personnel:**<br>**(Indicate all staff present, CIRCLE who filled out form)** | **Name: Alex Callender**<br>**Name: (Susan Callender)**<br>**Name:** |
| **Others onsite (name/affiliation)** | |
| **Site visit #**<br>**(CIRCLE all that apply)** | **1st (2nd) Unable to screen**<br>**Notes:** |
| **Do onsite conditions preclude the need for further visits?** | **Yes (No)**<br>**Dense woody cover that encompasses the entire site (trees/shrubs) that appears to preclude any potential MPG use.**<br>**Impervious Compacted Graveled Flooded**<br>**Other _____**<br>**Notes:** |
| **Describe visibility for mound detection:** | **Poor Fair (Good) Notes:** |
| **Request mowing?**<br>**(CIRCLE and DESCRIBE WHERE MOWING IS NEEDED and SHOW ON AERIAL PHOTO** | **(Yes) No N/A Notes:**<br>The area was mowed according to protocal prior to the gopher surveys. |

| Mounds observed over the whole site are characteristic of:<br><br>Quantify or describe amount of each type and approx. # of mounds<br><br>*Group = 3 mounds or more* | MPG Mounds | Likely MPG Mounds | Indeterminate | Likely Mole Mounds | Mole Mounds |
|---|---|---|---|---|---|
| | 0 | 0 | 0 | 0 | 20 |
| | No MPG mounds (circle) | | | | |
| MPG mounds in GPS?<br><br>(CIRCLE and DESCRIBE)<br><br>If MPG mounds present, entered in GPS? | None All Most Some<br><br>Notes:<br><br>Yes No (N/A) | | | | |
| Does woody vegetation onsite match aerial photo? | (Yes) No - describe differences and show on parcel map/aerial: | | | | |
| What portion(s) of the property was screened?<br><br>(CIRCLE and DESCRIBE) | All (Part) - describe and show on parcel map/aerial:<br><br>Portions of the parcels are excluded and shown on the transcect maps in Appendix C | | | | |
| Notes - | Describe, and show on parcel map/aerial if applicable: | | | | |
| Team reviewed and agreed to data recorded on form?<br><br>(CIRCLE, and EXPLAIN if "No") | (Yes) No Reviewed by initials: AC, SC<br><br>Notes: | | | | |

# Appendix D

# CAO Prairie Data Sheet

## 2019 Thurston County Critical Areas Ordinance (CAO) Prairie Screening Data Sheet

| | |
|---|---|
| Parcel Number: 81300800000 | **CAO prairie criteria met?** Yes or (No) |
| Property Owner: Vander Linden Project | **Mima mounds present?** Yes or (No) |
| Surveyor(s): Alex and Susan Callender | **Oaks (*Quercus garryana*) present?** (Yes) or No |
| Date: 9.14.21 and 10.14.2021 | Mature: |
| Composition of Vegetation: | Sapling: |
| | Seedling: |

| X | Target species | Class* (circle) |
|---|---|---|
| | *Apocynum androsaemifolium* | 1 2 3 4 5 N/A |
| | ***Balsamorhiza deltoidea*** | Present / Absent |
| | ***Bistorta bistortoides*** | Present / Absent |
| | *Brodiaea coronaria* | 1 2 3 4 5 N/A |
| | *Camassia leichtlinii* | 1 2 3 4 5 N/A |
| | *Camassia quamash* | Present / Absent |
| | ***Carex densa*** | Present / Absent |
| | *Carex feta* | 1 2 3 4 5 N/A |
| | *Carex inops* ssp. *inops* | 1 2 3 4 5 N/A |
| | *Carex tumulicola* | 1 2 3 4 5 N/A |
| | *Carex unilateralis* | 1 2 3 4 5 N/A |
| | *Castilleja hispida* | 1 2 3 4 5 N/A |
| | ***Castilleja levisecta*** | Present / Absent |
| | *Danthonia californica* | 1 2 3 4 5 N/A |
| | *Delphinium menziesii* | 1 2 3 4 5 N/A |
| | *Delphinium nuttallii* | 1 2 3 4 5 N/A |
| | *Deschampsia cespitosa* | 1 2 3 4 5 N/A |
| | *Deschampsia danthonioides* | 1 2 3 4 5 N/A |
| | *Dodecatheon hendersonii* | 1 2 3 4 5 N/A |
| | *Downingia yina* | 1 2 3 4 5 N/A |
| | *Erigeron speciosus* | 1 2 3 4 5 N/A |
| | *Eriophyllum lanatum* | Cover: ___ $m^2$ N/A |
| | ***Eryngium petiolatum*** | Present / Absent |
| | *Festuca roemeri (F. idahoensis)* | 1 2 3 4 5 N/A |
| | *Fragaria virginiana* | Cover: 3 $m^2$ N/A |
| | *Fritillaria affinis* | 1 2 3 4 5 N/A |
| | *Hieracium scouleri* | 1 2 3 4 5 N/A |
| | ***Hosackia pinnata*** *(Lotus pinnatus)* | Present / Absent |
| | *Koeleria macrantha (K. cristata)* | 1 2 3 4 5 N/A |
| | *Leptosiphon bicolor (Linanthus b.)* | 1 2 3 4 5 N/A |
| | ***Lomatium bradshawii*** | Present / Absent |
| | *Lomatium nudicaule* | 1 2 3 4 5 N/A |
| | *Lomatium triternatum* | 1 2 3 4 5 N/A |
| | *Lomatium utriculatum* | Present / Absent |

| | | |
|---|---|---|
| | *Lupinus albicaulis* | 1 2 3 4 5 N/A |
| | *Lupinus lepidus* var. *lepidus* | 1 2 3 4 5 N/A |
| | *Lupinus polyphyllus* | 1 2 3 4 5 N/A |
| | *Micranthes integrifolia (Saxifraga i.)* | Present / Absent |
| | *Micranthes oregana (Saxifraga o.)* | 1 2 3 4 5 N/A |
| | ***Microseris laciniata*** | Present / Absent |
| | *Perideridia gairdneri* | 1 2 3 4 5 N/A |
| | *Plagiobothrys figuratus* | 1 2 3 4 5 N/A |
| | *Plectritis congesta* | Present / Absent |
| | ***Polemonium carneum*** | Present / Absent |
| | *Potentilla gracillis* | Present / Absent |
| | *Ranunculus alismifolius* | 1 2 3 4 5 N/A |
| | *Ranunculus occidentalis* | Present / Absent |
| | *Ranunculus orthorhynchus* | 1 2 3 4 5 N/A |
| | ***Sericocarpus rigidus*** | Present / Absent |
| | ***Sidalcea malviflora* var. *virgata*** | Present / Absent |
| | ***Silene scouleri*** | Present / Absent |
| | *Sisyrinchium idahoense* | 1 2 3 4 5 N/A |
| | *Solidago missouriensis* | 1 (2) 3 4 5 N/A |
| | *Solidago simplex (S. spathulata)* | 1 2 3 4 5 N/A |
| | *Toxicoscordion venenosum var. venenosum (Zigadenus venenosus)* | 1 2 3 4 5 N/A |
| | *Trifolium willdenowii (T. tridentatum)* | 1 2 3 4 5 N/A |
| | *Triteleia grandiflora* | 1 2 3 4 5 N/A |
| | *Triteleia hyacinthina* | 1 2 3 4 5 N/A |
| | *Veratrum californicum* | 1 2 3 4 5 N/A |
| | ***Veratrum viride*** | 1 2 3 4 5 N/A |
| | *Viola adunca* | 1 2 3 4 5 N/A |
| | *Viola praemorsa* var. *nuttallii* | 1 2 3 4 5 N/A |

*Species Count Class:
1 = < 25
2 = 25 - 49
3 = 50 - 74
4 = 75 - 100
5 = >100

Prairie Plant Manual: https://www.thurstoncountywa.gov/planning/planningdocuments/cao-prairie-plant-manual-4.23.2018.pdf

## Non-CAO vegetation

| | Species or codons (i.e. "HYPRAD" for *Hypochaeris radicata* ) | Notes | No real density of prairie species |
|---|---|---|---|
| 1 | Narrow leafed plantain (Plantago lanceolata) | | |
| 2 | White Clover (Trifolium repens) | | |
| 3 | Trailing blackberry (Rubus ursinus) | | |
| 4 | Velvetgrass (*Holcus lanatus*) | | |
| 5 | Common dandelion *(Taraxacum officinale)* | | |
| 6 | Ox eye daisey (*Leucanthemum vulgare*) | | |
| 7 | Himalayan blackberry (Rubus armeniacus ) | | |
| 8 | Red fescue (Festuca rubra) | | |
| 9 | Orchard Grass (Dactylis glomerata) | | |
| 10 | Scotch broom *(Cytisus scoparius)* | | |
| 11 | St. johnswort *(Hypericum perforatum)* | | |
| 12 | Wild carrot *(Daucus carota)* | | |
| 13 | Birds-foot trefoil *(Lotus corniculatus)* | | |
| 14 | Hairy cats ear *(Hypochaeris radicata)* | | |
| 15 | | | |

| |
|---|
| Prairie Habitat Criteria: If at any point at least three target species, totaling in general at least 25 plants each are encountered within about 5 meters of each other (WDFW 2015), the area in question meets the criteria to be established as occurrence of prairie. For certain plants such as WNHP rare plants (indicated here in bold), or species which serves as nectar or host plants for both TCB and either SCC or SGCN butterflies (indicated here with underline), presence is enough to meet prairie habitat criteria for such species, even if their count is less than 25 individual plants. CAO wet and dry prairie plant lists can be found in Tables 24.25-7 and 24.25-8, respectively. More info available at: https://www.thurstoncountywa.gov/planning/Pages/hcp-prairie-review.aspx |
| Mima mounds and oak habitat definitions can be found in TCC 24.03.010 |

**Land Services Northwest**
120 State Avenue NE PMB190
Olympia, WA 98501
landservicesnw@gmail.com
360.481.4208

October 31, 2022

Trevor Colby
trevor@kciwa.com

Re: Kingswood Drive Mazama Pocket Gopher and Regulated Prairie Reconnaissance Survey

Per your request, Land Services Northwest performed a Mazama Pocket Gopher and Regulated Prairie survey on October 31, 2022 on the 5.76-acre and 3.24-acre parcel numbers 12703240403 and 12703240404 at 1401 KINGSWOOD DR SW and 1551 KINGSWOOD DR SW, with the legal descriptions of Section 03 Township 17 Range 2W Quarter NE NW & SE NW TR B BLA03744 3500815 EXCEPT PTN DEDICATED TO CITY OF TUMWATER PER AFN 3539066 and Section 03 Township 17 Range 2W Quarter NE NW BLA027432 TR D Document 3472425 EXC PTN TO CITY OF TUMWATER PER AFN:3539066; EXC PTN FOR RD PER AFN:3991167; ALSO EXC PTN FOR RD PER AFN:4158266 in the City of Tumwater, WA.

The purpose of this survey is to reconfirm the property remains unoccupied as depicted in the study submitted to the City of Tumwater in October 2021 (no Mazama Pocket Gopher indicators or regulated prairie).

**Current Conditions**
The 5.76-acre and 3.24-acre parcels are undeveloped vacant fields with uneven terrain and three large dirt piles. There are large retail stores to the north and east, small commercial businesses to the south and a school, single family residences and a commercial business to the west.

**Methods**
Land Services Northwest conducted a single survey on October 29, 2022, walking the area in 5 meter transects looking for signs of the MPG and regulated prairie in a modified USFWS protocol (USFWS, 2018) with the modification that we conducted one site visit for the verification of a previous absence determination.

**Conditions**
The fields were mowed in the 2021 season and the grass had not grown out much this season. The property is relatively flat with three large soil mounds in the Southeast and Southwest portions of the property. These mounds have blackberries that have been mowed so traversing the mounds was not too difficult and the ground was visible in these areas.

The rainfall for the fall has just begun (**Appendix C**). There was a light rain during the survey that was not accumulating in puddles or affecting the shape of the mounds, but earlier rains were quite heavy and older mounds were no longer discernable as the area has a fine sandy loam that does not hold up well in wet conditions. There were plenty of new mounds, but they were all obviously mole mounds as they were round clumpy and typically showed in a linear fashion.

**Results**

**No** Mazama Pocket Gophers mounds were found. The regulated prairie plant list remains the same as submitted in 2021. No regulated prairie was found. A map of the Garry oaks was submitted in 2021.

# Appendix A

# Pictures

Kingswood
10.30.2022 05:14 PM
1401 Kingswood Dr SW, Tumwater, WA 98512, USA

Rain Drenched Older Mound (Some Clumping Visible)

Typical Conditions On site

Kingswood
10.30.2022 05:18 PM
1401 Kingswood Dr SW, Tumwater, WA 98512, USA

Newer mounds found near older mound below

Older Mounds

Kingswood
10.30.2022 05:24 PM
5945 Littlerock Rd SW, Tumwater, WA 98512, USA

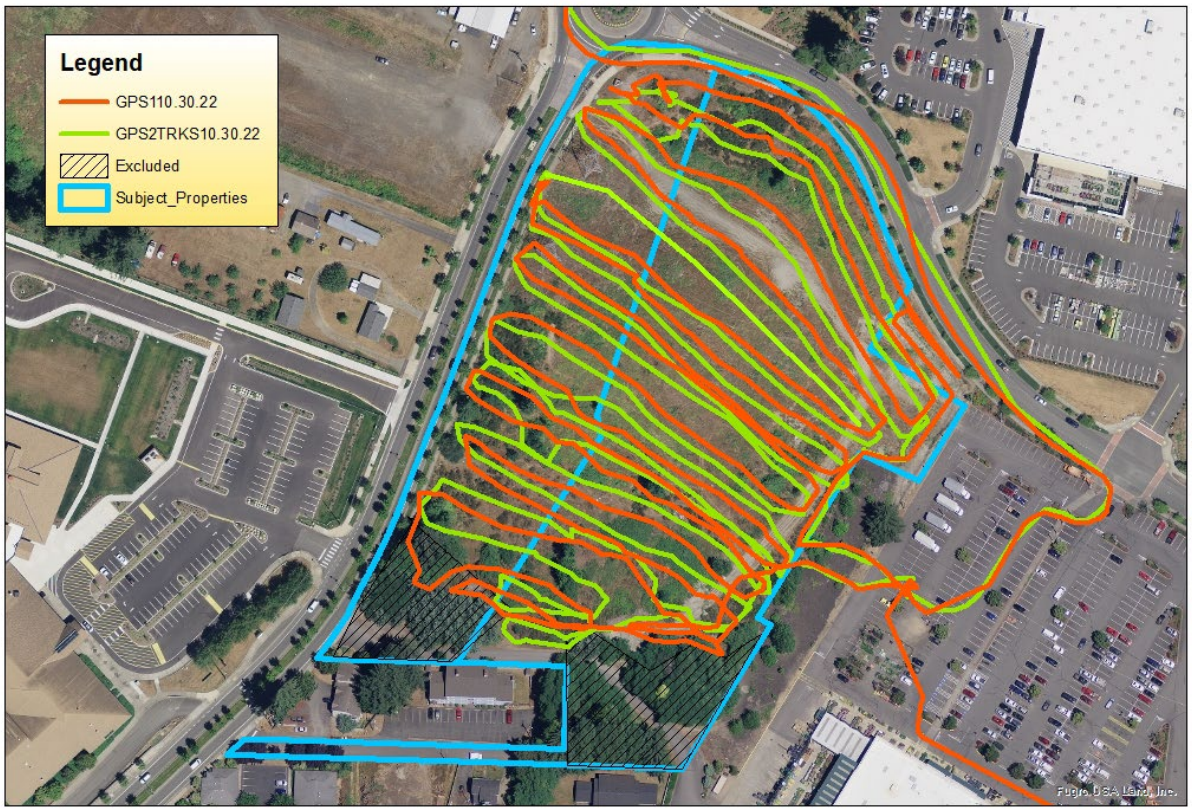
Kingswood
10.30.2022 05:26 PM
5945 Littlerock Rd SW, Tumwater, WA 98512, USA

Kingswood
10.30.2022 05:40 PM
1401 Kingswood Dr SW, Tumwater, WA 98512, USA

Kingswqood
10.30.2022 06:13 PM
1536 Bloomingdale Ln SW, Tumwater, WA 98512, USA

# Appendix B

# Transect Map and Data Sheet




| | | |
|---|---|---|
| N LSNW<br>Land Services Northwest<br>120 State Avenue NE PMB 190<br>Olympia, WA 98501<br>360.481.4208 | Site Visit<br>10.30.22 | 0 125 250 500 Feet |

Note: Unforested area to Southwest and Northwest has a Driving Surface

**2021 Thurston County Mazama Pocket Gopher Screening Field Form** **Site Visit Date:** 10.30.22

| | |
|---|---|
| **Site Name and Parcel #** | **Parcel #:** 12703240403 and 12703240404<br>**Project #:**<br>**Site/Landowner:** Kingswood |
| **How were the data collected?**<br>**(circle the method for each)** | **Transect:** Trimble (Garmin) Aerial<br>**Mounds** Trimble Garmin Aerial<br>**Notes:** |
| **Field Team Personnel:**<br>**(Indicate all staff present, CIRCLE who filled out form)** | **Name:** Alex Callender<br>**Name:** (Susan Callender)<br>**Name:** |
| **Others onsite (name/affiliation)** | |
| **Site visit #**<br>**(CIRCLE all that apply)** | (1st) 2nd Unable to screen<br>**Notes:** Site visit to verify no changes from 2021 MPG Report. |
| **Do onsite conditions preclude the need for further visits?** | Yes (No)<br>**Dense woody cover that encompasses the entire site (trees/shrubs) that appears to preclude any potential MPG use.**<br>Impervious Compacted Graveled Flooded<br>Other<br>Notes: |
| **Describe visibility for mound detection:** | Poor Fair (Good) Notes: |
| **Request mowing?**<br>**(CIRCLE and DESCRIBE WHERE MOWING IS NEEDED and SHOW ON AERIAL PHOTO** | Yes (No) N/A Notes: |

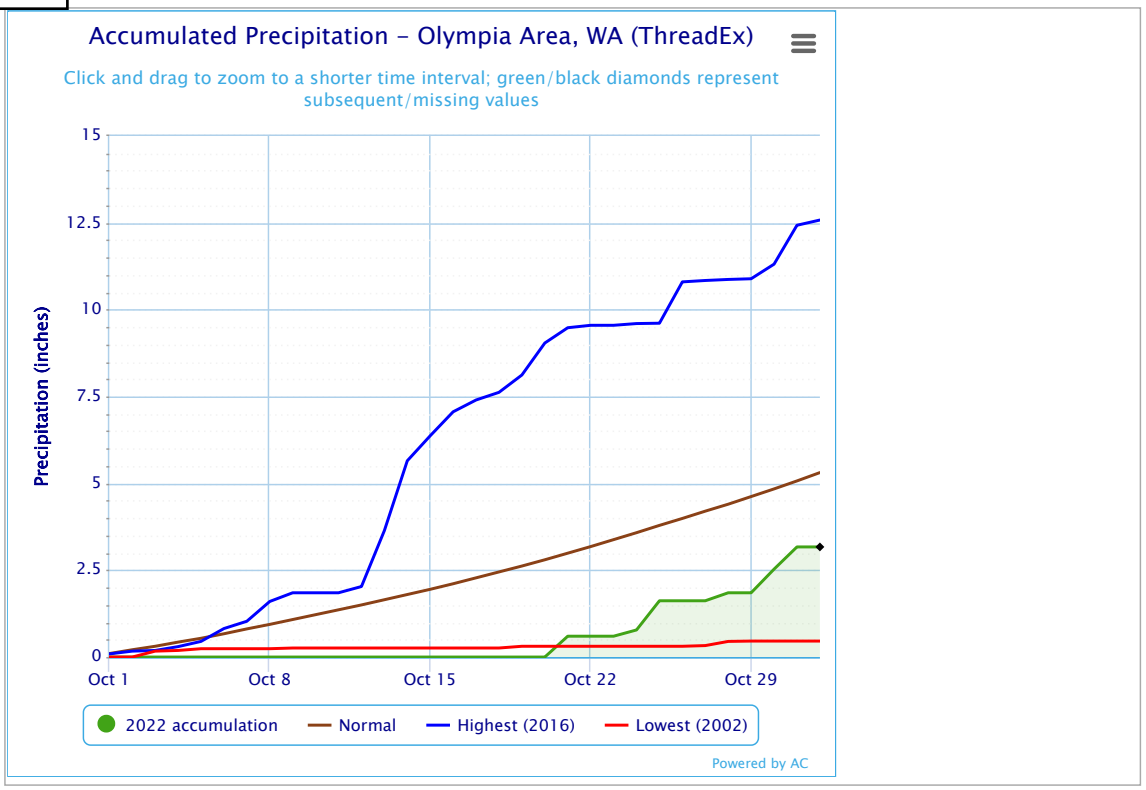
| Mounds observed over the whole site are characteristic of: | MPG Mounds | Likely MPG Mounds | Indeterminate | Likely Mole Mounds | Mole Mounds |
|---|---|---|---|---|---|
| Quantify or describe amount of each type and approx. # of mounds<br>*Group = 3 mounds or more* | 0 | 0 | 0 | 0 | 50 |
| | No MPG mounds (circle) | | | | |
| MPG mounds in GPS?<br>(CIRCLE and DESCRIBE)<br>If MPG mounds present, entered in GPS? | None All Most Some<br>Notes:<br>Yes No N/A | | | | |
| Does woody vegetation onsite match aerial photo? | Yes No - describe differences and show on parcel map/aerial: | | | | |
| What portion(s) of the property was screened?<br>(CIRCLE and DESCRIBE) | All Part describe and show on parcel map/aerial:<br>There are two small excluded areas that are identified on the transect map. | | | | |
| Notes - | Describe, and show on parcel map/aerial if applicable: | | | | |
| Team reviewed and agreed to data recorded on form?<br>(CIRCLE, and EXPLAIN if "No") | Yes No Reviewed by initials: AC SC ____ ____<br>Notes: | | | | |

Information provided by Thurston County Government

Page 2 of 2

# Appendix C

# NOAA Precipitation Data




Note regarding subsequent/missing values

## Alex Baruch

**From:** Alex Callender <landservicesnw@gmail.com>
**Sent:** Wednesday, November 2, 2022 2:41 PM
**To:** Tyrell Bradley
**Cc:** Trevor Colby; Alex Baruch
**Subject:** Re: TUM 22-0234 Kingswood Commercial - Gopher Memo
**Attachments:** Colby MPG Survey Memo11.1.2022rev.pdf

Alex,

As Tyrell mentioned, we worked hard to get this done during the survey season.

