

DEVELOPMENT REVIEW APPLICATION

For Office Use Only

STAFF CONTACT Chris Myers	PROJECT No(s). WAP-20-04 WRG-20-02 MISC-20-08	PRE-APPLICATION No. PA-19-04
NON-REFUNDABLE FEE(S) \$2,850	REFUNDABLE DEPOSIT(S) \$2,750	TOTAL \$5,600

Type of Review (Please check all that apply):

- | | | |
|--|---|--|
| <input type="checkbox"/> Annexation (ANX) | <input type="checkbox"/> Historic Review | <input type="checkbox"/> Subdivision (SUB) |
| <input type="checkbox"/> Appeal and Review (AP) | <input type="checkbox"/> Legislative Plan or Change | <input type="checkbox"/> Temporary Uses |
| <input type="checkbox"/> Conditional Use (CUP) | <input type="checkbox"/> Lot Line Adjustment (LLA) | <input type="checkbox"/> Time Extension |
| <input type="checkbox"/> Design Review (DR) | <input type="checkbox"/> Minor Partition (MIP) (Preliminary Plat or Plan) | <input type="checkbox"/> Variance (VAR) |
| <input type="checkbox"/> Easement Vacation | <input type="checkbox"/> Non-Conforming Lots, Uses & Structures | <input type="checkbox"/> Water Resource Area Protection/Single Lot (WAP) |
| <input type="checkbox"/> Extraterritorial Ext. of Utilities | <input type="checkbox"/> Planned Unit Development (PUD) | <input checked="" type="checkbox"/> Water Resource Area Protection/Wetland (WAP) |
| <input type="checkbox"/> Final Plat or Plan (FP) | <input type="checkbox"/> Pre-Application Conference (PA) | <input checked="" type="checkbox"/> Willamette & Tualatin River Greenway (WRG) |
| <input checked="" type="checkbox"/> Flood Management Area | <input type="checkbox"/> Street Vacation | <input type="checkbox"/> Zone Change |
| <input type="checkbox"/> Hillside Protection & Erosion Control | | |

Home Occupation, Pre-Application, Sidewalk Use, Sign Review Permit, and Temporary Sign Permit applications require different or additional application forms, available on the City website or at City Hall.

Site Location/Address: Clackamas County Assessor's Map No. 31E02AC, Tax Lots 800 and 300	Assessor's Map No.: 31E02AC
	Tax Lot(s): 800 and 300
	Total Land Area: ±3.08 acres

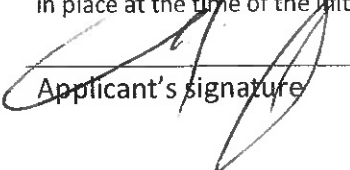
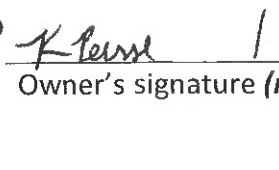
Brief Description of Proposal:

HCA, FMA, WRG, and WRA for TL 800 and accessway affecting TL 300.

Applicant Name: Roy Marvin <small>(please print)</small>	Phone: *Please contact Consultant
Address: 615 NW Territorial Road	Email: *Please contact Consultant
City State Zip: Canby, OR 97013	
Owner Name (required): Andrew Persse and Kami Persse (TL 300) <small>(please print)</small>	Phone: *Please contact Consultant
Address: 1220 9th Street	Email: *Please contact Consultant
City State Zip: West Linn, OR 97068	
Consultant Name: Zach Pelz, AICP, AKS Engineering & Forestry, LLC <small>(please print)</small>	Phone: (503) 400-6028
Address: 3700 River Road N, Suite 1	Email: PelzZ@aks-eng.com
City State Zip: Keizer, OR 97303	

1. All application fees are non-refundable (excluding deposit). **Any overruns to deposit will result in additional billing.**
2. The owner/applicant or their representative should be present at all public hearings.
3. A decision may be reversed on appeal. No permit will be in effect until the appeal period has expired.
4. **One complete hard-copy set of application materials must be submitted with this application.**
One complete digital set of application materials must also be submitted electronically in PDF format.
If large sets of plans are required in application please submit one set.

The undersigned property owner(s) hereby authorizes the filing of this application, and authorizes on site review by authorized staff. I hereby agree to comply with all code requirements applicable to my application. Acceptance of this application does not infer a complete submittal. All amendments to the Community Development Code and to other regulations adopted after the application is approved shall be enforced where applicable. Approved applications and subsequent development is not vested under the provisions in place at the time of the initial application.

	Date 12/4/20		Date 12.4.20
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Consolidated Land Use Application for Natural Resource Overlay Permits

Date: December 2020

Submitted to: City of West Linn
22500 Salamo Road
West Linn, OR 97068

Applicant: Malibar Group, LLC
615 NW Territorial Road
Canby, OR 97013

AKS Job Number: 5926



3700 River Road N, Suite 1
Keizer, OR 97303
(503) 400-6028

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- Exhibit A:** Preliminary Plans
 - Exhibit B:** Development Review Applications
 - Exhibit C:** Verification of Property Ownership
 - Exhibit D:** Clackamas County Tax Assessor’s Map
 - Exhibit E:** DSL Wetland Delineation Report and DSL Concurrence
 - Exhibit F:** Site Assessment Report
 - Exhibit G:** Geotechnical Report
 - Exhibit H:** Pre-Application Summary
 - Exhibit I:** Preliminary Stormwater Report
 - Exhibit J:** Certified Engineer Letter
 - Exhibit K:** Copy of Recorded Easement 2019-6706
 - Exhibit L:** Fire Department Approval
 - Exhibit M:** Pre-Construction Elevation Certificate
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Consolidated Land Use Application for Natural Resource Overlay Permits