Typically, it is not necessary to show the precipitation record, however, I wanted to show that the rain had started to fall and that was the reason some of the mole mounds that occur in the fine sandy soils appear washed out. Fortunately, there were plenty of fresh round clumpy mole mounds throughout the property to establish that the area was occupied by moles, not Mazama pocket gophers.

Thank you for the review on this project. I have attached the precipitation record to the report.

Sincerely,

On Wed, Nov 2, 2022 at 2:13 PM Tyrell Bradley <tbradley@ldccorp.com> wrote:

> Hello Alex (Callendar),
>
> Please see the comment highlighted below from Alex Baruch at the city of Tumwater, are you able to provide comment/clarification back on this?
>
> Thank you,
>
> Tyrell
>
> **Tyrell Bradley, PE**
>
> Principal Engineer
>
> ***LDC, Inc.***
>
> Cell: 360-878-0678
>
> tbradley@ldccorp.com

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*www.LDCCorp.com*

**From:** Alex Baruch <ABaruch@ci.tumwater.wa.us>
**Sent:** Wednesday, November 2, 2022 2:10 PM
**To:** Tyrell Bradley <tbradley@ldccorp.com>
**Cc:** Trevor Colby <trevor@kciwa.com>
**Subject:** RE: TUM 22-0234 Kingswood Commercial - Gopher Memo

CAUTION: This email originated from outside of LDC. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Tyrell,

Thank you for coordinating the quick turnaround, I have added the document to the file. Briefly looking through it the last page is the Appendix C NOAA Precipitation Data cover sheet but I did not see any data included as page 20. Not an issue whatsoever, I just wanted to make sure it is included if it is intended to be included. I will follow-up with the red-lines in a separate email.

Sincerely,

**Alex Baruch** | **he/him**

**Associate Planner**, Community Development

City of Tumwater

555 Israel Rd SW | Tumwater, WA 98501

(360) 754-4180 | ABaruch@ci.tumwater.wa.us

www.ci.tumwater.wa.us

**From:** Tyrell Bradley <tbradley@ldccorp.com>
**Sent:** Wednesday, November 2, 2022 2:04 PM
**To:** Alex Baruch <ABaruch@ci.tumwater.wa.us>
**Cc:** Trevor Colby <trevor@kciwa.com>
**Subject:** TUM 22-0234 Kingswood Commercial - Gopher Memo

Hello Alex,

We moved heaven and earth to get another walk on the 31st….everything looked good and attached is the report from Alex Callendar. I will be giving you a call this week to discuss some of the permitting strategy on this project, we are excited to get through hearing as soon as possible.

Thank you,

Tyrell

**Tyrell Bradley, PE**

Principal Engineer

***LDC, Inc.***

Cell: 360-878-0678

tbradley@ldccorp.com

*Service ABOVE the Standard*

*www.LDCCorp.com*

--
Alexander Callender MS, PWS
Land Services NW

120 State Avenue NE  #190
Olympia, WA 98501
360-481-4208

Exhibit 21

# SUF

**SOUND URBAN FORESTRY**
**Appraisals, Planning, Urban Landscape Design and Management**

**Kingswood Commercial Project**
1401 & 1551 Kingswood Drive SW
Tumwater, Washington 98501

Tree Protection Plan

---

Prepared for: KCI Commercial Inc., Trevor Colby

Prepared by: Kevin M. McFarland, SUF
Consulting Urban Forester/ISA Certified Arborist & Tree Risk Assessor Qualified

Date: 4/28/2022

This report has been developed as part of the proposed 8.97-acre Kingswood commercial project, in Tumwater, Washington. This plan will satisfy the requirements as specified by the Tumwater Protection of Trees and Vegetation Ordinance (TMC 16.08) pursuant to the City of Tumwater Development Guidelines and Standards.

## I. Overall Vegetation Description

The majority of the property is field grass with small pockets of trees around the outer edges in the southern portion. The species found are a mix of natives with Douglas fir the dominant, and invasives such as black locust and poplars.

## II. Inventory of Trees

A 100% inventory of the trees within the parcels was conducted on April 18, 2022. This information is presented in the table below and the approximate locations are shown on the attached aerial.

**Table 1. Inventory of Trees within Property**

| ID# | Species | DBH | Condition |
|---|---|---|---|
| *1 | Cottonwood | 20” | Good |
| 2 | Douglas Fir | 14” | Good |
| 3 | Douglas Fir | 20” | Good |
| 4 | Red Oak | 6” | Good |
| 5 | Crabapple | 16” | Fair |
| 6 | Black Locust | 12” | Good |
| 7 | Black Locust | 14” | Good |
| 8 | Black Locust | 10” | Good |
| 9 | Black Locust | 16” | Good |
| 10 | Douglas Fir | 28” | Good |
| 11 | Black Locust | 16” | Fair |
| 12 | Black Locust | 20” | Fair |
| 13 | Black Locust | 16” | Fair |
| 14 | Black Locust | 20” | Fair |
| *15 | Poplar | 18” | Fair |
| 16 | Black Locust | 14” | Fair |
| *17 | Poplar | 12” | Fair |
| 18 | Bitter Cherry | 15” | Fair |
| 19 | Scots Pine | 18” | Fair |
| 20 | Scots Pine | 20” | Fair |
| 21 | Douglas Fir | 20” | Fair |
| 22 | Douglas Fir | 25” | Fair |
| *23 | Douglas Fir | 24” | Poor |
| *24 | Douglas Fir | 22” | Poor |
| 25 | Douglas Fir | 18” | Fair |
| *26 | Douglas Fir | 14” | Poor |
| 27 | Douglas Fir | 22” | Fair |
| 28 | Douglas Fir | 17” | Fair |
| **29 | Douglas Fir | 26” | Fair |
| 30 | Douglas Fir | 18” | Fair |
| 31 | Douglas Fir | 20” | Good |

| ID# | Species | DBH | Condition |
|---|---|---|---|
| **32 | Douglas Fir | 24” | Good |
| 33 | Douglas Fir | 17” | Fair |
| 34 | Douglas Fir | 22” | Good |
| **35 | Douglas Fir | 24” | Good |
| **36 | Western Red Cedar | 50”+ | Good |
| **37 | Douglas Fir | 26” | Fair |
| *38 | Black Locust | 26” | Poor |
| **39 | Black Locust | 24” | Fair |
| 40 | Black Locust | 6” | Fair |
| 41 | Black Locust | 8” | Fair |
| 42 | Black Locust | 6” | Fair |
| 43 | Black Locust | 6” | Fair |
| 44 | Black Locust | 8” | Fair |
| 45 | Black Locust | 6” | Fair |
| 46 | Black Locust | 10” | Fair |
| 47 | Black Locust | 6” | Fair |
| 48 | Port Orford Cedar | 23” | Good |
| 49-62 | Black Locust | 6-18” | Poor to Fair |
| 63 | Black Locust | 8” | Fair |
| 64 | Black Locust | 10” | Fair |
| *65 | Poplar | 26” | Poor |
| *66 | Poplar | 12” | Poor |
| *67 | Poplar | 14” | Poor |
| *68 | Poplar | 16” | Poor |
| *69 | Poplar | 16” | Poor |
| *70 | Poplar | 20” | Poor |
| *71 | Cottonwood | 6” | Fair |
| 72 | Black Locust | 8” | Fair |
| *73 | Cottonwood | 14” | Good |
| *74 | Cottonwood | 23” | Fair |
| *75 | Cottonwood | 14” | Fair |

*Denotes trees subtracted from tree retention calculations due to species or poor condition.
**Denotes trees that are to be retained and count as 2 trees due to their 24”+ diameters.

**Landmark Trees**

I found no trees within the site that would be considered specimen or ‘Landmark’ trees.

**Off-Site & Edge Trees**

No offsite trees were identified with the potential of impacts.

## III. Tree Retention Calculations

Per TMC 16.08.070, cottonwoods, poplars and trees that do not have a post construction life expectancy greater than 10 years are not considered for the purposes of calculating tree retention standards. Therefore, 17 trees were subtracted from the total of 75 listed in Table 1 (noted *).

Trees to be retained are located within the southeast corner of the project and include #19-47. Of these, 4 trees were subtracted due to their poor conditions (*) and 6 trees are of size that they count as two trees (**). Therefore, this project has a total of 31 tree retention credits.

**Table 6. Summary of Tree Retention Calculations**

| | |
|---|---|
| Gross Acreage | 8.97 |
| Total Trees Within Site (75 – 17) | 58 |
| 20% Tree Retention | 12 Trees |
| *12 Trees/ Acre Retention | 108 Trees |
| Proposed Tree Retention | 31 Trees |
| Shortfall on Required Retention | 77 Trees |
| Required Replanting (1:1) | 77 Trees |

***This is the greater amount and therefore required by TMC**

## IV. Replanting

This project falls short of the minimum retention by 79 trees and is therefore required to replant at a rate of 1:1 within the site. This requirement will be met with the landscape plans and will follow the standards as outlined in TMC 16.08.070.3.

## IV. Tree Protection

I recommend tree protection fencing be installed along the outer edges of the area of trees to be retained (#19-47). I have indicated approximate location in orange on the attached site plan. Fencing shall meet the City's standards and in place and inspected by myself or another certified arborist prior to any site work. The fencing shall remain in place during the entire construction process with absolutely no equipment or materials allowed beyond the fencing.

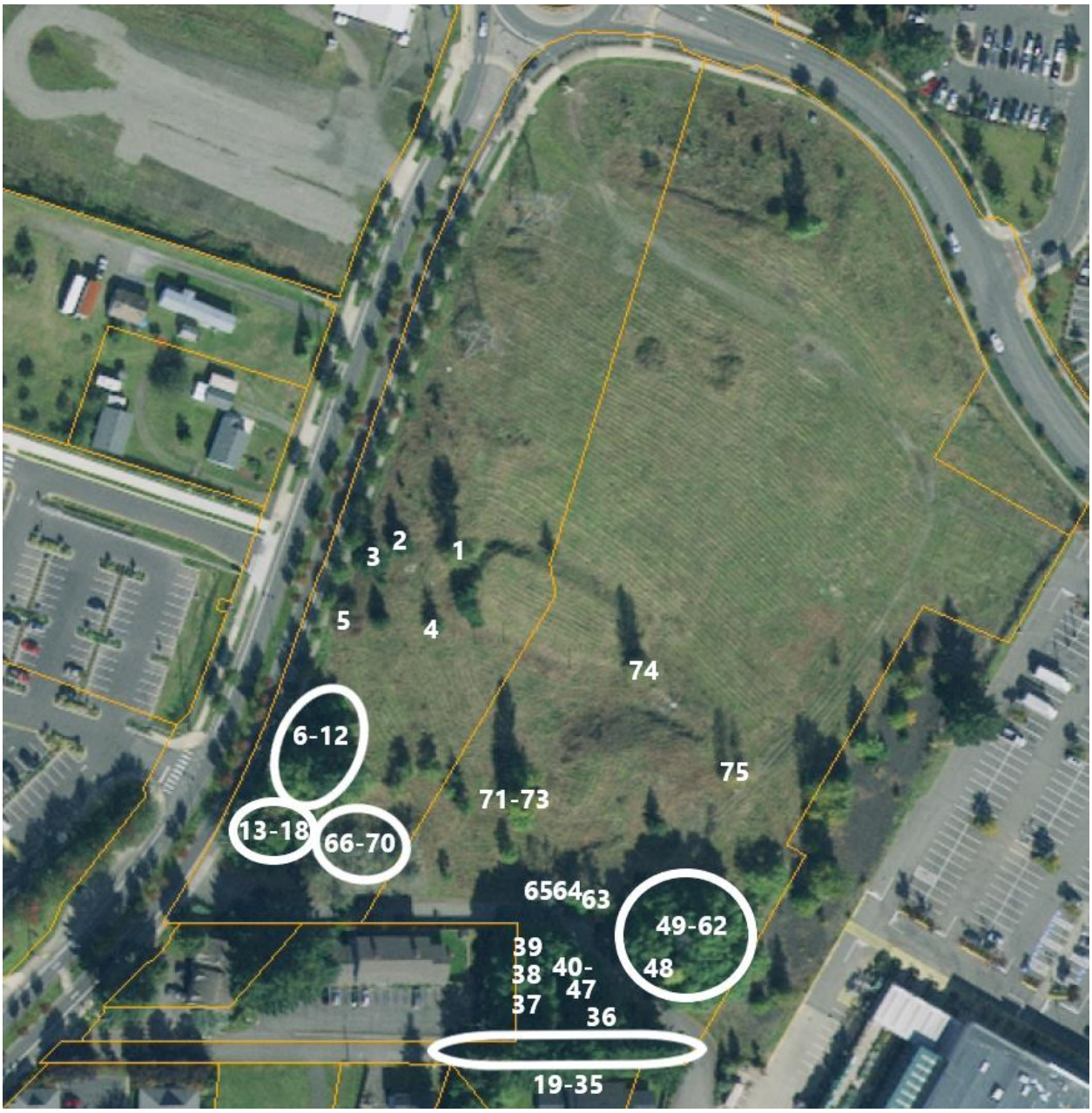
I am also recommending that the English ivy be removed from the trees to be retained. This will start having a negative effect on the condition of the trees.

Professionally Submitted,

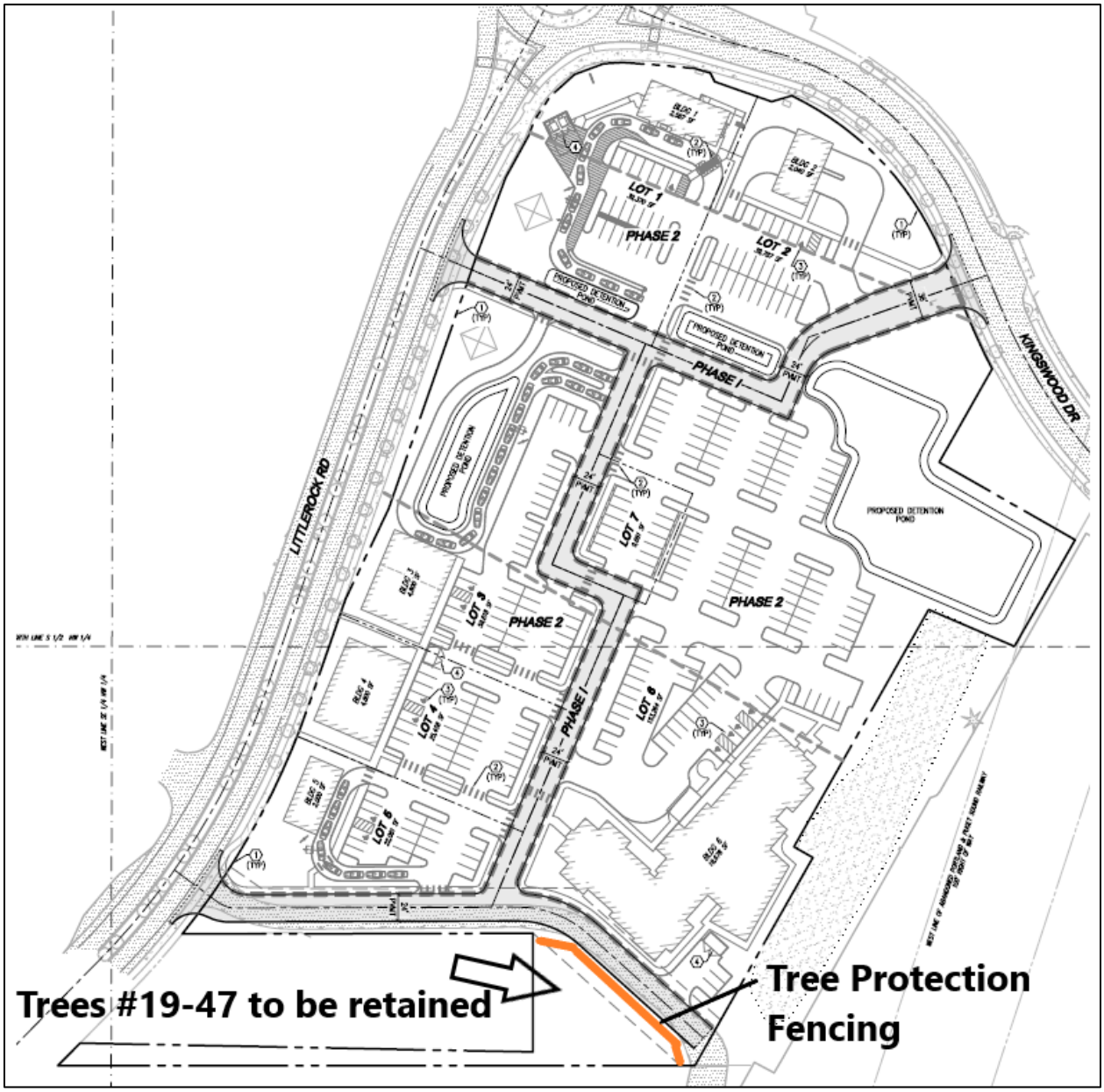
Kevin M. McFarland

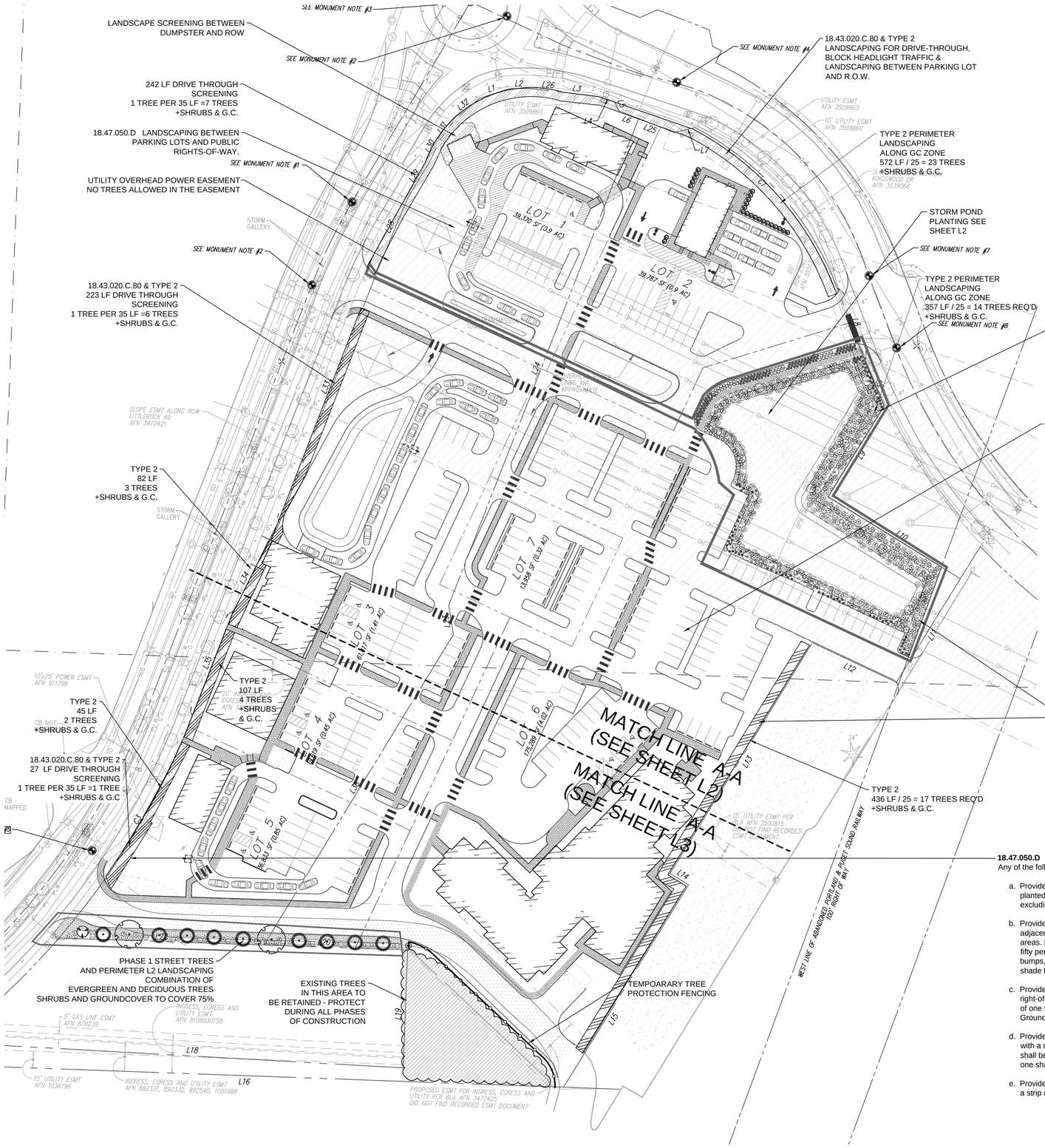
Kevin M. McFarland, Principal
ISA Certified Arborist PN-0373 & ISA Tree Risk Assessment Qualified
Sound Urban Forestry, LLC