Submitted to:	City of West Linn Planning Department 22500 Salamo Road West Linn, OR 97068
Applicant:	Malibar Group, LLC Attn: Roy Marvin 615 NW Territorial Road Canby, OR 97013
Property Owners:	Malibar Group, LLC Retirement Plan FBO Roy Marvin 615 NW Territorial Road Canby, OR 97013 Andrew Persse and Kami Persse 1220 9 th Street West Linn, OR 97068
Applicant's Consultant:	AKS Engineering & Forestry, LLC 3700 River Road N, Suite 1 Keizer, OR 97303 Contact: Zach Pelz, AICP Email: PelzZ@aks-eng.com Phone: (503) 400-6028
Site Location:	Tax Lot 300: 1220 9 th Street, West Linn, OR 97068; Tax Lot 800: No site address, West Linn, OR 97068
Clackamas County Assessor's Map:	Clackamas County Assessor's Map 3 1 E 02AC, Tax Lots 800 and 300
Site Size:	±1.32 acres (Lot 800), ±1.89 acres (Lot 300)
Land Use Districts:	R-10 (Single Family Residential Detached)



I. Executive Summary

AKS Engineering & Forestry, LLC is pleased to submit this application on behalf of Roy Marvin (Applicant) to gain approval for a consolidated package of land use applications, including a Water Resource Area (WRA) permit, Flood Management Area (FMA) permit, and Willamette River Greenway (WRG) permit for Tax Lot 800 and a portion of Tax Lot 300 of Clackamas County Assessor's Map 3 1 E 02AC. Together, this consolidated package outlines how Tax Lot 800 can meet natural resource protection, flood management, and site access standards for the future construction of a single-family home, which will be the subject of a future building permit application.

Lot 800 will have access via a 20-foot-wide Private Access and Utility Easement (Easement) along the south property boundary of Lot 300. The Easement was recorded in Clackamas County Records as Document No. 2019-6706 for the benefit of Tax Lots 300, 800, and 802. A copy of this Easement is attached as Exhibit K.

Careful consideration for reducing impacts to the WRA was made in the preparation for the layout of the proposed development. The home is shifted as far to the north (away from the water resource) as possible while accommodating a reasonable building footprint and driveway from the shared accessway. Moreover, the Applicant successfully completed a property line adjustment (File No. WAP-20-01/WRG-20-01/MIS-20-01/LLA-20-01) to accommodate placement of the home further east, which reduces the length of a driveway needed to serve this lot and subsequently further reduces WRA impacts. The property line adjustment has been approved and the Partition Plat is expected to be recorded in Clackamas County Records. Tax Lot 800 will then reflect a lot size of ± 1.32 acres.

Situated within 1000 feet of the Willamette River and with wetlands extending across the site, Tax Lot 800 is entirely or partially within flood, water, and habitat protection zones which constrain development. This legal lot predates City regulations concerning the aforementioned protection zones. In such cases, and where substantial regulation constrains a property, the West Linn Community Development Code (CDC) provides hardship provisions that accommodate reasonable land use. The subject property satisfies applicable provisions of the City hardship standards and this application demonstrates a thoughtful balance between natural resource protection and development expectations.

This application includes the City application forms, written materials, and preliminary plans necessary for staff to review and determine compliance with the applicable approval criteria. The evidence is substantial and supports the City's approval of the application.

II. Site Description/Setting

Tax Lot 800 is located north of Volpp Street between 9th and 10th streets in West Linn's Willamette Neighborhood and is zoned Single-Family Residential Detached (R-10). The site is unimproved but has access to public water, sanitary sewer, gas, power, and communications along 9th Street. The subject lot was created in 1908 with the Willamette and Tualatin Tracts Plat.

The subject property is completely encompassed within the Federal Emergency Management Agency (FEMA) 100-year floodplain and is further constrained by the WRG, WRA, and Habitat Conservation Area (HCA) protection overlay zones. Wetlands are located across Tax Lot 800 and extend off site to the east and west.

III. Applicable Review Criteria

CITY OF WEST LINN COMMUNITY DEVELOPMENT CODE

Chapter 11 – SINGLE-FAMILY RESIDENTIAL DETACHED, R-10

11.030 Permitted Uses

The following are uses permitted outright in this zoning district:

1. Single-family detached residential unit.

...

Response: While a request to construct a home on Lot 800 is not included with this application, the Applicant desires to construct a single-family home once this request is approved. The City of West Linn will confirm that the proposed structure conforms to all applicable criteria at the time of building permit submittal. This criterion can be met.

11.070 Dimensional Requirements, Uses Permitted Outright And Uses Permitted Under Prescribed Conditions

Except as may be otherwise provided by the provisions of this code, the following are the requirements for uses within this zone:

1. The minimum lot size shall be 10,000 square feet for a single-family detached unit.

Response: The Existing Conditions Plan, included in the attached Exhibit A, illustrates the lot size of Tax Lot 800 is ±57,451 square feet (±1.32 acres), which exceeds the minimum 10,000 square feet required in the R-10 zone. This criterion is met.

2. The minimum front lot line length or the minimum lot width at the front lot line shall be 35 feet.

Response: The Existing Conditions Plan, included in the attached Exhibit A, shows the front lot line length is ±228.45 feet for Tax Lot 800. This criterion is met.

3. The average minimum lot width shall be 50 feet.

Response: Exhibit A illustrates that Tax Lot 800 is ±228.45 feet wide, which exceeds the 50-foot requirement stated above. This criterion is met.

4. Repealed by Ord. 1622.

5. Except as specified in CDC 25.070(C)(1) through (4) for the Willamette Historic District, the minimum yard dimensions or minimum building setback area from the lot line shall be:

- a. For the front yard, 20 feet; except for steeply sloped lots where the provisions of CDC 41.010 shall apply.

Response: The front yard setback is ±20 feet, as illustrated in the Preliminary Composite Utility and Site Plan included in the attached Exhibit A. This application includes a request, as permissible under the hardship provisions of CDC 32.110, for a reduction in the front setback on Lot 800 to 15 feet. See responses to CDC 32 regarding this request. The criteria are met.