# Locations of Inventoried Trees



## Recommended Tree Protection Fencing






## NOTE:

1. EACH LOT SHALL PROVIDE A LANDSCAPE AND IRRIGATION PLAN FOR AGENCY APPROVAL.
2. THE LANDSCAPE PLAN MUST SHOW PROPOSED PLANTINGS, TREE TYPES AND HEIGHTS, AND OTHER VEGETATION.
3. THIS PLAN IS TO BE SUBMITTED WITH THE SITE DEVELOPMENT/GRADING AND ENGINEERING PERMITS FOR EACH LOT AND IS TO BE IMPLEMENTED PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
4. IRRIGATION OF ALL LANDSCAPE BEDS IS REQUIRED. TEMPORARY IRRIGATION FOR PLANTING AREAS WITH NATIVE PLANT MATERIAL IS REQUIRED BUT MAY BE DECOMMISSIONED AFTER PLANT ESTABLISHMENT (3 YEARS).
5. TREES:
   TOTAL PERIMETER LANDSCAPING REQUIRED TREES = 70
   PARKING LOT TREES WILL BE REQUIRED. QUANTITY TO BE DETERMINED AT EACH LOT DESIGN

   UNDER BPA POWER LINES - TREES ARE NOT PERMITTED - AN ALTERNATIVE LANDSCAPE DESIGN EXCEEDING THE PLANTING DENSITY OR OTHER SUPERIOR DESIGN IS REQUIRED TO COMPENSATE FOR THE TREES NOT ALLOWED.

**ALTERNATIVE LANDSCAPING**
MORE SHURB DENSITY THAN 75% REQURIED UNDER POWER LINES AS NO TREES PERMITTED

**18.47.050.E PARKING AREA INTERIOR BUFFERS.**

**a. Design.**

i. Live planting material shall be provided throughout each landscaping area, and may be any combination of grass, shrubs and trees that provide the desired effect of providing visual relief and green space within the parking area.

ii. Each planting area shall contain at least one tree. Up to one hundred percent of the trees proposed for the planning area may be deciduous.

iii. Landscaping islands must be placed in every parking row at a maximum spacing of every ten parking spaces. Landscaping islands shall be a minimum of eight feet in width and shall extend the length of the parking stall. The minimum required width may be reduced for landscaping islands located in angled parking areas. In cases where no more than two parking rows wide are proposed for the entire parking lot, the maximum spacing requirement (ten spaces) may be varied as part of the site plan review process provided the total requirements for total landscaping area are met.

iv. To provide for vehicle overhang, curbs need to be located at least three feet from the trunk of the tree.

**b. Required Amount.**

i. If the parking area contains more than ten but no more than fifty parking spaces, at least seventeen and one-half square feet of landscape development must be provided for each parking stall proposed.

ii. If the area contains more than fifty but no more than one hundred parking spaces, at least twenty-five square feet landscape development must be provided for each parking stall proposed.

iii. If the parking area contains more than one hundred spaces, at least thirty-five square feet of landscape development must be provided for each parking stall proposed.

The above requirements are considered a minimum. Additional landscape area may be necessary to meet design requirements above.

**18.47.050.B - TYPE 2 PERIMETER LANDSCAPE BUFFER ALONG GC ZONE**
Description.

a. Trees shall be any combination of deciduous and evergreen (with no more than fifty percent being deciduous). One tree shall be provided for each twenty-five lineal feet of landscaped area.
b. A minimum planting area of eight feet in width shall be required.
c. Evergreen shrubs and ground cover must provide seventy-five percent coverage of the designated area within four years from planting.

**18.47.050.D Landscaping between Parking Lots and Public Rights-of-Way.**
Any of the following landscaped strip treatments may be used singly or in combination:

a. Provide a minimum ten-foot-wide landscape strip between the right-of-way and the parking lot to be planted with a minimum of one shade tree and ten shrubs per thirty-five linear feet of frontage, excluding driveway openings.

b. Provide a berm, the top of which is at least two and one-half feet higher than the elevation of the adjacent parking lot pavement. The slope of the berm shall not exceed thirty-three percent for lawn areas. Berms planted with ground covers and shrubs may be steeper. However, no slope shall exceed fifty percent. Berms should be graded to appear smooth, rounded, naturalistic forms. Avoid narrow bumps, which result from creating too much height for width of the space. Plant with a minimum of one shade tree and five shrubs per thirty-five linear feet of frontage, excluding driveway openings.

c. Provide a minimum six-foot-wide landscaped strip and a minimum three-foot grade drop from the right-of-way line to the adjacent parking lot pavement. Plant the resulting embankment with a minimum of one shade tree and five shrubs per thirty-five linear feet of frontage, excluding driveway openings. Ground cover or low shrubs shall be planted to attain seventy-five percent coverage within four years.

d. Provide a minimum five-foot-wide landscaped strip between the right-of-way line and the parking lot, with a minimum three-foot-high brick, stone or finished concrete wall to screen the parking lot. The wall shall be located adjacent to but entirely outside the five-foot landscaped strip. Plant with a minimum of one shade tree per thirty-five linear feet of frontage, excluding driveway openings.

e. Provide a minimum twenty-five-foot-wide strip of existing native vegetation, unless the creation of such a strip creates a hazard of existing trees as determined by a certified landscaper or forester.

| PLANT LIST | | | |
|---|---|---|---|
| SYMBOL | QTY | DESCRIPTION | SIZE |
| TREES | | | |
| | 2 | Carpinus betula fastigiata<br>Columnar Hornbeam | 2" Cal. Min. |
| | 1 | Picea omorika<br>Serbian Spruce | 6' Ht. Min. |
| | 9 | Pseudotsuga menziesii<br>Douglas Fir | 6' Ht. Min. |
| | 12 | | |
| SHRUBS | | | |
| | 32 | Acer circinatum<br>Vine Maple | 2 Gal. Min. |
| | 135 | Mahonia aquilfolium<br>Tall Oregon Grape | 2 Gal. Min. |
| | 68 | Cornus stolonifera<br>Red Osier Dogwood | 2 Gal. Min. |
| | 93 | * Deschampsia cespitosa<br>Tufted Hairgrass | 1 Gal. Min. |
| | 35 | Lonicera involucrata<br>Black Twinberry | 1 Gal. Min. |
| MYC | 12 | Myrica californica<br>Pacific Wax Myrtle | 5 Gal. Min. |
| | 19 | Ribes sanguineum<br>Flowering Currant | 2 Gal. Min. |
| | 70 | Rosa gymnocarpa<br>Wild Rose | 2 Gal. Min. |
| | 11 | Rosa nutkana<br>Nootka Rose | 2 Gal. Min. |
| | 80 | Symphoricarpos albus<br>Snowberry | 2 Gal. Min. |
| | 49 | Arctostophyllos uva ursi<br>Kinnickinnick | 1 Gal. Min. |
| | 13 | Corylus cornuta<br>Hazlenut | 1 Gal. Min. |
| | 1628 sf | Fragaria chileonsis<br>Coastal Strawberry<br>at 30" O.C. triangular spacing | 1 Gal. Min. |
| | 5941 sf | Native - Super Short Pollinator Hydroseed mix by Sunmark Seeds - sunmarkseeds.com | |

## FROM THE ARBORIST'S REPORT

Replanting
This project falls short of the minimum retention by 79 trees and is therefore required to replant at a rate of 1:1 within the site. This requirement will be met with the landscape plans and will follow the standards as outlined in TMC 16.08.070.3.

| | |
|---|---|
| TOTAL REQUIRED TREES ADDITIONAL: | 79 |
| PHASE 1 PROPOSED TREES: | 12 |
| TO BE PROPOSED IN LOT DESIGNS: | 67 |

Exhibit 22

## PRELIMINARY OVERALL LANDSCAPE PLAN - PHASE 1

GRAPHIC SCALE
50 0 25 50 100
( IN FEET )
1 inch = 50 ft.

N

Know what's below.
Call before you dig.

Nature By Design
Landscape Architecture
1320 Alameda Avenue, Suite B, Fircrest, WA 98466
www.naturebydesigninc.com
253.460.6067

PROJECT:
KINGSWOOD COMMERCIAL
1551 Kingswood Dr. SW
TUMWATER WA

LDC, INC
20210 142?? Ave NE
Woodinville, WA 98072

REVISIONS:
B REVISED PER COMMENTS 7/13/2022
C. REVISED PER COMMENTS

DRAWING ISSUED FOR:
AGENCY REVIEW
DATE: OCTOBER 26, 2022

STATE OF WASHINGTON · CATHERINE OWENS · NO. 692 · EXP. APRIL 2023 · LICENSED LANDSCAPE ARCHITECT

| | |
|---|---|
| PROJECT NO: | 2232 |
| FILE NAME: | 2232LSC |
| DRAWN BY: | KLO |
| CHECKED BY: | KLO |
| X-REFS: | CIVIL |
| PLOT SCALE: | 1:1 |
| DRAWING SCALES: | 1:50 |

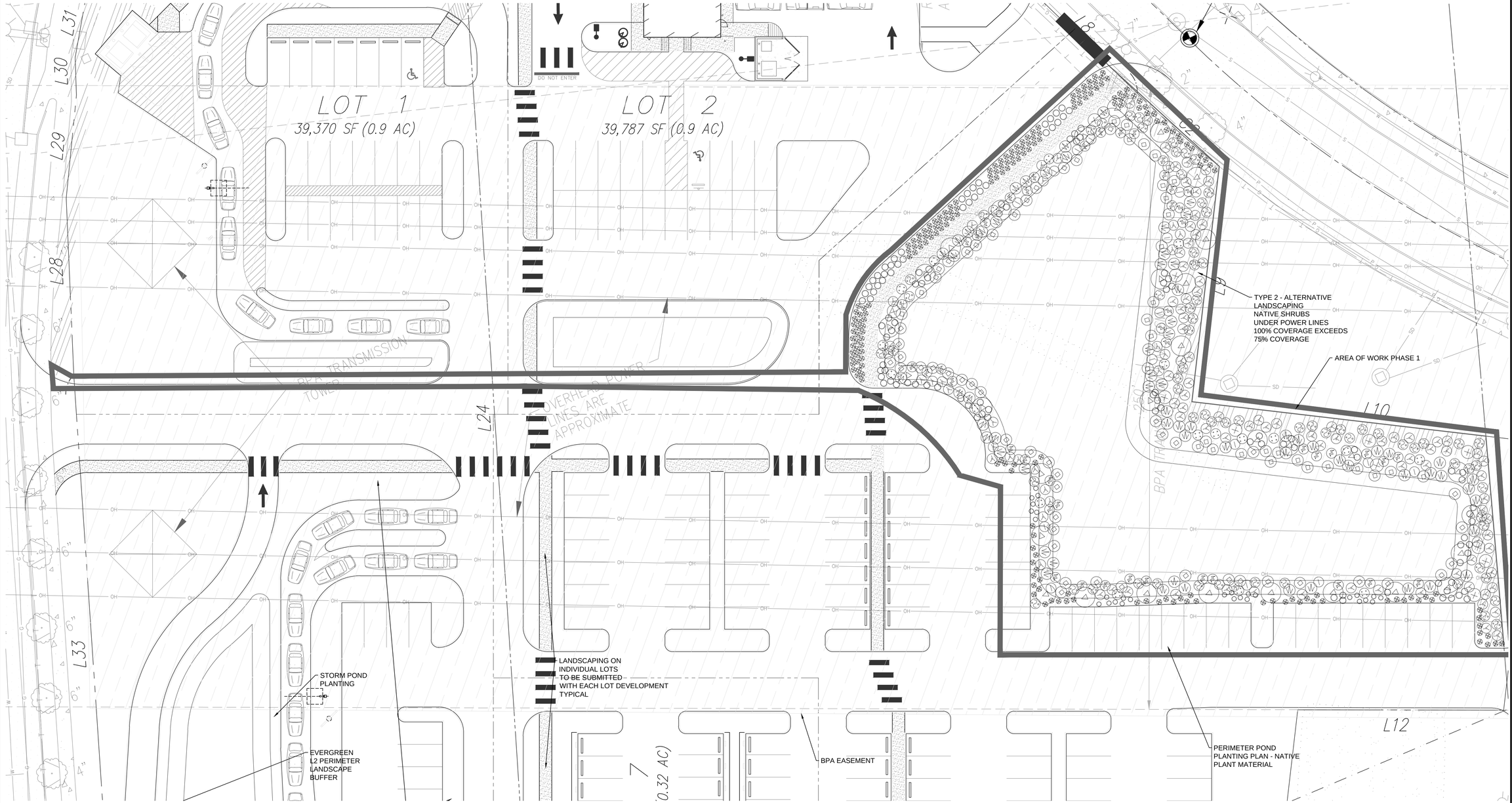
DRAWING CONTENTS
PRELIMINARY OVERALL LANDSCAPE PLAN

DRAWING NO.:
L1

1 OF 4



ORIG. SHEET SIZE 22X34




IRRIGATION NOTE:
Back flow prevention is required on all fire services and irrigation services and in accordance with the AWWA Cross Connection Control Manual. A reduced pressure backflow assembly is required on all commercial domestic services per WAC 246-290-490. Please contact maintenance at 754-4150 for more information.

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

## NORTH PH 1 PLANTING PLAN

GRAPHIC SCALE
20 0 10 20 40
( IN FEET )
1 inch = 20 ft.

Nature By Design
Landscape Architecture
1320 Alameda Avenue, Suite B, Fircrest, WA 98466
www.naturebydesigninc.com
253.460.6067

PROJECT:
KINGSWOOD COMMERCIAL
1551 Kingswood Dr. SW
TUMWATER WA

LDC, INC
20210 142?? Ave NE
Woodinville, WA 98072

REVISIONS:
B REVISED PER COMMENTS 7/13/2022
C. REVISED PER COMMENTS

DRAWING ISSUED FOR:
AGENCY
REVIEW
DATE: OCTOBER 26, 2022

STATE OF WASHINGTON
KATHERINE OVSIANKIN
NO. 692 • EXP. APRIL 2023
LICENSED LANDSCAPE ARCHITECT

| | |
|---|---|
| PROJECT NO: | 2232 |
| FILE NAME: | 2232LSC |
| DRAWN BY: | KLO |
| CHECKED BY: | KLO |
| X-REFS: | CIVIL |
| PLOT SCALE: | 1:1 |
| DRAWING SCALES: | 1:20 |

DRAWING CONTENTS
**PRELIMINARY PLANTING PLAN-NORTH**

DRAWING NO.:
**L2**
2 OF 4

ORIG. SHEET SIZE 22X34

MATCHLINE A-A

LANDSCAPING ON INDIVIDUAL LOTS TO BE SUBMITTED WITH EACH LOT DEVELOPMENT TYPICAL

LOT 4
16,619 SF (0.45 AC)

LOT 5
36,833 SF (0.85 AC)

LOT 1
175,289 SF

20' INGRESS AND EGRESS ESMT AFN 586587

L35 L36 L14 L15 L16 L18 C3

TEMPOARARY TREE PROTECTION FENCING

EXISTING TREES IN THIS AREA TO BE RETAINED - PROTECT DURING ALL PHASES OF CONSTRUCTION

AREA OF WORK PHASE 1

PHASE 1 STREET TREES AND PERIMETER L2 LANDSCAPING COMBINATION OF EVERGREEN AND DECIDUOUS TREES SHRUBS AND GROUNDCOVER TO COVER 75%

PROPOSED ESMT FOR INGRESS, EGRESS AND UTILITY PER BLA AFN 3472425 DID NOT FIND RECORDED ESMT DOCUMENT

INGRESS, EGRESS AND UTILITY ESMT AFN 8108030158

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

## SOUTH PH 1 PLANTING PLAN

GRAPHIC SCALE
20 0 10 20 40
( IN FEET )
1 inch = 20 ft.

Nature By Design
Landscape Architecture
1320 Alameda Avenue, Suite B, Fircrest, WA 98466
www.naturebydesigninc.com
253.460.6067

PROJECT:
KINGSWOOD COMMERCIAL
1551 Kingswood Dr. SW
TUMWATER WA
LDC, INC
20210 142?? Ave NE
Woodinville, WA 98072

REVISIONS:
B REVISED PER COMMENTS 7/13/2022
C. REVISED PER COMMENTS

DRAWING ISSUED FOR:
AGENCY REVIEW
DATE: OCTOBER 26, 2022

STATE OF WASHINGTON · KATHERINE OWENS · NO. 692 · EXP. APRIL 2023 · LICENSED LANDSCAPE ARCHITECT

| | |
|---|---|
| PROJECT NO: | 2232 |
| FILE NAME: | 2232LSC |
| DRAWN BY: | KLO |
| CHECKED BY: | KLO |
| X-REFS: | CIVIL |
| PLOT SCALE: | 1:1 |
| DRAWING SCALES: | 1:20 |

DRAWING CONTENTS
PRELIMINARY PLANTING PLAN - SOUTH

DRAWING NO.:
L3



ORIG. SHEET SIZE 22X34

# GENERAL LANDSCAPE NOTES

1. Contractor is responsible for obtaining all necessary permits from the appropriate agency prior to commencing work. Contractor shall contact Line Locators (811) a min. of 48 hours prior to any digging or trenching. If there are any discrepancies with existing lines and landscaping, it is the contractor's responsibility to contact the landscape architect and request a site visit to address the conflicts. Contractor shall comply and conform to any and all local and state codes for work, schedules and any other project related requirements.

2. Contractor shall coordinate directly with the landscape architect for all landscape related issues, concerns, inspections and approvals. Contractor shall provide the landscape architect with a written request for a site visit to address any related items.

3. Scope of work shall include any and all specified and unspecified but related incidental work to achieve the design indicated on the landscape plans. All labor, materials, subcontractors, equipment, and related incidental items shall be supplied and installed to achieve a complete project, unless directed otherwise by the general contractor or landscape architect.

4. Contractor to verify all sub grades are set below required amendments to insure the finished grade will match what is intended by civil or drainage design. All sub grades and finished or final grades shall be graded to drain to the designed drainage system with positive drainage away from all structures.

5. **Grade Preparation:**

a. Slopes used for grass plantings or turf shall be less than 3:1 or 33 percent. Otherwise plantings should not require mechanized mowing equipment.

Soil Preparation.

a. Where soils are compacted, planting beds should be deep tilled to a depth of at least 12 inches. Soils shall be enhanced through the addition of the following materials: bark and forestry by-products, organic matter such as composted yard waste, organics and other amendments as needed through a soils test. Where Pit Planting, see planting detail for planting ring sizes and depths. Scarify the edges of planting pits to encourage root expansion.
b. On project sites where topsoil is limited or nonexistent, a minimum depth of 6 (six) inches of sandy loam topsoil should be tilled into the soil to a depth of 12 inches through all planting areas with compacted soils.
c. For all newly planted areas, three cubic yards of composted organic matter per 1,000 square feet of landscape area should be added to a depth of four inches to the top of the soil and Tilled in.
d. Seeded areas shall be fine graded and rolled. New Soil depths in lawn areas shall be 4 Inches.

6. Mulching of Newly Planted or Replanted Areas.

a. Mulches must be applied to the following depths: a minimum 3 (three) inches over bare soil, and two inches where plant materials will cover.
b. Mulches must include organic materials, such as wood chips and shredded bark.
c. Nonporous materials, such as plastic sheeting, shall not be used in any area of the landscape because of down-slope erosion and potential soil contamination from herbicide washing.
d. Mulch should be applied regularly to and maintained in all planting areas to assist soils in retaining moisture, reducing weed growth, and minimizing erosion.

7. Contractor shall field layout all plant material and contact the landscape architect for a site visit to approve the layout. Any field modifications shall be done by the landscape architect prior to planting.

8. Contractor shall immediately notify the landscape architect of any poor drainage condition in landscape areas. No standing water shall be permitted in any landscape areas - either on the surface or below the topsoil. The landscape architect shall coordinate the drainage solution with the general contractor and civil engineer. Once the concerns have been remedied planting shall commence.

9. All groundcover to be planted in a triangular spacing formation, equal in all directions to the centers of the groundcovers in distances indicated in the legend. Contractor shall verify all quantities of groundcovers by area calculations and spacing requirements.

10. Landscaping is to be per plan. Plant substitutions due to availability or otherwise will be allowed only with landscape architect, owner and agency approval. Any substitutions will be with material of similar size, growth characteristics, and quality.

11. All trees must be staked as necessary so as to maintain material in a healthy, vigorous growing condition.

12. Landscaping shall be installed in a professional workmanlike manner that is consistent and accepted throughout the industry. All landscape and irrigation work shall be performed by experienced persons familiar with scope of project.

13. All landscape material and labor is to be guaranteed for a period of one full year from the time of completion.

14. When planting 'Balled and Burlapped' product, remove all burlap, string & wire from any B&B plant material, cut and remove jute strings. Gently place in tact Rootbal into planting pit. If rootball breaks or is not solid - the plant is unacceptable and shall be replaced.

15. Street trees shall be high branching with canopy that starts at least 6' above finish grade.

16. All plant I.D. tags are to remain on the plant material until final inspection has been completed. Once approved all plant I.D. tags shall be removed and discarded appropriately.

17. Trees shall be cared for in accordance with the American National Standards Institute (ANSI) standard practices for trees, shrubs and other woody plant maintenance (ANSI 300) in order to allow them to reach there mature height and form.

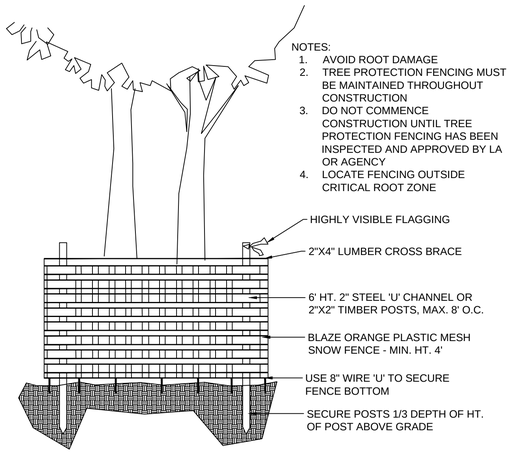
18. Pruning of street trees shall be performed per the ANSI 300 standards so as to maintain the natural form of the tree, encourage vigorous growth to a mature spread and height, and avoid weakening the tree to create a hazard. Street trees shall not be topped pollarded, or otherwise pruned in a manner contrary to these goals, unless there is no practicable alternative that would preserve essential utility services.

Plant material selected is drought tolerant or native species. The project proponent shall be responsible for maintaining and watering all plant material throughout the first growing season and in times of drought. A permanent irrigation system shall be designed and submitted at final review for phase 1.

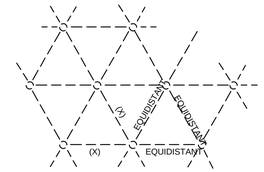
It is recommended to install the landscaping in the Spring (February - April) or Fall (October - December)when dormant but before hard freeze.

**TEMPORARY IRRIGATION**

The project proponent shall ensure that a minimum of **one (1) inch of water is supplied each week** to the restoration area between May 1 and October 15 for a least the first two years following initial planting. The calculated amount of required water shall include both natural rainfall and temporary irrigation.




## TEMPORARY TREE PROTECTION FENCING - ORANGE MESH FABRIC




DISTANCE (X) PER PLANT LEGEND

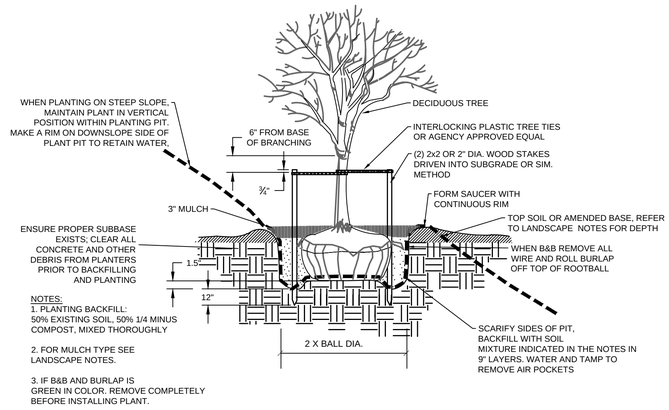
NOTES:

ALL GROUNDCOVER SHALL BE PLANTED AT EQUAL TRIANGULAR SPACING AS SPECIFIED IN THE PLANT LEGEND.

LOCATE GROUNDCOVER ONE-HALF OF SPECIFIED ON-CENTER SPACING FROM ANY CURB, SIDEWALK OR OTHER HARD SURFACE.

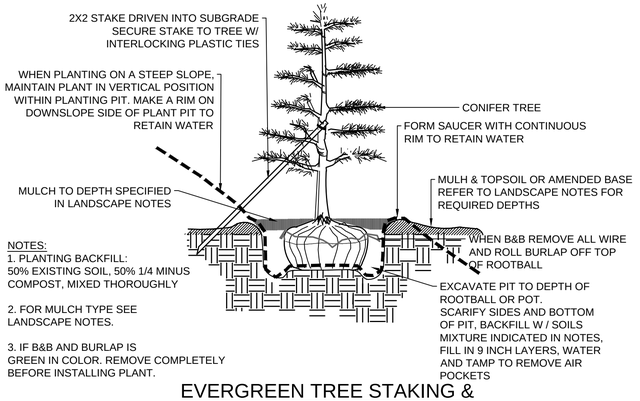
## GROUNDCOVER PLANTING DETAIL

No Scale



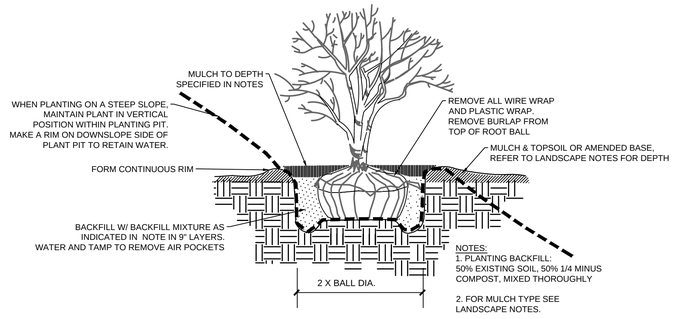

## DECIDUOUS TREE PLANTING & STAKING DETAIL

No Scale




## EVERGREEN TREE STAKING & PLANTING DETAIL

No Scale




## SHRUB PLANTING DETAIL

No Scale

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

Nature By Design
Landscape Architecture
1320 Alameda Avenue, Suite B, Fircrest, WA 98466
www.naturebydesigninc.com
253.460.6067

PROJECT:
KINGSWOOD COMMERCIAL
1551 Kingswood Dr. SW
TUMWATER WA

LDC, INC
20210 142?? Ave NE
Woodinville, WA 98072

**REVISIONS:**

B REVISED PER COMMENTS 7/13/2022
C. REVISED PER COMMENTS

**DRAWING ISSUED FOR:**
AGENCY REVIEW

**DATE:** OCTOBER 26, 2022

STATE OF WASHINGTON · CATHERINE OWEN · NO. 692 • EXP. APRIL 2023 · LICENSED LANDSCAPE ARCHITECT

| | |
|---|---|
| PROJECT NO: | 2232 |
| FILE NAME: | 2232LSC |
| DRAWN BY: | KLO |
| CHECKED BY: | KLO |
| X-REFS: | NONE |
| PLOT SCALE: | 1:1 |
| DRAWING SCALES: | N.T.S. |

DRAWING CONTENTS

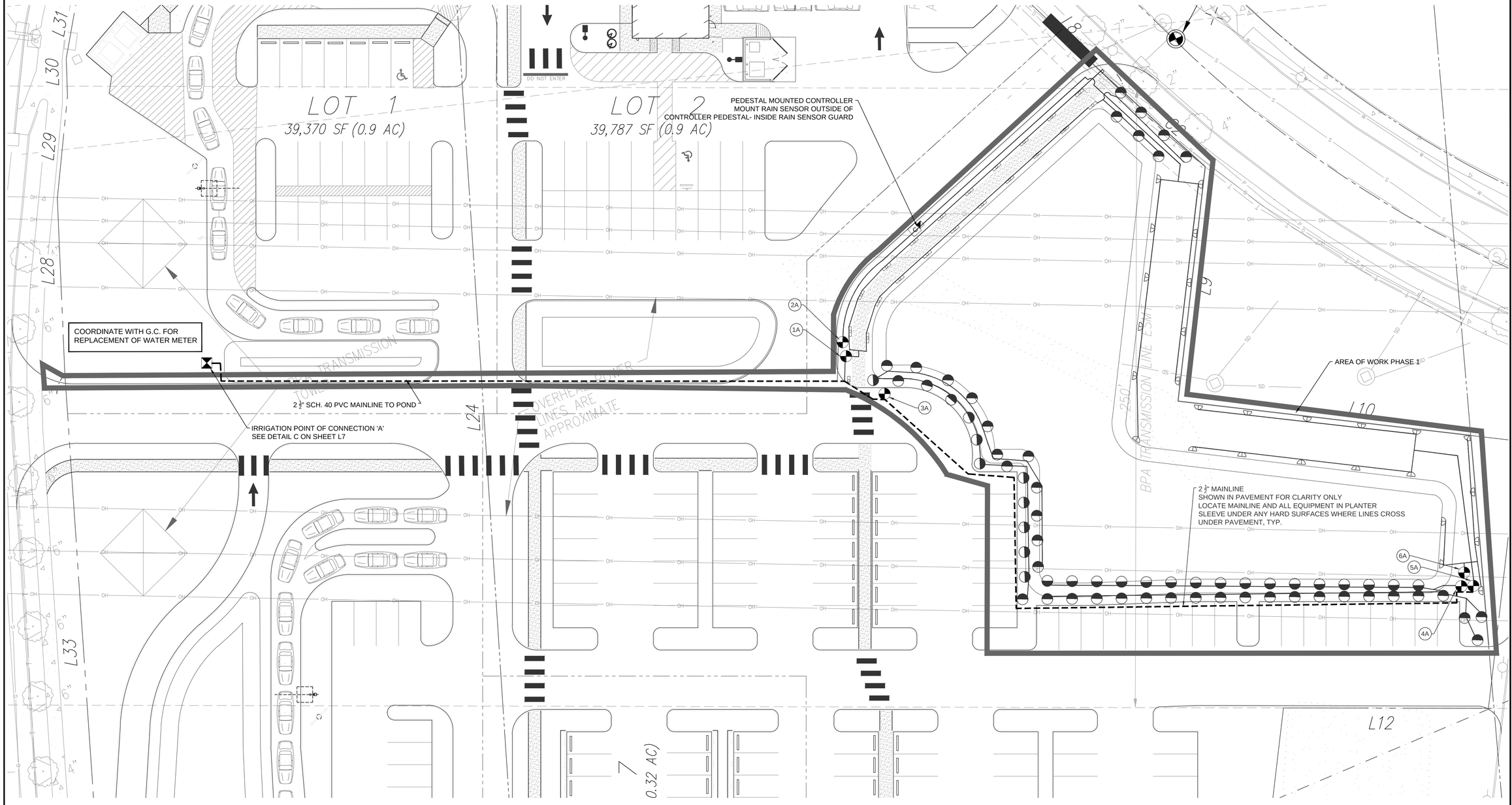
**LANDSCAPE DETAILS & NOTES**

DRAWING NO.:

# L4

4 OF 4

ORIG. SHEET SIZE 22X34




IRRIGATION NOTE:
Back flow prevention is required on all fire services and irrigation services and in accordance with the AWWA Cross Connection Control Manual. A reduced pressure backflow assembly is required on all commercial domestic services per WAC 246-290-490. Please contact maintenance at 754-4150 for more information.

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

## NORTH PH 1 IRRIGATION PLAN

GRAPHIC SCALE
20 0 10 20 40
( IN FEET )
1 inch = 20 ft.

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STATE OF WASHINGTON · CATHERINE OWEN · NO. 692 · EXP. APRIL 2023 · LICENSED LANDSCAPE ARCHITECT

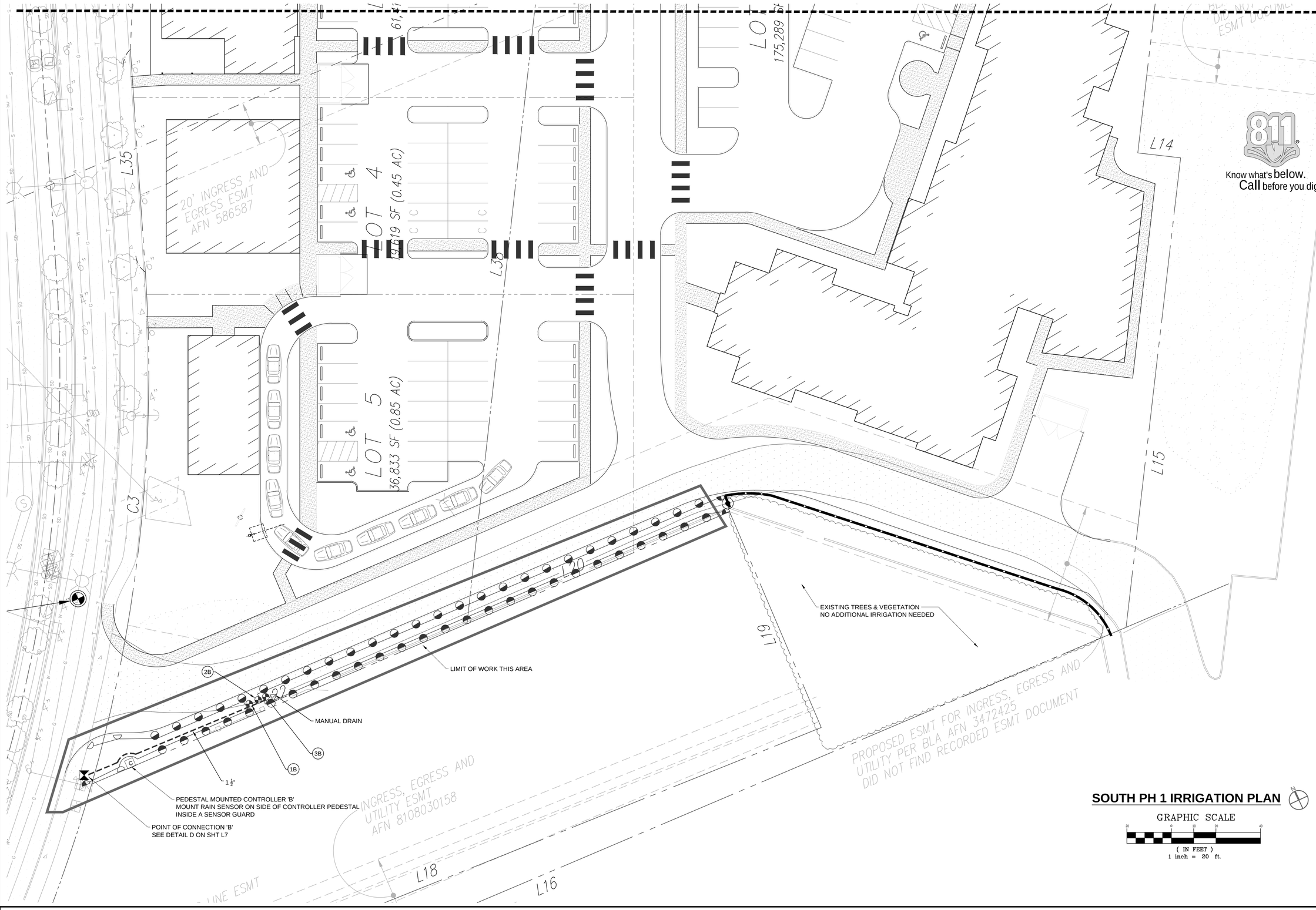
| | |
|---|---|
| PROJECT NO: | 2232 |
| FILE NAME: | 2232LSC |
| DRAWN BY: | KLO |
| CHECKED BY: | KLO |
| X-REFS: | CIVIL |
| PLOT SCALE: | 1:1 |
| DRAWING SCALES: | 1:20 |

DRAWING CONTENTS
**IRRIGATION PLAN-NORTH**

DRAWING NO.:
**L5**

5 OF 7

ORIG. SHEET SIZE 22X34




## SOUTH PH 1 IRRIGATION PLAN

GRAPHIC SCALE

20 0 10 20 40

( IN FEET )
1 inch = 20 ft.

Nature By Design
Landscape Architecture
1320 Alameda Avenue, Suite B, Fircrest, WA 98466
www.naturebydesigninc.com
253.460.6067

PROJECT:
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1551 Kingswood Dr. SW
TUMWATER WA

LDC, INC
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Woodinville, WA 98072

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C. REVISED PER COMMENTS

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AGENCY REVIEW
DATE: OCTOBER 26, 2022

STATE OF WASHINGTON
KATHERINE OWENS
NO. 692 • EXP. APRIL 2023
LICENSED LANDSCAPE ARCHITECT

| | |
|---|---|
| PROJECT NO: | 2232 |
| FILE NAME: | 2232LSC |
| DRAWN BY: | KLO |
| CHECKED BY: | KLO |
| X-REFS: | CIVIL |
| PLOT SCALE: | 1:1 |
| DRAWING SCALES: | 1:20 |

DRAWING CONTENTS

**IRRIGATION PLAN - SOUTH**

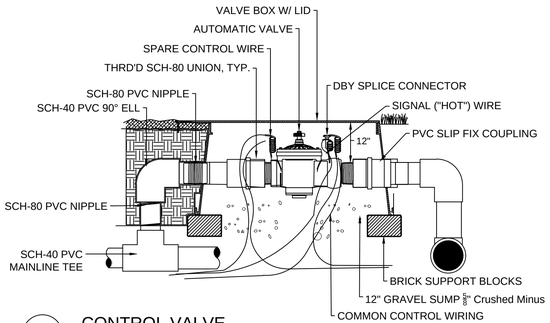
DRAWING NO.:

# L6

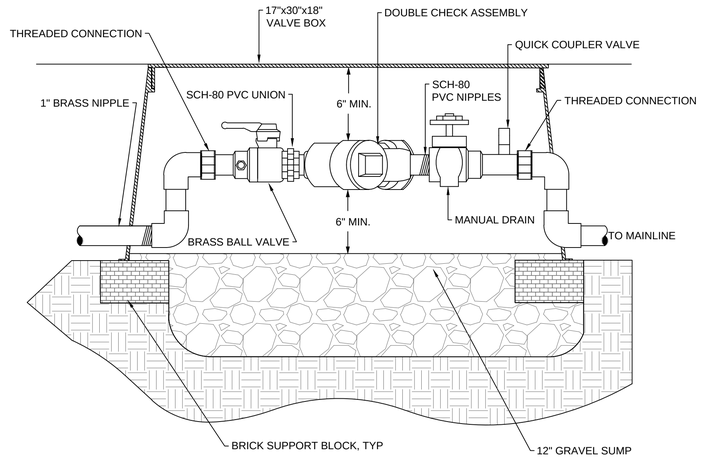
6 OF 7

ORIG. SHEET SIZE 22X34

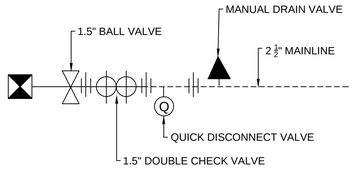
Know what's **below.**
**Call** before you dig.



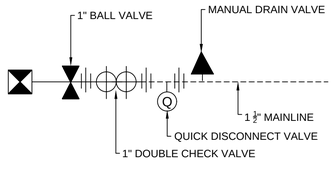

A CONTROL VALVE
N.T.S.




B BACK FLOW POINT OF CONNECTION
N.T.S.

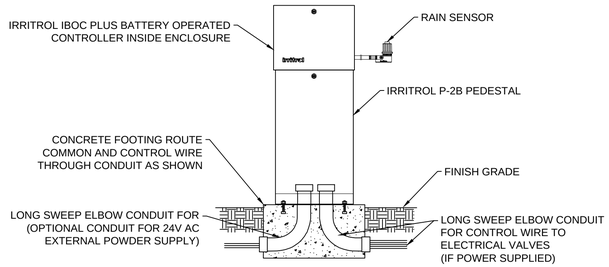



C POINT OF CONNECTION 'A'
N.T.S.