- b. For an interior side yard, seven and one-half feet.

Response: The interior side yard setback exceeds the minimum ± 7.5 feet, as illustrated in the Preliminary Composite Utility and Site Plan included in the attached Exhibit A. The criterion is met.

c. For a side yard abutting a street, 15 feet.

Response: The subject property does not have a side yard abutting a street. This criterion does not apply.

d. For a rear yard, 20 feet.

Response: The rear yard setback exceeds the minimum of ± 20 feet, as illustrated in the Preliminary Composite Utility and Site Plan included in the attached Exhibit A. The criterion is met.

6. The maximum building height shall be 35 feet, except for steeply sloped lots in which case the provisions of Chapter 41 CDC shall apply.

Response: This application does not include a request to construct a new home on the subject lot at this time. The City will ensure that the building height requirements are met at the time of building permit submittal. The criteria do not apply.

7. The maximum lot coverage shall be 35 percent.

Response: The conceptual building footprint illustrated in the Preliminary Plans, attached as Exhibit A, is $\pm 2,100$ square feet and the lot size is $\pm 57,451$ square feet. Thirty-five percent of the lot size is $\pm 20,107.85$ square feet. The criterion is met.

8. The minimum width of an accessway to a lot which does not abut a street or a flag lot shall be 15 feet.

Response: The Preliminary Access Lane Plan included in the attached Exhibit A, shows that access to Tax Lot 800 will occur via an existing Access and Utility Easement on Tax Lot 300, along the north boundary of Tax Lots 800 and 802. The accessway from 9th Street to Tax Lot 800 measures ± 12 feet in width and has been approved by the Deputy Fire Marshal. A copy of the approval is attached as Exhibit L. The criterion is met.

9. The maximum floor area ratio shall be 0.45. Type I and II lands shall not be counted toward lot area when determining allowable floor area ratio, except that a minimum floor area ratio of 0.30 shall be allowed regardless of the classification of lands within the property. That 30 percent shall be based upon the entire property including Type I and II lands. Existing residences in excess of this standard may be replaced to their prior dimensions when damaged without the requirement that the homeowner obtain a non-conforming structures permit under Chapter 66 CDC.

10. The sidewall provisions of Chapter 43 CDC shall apply.

Response: The subject property measures $\pm 57,451$ total square feet in area and is comprised entirely of Type I and II lands. Utilizing the 30 percent minimum FAR per above, the max allowable FAR is $\pm 17,235$ square feet. While an application for a new home is not included with this application, the Applicant intends that a future home on the subject site will be within this allowable FAR maximum. Applicable section of CDC Chapter 43, including sidewall provisions, are discussed later in this narrative. The criteria are or can be met.

11.090 Other Applicable Development Standards

A. The following standards apply to all development including permitted uses:

-
1. Chapter 34 CDC, Accessory Structures, Accessory Dwelling Units, and Accessory Uses.
 2. Chapter 35 CDC, Temporary Structures and Uses.
 3. Chapter 38 CDC, Additional Yard Area Required; Exceptions to Yard Requirements; Storage in Yards; Projections into Yards.
 4. Chapter 41 CDC, Building Height, Structures on Steep Lots, Exceptions.
 5. Chapter 42 CDC, Clear Vision Areas.
 6. Chapter 44 CDC, Fences.

Response: This application does not include a request for building structures or a building permit. The City will ensure the development meets the referenced standards during the building permit submittal. The above criteria do not apply to this application.

7. Chapter 46 CDC, Off-Street Parking, Loading and Reservoir Areas.
8. Chapter 48 CDC, Access, Egress and Circulation.

Response: Responses to the applicable criteria from CDC 46 and 48 are included below.

Chapter 27 – FLOOD MANAGEMENT AREAS

27.020 Applicability

A flood management area permit is required for all development in the Flood Management Area Overlay Zone. The standards that apply to flood management areas apply in addition to State or federal restrictions governing floodplains or flood hazard areas.

Response: The subject property is located partially within the Flood Management Area Overlay Zone (FMA). As shown in Exhibit A, the extent of impact in the FMA on Lot 800 is due to grading only and is ±125 square feet in area. Approximately 3,850 square feet of FMA impact is planned on Lot 300 as a result of installing the utilities and driveway that will serve a future home on Lot 800. Consistent with the purpose and intent of these regulations, considerable attention has been paid to locating habitable structures outside of the FMA. The property has been configured to accommodate a buildable footprint to comply with the requirements for construction within the FMA. The Applicant is aware of the requirements for development in this overlay zone and has included the FMA permit application in this submittal. This criterion is met.

27.030 Exemptions

This chapter does not apply to work necessary to protect, repair, or maintain existing public or private structures, utility facilities, roadways, driveways, accessory uses, and exterior improvements, or replace small public structures, utility facilities, or roadways in response to emergencies. Within 30 days after the work has been completed, the party responsible for the work shall initiate a flood management permit designed to analyze any changes effectuated during the emergency and mitigate adverse impacts.

Response: The Applicant is aware of exemptions relating to work performed in response to emergencies. This exemption does not apply.

27.050 Application

Applications for a flood management area permit must include the following:

- A. A pre-application conference as a prerequisite to the filing of the application.

Response: A pre-application conference to discuss the subject application was held June 20, 2019 at West Linn City Hall. The Pre-Application Summary from the City is attached as Exhibit H. This criterion has been met.

- B. An application initiated by the property owner, or the owner's authorized agent, and accompanied by the appropriate fee.

Response: An application form signed by the property owner is included as Exhibit B and associated fees are included with this application. This criterion is met.