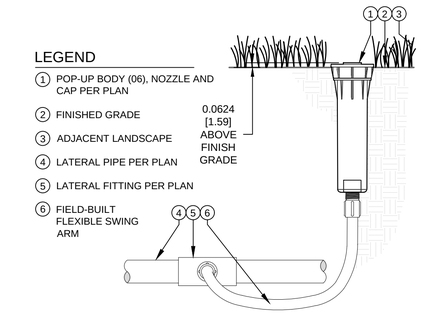

D POINT OF CONNECTION 'B'
N.T.S.

IRRITROL SYSTEMS
5825 JASMINE ST.
RIVERSIDE, CA 92504
TOLL FREE: 1-800-634-8873
PHONE: (951) 785-3454
www.irritrol.com

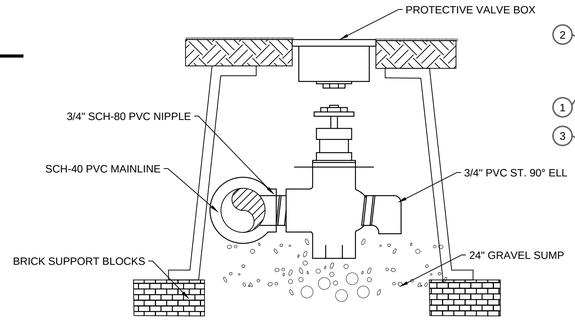



NOTES:
1. ALL ELECTRICAL WORK MUST CONFORM TO LOCAL CODES. REFER TO PRODUCT LITERATURE FOR ADDITIONAL INSTALLATION REQUIREMENTS.
2. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
3. DO NOT SCALE DRAWING.
4. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY. THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION.
5. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.
6. CONTRACTOR'S NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT IRRITROL.COM

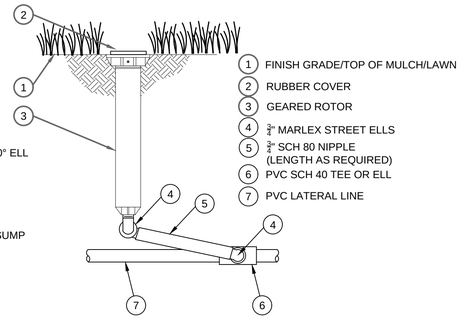
E STAINLESS STEEL ENCLOSURE
N.T.S.




F SPRAY HEAD DETAIL
N.T.S.




G MANUAL ASSEMBLY DRAIN
N.T.S.




H ROTARY SPRINKLER DETAIL
N.T.S.

## EQUIPMENT LEGEND

| CATALOG NUMBER | SYMBOL | DESCRIPTION | PSI | RADIUS |
|---|---|---|---|---|
| PGP ULTRA 04 MPR 25 | | HUNTER POP UP ROTARY SPRINKLER HEAD | 40 | 30' |
| 1806 PRS SAM 18 | | RAINBIRD POP UP SPRAY HEAD SPRINKLER | 30 | 18' |
| 1806 PRS SAM 15 | | RAINBIRD POP UP SPRAY HEAD SPRINKLER | 30 | 15' |
| 1806 PRS SAM 12 | | RAINBIRD POP UP SPRAY HEAD SPRINKLER | 30 | 12' |
| 1806 PRS SAM 10 | | RAINBIRD POP UP SPRAY HEAD SPRINKLER | 30 | 10' |
| 1806 PRS SAM EST | | RAINBIRD POP UP SPRAY HEAD SPRINKLER | 30 | 5'X15' |
| 1806 PRS SAM SST | | RAINBIRD POP UP SPRAY HEAD SPRINKLER | 30 | 5'X30' |
| 150BBVTF 1.50" | | HAMMOD FULL PORT BRASS BALL VALVE | | |
| 100BBVTF 1.00" | | HAMMOD FULL PORT BRASS BALL VALVE | | |
| 850 SERIES | | FEBCO DOUBLE CHECK VALVE, 1 EACH | | |
| 44 NP-1.00" | | RAINBIRD QUICK COUPLING VALVE W/ MATCHING KEY | | |
| 75SV-0.75" | | LAWN LIFE MANUAL DRAIN VALVE W/ RISING SWIVEL | | |
| 700 SERIES ULTRA FLOW | | IRRITROL AUTO CONTROL VALVE W/ DC LATCHING SOLENOID | | |
| IBOC PLUS SERIES | C | IRRITROL BATTERY POWERED CONTROLLER, 1 EACH, 4 AND 8 STATION IN PEDESTAL SS ENLCOSURE (P-2B) | | |
| RAIN CLICK | | HUNTER AUTO-RAIN SENSOR OR EQUIV. MOUNTED ON TOP OF TREATED POST AT CONTROLLER LOCATION | | |
| 195101-17"x30"x18" | NONE | BACKFLOW BOX W/ LOCKING LID | | |
| 190106-14"x20"x12" | NONE | DRIP CONTROL VALVE BOX W/ LOCKING LID | | |
| 181104-9"x10" | NONE | GATE AND MANUAL DRAIN VALVE BOX W/ LOCKING LID | | |
| SCH-40 | | SOLVENT WELD PVC MAINLINE, SIZE AS SHOWN | | |
| CL-200 | | SOLVENT WELD PVC LATERAL, SIZE AS SHOWN | | |
| SCH 40 PVC 3/4" | | SOLVENT WELD PVC LATERAL LINE | | |
| SCH-40 | | SOLVENT WELD PVC SLEEVING, SIZE AS SHOWN | | |
| 14UF-1 | NONE | DIRECT BURY CONTROL WIRING, USE WHITE FOR COMMON, RED AS SIGNAL AND YELLOW FOR SPARES | | |

## VALVE SCHEDULE

| NO. | GPM | SIZE | AREA | TYPE OF ZONE |
|---|---|---|---|---|
| A1 | 19.81 | 1.50 | SHRUB | SPRAY HEAD |
| A2 | 26.07 | 1.50 | SHRUB | SPRAY HEAD |
| A3 | 22.00 | 1.50 | SHRUB | SPRAY HEAD |
| A4 | 19.54 | 1.50 | SHRUB | SPRAY HEAD |
| A5 | 23.70 | 1.00 | SHRUB | SPRAY HEAD |
| A6 | 14.22 | 1.50 | SHRUB | SPRAY HEAD |
| B1 | 18.79 | 1.00 | SHRUB | SPRAY HEAD |
| B2 | 17.77 | 1.00 | SHRUB | SPRAY HEAD |
| B3 | 17.77 | 1.00 | SHRUB | SPRAY HEAD |

NOTE: THERE ARE (2) THREE CONTROLLERS

## IRRIGATION NOTES

1. Irrigation system engineering based on a 1.5" water meter for P.O.C. 'A' and a 1.00" water meter for P.O.C. 'B'. Both have a static water pressure of 60.0 LBS. The installer to verify adequate static water pressure at time of installation.
2. Irrigation lines are that are shown within hard surface areas for clarity, shall be located within landscape planting areas or underground sleeves. All valves shall be installed within protective boxes installed flush and level with finished grade.
3. Install all equipment per state and local codes (City of Tumwater). Call Line Locaters prior to digging at 1-800-424-5555. The installer shall be responsible for all permits, tests and inspections as required.
4. See civil drawings to verify all utility locations.
5. Install manual drains at all low points and record all locations on the "Record Drawings".
6. Adjust radius on all sprinkler heads to maximize the coverage and minimize overspray on all hard surfaces. Add anti-drain check valves to low heads to eliminate drainage and run-off.
7. Mainline & wiring to have a minimum cover of 18" and all lateral piping 12".
8. Prior to backfill, the main line is to be pressure tested at 75 lbs. for (1) one hour with '0' loss. The completed test is to be turned over to the General Contractor.
9. Use select "rock free" native soil or clean sand to backfill all trenches and compact to 85% density for landscape areas and 95% for areas under concrete or asphalt.
10. The back flow assemblies are to be certified by a State Licensed BAT. The completed forms are to be turned in to the City of Tumwater. And a copy of the certification shall be delivered to the project proponent.
11. Install the controllers at locations indicated on the plans and per detail this sheet. Provide a 12"x15"x4" concrete pad for the controller pedestal to mount on. Verify any conduit needed for pad prior to pouring
12. As part of the contract, the landscape contractor is to winterize in the fall and activate the system in the spring for one year.
13. From controller 'A' install (2) two spare Yellow wires to each valve No. 1A and 8A. From controller B install (2) two spare yellow wires to valve no. 3B and Note: all control valve boxes shall have the spare yellow wires visible inside.
14. Do not spice the red signal wire between the controller and the control valve. Wire splices shall be within the valve boxes only using 3M-DBY splice kits.
15. All control valves shall be tagged using plastic marking numbers. Number valves as per plan.
16. The installer shall provide to the owner an exact 'As-Built' drawing of the installed system
17. As part of the contract, the installer shall perform (1) one each on the system. Spring Start Up and Winterization. The Spring Start Up shall include the complete review of the system to ensure it is operating correctly. Adjust and repair as required. Damage due to vandalism or other destruction, are not under warranty. Any manufacture or installer repairs are at installer's expense.

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| X-REFS: | CIVIL |
| PLOT SCALE: | 1:1 |
| DRAWING SCALES: | N.T.S. |

DRAWING CONTENTS
**IRRIGATION NOTES & DETAILS**

DRAWING NO.:
**L7**



ORIG. SHEET SIZE 22X34

Exhibit 23

City Hall
555 Israel Road SW
Tumwater, WA 98501-6515
Phone: 360-754-5855
Fax: 360-754-4138

November 22, 2022

Tyrell Bradley, SCJ Alliance

RE: Formal Site Plan Review – TUM-22-0234
Kingswood Commercial Binding Site Plan and Variance
1401 and 1551 Kingswood Dr. SW, Tumwater WA 98501

On October 27, 2022 the Development Review Committee for the City of Tumwater reviewed your preliminary site plan application for the above referenced project.

**GENERAL**

All requirements of the Tumwater Municipal Code (TMC) pertaining to zoning, tree protection, critical areas, building and fire code compliance and engineering standards shall be met. Please see attached red-line comments as they are referenced in these comments and may include some additional information that may be helpful.

**PLANNING**

1. Use: The proposed project is located within the General Commercial Zoning District and Aquifer Protection Overlay Zoning District. Restaurants (fast food and seated), automobile service stations, general retail sales, general offices, hotels and electric vehicle infrastructure are permitted uses within the zone. [Section 18.22.020 TMC]

2. Design Guidelines: The project is subject to the general design guidelines and signature road design guidelines (for a portion along Littlerock Road) for Commercial, Mixed Use and Multi-Family uses. Please provide a narrative with each building outlining how each section within 2.E Building Design stating how the requirement is being met (at building permit stage). For the buildings along the signature road please provide an additional narrative regarding the signature road requirements addressing each of the requirements. [Chapter 2 and Appendix A, City Design Guidelines and Street Designations]

Please add pedestrian cross-walks from the development across Kingswood Drive to the receiving ramps on the other side of the road.

Will be addressed at the building permit stage.

3. Zoning:

   Yards/Setbacks: The minimum required setbacks for the General Commercial Zoning Distirct are as follows:

   Front yard: No minimum unless structures or portions of structures are adjacent to any residential zoning district, the minimum structural setback shall be 20 feet. Where structures are constructed over one story, the setback

of the structure from the adjacent property line or lines shall be increased by 10 feet for every story above the ground level story of the proposed new building and shall be screened from view in accordance with TMC Chapter 18.47.

Side yards: No minimum.

Rear yards: No Minimum.

Maximum attainable lot coverage is 85% of the total lot area subject to on-site parking requirements in Chapter 18.50 TMC, minimum landscaping requirements in Chapter 18.47 TMC, minimum setback requirements, and on-site stormwater management requirements as described in the city of Tumwater drainage design and erosion control manual.

A variance is being requested for lots 3, 4 and 5 and a sign to be within the 20' setback adjacent to residential zoning district.

4. Parking:

Minimum parking requirement is Fast Food: 10 spaces per 1,000 sq ft plus 1 lane for each drive up window. See 18.43.020 for stacking requirements, Retail Use: 3.5 spaces per 1,000 sq ft, Hotel: 1 space for each room or suite and 1 space per manager's unit (banquet and meeting rooms shall provide 6 spaces for 1,000 square feet of seating area, Restaurants are figured separately if included), Automotive Service: Community Development Director may require a parking demand study or determine the standards that should be applied to the use in question.

Parking stall sizes are as follows:

9' x 18' - Standard stalls

8' x 17' – Compact stalls (maximum 15% of total parking)

9' x 18' – Barrier-free

16' x 18' - Barrier-free van stalls

The parking area is to be hard-surfaced (asphalt, concrete or turfstone) and the spaces shall be defined by white striping a minimum of 4" wide.

A minimum 8-foot walkway or 6-foot walkway with 3-foot landscape strip is required between the building and the parking stalls.

Parking spaces must utilize approved wheel stops to prevent vehicle overhang of a sidewalk or walkway or planter bed where a tree is within three feet of the curb. These need to be shown on the site plan.

The parking aisle (lane) is to be a minimum of 22' 6" feet wide. All vehicle maneuvering areas shall be paved.

Section 18.50.120 TMC requires bicycle storage facilities. Parking areas or buildings with more than 150 vehicular parking spaces require 8 short-term spaces or 3% of vehicle spaces, whichever is greater. Commercial uses or parking areas providing 50 or more vehicular parking spaces require 1 long

term bicycle facility per 50 spaces plus 1 space per 100 additional vehicular spaces.

The electric charging infrastructure on Lot 7 can be used to meet the requirements for lot 3 and the hotel's EV requirements but will need to be constructed prior to lot 3 or the hotel's CO. Each of the other lots will need to accommodate the required amount of chargers on each individual property or propose an alternative that is approved by the Building Official (needs to meet accessibility standards throughout development).

Each lot shall have the necessary parking infrastructure to accommodate the parking requirements outlined in 18.50 to ensure each lot can meet their requirements when they build out. Build-out of adjacent parking spaces can be used to accommodate this as shown on the plan.

5. Exterior Lighting: Site lighting shall be directed downward and inward, or other techniques may be utilized to minimize impacts on off-site uses.

   A photometric lighting plan addressing all proposed exterior lighting must be submitted for review and approval. The plan shall show how the lighting for the site complies with the light trespass requirements outlined in Section 18.40.035.D TMC.

   Light fixtures shall be limited to 24 feet in mounting height.

Land use will be conditioned with the following: Exterior lighting shall be submitted for review and approval as part of the building permit submittal for each lot. The plan shall show how the lighting for the site complies with the light trespass requirements outlined in 18.40.035. Light trespass may not exceed the footcandle amount stated within 18.40.035 adjacent to residential or commercial zoned properties. Light trespass is allowed across internal property lines of the development.

6. Landscaping: A landscaping plan shall be submitted for the required landscaping in the right-of-way, perimeter yard areas.

   A Type 2 buffer is required for perimeter yard areas and shall have a minimum 8-foot wide planter area and shall contain 1 tree every 25 lineal feet with no less than 50% of the trees be evergreen variety. The planter bed shall also contain shrubs and groundcover to provide 75% coverage of the area within 4 years.

   The plan must also address parking lot landscaping as prescribed in Chapter 18.47 TMC. For parking areas with more than 10 parking spaces the requirements of TMC 18.47.050(E) must be met. For every ten parking spaces an eight foot by eighteen foot landscape-island must be provided. The island must include a tree and groundcover plants. The trees may be deciduous. The islands must be irrigated.

   The Landscape Plan must show proposed plantings, tree types and heights, and other vegetation. This plan is to be submitted with the site

development/grading and engineering permits and is to be implemented prior to the issuance of a Certificate of Occupancy.

Irrigation of all landscape beds is required.

Please update any reference to Phase I to Site Development Grading.

Please call out landscaping screening behind dumpsters where they could be viewed from right-of-way.

Is there any desire to specify the type of screening required for drive through screening or will it be considered lot by lot?

Similarly, is there any desire to require a consistent landscaping design with the development to ensure consistency in the planting types around the perimeter type II buffer?

Please clarify what is being proposed as native super short pollinator hydroseed mix, could not find reference on the sunmarkseeds.com website.

7. Signs: The General Commercial Zoning District allows a total of 200 sq. ft. on all faces of all signs (no more than 100 sq. ft. on one side). Separate permits are required and height restrictions apply depending on the location of the sign. [Chapter 18.44 TMC].

   Wall and building mounted signs shall be limited to an area not to exceed twenty percent of the public facade, provided that the total area of signs on an individual public façade or outer wall of a building does not exceed fifty percent of the sign area allowed for freestanding signs. In addition, no one sign may be larger than 100 square feet.

   Multi-tenant sign regulations may be applied to this property as outlined and allowed in TMC 18.44.155.

8. Impact Fees: Impact fees will be assessed prior to building permit issuance.

9. Transportation Concurrency: A concurrency application and trip generation and distribution diagram must be submitted with a $100.00 fee.

   The trip distribution diagram needs to show any new trips through the Tumwater Blvd./I-5 Interchange. The City will be imposing SEPA based mitigation fees per new trip that affects the Interchange.

10. Notice of Application: A notice of application is required to be issued for the project. The NOA will have a 14-day comment period.

11. SEPA: The project must be reviewed under the provisions of the State Environmental Policy Act (SEPA). Please submit the checklist and fee ($880.00) after formal site plan review is completed.

Updated gopher study required with at an additional site visit required with next submittal.

12. Variance: A variance is being proposed to reduce the setback from Littlerock Rd where GC zoning abuts residential zoning. Staff will continue to evaluate the

documents submitted with the justification and let the applicant know if we need any additional information.

13. Planned Unit Development: A PUD is no longer required for this project, the internal driveway will need to meet the private street road design as previously discussed and will need to be recorded as a shared access easement for all parcels as a part of the final binding site plan.

**BUILDING AND FIRE**
**IMPORTANT NOTE:**

At this point in the process, no comprehensive review of construction drawings for the proposed structure(s), if they exist, has been undertaken. When that review does occur, additional requirements are likely to be added to this list of conditions in order to ensure that the project conforms with all required building and fire codes.

**GENERAL**

1. A Site Development/Grading permit will be required for this site. The permit application shall be accompanied by two sets of plans and specifications, and supporting data consisting of a soils engineering report and engineering geology report prepared and signed by a licensed civil engineer. Grading work in excess of 5000 cubic yards shall be considered "engineered grading." The building official may require grading in quantities less than 5000 cubic yards to be engineered grading if special hazards exist. Special hazards may include steep slopes, terracing with rockeries or multiple retaining walls. Inspection of the grading shall be provided by the civil engineer or special inspectors approved by the building official. All special inspections including compaction reports are to be performed by WABO registered labs and inspectors. The engineer is responsible for providing a final inspection report and/or as-built drawings when the work is complete and ready for final inspection. IBC Appendix Chapter "J".

Please place the following note on the site development and grading plans:

"The City of Tumwater requires that the firm providing the soils report (YOUR FIRM) conduct the site inspections as defined in the report. The City also requires that in addition to the soils engineering firm, a WABO registered special inspector with experience with soil grading be employed, by the owner, to conduct compaction testing for the building pads and the required fire lanes. The special inspector shall not be the geotechnical firm, the civil engineer of record or an employee of the contractor.

All grading work shall be conducted in accordance with the soils report prepared by (YOUR FIRM). Compaction testing of the souls under the fire lanes and the building foundations and utility trenches shall be verified by (YOUR FIRM) and the WABO special inspector.

The owner will need to submit the name of the WABO registered firm who will conduct the special inspections, to the Building Official, prior to issuance of the site development/grading permits.

That no vertical or combustible construction will be allowed on the construction site until the fire hydrants and paved roads are installed, tested and approved by the City of Tumwater. Note: testing will also include verification of fire flow by the fire department.

2. The building and site are required to be accessible. An accessible route of travel shall be provided to all portions of the building, to accessible building entrances, and connecting the building and the public way. The accessible route of travel shall be shown on the engineering plans WAC 51-30
3. The proposed buildings occupancy is A-2/B/R-1 of 2018 IBC Section 3 each building will be separate permits and requirements.
4. Exterior walls are required to be of 1-hour fire-rated construction when less than 10 feet to the property line. Protected openings are required when less than 5 feet to the property line. No openings are permitted less than 3 feet to the property line. IBC Section 704.8.
5. Water cross connection control shall be provided in accordance with the provision of the Plumbing Code. Cross connection control devices or assemblies must be models approved under WAC 246-290-490.
6. If water pressure at the meter exceeds 80 psi, a pressure-reducing valve will be required to be installed on the private side of the water line.