- C. An application submittal that includes the completed application form, one copy of written responses addressing CDC 27.060, 27.070, 27.080 (if applicable), and 27.090 (if applicable), one copy of all maps and plans at the original scale, one copy of all maps and plans reduced to a paper size not greater than 11 inches by 17 inches, and a copy in a digital format acceptable to the City.

Response: An application form signed by the property owner is included as Exhibit B, together with written responses addressing applicable approval criteria and accompanying maps and exhibits, as required. The criterion is met.

- D. A map of the property indicating the nature of the proposed alteration and its relationship to property zones, structures, trees, and any other pertinent features.

Response: A Preliminary Grading Impact Plan included in the attached Exhibit A is a map of the property identifying the proposed alteration and location of cuts and fills, including its relationship to property zones, structures, trees, and other pertinent features. The criterion is met.

- E. Information regarding the elevation of the site prior to development, the base flood elevation data for subdivisions (if applicable), and a description of water course alterations, if proposed.

Response: A Preliminary Grading Impact Plan included in the attached Exhibit A illustrates the extent of grading and associated modifications to the floodplain on the subject site. This criterion is met.

- F. A topographic map of the site at contour intervals of five feet or less showing a delineation of the flood management area, which includes, but is not limited to, areas shown on the Flood Management Area map. The City Engineer or Building Official, as applicable, may, at his/her discretion, require the map to be prepared by a registered land surveyor to ensure accuracy. A written narrative explaining the reason why the owner wishes to alter the floodplain shall accompany the site plan map.

Response: Exhibit A includes an Existing Conditions Plan prepared by AKS Engineering & Forestry, LLC (a licensed professional land surveyor) which shows the boundary of the FMA. Required submittal elements are included with this application and supported by this narrative and the accompanying exhibits. This criterion is met.

- G. The elevation in relation to mean sea level, of the lowest floor (including basement) of all structures.

Response: A Preliminary Grading Impact Plan, included in the attached Exhibit A, shows a finished floor elevation of ±80.36 feet for a conceptual home on Lot 800. This finished floor elevation is more than 5 feet above the base flood elevation of 75.1. This criterion is met.

-
- H. The elevation in relation to mean sea level to which any structure has been flood-proofed (non-residential only).

Response: This application is for residential property only, therefore this criterion is not applicable.

27.060 Approval Criteria

The Planning Director shall make written findings with respect to the following criteria when approving, approving with conditions, or denying an application for development in flood management areas:

- A. Development, excavation, and fill shall be performed in a manner to maintain or increase flood storage and conveyance capacity and not increase design flood elevations.

Response: The Preliminary Cut and Fill Map included in the attached Exhibit A provides a detailed evaluation of cuts and fills. Additionally, this application includes a letter attached as Exhibit J certifying that the site results in no net change to the flood capacity of the floodplain. This criterion is met.

- B. No net fill increase in any floodplain is allowed. All fill placed in a floodplain shall be balanced with an equal amount of soil material removal. Excavation areas shall not exceed fill areas by more than 50 percent of the square footage. Any excavation below the ordinary high water line shall not count toward compensating for fill.

Response: A detailed evaluation of cuts and fills is included in the Preliminary Grading Impact Plan included in the attached Exhibit A. This evaluation concludes that preliminary grading will result in ± 5.0 cubic yards of net fill on Tax Lot 800 and ± 233 cubic yards of net fill on Tax Lot 300. Fill within the floodplain boundary on Tax Lots 300 and 800 will be balanced with cut on Tax Lot 803, which is owned by the Applicant. Additionally, this application includes a letter attached as Exhibit J certifying that the site results in no net change to the flood capacity of the floodplain. This criterion is met.

- C. Excavation to balance a fill shall be located on the same lot or parcel as the fill unless it is not reasonable or practicable to do so. In such cases, the excavation shall be located in the same drainage basin and as close as possible to the fill site, so long as the proposed excavation and fill will not increase flood impacts for surrounding properties as determined through hydrologic and hydraulic analysis.

Response: Per above, a new home on Lot 800 and an associated driveway (on Lot 300) result in approximately 238 cubic yards of fill in the floodplain. There is not sufficient area within the floodplain boundary on Lot 800 to remove earth (cut) in a manner that would not impact the adjacent wetland. Subsequently, the Application utilizes the flexibility here to balance this fill by removing an equivalent amount of earth on Lot 803, which is also owned by the Applicant. Cuts on Lot 803 are in the floodplain boundary and will not impact the adjacent wetland. As illustrated in the Preliminary Grading Impact Plan, included in the attached Exhibit A, all cut and fill will be balanced in the same drainage basin. This criterion is met.

- D. Minimum finished floor elevations must be at least one foot above the design flood height or highest flood of record, whichever is higher, for new habitable structures in the flood area.

Response: The finished floor elevation (FFE) of a conceptual future home on the subject property is ± 80.36 feet, as illustrated on the Preliminary Grading Impact Plan included in the attached Exhibit A. This is ± 5 feet above the base flood elevation of 75.1 feet. This criterion is met.

- E. Temporary fills permitted during construction shall be removed.

Response: Temporary fills are not anticipated. This criterion does not apply.

- F. Prohibit encroachments, including fill, new construction, substantial improvements, and other development in floodways unless certification by a professional civil engineer licensed to practice in the State of Oregon is provided demonstrating that encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.

Response: The planned development is not located in or near, nor will it encroach into, the floodway. This criterion does not apply.

- G. All proposed improvements to the floodplain or floodway which might impact the flood-carrying capacity of the river shall be designed by a professional civil engineer licensed to practice in the State of Oregon.

Response: All proposed improvements within the area floodplain have been designed by a professional civil engineer licensed to practice in the State of Oregon. Based on the advice of City staff, proposed cuts and fills across the site are completely balanced and therefore have no net effect on the flood storage and conveyance capacity of the floodplain. A letter attesting to such is included as Exhibit J. This criterion is met.

- H. New culverts, stream crossings, and transportation projects shall be designed as balanced cut and fill projects or designed not to significantly raise the design flood elevation. Such projects shall be designed to minimize the area of fill in flood management areas and to minimize erosive velocities. Stream crossings shall be as close to perpendicular to the stream as practicable. Bridges shall be used instead of culverts wherever practicable.

Response: The application does not include new culverts, stream crossings, or transportation projects. The criterion does not apply.

- I. Excavation and fill required for the construction of detention facilities or structures, and other facilities, such as levees, specifically shall be designed to reduce or mitigate flood impacts and improve water quality. Levees shall not be used to create vacant buildable land.

Response: This application proposes two new stormwater structures to treat and detain stormwater from new impervious areas on the subject site. A new stormwater planter will be located immediately east of the conceptual home on Lot 800 and will treat stormwater runoff generated by new impervious areas on Lot 800. Additionally, a stormwater swale is proposed along the south side of the access lane to Lot 800 and will treat and detain runoff occurring on the accessway itself. These facilities are illustrated on the Preliminary Composite Utility and Site Plan in Exhibit A. The criterion is met.

- J. The applicant shall provide evidence that all necessary permits have been obtained from those federal, State, or local governmental agencies from which prior approval is required.

Response: A Pre-construction FEMA Flood Elevation Certificate is included in Exhibit M. A completed elevation certificate will be furnished to the City following the completion of new home construction on Tax Lot 800. This criterion can be met.

27.070 Construction Materials and Methods

- A. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage using methods and practices that minimize flood damage.

Response: Exhibit A includes a Preliminary Composite Utility and Site Plan. The majority of private utilities will be placed underground and will be resistant to flood impacts. Final

construction plans will include notes to the contractors to ensure that they utilize methods and practices during construction that will minimize flood damage. This criterion can be met.

- B. Electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities shall be designed and/or otherwise elevated or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

Response: New heating, ventilation, air conditioning (HVAC) and other above-grade equipment will be located at least 1 foot above the base floor elevation. This criterion can be met.

- C. New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system.

Response: The proposed water service to the property will be located below ground in enclosed pipes that are designed to resist infiltration. This criterion is met.

- D. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharge from the systems into flood waters.

Response: The planned sanitary sewer service to the property will be located below ground in enclosed pipes that are designed to resist infiltration. This criterion is met.

- E. On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

Response: This application does not include an on-site waste disposal system. The criterion does not apply.

- F. All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure.

Response: The construction and substantial improvements will be anchored to prevent flotation, collapse, or lateral movement of the structure. The final construction plans will have notes to direct the contractor to put these measures in place during construction. The criteria can be met.

27.080 Residential Construction

- A. New construction and substantial improvement of any residential structure shall have the lowest floor, including basement, elevated to at least one foot above the base flood elevation.

Response: A Preconstruction Elevation Certificate is included as Exhibit M which demonstrates that the base flood elevation (BFE) is 75.1 feet, and the finished floor elevation (FFE) of the conceptual structure is at least one foot above the BFE. The City will confirm this FFE at time of building permit review. The criterion can be met.

- B. Fully enclosed areas below the lowest floor that are subject to flooding are prohibited, or shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must be certified by either a professional civil engineer or an architect licensed to practice in the State of Oregon, and must meet or exceed the following minimum criteria:

1. A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided.

Response: As shown in Exhibit A, there are no fully enclosed areas below the BFE. The criterion does not apply.

2. The bottom of all openings shall be no higher than one foot above grade.

Response: The Preconstruction Elevation Certificate attached as Exhibit M, demonstrates that all permanent flood openings will be located within 1 foot above adjacent grade. This criterion is met.

3. Openings may be equipped with screens, louvers, or other coverings or devices; provided, that they permit the automatic entry or exit of floodwaters.

Response: The Applicant is aware that the flood openings may be equipped with various coverings, as mentioned above, and that they must permit automatic entry and exit of floodwaters. This criterion can be met.

4. Fully enclosed areas below the base flood elevation shall only be used for parking, access, and limited storage.

Response: As shown in Exhibit A, there are no fully enclosed areas below the BFE. The criterion does not apply.

5. Service equipment (e.g., furnaces, water heaters, washer/dryers, etc.) is not permitted below the base flood elevation.

Response: The Preconstruction Elevation Certificate included as Exhibit M describes the lowest elevation of machinery or equipment servicing the building will be at or above the BFE of 75.1 feet. This criterion can be met.

6. All walls, floors, and ceiling materials located below the base flood elevation must be unfinished and constructed of materials resistant to flood damage.

Response: AS shown in Exhibits A and M, no walls, floor, or ceiling materials of a conceptual home on Lot 800 will be located below the BFE. The City will confirm such requirement is adhered to during the building permit review. This criterion can be met.

C. Crawlspace. Crawlspace are a commonly used method of elevating buildings in special flood hazard areas (SFHAs) to or above the base flood elevation (BFE), and are allowed subject to the following requirements:

1. The building is subject to the Flood-Resistant Construction provisions of the Oregon Residential Specialty Code.

Response: This application does not seek approval for new home construction. At time of building permit submittal, the City's Building Department staff will ensure that the building meets all applicable provisions of the Oregon Residential Specialty Code. This criterion can be met.

2. They shall be designed by a professional engineer or architect licensed to practice in the State of Oregon to meet the standards contained in the most current Federal Emergency Management Agency's (FEMA) Technical Bulletin.

Response: This application does not seek approval for new home construction. At time of building permit submittal, the City's Building Department staff will ensure that the building meets all applicable provisions of the most current FEMA Technical Bulletin. This criterion can be met.

3. The building must be designed and adequately anchored to resist flotation, collapse, and lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.

Response: This application does not seek approval for new home construction. At time of building permit submittal, the City’s Building Department staff will ensure that the building meets all applicable requirements stated above. This criterion can be met.