**FIRE**

1. The required fire flow for this plat is derived from Appendix B of the International Fire Code. The Type of construction and buildings sizes will be required to have a fire flow of the min. gallons per minute at 20 psi for each structure. This will be required as this project moves forward in the process.

**MISCELLANEOUS**

1. Building plans and specifications shall be prepared and stamped by an architect and engineer licensed to practice in the State of Washington.
2. All building permit applications shall include architectural, structural, plumbing, mechanical and energy plans and specifications. **No exceptions, and no deferrals**. Fire sprinkler and fire alarm permits and plans may be submitted separately from the main permit application but must be submitted before the main building permit will be issued.
3. The following permits may be required for this project:
   - Grading

- Retaining / rockery
- Building, including plumbing and mechanical
- Fire sprinkler / fire suppression
- Fire alarm
- Swimming Pools in Hotel if any
- Sign

**PUBLIC WORKS**

1. The applicant shall be responsible for providing the City with all costs associated with the installation of water, sewer, street and storm systems that are dedicated to the City of Tumwater.

2. All designs/construction shall comply with the City of Tumwater's Development Guide and WSDOT standards.

3. The site plan shall show all existing and proposed utilities and easements including street lights, street trees, water, sewer, storm, gas, cable, power, telephone, signage and striping.

4. All main installation, road design and storm drainage work requires engineered plans certified by a professional engineer.

5. The applicant is responsible for all plan check, inspection and connection fees.

6. Any private or public utility relocation is the responsibility of the applicant.

7. The applicant shall be responsible for the maintenance and timely repair of all public improvements for a period of 30 months following final certification by the City and shall submit a surety for maintenance equal in value to fifteen (15) percent of the total value of the required public improvements certified by the Public Works Director. Please refer to Chapter 3 of the Development Guide for further clarification.

8. Provide all easements and bills-of-sale documents with the engineered plans.

9. All legal descriptions must be accompanied with an appropriate drawing that the City Surveyor can use to verify the legal description. All engineering drawings will be set up to be printable on 24" x 36" sheets and available in PDF format.

10. The owner or owner's representative is also responsible for furnishing the City with electronic files, compatible with release 2014 or newer Auto-CAD format. Drawings shall be in TCHPN (Thurston County High Precision Network) horizontal datum. Provide individual drawings independent of x-refs. Include all non-standard font files and plot files. Also, please furnish PDF files printed

from the Auto-CAD files. A storm water maintenance agreement, utility maintenance agreement, easements and bills-of-sale will also be required.

11. Site plan modifications may occur as a result of the engineering review process. For engineering issues, the approved engineering plans take precedence over the approved site plan. Other engineering related items may be discovered throughout the review and construction of the project and will need to be addressed by the engineer and applicant as required.

12. Please note on the plans that the PLS responsible for the surveying of the project must obtain a permit from DNR before any monuments are disturbed.

13. The vertical datum required to be used is NGVD29.

**STREET**

1. Frontage improvements are required per Tumwater Municipal Code 12.12.010. These improvements include street lighting, street trees/landscaping and any storm drainage necessary to take care of the impervious area in the right-of-way. The applicant is responsible to the centerline of the right-of-way.

   The frontage on Littlerock and Kingswood Drive will require the irrigation system to be modified so that this Binding Site Plan maintains the landscaping, irrigation and is responsible for a separate water meter and the monthly charges associated with the water use.

   Kingswood Drive may require additional street lights. The street lights will match the existing post lights (pedestrian, historic/ornamental style). Field verify existing lights and the spacing. The existing street light at the intersection of Kingswood Drive and the new access will need to be relocated.

2. Full lane overlays will be required after patching.

3. All accesses will meet city standards. Provide an engineering safety analysis of the intersection on Kingswood Drive. Evaluate whether pedestrian crossing needs are met with the new access.

4. Additional engineered sight distance calculations/evaluation may be needed from what was shown on Sheet SP-01 at the new Kingswood access. Are the existing street trees to the northwest an issue with the new access?

5. Provide supporting information for the ability to use the Home Depot access easement on the south boundary of the project.

6. Provide supporting information that safety issues are addressed for the drive through locations shown by the existing BPA towers on Lot 1 and 3 (screening, protective safety barriers, etc).

7. Do buildings 1, 2 and 3 and the roof tops, signage, structures meet separation requirements form the overhead lines for EMF output, etc.? Are the wire elevations known and in safe proximity from all proposed features?

**STORM**

1. A drainage design and erosion control plan will be required according to City's 2022 Drainage Design and Erosion Control Manual.

2. Maintenance of the on-site storm water system will be the responsibility of the property owner and a maintenance agreement will be recorded against the property.

3. This project will be paying a monthly storm water utility fee based on the amount of impervious surface per Tumwater Municipal Code 13.12.060.

4. If the depth from the bottom of the proposed detention facility to the high groundwater elevation or other restrictive layer is less than 6-feet, storm water modeling will be required. The applicant will be responsible for the cost of a third party review of the onsite and off-site storm water impacts and mitigations.

5. Identify the existing line shown stubbing through the upper end of the detention pond. If this is a storm feature please account for it. This triangular area to the east of the pond showing these features is also included in Basin 3 of the storm report.
6. The September 2022 Drainage Report is still under review. Comments will be provided during the SDG permit process. Nothing significant to report at this time.

**SANITARY SEWER**

1. Verify a gravity sewer main will work from the connection point. It is estimated at 5.1' deep at the existing manhole connection. The existing cleanout elevation that is stubbed to the site is unknown and will need to be field verified..

**WATER**

1. The project must meet minimum fire flow requirements.

2. Back flow prevention is required on all fire services and irrigation services and in accordance with the AWWA Cross Connection Control Manual. A reduced pressure backflow assembly is required on all commercial domestic services per WAC 246-290-490. Please contact maintenance at 754-4150 for more information.

3. Any water main extension will require a minimum of an 8" system. The main size will depend on the fire flow requirements for this project. The system shall be designed for a maximum velocity of 8 feet per second.

4. Water meters need to be placed in the public right-of-way or clustered on site within an easement. The professional engineer will need to provide calculations on the maximum instantaneous water demand and size of the meter for the project.

This review does not provide the benefit of vesting, which is currently not allowed until the time a completed building permit application is submitted. Therefore, if ordinance changes occur during the life of this approval, your project must conform to those new requirements prior to the issuance of building permits.

If you have any questions regarding the Planning comments please contact me at 360 754-4180 or abaruch@ci.tumwater.wa.us. For questions on Building/Fire, contact Al Christensen achristensen@ci.tumwater.wa.us and for Engineering and Transportation questions, please contact Matt Webb mwebb@ci.tumwater.wa.us or Jeff Query jquery@ci.tumwater.wa.us.

Sincerely,

Alex Baruch, Associate Planner

Exhibit 24

2455 Paces Ferry Rd, Atlanta, GA 30339
(770) 433-8211

September 27, 2022

**Via Email**

Aron Fineman
Kingswood Capital Inc.
Box 10004
Suite 520 – 701 West Georgia Street
Vancouver, BC V7Y 1A1
afineman@kingswoodcapital.ca

**Re: Home Depot Store 4724 Tumwater, WA; MATT - 152944**
**Third Party Request by Kingswood Capital Inc. for Multiple Waivers**

Dear Mr. Fineman:

Home Depot U.S.A., Inc. ("**Home Depot**") acknowledges that certain approval rights are set forth in Paragraph 2.3 of that certain Restriction Agreement and Grant of Easements dated October 3, 2002, recorded at Thurston County Recording No. 3472457 (as amended, the "**RAGE**") affecting Parcels A through H reflected on that certain plat entitled Boundary Line Adjustment No. 02-7432TW, as recorded on October 24, 2002, in AF#3472425, records of Thurston County, Washington (the 2002 "**BLA**"). All capitalized terms used in this letter that are not defined or modified herein shall have the meanings ascribed to them in the RAGE.

Home Depot is in receipt of a letter dated May 10, 2022, sent on behalf of the proposed purchasers Trevor Colby and Ed Brooks (collectively, "**Buyers**") of the 8 acres of the Kingswood Property and Parcel A of the BLA (collectively, the "**Property**"). In the letter, Kingswood Capital Inc. ("**Kingswood**") requested Home Depot's approval/waiver for the construction of certain improvements proposed to be built on the Property as shown on the following drawings: 1) Preliminary Binding Site Plan prepared by LDC Surveying Engineering Planning for Job Number C22151, sheet SP-01, dated 8/03/2022, a copy of which is attached hereto as **Exhibit "A"** and incorporated herein by this reference; and 2) Building Exterior Elevations prepared by Kaul Design Architecture, PLLC, consisting of Sheet 211 and Sheet 212, dated 3/31/22, copies of which are attached hereto as **Exhibit "B"** and incorporated herein by this reference. In response to Kingswood's request, Home Depot hereby provides the following comments regarding the requested approval and waivers for the Buyers intended uses ("**Uses**"):

A. Drive-Through Approval: Home Depot is okay with approving the Wendy's proposed for Lot 1 and the Starbucks proposed for Lot 3 as shown on Exhibit A.

B. Valvoline Approval: Notwithstanding the use restrictions contained in Section 5.2 (a) of the RAGE, Home Depot is willing to approve this use on Lot 2, provided no cars are stored on the property overnight.

C. Hotel Approval for Lot 6: Home Depot approves this Use on Lot 6, as shown on Exhibit B.

#10509475v1

D. Car Wash Approval for Parcel A: Home Depot has had issues with car washes creating backups in various centers and feels that this use could create issues at the entrance off Tyee Drive, so we are denying this request.

E. Electrical Charging Stations on Lot 7: Home Depot is ok with the addition of electrical charging stations in this location, provided they do not connect to Home Depot's utilities.

Home Depot's limited consent to certain of the Uses as noted above is in no way a representation (or agreement) by Home Depot that the same are in compliance with any laws, rules, regulations or codes, or that the same will be permitted by any relevant governing authority. Please note that any consents for Uses granted herein are only for the Uses in the instances noted above and are not a waiver of any other approval rights contained in the RAGE. Additionally, it is the collective responsibility of Kingswood and Buyers, if applicable, to obtain all consents, approvals, and waivers for these Uses from any and all other consenting Owners.

This consent is being given collectively for the benefit of Kingswood and Buyers, in this particular instance, in these particular locations; provided, however, that this consent shall only benefit future successors and assigns of the subject property so long as the Uses remain the same. Except as expressly waived or consented to herein, no other provisions of the RAGE shall be deemed waived, supplemented or modified hereby, and all of the covenants, terms, obligations and conditions shall remain in full force and effect.

If you have any questions regarding this letter, please contact Clay Brasher – Manager, Real Estate, at Clay_Brasher@homedepot.com. Otherwise, please have the letter countersigned below and send a copy by email to me at John_Chescavage@homedepot.com within ten (10) days of receipt.

Sincerely,

John Chescavage
Senior Corporate Counsel

Acknowledged and agreed to
this 28 day of Sept, 2022.

**Kingswood Capital Inc.**

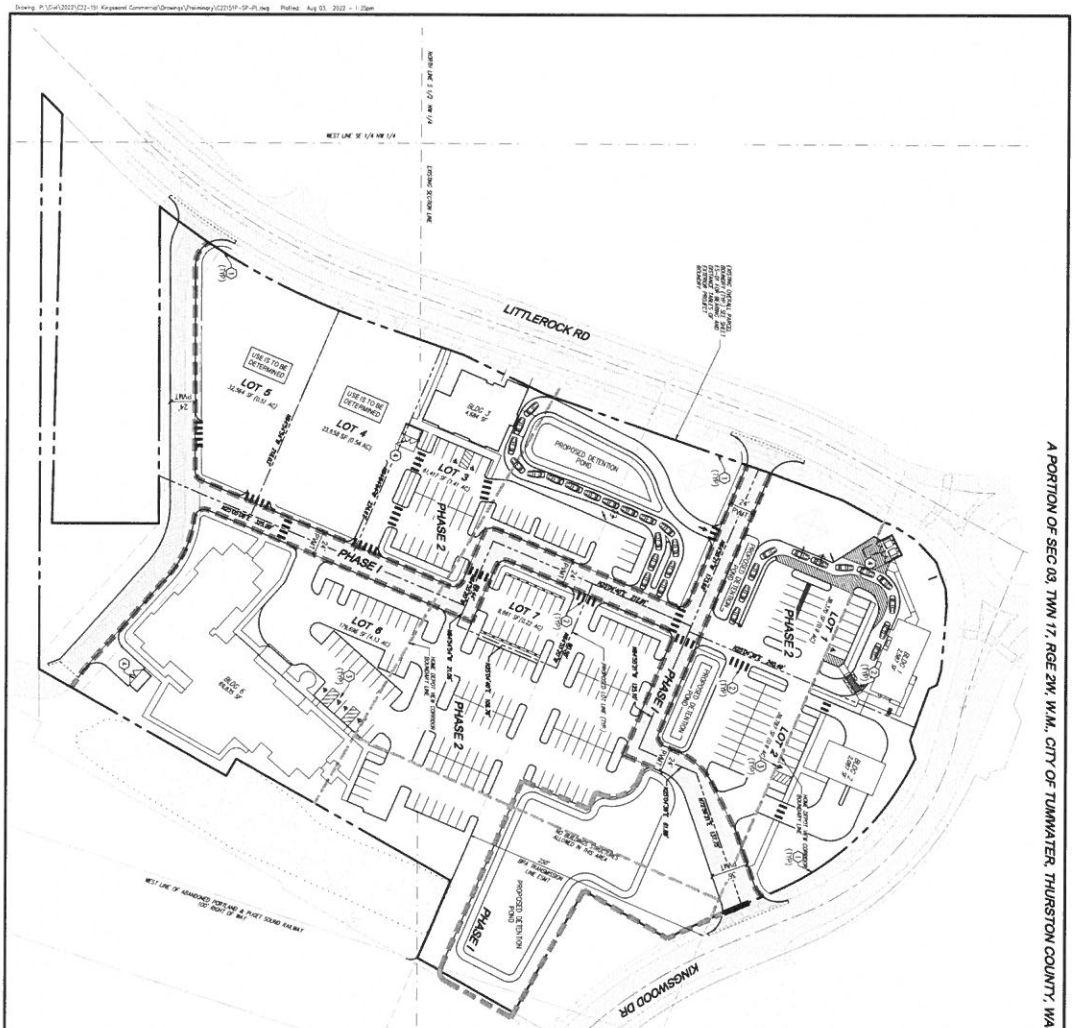
By: _____

Name: GARY SEGAL

Its: Authorized Signatory

cc: Celeste Burr, Legal Specialist
Clay Brasher, Manager, Real Estate
W. Nicolas Harper, Senior Corporate Counsel

#10509475v1




A PORTION OF SEC 03, TWN 17, RGE 2W, W.M., CITY OF TUMWATER, THURSTON COUNTY, WASHINGTON

**CONSTRUCTION NOTES**

1. RIGHT OF WAY
2. SIDEWALK
3. ACCESSIBLE PARKING
4. TRASH ENCLOSURE

**BINDING SITE PLAN INFORMATION**

SITE ADDRESS: 1401 & 1331 KINGSWOOD DR SW, TUMWATER
PROPOSED USE: MULTIPLE RETAIL/COMMERCIAL BUILDINGS
APPROVED CONCEPT CONTROL OF DEVELOPMENT #24
ZONING: GENERAL COMMERCIAL (GC)
OVERLAY: NONE
SEWER: CITY OF TUMWATER
WATER: CITY OF TUMWATER
STORM: CITY OF TUMWATER
CONFIGURATION: PUGET SOUND ENERGY
FIRE: TUMWATER FIRE DEPARTMENT
REFUSE COLLECTION: WASTE CONNECTIONS (CURRY)

PROPOSED ADDRESSING

| | |
|---|---|
| LOT 1 | KINGSWOOD DR SW, TUMWATER WA 98512 |
| LOT 2 | KINGSWOOD DR SW, TUMWATER WA 98512 |
| LOT 3 | KINGSWOOD DR SW, TUMWATER WA 98512 |
| LOT 4 | KINGSWOOD DR SW, TUMWATER WA 98512 |
| LOT 5 | KINGSWOOD DR SW, TUMWATER WA 98512 |
| LOT 6 | KINGSWOOD DR SW, TUMWATER WA 98512 |
| LOT 7 | KINGSWOOD DR SW, TUMWATER WA 98512 |

PROPOSED USE

| | |
|---|---|
| LOT 1 | FAST FOOD RESTAURANT |
| LOT 2 | RETAIL/COMMERCIAL BUILDING |
| LOT 3 | FAST FOOD RESTAURANT & SIXED RESTAURANT |
| LOT 4 | TO BE DETERMINED |
| LOT 5 | TO BE DETERMINED |
| LOT 6 | DAY CHARCOAL STATION |

PARKING

| | |
|---|---|
| LOT 1 | 24 PARKING STALLS |
| LOT 2 | 41 PARKING STALLS |
| LOT 3 | 41 PARKING STALLS |
| LOT 4 | TO BE DETERMINED |
| LOT 5 | TO BE DETERMINED |
| LOT 6 | 11 PARKING STALLS |

**DISCLAIMER**

GEOGRAPHIC SURVEY INFORMATION CONTAINED ON THESE PLANS HAS BEEN PROVIDED BY MFR 2 COATES, LLC, INC. LAND DEVELOPMENT CONSULTANTS, LDC, INC. ASSUMES NO RESPONSIBILITY AS TO THE ACCURACY OR COMPLETENESS OF THIS DATA AND DISCREPANCIES FOUND BETWEEN WHAT IS SHOWN HEREON AND CONDITIONS IN THE FIELD SHOULD BE BROUGHT IMMEDIATELY TO THE ATTENTION OF THE ENGINEER.

KCI COMMERCIAL, INC.

**KINGSWOOD COMMERCIAL**

*PRELIMINARY BINDING SITE PLAN*

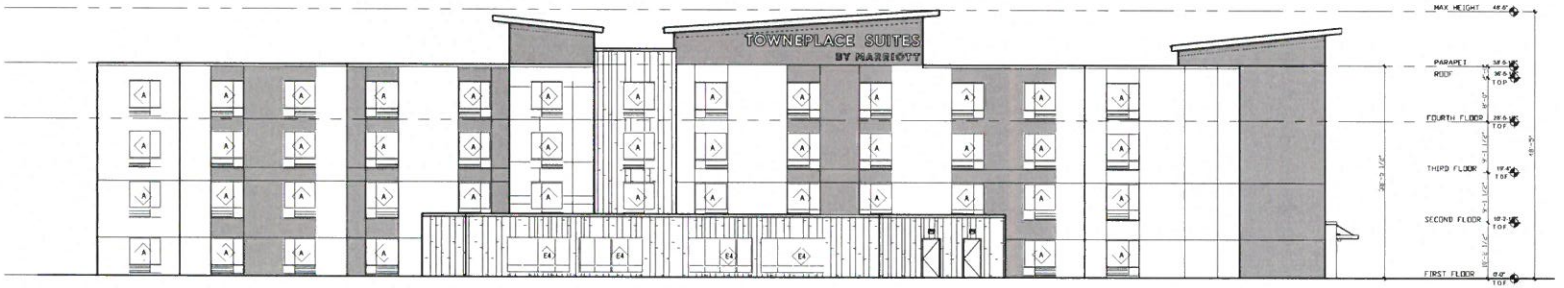
LDC Surveying Engineering Planning
Woodinville | Olympia | Kent
1411 State Avenue NE, #208
Olympia, WA 98506
T 425.806.1869 www.LDCcorp.com F 425.482.2893

| REVISIONS | | | |
|---|---|---|---|
| NO. | DATE | DESCRIPTION | BY |

SP-01
SHEET 2 of 5

# EXHIBIT B

1 WEST (FRONT) ELEVATION
SCALE: 1/8" = 1'-0"




2 EAST (REAR) ELEVATION
SCALE: 1/8" = 1'-0"


KAUL DESIGN ARCHITECTURE, PLLC
KDA
1723 FERNDALE AVE SE
RENTON, WASHINGTON 98058
(206) 200-0135


Registration

Design Team
KDA
Design
Dr.
Drawn
Dr.
Owner Project No.
-
KDA Project No.
-

Owner
-

Project
TOWNPLACE SUITES

| Issue/Revision | | |
|---|---|---|
| No. | Date | Description |
| 1 | 5/31/22 | FRANCHISE 1ST SUBMITTAL |

Sheet Title

Print Date
--/--/20--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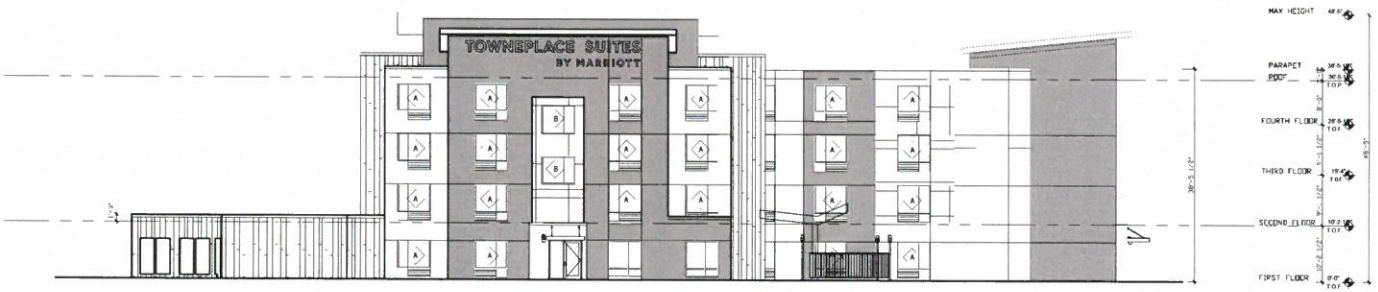
Sheet No.