4. Flood vent openings shall be provided on at least two sides that equalize hydrostatic pressures by allowing for the automatic entry and exit of floodwaters. The total area of the flood vent openings must be no less than one square inch for each square foot of enclosed area. The bottom of each flood vent opening can be no more than one foot above the lowest adjacent exterior grade. For guidance on flood openings, see FEMA Technical Bulletin 1-93, Openings in Foundation Walls.

Response: As shown in Exhibit A, there are no fully enclosed areas below the BFE. However, the Preconstruction Elevation Certificate attached as Exhibit M shows 11 flood vents will be included to account for less frequent flooding events. This criterion does not apply.

5. Portions of the building below the BFE must be constructed with materials resistant to flood damage. This includes not only the foundation walls (studs and sheathing), but also any joists, insulation, or other materials that extend below the BFE. For more detailed guidance on flood-resistant materials see FEMA Technical Bulletin 2-93, Flood-Resistant Materials Requirements.

Response: This application does not seek approval for new home construction. At time of building permit submittal, the City’s Building Department staff will ensure that the building meets all applicable requirements stated above. This criterion can be met.

6. Utility systems within the crawlspace must be elevated above BFE or designed so that floodwaters cannot enter or accumulate within the system components during flood conditions. Ductwork, in particular, must either be placed above the BFE or sealed from floodwaters. For further guidance on the placement of building utility systems in crawlspaces, see FEMA 348, Protecting Building Utilities From Flood Damage. Flood-resistant materials and utilities, access, and ventilation openings in crawlspaces are further addressed in this bulletin.

Response: As above, the conceptual home on Lot 800, including all mechanical equipment and related appurtenances are planned to be located above the BFE. Applicant is aware that utility systems within the crawlspace must be elevated above BFE or designed in a way that floodwaters cannot enter or accumulate within the system components. The City will review the final construction plans and locations of utility systems upon building permit submittal. This criterion can be met.

7. The interior grade of a crawlspace below the BFE must not be more than two feet below the lowest adjacent exterior grade (LAG).

Response: The Notes in the Existing Conditions Plan in the attached Exhibit A, describe the BFE at 75.1 feet. The Preliminary Grading Plan Impact Plan shows that the finished grade adjacent the conceptual building foundation will be at 75.2 feet. Per this criterion, the interior grade of the crawlspace may not be below 73.2 feet. At time of building permit submittal, the City’s Building Department staff will ensure that the building meets this provision. The criterion can be met.

8. The height of the below-grade crawlspace, measured from the interior grade of the crawlspace to the top of the crawlspace foundation wall, must not exceed four feet at any point. This limitation will also prevent these crawlspaces from being converted into habitable spaces.

Response: The Preconstruction Elevation Certificate attached as Exhibit M illustrates the minimum crawlspace elevation is 75.2 feet. Based on this criterion, the top of the foundation wall may not be above 79.2 feet. As shown in the Preliminary Grading Impact Plan attached in Exhibit A, the minimum finished floor elevation is 80.36 feet. The height of the first floor (FFE minus top of foundation wall) is typically 18-36 inches, which results in a maximum crawlspace height of less than 4 feet as required per this section. The City's Building Department will confirm compliance with this criterion at time of building permit review/issuance. The criterion can be met.

9. There must be an adequate drainage system that removes floodwaters from the interior area of the crawlspace. Possible options include natural drainage through porous, well-drained soils and drainage systems such as low-point drains, perforated pipes, drainage tiles, or gravel or crushed stone drainage by gravity.

Response: Applicant anticipates that floodwaters will exit the interior area of the crawlspace via flood vents and gravity drainage through porous materials, such as gravel or crushed stone. The City's Building Department will confirm compliance with this criterion at time of building permit review. The criterion can be met.

10. The velocity of floodwaters at the site should not exceed five feet per second for any crawlspace. For velocities in excess of five feet per second, other foundation types should be used.

Response: As shown in Exhibit A, the crawlspace of the conceptual home on Lot 800 is above the BFE. Further, applicant is not aware of potential floodwater velocities at the site, nor is floodwater modeling required for the requested work. Applicant expects to coordinate with the City's Building Department on the foundation and home design that meets applicable flood and Oregon Structural Specialty Code requirements at time of building permit review. The criterion can be met.

11. For more detailed information refer to FEMA Technical Bulletin 11-01 or the most current edition.
12. The use of below-grade crawlspaces to elevate the building to one foot above the BFE may cause an increase in flood insurance premiums, which are beyond the control of the City.

Response: Applicant acknowledges the FEMA information and that using below-grade crawlspaces to elevate a building to 1 foot above BFE may cause increase in flood insurance premiums.

- D. A poured slab placed over fill can be used to elevate the lowest floor of a structure above the base flood elevation. However, when a building site is filled, it is still in the floodplain and no basements are permitted.

Response: This application does not include a request to pour a slab over fill to elevate the lowest floor of the proposed structure above BFE. Applicant expects to coordinate with the City's Building Department on a foundation and home design that meets applicable flood and Oregon Structural Specialty Code requirements at time of building permit review. The criterion can be met.

- E. Placing a structure on piers, piles, and posts is allowed provided supporting members are designed to resist hydrostatic and hydrodynamic forces.

Response: This application does not seek approval for new home construction. At time of building permit submittal, the City’s Building Department staff will ensure that the building meets all applicable requirements stated above. This criterion can be met.

Chapter 28 – WILLAMETTE AND TUALATIN RIVER PROTECTION

28.030 Applicability

- A. The Willamette and Tualatin River Protection Area is an overlay zone. The zone boundaries are identified on the City’s zoning map, and include:
 - 1. All land within the City of West Linn’s Willamette River Greenway Area.
 - 2. All land within 200 feet of the ordinary low water mark of the Tualatin River, and all land within the 100-year floodplain of the Tualatin River.
 - 3. In addition to the Willamette Greenway and Tualatin River Protection Area boundaries, this chapter also relies on the HCA Map to delineate where development should or should not occur. Specifically, the intent is to keep out of, or minimize disturbance of, the habitat conservation areas (HCAs). Therefore, if all, or any part, of a lot or parcel is in the Willamette Greenway and Tualatin River Protection Area boundaries, and there are HCAs on the lot or parcel, a Willamette and Tualatin River Protection Area permit shall be required unless the development proposal is exempt per CDC 28.040.
- B. At the confluence of a stream or creek with either the Tualatin or Willamette River, the standards of this chapter shall apply only to those portions of the lot or parcel fronting the river. Meanwhile, development in those portions of the property facing or adjacent to the stream or creek shall meet the transition, setbacks and other provisions of Chapter 32 CDC, Water Resource Area Protection.
- C. All uses permitted under the provisions of the underlying base zone and within the Willamette and Tualatin River Protection Area zone are allowed in the manner prescribed by the base zone subject to applying for and obtaining a permit issued under the provisions of this chapter unless specifically exempted per CDC 28.040.
- D. The construction of a structure in the HCA or the expansion of a structure into the HCA when the new intrusion is closer to the protected water feature than the pre-existing structure.

Response: The subject site is partially or completely located within the Willamette River Greenway or Habitat Conservation Area boundaries. This application seeks approval for the future construction of a new home within a portion of these protection zones. The planned use is allowed in the R-10 zoning district and this narrative includes responses which demonstrate compliance with all applicable approval criteria.

28.090 Submittal Requirements

- A. An application for a protection area permit shall be initiated by the property owner or the owner’s authorized agent. Evidence shall be provided to demonstrate that the applicant has the legal right to use the land above the OLW. The property owner’s signature is required on the application form.

Response: An application form signed by each of the property owners is included in the attached Exhibit B. Property owner verification is provided as Exhibit C. These criteria are met.

- B. A prerequisite to the filing of an application is a pre-application conference at which time the Planning Director shall explain the provisions of this chapter and provide appropriate forms as set forth in CDC 99.030(B).

Response: The Applicant met with City staff for a pre-application conference on June 20, 2019. A copy of the Pre-application Summary is attached as Exhibit H. This criterion is met.

C. An application for a protection area permit shall include the completed application and:

1. Narrative which addresses the approval criteria of CDC 28.110.

Response: This narrative and supporting documentation address the approval criteria of CDC 28.110. This criterion is met.

2. A site plan, with HCA boundaries shown and by low, moderate, high type shown (CDC 28.120).

Response: A Site Plan (Figure 7A) with HCA boundaries shown by low, moderate, and high type is included in the Site Assessment Report attached as Exhibit F. This criterion is met.

3. A grading plan if applicable (CDC 28.130).

Response: A Preliminary Grading, Erosion Control, and Construction Management Plan is included in the attached Exhibit A. This criterion is met.

4. Architectural drawings if applicable (CDC 28.140).

Response: Architectural drawings will be provided with the building permit submittal. This criterion can be met.

5. A landscape plan if applicable (CDC 28.150).

Response: A Preliminary Landscape Plan is included in the attached Exhibit A. This criterion is met.

6. A mitigation plan if applicable (CDC 28.160).

Response: A Mitigation Plan (Figure 7) is included in the Site Assessment Report attached as Exhibit F. This criterion is met.

7. A storm detention and treatment plan and narrative statement pursuant to CDC 92.010(E).

Response: A Preliminary Stormwater Report is attached as Exhibit I. This criterion is met.

One original application form must be submitted. One copy at the original scale and one copy reduced to 11 inches by 17 inches or smaller of all drawings and plans must be submitted. One copy of all other items, including the narrative, must be submitted. The applicant shall also submit one copy of the complete application in a digital format acceptable to the city. When the application submittal is determined to be complete, additional copies may be required as determined by the Planning Director.

Response: As supported by this narrative and the accompanying exhibits, required submittal elements are included with this application. This criterion is met.

D. The applicant shall pay the requisite fees.

Response: Requisite fees are included with this submittal. This criterion is met.

E. The applicant shall be responsible for, and shall apply for, all applicable State and/or federal permits.

Response: The Applicant understands the responsibility to apply for all applicable state and/or federal permits, if any are required. This criterion can be met.

F. The applicant shall include a map, approved or acknowledged by DSL, of the preference rights and authorized areas if a water surface structure is proposed.

Response: This application does not include a request for a water surface structure. This criterion does not apply.

28.100 Additional Submittal Information Required, Waiver of Submittal Requirements

- A. The Planning Director may require additional information as a part of the application subject to the provisions of CDC 99.035(A).
- B. The Planning Director may waive any submittal requirement for the application subject to the provisions of CDC 99.035(B) and (C).

Response: The Planning Director has not requested any additional information as part of this application. The application does not seek a waiver to any of the submittal requirements of this chapter. The criteria do not apply.

28.110 Approval Criteria

No application for development on property within the protection area shall be approved unless the decision-making authority finds that the following standards have been met or can be met by conditions of approval. The development shall comply with the following criteria as applicable:

- A. Development: All sites.
 - 1. Sites shall first be reviewed using the HCA Map to determine if the site is buildable or what portion of the site is buildable. HCAs shall be verified by the Planning Director per CDC 28.070 and site visit. Also, “tree canopy only” HCAs shall not constitute a development limitation and may be exempted per CDC 28.070(A). The municipal code protection for trees and Chapters 55 and 85 CDC tree protection shall still apply.
 - 2. HCAs shall be avoided to the greatest degree possible and development activity shall instead be directed to the areas designated “Habitat and Impact Areas Not Designated as HCAs,” consistent with subsection (A)(3) of this section.
 - 3. If the subject property contains no lands designated “Habitat and Impact Areas Not Designated as HCAs” and development within HCA land is the only option it shall be directed towards the low HCA areas first, then medium HCA areas and then to high HCA as the last choice. The goal is to, at best, avoid or, at least, minimize disturbance of the HCAs. (Water-dependent uses are exempt from this provision.)