DESIGN GUIDELINE DRAWINGS
06/05/19
05/25/2021
5 - 10 UNITS
Real Living

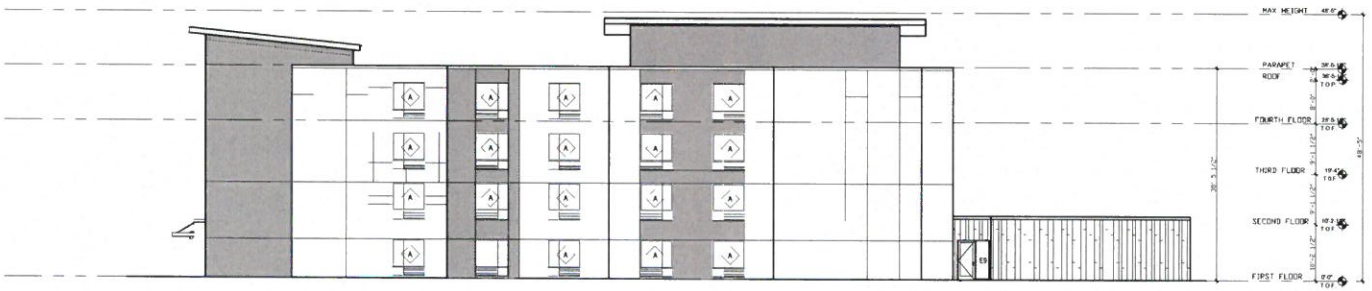
BUILDING EXTERIOR ELEVATIONS

211

# EXHIBIT B




2 NORTH (LEFT SIDE) ELEVATION
SCALE: 1/8" = 1'-0"




1 SOUTH (RIGHT SIDE) ELEVATION
SCALE: 1/8" = 1'-0"


KAUL DESIGN ARCHITECTURE, PLLC
KDA
1720 FERNDALE AVE SE
RENTON, WASHINGTON 98058
(206) 209-0115


Registration

Design Team
KDA
Design
SK
Drawn
SK
Owner Project No.
-
KDA Project No.
-

Owner
-

Project
TOWNEPLACE SUITES

| No. | Date | Description |
|---|---|---|
| 1 | 3/31/23 | FRANCHISE 1ST SUBMITTAL |

Sheet Title

Print Date
---/---/25---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Sheet No.

DESIGN GUIDELINE DRAWINGS
06/25/10
08/02/21
5 - 112 UNITS
Red Lobby

BUILDING EXTERIOR ELEVATIONS

212

Exhibit 25

stewart

# ALTA COMMITMENT FOR TITLE INSURANCE

ISSUED BY
STEWART TITLE GUARANTY 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, STEWART TITLE GUARANTY COMPANY, a Texas 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.

Authorized Countersignature

Stewart Title Company
824 State Avenue NE, Suite A
Olympia, WA 98506

STEWART TITLE GUARANTY COMPANY INCORPORATED 1908 TEXAS

Frederick H. Eppinger
President and CEO

David Hisey
Secretary

*This page is only a part of a 2016 ALTA® Commitment for Title Insurance. This Commitment is not valid without the Notice; the Commitment to Issue Policy; the Commitment Conditions; Schedule A; Schedule B, Part I - Requirements; and Schedule B, Part II - Exceptions; and a countersignature by the Company or its issuing agent that may be in electronic form.*

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File No.: 1689003
ALTA Commitment For Title Insurance 8-1-16
Page 1 of 3

AMERICAN LAND TITLE ASSOCIATION

## 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;
(f) Schedule B, Part II - Exceptions; and
(g) a countersignature by the Company or its issuing agent that may be in electronic form.

**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.



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(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.

**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>.

## STEWART TITLE GUARANTY COMPANY

All notices required to be given the Company and any statement in writing required to be furnished the Company shall be addressed to it at P.O. Box 2029, Houston, Texas 77252-2029.

*This page is only a part of a 2016 ALTA® Commitment for Title Insurance. This Commitment is not valid without the Notice; the Commitment to Issue Policy; the Commitment Conditions; Schedule A; Schedule B, Part I - Requirements; and Schedule B, Part II - Exceptions; and a countersignature by the Company or its issuing agent that may be in electronic form.*

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**ALTA COMMITMENT FOR TITLE INSURANCE**
**SCHEDULE A**

ISSUED BY
STEWART TITLE GUARANTY COMPANY

***Transaction Identification Data for reference only:***

Issuing Agent: Stewart Title Company
Issuing Office: 824 State Avenue NE, Suite A, Olympia, WA 98506
Issuing Office's ALTA® Registry ID:
Loan ID Number:
Commitment Number: 1689003
Issuing Office File Number: 1689003
Property Address: 1401 Kingswood Drive SW, Tumwater, WA 98512
Revision Number:

| | | | | |
|---|---|---|---|---|
| Title Officer: | Don G. Peterson<br>Phone: (253) 439-6432<br>don.peterson@stewart.com<br>titleofficers@stewart.com | Joe Dorfman<br>Phone: (253) 439-6433<br>joe.dorfman@stewart.com<br>titleofficers@stewart.com | Amanda Rockey<br>Phone: (425) 317-7330<br>amanda.rockey@stewart.com<br>titleofficers@stewart.com | Scott McDearmon<br>Phone (360) 596-4394<br>scott.mcdearmon@stewart.com<br>titleofficers@stewart.com |

1. Commitment Date: April 29, 2022 at 8:00AM

2. Policy to be issued: Proposed Policy Amount

| | | | |
|---|---|---|---|
| (a) ALTA Owner's Standard | | **Amount:** | $2,250,000.00 |
| | (Underwriting fee - 11%) | **Premium:** | $3,988.00 |
| General Schedule Rate | | **Tax:** | $374.87 |
| | | **Total:** | $4,362.87 |

Proposed Insured: Trevor Colby and Ed Brooks

| | | | |
|---|---|---|---|
| (b) ALTA Loan | | **Amount:** | |
| | (Underwriting fee - 11%) | **Premium:** | $0.00 |
| | | **Tax:** | |
| | | **Total:** | $0.00 |

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:

   Kingswood Capital, Inc., a Washington corporation

5. The Land is described as follows:

   See Exhibit "A" Attached Hereto



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**ALTA COMMITMENT FOR TITLE INSURANCE**
**EXHIBIT "A"**
**LEGAL DESCRIPTION**

ISSUED BY
STEWART TITLE GUARANTY COMPANY

**File No.:** 1689003

PARCEL I:

Parcel A of City of Tumwater Boundary Line Adjustment No. BLA 02-7432TW, according to Survey recorded October 24, 2002 under Recording No. 3472425, in Thurston County, Washington.

PARCEL II:

Parcel B of City of Tumwater Boundary Line Adjustment No. BLA 03-7444 TW, according to Survey recorded February 4, 2003 under Recording No. 3500815, in Thurston County, Washington;

EXCEPT that portion conveyed to City of Tumwater by deed recorded June 6, 2003 under Recording No. 3539066.

PARCEL III:

Parcel D of City of Tumwater Boundary Line Adjustment No. BLA 02-7432TW, according ro Survey recorded October 24, 2002 under Recording No. 3472425, in Thurston County, Washington;

EXCEPT that portion conveyed to the City of Tumwater recorded June 6, 2003 under Recording No. 3539066;

ALSO EXCEPT that portion conveyed to the City of Tumwater recorded February 25, 2008 under Recording No. 3991167;

AND ALSO EXCEPT that portion conveyed to the City of Tumwater recorded June 30, 2010 under Recording No. 4158266.

TOGETHER WITH that portion of vacated Littlerock Road, adjoining or abutting thereon, by right of way Vacation Ordinance No. 02010-018 recorded March 16, 2011 under Recording No. 4202517.



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# ALTA COMMITMENT FOR TITLE INSURANCE
# SCHEDULE B PART I

ISSUED BY
STEWART TITLE GUARANTY COMPANY

**File No.:** 1689003

**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.

5. MAP & DOCS

   THE MAP CONNECTED HEREWITH IS BEING PROVIDED AS A COURTESY AND FOR INFORMATIONAL PURPOSES ONLY; THIS MAP SHOULD NOT BE RELIED UPON. FURTHERMORE, THE PARCELS SET OUT ON THIS MAP MAY NOT COMPLY WITH LOCAL SUBDIVISION OR BUILDING ORDINANCES. STEWART ASSUMES NO LIABILITY, RESPONSIBILITY OR INDEMNIFICATION RELATED TO THE MAPS NOR ANY MATTERS CONCERNING THE CONTENTS OF OR ACCURACY OF THE MAP.

6. Payment of Real Estate Excise Tax, if applicable.

   Beginning January 2, 2020, the State of Washington switched to a graduated Excise Tax scale based on the selling price of the property. (RCW.45.060)

   $500,000.00 and less: 1.1%, plus local rate of .25% or .50%
   Greater than $500,000.00 and less than or equal to $1,500,000.00: 1.28% plus local rate of .25% or .50%
   Greater than $1,500.000.00 and less or equal to $3,000,000.00: 2.75%, plus local rate of .25% or .50%
   Greater than $3,000,000.00: 3%, plus local rate of .25% or .50%

7. General taxes: First half delinquent May 1; Second half delinquent November 1:

| | |
|---|---|
| Year: | 2022 |
| Amount Billed: | $1,364.11 |
| Amount Paid: | $682.05 |
| Amount Due: | $682.06, plus interest and penalty if delinquent |
| Tax Account No. | 12703240401 |
| Levy Code: | 440 |
| Land: | $115,300.00 |



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# ALTA COMMITMENT FOR TITLE INSURANCE
# SCHEDULE B PART I

ISSUED BY
STEWART TITLE GUARANTY COMPANY

Improvements: $0.00
(Affects Parcel I)

8. General taxes: First half delinquent May 1; Second half delinquent November 1:
   Year: 2022
   Amount Billed: $19,084.33
   Amount Paid: $9,542.16
   Amount Due: $9,542.17, plus interest and penalty if delinquent
   Tax Account No. 12703240403
   Levy Code: 440
   Land: $1,623,900.00
   Improvements: $0.00
   (Affects Parcel II)

9. General taxes: First half delinquent May 1; Second half delinquent November 1:
   Year: 2022
   Amount Billed: $12,824.47
   Amount Paid: $6,412.23
   Amount Due: $6,412.24, plus interest and penalty if delinquent
   Tax Account No. 12703240404
   Levy Code: 440
   Land: $1,091,000.00
   Improvements: $0.00
   (Affects Parcel III)

10. Liability for supplemental assessments for improvements not presently carried or being taxed in the general tax rolls.

11. Current and/or advance personal property taxes for 2022 may become due upon transfer or sale of the premises herein described. Please contact the Thurston County Treasurer's office for further information.

12. City liens, if any, for the city of Tumwater.

    Note: An inquiry has NOT been made concerning the actual status of such liens.

13. **Please be advised that our search did not disclose any open deeds of trust of record. If you should have knowledge of any outstanding obligation, please contact the title department immediately for further review prior to closing.**

14. The attached Commercial Title Affidavit must be completed in full, notarized and submitted to the Company for review prior to closing.

15. Any unrecorded leaseholds, rights of vendors and holders of security interest on personal property installed upon said property, and right of tenants to remove trade fixtures at the expiration of the term.



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# ALTA COMMITMENT FOR TITLE INSURANCE
# SCHEDULE B PART I

ISSUED BY
STEWART TITLE GUARANTY COMPANY

16. Evidence of the corporate existence of Kingswood Capital, Inc., a Washington corporation must be submitted, together with evidence of the identity and authority of the officers thereof to execute the forthcoming instruments.

17. Upon examination it has been determined that the subject property does not meet the underwriting qualifications to receive the coverage provided in the ALTA Homeowner's Policy of Title Insurance for a one- to four-family residence, due to the following condition: Vacant Land. The coverage provided for the subject property will be the Standard ALTA Owner's Policy. The Policy and any applicable endorsements will be issued at the filed rate.

NOTES

NOTE A: In order to assure timely recording all recording packages should be sent to:

Stewart Title Company
824 State Avenue NE, Suite A
Olympia, WA 98506

NOTE B: Recording fees charged by the county will be billed as follows: Deeds of Trust $204.50 for the first page and $1.00 for each additional page. Deeds $203.50 for the first page and $1.00 for each additional page. For Electronic Recorded documents, please add $2.50 plus tax for King, Pierce, Snohomish and Thurston Counties and $5.00 plus tax for all remaining counties in Washington..

NOTE C: The description can be abbreviated as suggested below if necessary to meet standardization requirements. The full text of the description must appear in the document(s) to be insured.

Parcels A and D, Tumwater BLA No. BLA 02-7432TW, Rec. 3472428
Parcel B, Tumwater BLA No. 03-7444 TW, Rec. 3500815, Thurston County, Washington

NOTE D: The records of Thurston County and/or our inspection indicate that the address of the improvement located on said land is 1401 Kingswood Drive SW, Tumwater, WA 98512

NOTE E: In the event of cancellation, a cancellation charge may be made.

NOTE F: There are no deeds affecting said land recorded within 36 months of the date of this report. Title to the estate or interest shown in Schedule A was acquired by instrument No(s). 9309020222.

NOTE G: In order for Stewart Title to act as a Trustee under a Deed of Trust, they must appear as Stewart Title Company on the recorded document.

NOTE H: We find no pertinent matters filed or recorded against Trevor Colby and Ed Brooks.



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# ALTA COMMITMENT FOR TITLE INSURANCE
# SCHEDULE B PART I

ISSUED BY
STEWART TITLE GUARANTY COMPANY

**The following are the requirements to be complied with:**

| | |
|---|---|
| Item (a) | Payment to or for the account of the grantors or mortgagors of the full consideration for the estate or interest to be insured. |
| Item (b) | Proper instrument(s) creating the estate or interest to be insured must be executed and duly filed for record. |
| NOTE: | 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. |
| Format: | Margins to be 3" on top of first page, 1" on sides and bottom, 1" on top, sides and bottom of each succeeding page. |
| | Font size of 8 points or larger and paper size of no more than 8 ½" by 14". |
| | No attachments on pages such as stapled or taped notary seals, pressure seals must be smudged. |

Information which must appear on the first page:

Title or titles of document. If assignment or reconveyance, reference to auditor's file number or subject deed of trust.

Names of grantor(s) and grantee(s) with reference to additional names on following page(s), if any.

Abbreviated legal description (lot, block, plat name or section, township, range and quarter quarter section for unplatted).

Assessor's tax parcel number(s).

Return address which may appear in the upper left hand 3" top margin.



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# ALTA COMMITMENT FOR TITLE INSURANCE
# SCHEDULE B PART II

ISSUED BY
STEWART TITLE GUARANTY COMPANY

**Exceptions**

**File No.:** 1689003

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 public records.

3. Unpatented mining claims; (ii) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (iii) water rights, claims or title to water; whether or not the matters described (i), (ii) & (iii) are shown in the public records; (iv) Indian tribal codes or regulations, Indian treaty or aboriginal rights, including easements or equitable servitudes.

4. Extended coverage exceptions as follows:

    a. Rights or claims of parties in possession not shown by the public records.

    b. Easements, claims of easement or encumbrances which are not shown by the public records.

    c. Encroachments, overlaps, boundary line disputes, or other matters which would be disclosed by an accurate survey and inspection of the premises and which are not shown by the public records.

    d. Any lien, or right to a lien, for services, labor or material heretofore or hereafter furnished imposed by law and not shown by the public records.

5. Any service, installation, connection, maintenance, tap, capacity, construction or reimbursement charges for sewer, water, electricity or other utilities, or for garbage collection and disposal.

6. Any titles or rights asserted by anyone, including but not limited to persons, corporations, governments, or other entities, to tidelands, or lands comprising the shores or bottoms of navigable rivers, lakes, bays, ocean or gulf, or lands beyond the line of the harbor or bulkhead lines as established or changed by the United States Government, or riparian rights, if any.

**SPECIAL EXCEPTIONS TO FOLLOW**



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# ALTA COMMITMENT FOR TITLE INSURANCE
# SCHEDULE B PART II

ISSUED BY
STEWART TITLE GUARANTY COMPANY

7. Easement granted to United States of America, as more fully set forth in the document recorded as Instrument Nos. 418955, 502370 and 511992. (Affects all parcels/copies to follow)

8. Easement granted to United States of America, as more fully set forth in the document recorded as Instrument Nos. 419568, 508821 and 513867. (Affects Parcel I/copies to follow)

9. Relinquishment of access to state highway and of light, view and air by deed to the State of Washington, recorded October 19, 1954 under Recording Number 538091. (Affects Parcel I/a copy to follow)

10. Relinquishment of access to state highway and of light, view and air by deed to the State of Washington, recorded October 27, 1954 under Recording Number 538444. (Affects Parcel I/a copy to follow)

11. Covenants, conditions, restrictions and/or easements and the terms and conditions thereof recorded under Instrument No. 609665. (Affects Parcel I/a copy to follow)

12. Easement granted to Puget Sound Power & Light Company, as more fully set forth in the document recorded as Instrument No. 863195. (Affects Parcel I)

13. Easement granted to Washington Natural Gas Company, as more fully set forth in the document recorded as Instrument No. 870239. (Affects Parcel II)

14. Easement and the terms and conditions thereof recorded under Instrument No. 882331. (Affects Parcel II)

15. Easement and the terms and conditions thereof recorded under Instrument No. 892332. (Affects Parcel II)

16. Easement and the terms and conditions thereof recorded under Instrument No. 892540. (Affects Parcel II)

17. Easement and the terms and conditions thereof recorded under Instrument No. 1001988. (Affects Parcel II)

18. Easement granted to Puget Sound Power & Light Company, as more fully set forth in the document recorded as Instrument No. 911798. (Affects Parcels II and III)

19. Survey and the terms and conditions thereof, recorded under Instrument Number 993142. (Affects Parcels II and III)

20. Restrictions, easements, dedications, notes and delineated matters contained on the face of the Short Plat SS-7029 as recorded under Instrument Number 1011846, and any amendments thereto.

    Document declaring modifications thereof recorded July 23, 1981 as Recording No. 8107230105 of Official Records. (Affects Parcel II)



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# ALTA COMMITMENT FOR TITLE INSURANCE
# SCHEDULE B PART II

ISSUED BY
STEWART TITLE GUARANTY COMPANY

21. Easement granted to City of Tumwater, as more fully set forth in the document recorded as Instrument No. 1036195. (Affects Parcel II)

22. Easement granted to City of Tumwater, as more fully set forth in the document recorded as Instrument No. 1036196. (Affects Parcel II/a copy to follow)

23. Easement granted to Puget Sound Power& Light Company, as more fully set forth in the document recorded as Instrument No. 1039900. (Affects Parcel II)

24. Easement and the terms and conditions thereof recorded under Instrument No. 8108030158. (Affects Parcel II)

25. Condemnation of access to state highway and of light, view and air by decree to the State of Washington, entered March 17, 1986, under King County Superior Court Cause No. 85-2-01374-1. (Affects Parcel I)

26. Ordinance No. 1300 and the terms and conditions thereof recorded under Instrument No. 9107120094. (Affects all parcels)

27. Lot Line Adjustment 7244 and the terms and conditions thereof recorded under Instrument No. 9107150153. (Affects Parcel I)

28. Right to make necessary slopes for cuts or fills upon property herein described as granted in deed recorded under Instrument Number 3472421. (Affects Parcels II and III)

29. Lot Line Adjustment BLA 02-7432TW and the terms and conditions thereof recorded under Instrument No. 3472424. (Affects all parcels)

30. Survey and the terms and conditions thereof, recorded under Instrument Number 3472425. (Affects all parcels)

31. Covenants, conditions, restriction and/or easements and the terms and conditions thereof recorded under Instrument Nos. 3472457 and 3472458.

    Document(s) declaring modifications thereof recorded February 12, 2003 as 3503018, 3503019, 4102951, 4102952 and 4848826 of Official Records. (Affects all parcels)

32. Lot Line Adjustment BLA 03-7444 TW and the terms and conditions thereof recorded under Instrument No. 3500814. (Affects Parcel II)

33. Survey and the terms and conditions thereof, recorded under Instrument Number 3500815. (Affects Parcel II)

34. Easement granted to Puget Sound Energy, Inc., as more fully set forth in the document recorded as Instrument No. 3509860. (Affects all parcels)



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# ALTA COMMITMENT FOR TITLE INSURANCE
# SCHEDULE B PART II

ISSUED BY
STEWART TITLE GUARANTY COMPANY

35. Right to make necessary slopes for cuts or fills upon property herein described as granted in deed recorded under Instrument Number 3539066. (Affects all parcels)

36. Declaration of Covenants and Restrictions Affecting Land and the terms and conditions thereof recorded under Instrument No. 4033720.

    Document re-recorded September 09, 2008 as Recording No. 4034333 of Official Records. (Affects Parcel III)

37. Easement rights and maintenance agreements, if any, for utilities which may have been granted in vacated streets and alleys prior to their vacation. (Affects Parcel III)

**END OF SCHEDULE B**

*This page is only a part of a 2016 ALTA® Commitment for Title Insurance. This Commitment is not valid without the Notice; the Commitment to Issue Policy; the Commitment Conditions; Schedule A; Schedule B, Part I - Requirements; and Schedule B, Part II - Exceptions; and a countersignature by the Company or its issuing agent that may be in electronic form.*

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# Stewart Title Guaranty Company Privacy Notice
# Stewart Title Companies

## WHAT DO THE STEWART TITLE COMPANIES DO WITH YOUR PERSONAL INFORMATION?

Federal and applicable state law and regulations give consumers the right to limit some but not all sharing. Federal and applicable state law regulations also require us to tell you how we collect, share, and protect your personal information. Please read this notice carefully to understand how we use your personal information. This privacy notice is distributed on behalf of the Stewart Title Guaranty Company and its title affiliates (the Stewart Title Companies), pursuant to Title V of the Gramm-Leach-Bliley Act (GLBA).

The types of personal information we collect and share depend on the product or service that you have sought through us. This information can include social security numbers and driver's license number.

All financial companies, such as the Stewart Title Companies, need to share customers' personal information to run their everyday business—to process transactions and maintain customer accounts. In the section below, we list the reasons that we can share customers' personal information; the reasons that we choose to share; and whether you can limit this sharing.

| Reasons we can share your personal information. | Do we share | Can you limit this sharing? |
|---|---|---|
| **For our everyday business purposes**— to process your transactions and maintain your account. This may include running the business and managing customer accounts, such as processing transactions, mailing, and auditing services, and responding to court orders and legal investigations. | Yes | No |
| **For our marketing purposes**— to offer our products and services to you. | Yes | No |
| **For joint marketing with other financial companies** | No | We don't share |
| **For our affiliates' everyday business purposes**— information about your transactions and experiences. Affiliates are companies related by common ownership or control. They can be financial and non-financial companies. *Our affiliates may include companies with a Stewart name; financial companies, such as Stewart Title Company* | Yes | No |
| **For our affiliates' everyday business purposes**— information about your creditworthiness. | No | We don't share |
| **For our affiliates to market to you** — For your convenience, Stewart has developed a means for you to opt out from its affiliates marketing even though such mechanism is not legally required. | Yes | Yes, send your first and last name, the email address used in your transaction, your Stewart file number and the Stewart office location that is handling your transaction by email to optout@stewart.com or fax to 1-800-335-9591. |
| **For non-affiliates to market to you.** Non-affiliates are companies not related by common ownership or control. They can be financial and non-financial companies. | No | We don't share |

We may disclose your personal information to our affiliates or to non-affiliates as permitted by law. If you request a transaction with a non-affiliate, such as a third party insurance company, we will disclose your personal information to that non-affiliate. [We do not control their subsequent use of information, and suggest you refer to their privacy notices.]

## SHARING PRACTICES

| | |
|---|---|
| **How often do the Stewart Title Companies notify me about their practices?** | We must notify you about our sharing practices when you request a transaction. |
| **How do the Stewart Title Companies protect my personal information?** | To protect your personal information from unauthorized access and use, we use security measures that comply with federal law. These measures include computer, file, and building safeguards. |
| **How do the Stewart Title Companies collect my personal information?** | We collect your personal information, for example, when you<br>request insurance-related services<br>provide such information to us<br>We also collect your personal information from others, such as the real estate agent or lender involved in your transaction, credit reporting agencies, affiliates or other companies. |
| **What sharing can I limit?** | Although federal and state law give you the right to limit sharing (e.g., opt out) in certain instances, we do not share your personal information in those instances. |

***Contact us: If you have any questions about this privacy notice, please contact us at:*** **Stewart Title Guaranty Company, 1360 Post Oak Blvd., Ste. 100, Privacy Officer, Houston, Texas 77056**

Effective Date: January 1, 2020

# Privacy Notice for California Residents

Pursuant to the California Consumer Privacy Act of 2018 ("CCPA"), Stewart Information Services Corporation and its subsidiary companies (collectively, "Stewart") are providing this **Privacy Notice for California Residents** ("CCPA Notice"). This CCPA Notice supplements the information contained in Stewart's existing privacy notice and applies solely to all visitors, users and others who reside in the State of California or are considered California Residents ("consumers" or "you"). Terms used but not defined shall have the meaning ascribed to them in the CCPA.

Information Stewart Collects

Stewart collects information that identifies, relates to, describes, references, is capable of being associated with, or could reasonably be linked, directly or indirectly, with a particular consumer, household, or device. Most of the information that Stewart collects in the course of its regular business is already protected pursuant to the Gramm-Leach-Bliley Act (GLBA). Additionally, much of this information comes from government records or other information already in the public domain. Personal information under the CCPA does not include:

- Publicly available information from government records.
- Deidentified or aggregated consumer information.
- Certain personal information protected by other sector-specific federal or California laws, including but not limited to the Fair Credit Reporting Act (FCRA), GLBA and California Financial Information Privacy Act (FIPA).

Specifically, Stewart has collected the following categories of personal information from consumers within the last twelve (12) months:

| Category | Examples | Collected? |
|---|---|---|
| A. Identifiers. | A real name, alias, postal address, unique personal identifier, online identifier, Internet Protocol address, email address, account name, Social Security number, driver's license number, passport number, or other similar identifiers. | YES |
| B. Personal information categories listed in the California Customer Records statute (Cal. Civ. Code § 1798.80(e)). | A name, signature, Social Security number, physical characteristics or description, address, telephone number, passport number, driver's license or state identification card number, insurance policy number, education, employment, employment history, bank account number, credit card number, debit card number, or any other financial information, medical information, or health insurance information. Some personal information included in this category may overlap with other categories. | YES |
| C. Protected classification characteristics under California or federal law. | Age (40 years or older), race, color, ancestry, national origin, citizenship, religion or creed, marital status, medical condition, physical or mental disability, sex (including gender, gender identity, gender expression, pregnancy or childbirth and related medical conditions), sexual orientation, veteran or military status, genetic information (including familial genetic information). | YES |
| D. Commercial information. | Records of personal property, products or services purchased, obtained, or considered, or other purchasing or consuming histories or tendencies. | YES |
| E. Biometric information. | Genetic, physiological, behavioral, and biological characteristics, or activity patterns used to extract a template or other identifier or identifying information, such as, fingerprints, faceprints, and voiceprints, iris or retina scans, keystroke, gait, or other physical patterns, and sleep, health, or exercise data. | YES |
| F. Internet or other similar network activity. | Browsing history, search history, information on a consumer's interaction with a website, application, or advertisement. | YES |
| G. Geolocation data. | Physical location or movements. | YES |
| H. Sensory data. | Audio, electronic, visual, thermal, olfactory, or similar information. | YES |
| I. Professional or employment-related information. | Current or past job history or performance evaluations. | YES |
| J. Non-public education information (per the Family Educational Rights and Privacy Act (20 U.S.C. Section 1232g, 34 C.F.R. Part 99)). | Education records directly related to a student maintained by an educational institution or party acting on its behalf, such as grades, transcripts, class lists, student schedules, student identification codes, student financial information, or student disciplinary records. | YES |
| K. Inferences drawn from other personal information. | Profile reflecting a person's preferences, characteristics, psychological trends, predispositions, behavior, attitudes, intelligence, abilities, and aptitudes. | YES |

Stewart obtains the categories of personal information listed above from the following categories of sources:

- Directly and indirectly from customers, their designees or their agents (For example, realtors, lenders, attorneys, etc.)
- Directly and indirectly from activity on Stewart's website or other applications.
- From third-parties that interact with Stewart in connection with the services we provide.

Use of Personal Information

Stewart may use or disclose the personal information we collect for one or more of the following purposes:

- To fulfill or meet the reason for which the information is provided.
- To provide, support, personalize, and develop our website, products, and services.
- To create, maintain, customize, and secure your account with Stewart.
- To process your requests, purchases, transactions, and payments and prevent transactional fraud.
- To prevent and/or process claims.
- To assist third party vendors/service providers who complete transactions or perform services on Stewart's behalf.
- As necessary or appropriate to protect the rights, property or safety of Stewart, our customers or others.
- To provide you with support and to respond to your inquiries, including to investigate and address your concerns and monitor and improve our responses.
- To personalize your website experience and to deliver content and product and service offerings relevant to your interests, including targeted offers and ads through our website, third-party sites, and via email or text message (with your consent, where required by law).
- To help maintain the safety, security, and integrity of our website, products and services, databases and other technology assets, and business.
- To respond to law enforcement or regulator requests as required by applicable law, court order, or governmental regulations.
- Auditing for compliance with federal and state laws, rules and regulations.
- Performing services including maintaining or servicing accounts, providing customer service, processing or fulfilling orders and transactions, verifying customer information, processing payments, providing advertising or marketing services or other similar services.
- To evaluate or conduct a merger, divestiture, restructuring, reorganization, dissolution, or other sale or transfer of some or all of our assets, whether as a going concern or as part of bankruptcy, liquidation, or similar proceeding, in which personal information held by us is among the assets transferred.

Stewart will not collect additional categories of personal information or use the personal information we collected for materially different, unrelated, or incompatible purposes without providing you notice.

Disclosure of Personal Information to Affiliated Companies and Nonaffiliated Third Parties

Stewart does not sell your personal information to nonaffiliated third parties. Stewart may share your information with those you have designated as your agent in the course of your transaction (for example, a realtor or a lender). Stewart may disclose your personal information to a third party for a business purpose. Typically, when we disclose personal information for a business purpose, we enter a contract that describes the purpose and requires the recipient to both keep that personal information confidential and not use it for any purpose except performing the contract.

We share your personal information with the following categories of third parties:

- Service providers and vendors (For example, search companies, mobile notaries, and companies providing credit/debit card processing, billing, shipping, repair, customer service, auditing, marketing, etc.)
- Affiliated Companies
- Litigation parties and attorneys, as required by law.
- Financial rating organizations, rating bureaus and trade associations.
- Federal and State Regulators, law enforcement and other government entities

In the preceding twelve (12) months, Stewart has disclosed the following categories of personal information for a business purpose:

Category A: Identifiers
Category B: California Customer Records personal information categories
Category C: Protected classification characteristics under California or federal law
Category D: Commercial Information
Category E: Biometric Information
Category F: Internet or other similar network activity
Category G: Geolocation data
Category H: Sensory data
Category I: Professional or employment-related information
Category J: Non-public education information
Category K: Inferences

Consumer Rights and Choices

The CCPA provides consumers (California residents) with specific rights regarding their personal information. This section describes your CCPA rights and explains how to exercise those rights.

**Access to Specific Information and Data Portability Rights**

You have the right to request that Stewart disclose certain information to you about our collection and use of your personal information over the past 12 months. Once we receive and confirm your verifiable consumer request, Stewart will disclose to you:

- The categories of personal information Stewart collected about you.
- The categories of sources for the personal information Stewart collected about you.
- Stewart's business or commercial purpose for collecting that personal information.
- The categories of third parties with whom Stewart shares that personal information.
- The specific pieces of personal information Stewart collected about you (also called a data portability request).
- If Stewart disclosed your personal data for a business purpose, a listing identifying the personal information categories that each category of recipient obtained.

**Deletion Request Rights**

You have the right to request that Stewart delete any of your personal information we collected from you and retained, subject to certain exceptions. Once we receive and confirm your verifiable consumer request, Stewart will delete (and direct our service providers to delete) your personal information from our records, unless an exception applies.

Stewart may deny your deletion request if retaining the information is necessary for us or our service providers to:

1. Complete the transaction for which we collected the personal information, provide a good or service that you requested, take actions reasonably anticipated within the context of our ongoing business relationship with you, or otherwise perform our contract with you.
2. Detect security incidents, protect against malicious, deceptive, fraudulent, or illegal activity, or prosecute those responsible for such activities.
3. Debug products to identify and repair errors that impair existing intended functionality.
4. Exercise free speech, ensure the right of another consumer to exercise their free speech rights, or exercise another right provided for by law.
5. Comply with the California Electronic Communications Privacy Act (Cal. Penal Code § 1546 *seq.*).
6. Engage in public or peer-reviewed scientific, historical, or statistical research in the public interest that adheres to all other applicable ethics and privacy laws, when the information's deletion may likely render impossible or seriously impair the research's achievement, if you previously provided informed consent.
7. Enable solely internal uses that are reasonably aligned with consumer expectations based on your relationship with us.
8. Comply with a legal obligation.
9. Make other internal and lawful uses of that information that are compatible with the context in which you provided it.

Exercising Access, Data Portability, and Deletion Rights

To exercise the access, data portability, and deletion rights described above, please submit a verifiable consumer request to us either:

- Calling us Toll Free at 1-866-571-9270
- Emailing us at Privacyrequest@stewart.com
- Visiting http://stewart.com/ccpa

Only you, or someone legally authorized to act on your behalf, may make a verifiable consumer request related to your personal information. You may also make a verifiable consumer request on behalf of your minor child.

To designate an authorized agent, please contact Stewart through one of the methods mentioned above.

You may only make a verifiable consumer request for access or data portability twice within a 12-month period. The verifiable consumer request must:

- Provide sufficient information that allows us to reasonably verify you are the person about whom we collected personal information or an authorized representative.
- Describe your request with sufficient detail that allows us to properly understand, evaluate, and respond to it.

Stewart cannot respond to your request or provide you with personal information if we cannot verify your identity or authority to make the request and confirm the personal information relates to you.

Making a verifiable consumer request does not require you to create an account with Stewart.

Response Timing and Format

We endeavor to respond to a verifiable consumer request within forty-five (45) days of its receipt. If we require more time (up to an additional 45 days), we will inform you of the reason and extension period in writing.

A written response will be delivered by mail or electronically, at your option.

Any disclosures we provide will only cover the 12-month period preceding the verifiable consumer request's receipt. The response we provide will also explain the reasons we cannot comply with a request, if applicable. For data portability requests, we will select a format to provide your personal information that is readily useable and should allow you to transmit the information from one entity to another entity without hindrance.

Stewart does not charge a fee to process or respond to your verifiable consumer request unless it is excessive, repetitive, or manifestly unfounded. If we determine that the request warrants a fee, we will tell you why we made that decision and provide you with a cost estimate before completing your request.

Non-Discrimination

Stewart will not discriminate against you for exercising any of your CCPA rights. Unless permitted by the CCPA, we will not:

- Deny you goods or services.
- Charge you a different prices or rates for goods or services, including through granting discounts or other benefits, or imposing penalties.
- Provide you a different level or quality of goods or services.
- Suggest that you may receive a different price or rate for goods or services or a different level or quality of goods or services.

Changes to Our Privacy Notice

Stewart reserves the right to amend this privacy notice at our discretion and at any time. When we make changes to this privacy notice, we will post the updated notice on Stewart's website and update the notice's effective date. **Your continued use of Stewart's website following the posting of changes constitutes your acceptance of such changes.**

Contact Information

If you have questions or comments about this notice, the ways in which Stewart collects and uses your information described here, your choices and rights regarding such use, or wish to exercise your rights under California law, please do not hesitate to contact us at:

**Phone:** Toll Free at 1-866-571-9270

**Website:** http://stewart.com/ccpa

**Email:** Privacyrequest@stewart.com

**Postal Address:** Stewart Information Services Corporation

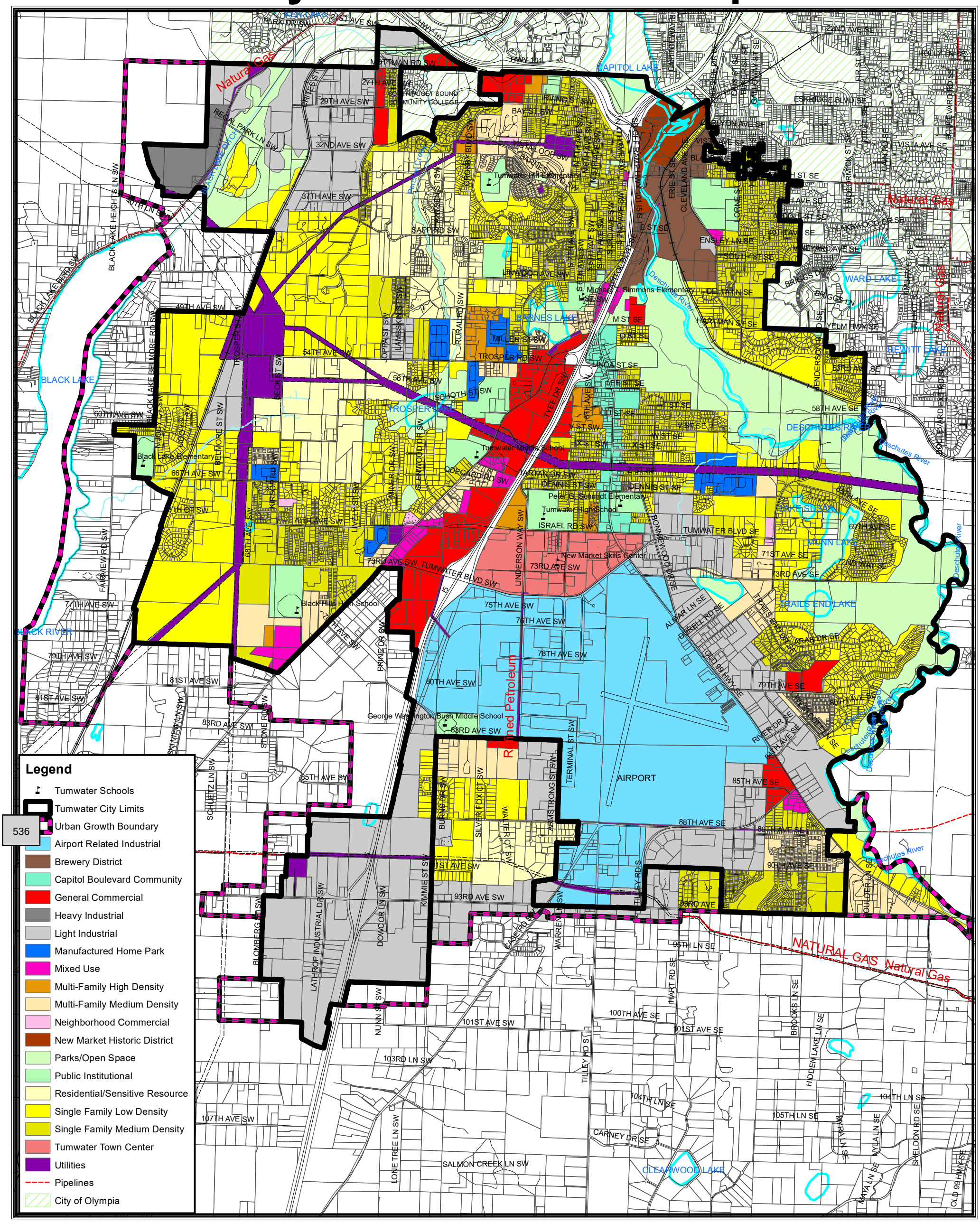
Attn: Mary Thomas, Deputy Chief Compliance Officer

1360 Post Oak Blvd., Ste. 100, MC #14-1

Houston, TX 77056

Exhibit 26

# City of Tumwater
# City-Wide Land Use Map




**Legend**

- Tumwater Schools
- Tumwater City Limits
- Urban Growth Boundary
- Airport Related Industrial
- Brewery District
- Capitol Boulevard Community
- General Commercial
- Heavy Industrial
- Light Industrial
- Manufactured Home Park
- Mixed Use
- Multi-Family High Density
- Multi-Family Medium Density
- Neighborhood Commercial
- New Market Historic District
- Parks/Open Space
- Public Institutional
- Residential/Sensitive Resource
- Single Family Low Density
- Single Family Medium Density
- Tumwater Town Center
- Utilities
- Pipelines
- City of Olympia

0 0.5 1 2 3 4 Miles

N W E S

**1:34,800**

DISCLAIMER: The City of Tumwater does not warrant, guarantee, or accept any liability for the accuracy, precision, or completeness of any information shown hereon or for any inferences made therefrom.

Tumwater Community Development Department
Dec 14, 2022