Response: The subject property does not contain any lands designated as “Habitat and Impact Areas Not Designated as HCAs.” The Site Assessment Report attached as Exhibit F demonstrates that although the property is covered with a moderate HCA designation, the buildable envelope is configured further away from the WRA to minimize impacts to the HCA. This criterion is met.

- 4. All development, including exempted activities of CDC 28.040, shall have approved erosion control measures per Clackamas County Erosion Prevention and Sediment Control Planning and Design Manual, rev. 2008, in place prior to site disturbance and be subject to the requirements of CDC 32.070 and 32.080 as deemed applicable by the Planning Director.

Response: The Grading, Erosion Control, and Construction Management Plan included in Exhibit A shows that the site design is configured to accommodate new home construction with the least impact to the HCA. The City’s Building Department will ensure that all applicable erosion control measures are in place prior to site construction during review of final construction plans. The criterion is met.

- B. Single-family or attached residential. Development of single-family homes or attached housing shall be permitted on the following HCA designations and in the following order of preference with “a” being the most appropriate and “d” being the least appropriate:
 - a “Habitat and Impact Areas Not Designated as HCAs”

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- b Low HCA
 - c Moderate HCA
 - d High HCA

Response: The entire subject property is located within West Linn’s Moderate HCA and there are no portions of the lot to relocate new home construction that would further minimize impacts to the HCA. This criterion is met.

1. Development of land classifications in “b,” “c” and “d” shall not be permitted if at least a 5,000-square-foot area of buildable land (“a”) exists for home construction, and associated impermeable surfaces (driveways, patios, etc.).

Response: Exhibit F illustrates that the entire subject property is classified as “c” which is designated as “Moderate HCA” and does not have at least 5,000 square feet of buildable land under a lower classification per above. This criterion is met.

2. If 5,000 square feet of buildable land (“a”) are not available for home construction, and associated impermeable surfaces (driveways, patios, etc.) then combinations of land classifications (“a,” “b” and “c”) totaling a maximum of 5,000 square feet shall be used to avoid intrusion into high HCA lands. Development shall emphasize area “a” prior to extending construction into area “b,” then “c” lands.

Response: The entire subject property is located within West Linn’s Moderate HCA and there are no portions of the lot to relocate new home construction that would minimize impacts to the HCA. The subject property does not have at least 5,000 square feet of buildable land under a lower classification per above, therefore development will take place entirely in land with a “c” classification. This criterion is met.

3. The underlying zone FAR shall also apply as well as allowable lot coverage.

Response: This application includes responses demonstrating compliance with all applicable FAR and lot coverage requirements. This criterion is met.

4. Development may occur on legal lots and non-conforming lots of record located completely within the HCA areas or that have the majority of the lot in the HCA to the extent that the applicant has less than 5,000 square feet of non-HCA land.

Development shall disturb the minimum necessary area to allow the proposed use or activity, shall direct development to any available non-HCA lands and in any situation shall create no more than 5,000 square feet of impervious surface. (Driveways, paths, patios, etc., that are constructed of approved water-permeable materials will not count in calculating the 5,000-square-foot lot coverage.) The underlying zone FAR and allowable lot coverage shall also apply and may result in less than 5,000 square feet of lot coverage.

Response: The subject property is a legal lot of record with less than 5,000 square feet of non-HCA land. As illustrated in the Site Assessment Report, attached as Exhibit F, new development minimizes disturbance to HCAs and will result in less than 5,000 square-feet of new impervious area. The criterion is met.

When only HCA land is available then the structure shall be placed as far away from the water resource area or river as possible. To facilitate this, the front setback of the structure or that side which is furthest away from the water resource or river may be reduced to a five-foot setback from the front property line without a variance. Any attached garage must provide a 20-foot by 20-foot parking pad or driveway so as to

provide off-street parking exclusive of the garage. The setbacks of subsection C of this section shall still apply.

Response: The Preliminary Plans attached as Exhibit A show a conceptual building footprint. The subject property only has HCA land available for future development, so the Applicant proceeded with a property line adjustment with the City (File No. LLA-20-01) to allow the new home to be placed further away from the wetland boundary and in a manner that reduces overall impacts to the HCA.

The Preliminary Stormwater Report, attached as Exhibit I, provides calculations for impervious area in Section 2.6 Impervious Area Calculations of the report. The new impervious surface area of the proposed development affecting Tax Lots 300 and 800 is illustrated below and illustrates that the new impervious surface area will be less than the maximum 5,000 square foot requirement.

IMPERVIOUS SURFACE AREA	
Tax Lot 800:	
New Roof Area (Home and Garage)	±2,262 square feet
New Driveway, Patio, Deck:	±1,130 square feet
Total for Lot 800:	±3,392 square feet
Tax Lot 300:	
New Paved Access Lane:	±3,150 square feet
Total for Lot 300:	±3,150 square feet

5. Driveways, paths, patios, etc., that are constructed of approved water-permeable materials will be exempt from the lot coverage calculations of subsections (B)(1) through (4) of this section and the underlying zone.

Response: The Applicant acknowledges that approved water-permeable material is exempt from lot coverage calculations.

6. Table showing development allowed by land classification:

Table 1: Development Allowed by Land Classification	
Classification	Development Allowed
Non-HCA (“a”)	Yes
Low-Medium HCA (“b” and “c”)	Yes, if less than 5,000 sq. ft. of non-HCA land available. Avoid “d.”
High HCA (“d”)	Yes, but only if less than 5,000 sq. ft. of “a,” “b” and “c” land available.
Non-conforming Structures (structures on HCA land)	Yes: vertically, laterally and/or away from river. Avoid “d” where possible.

(The underlying zone FAR and allowable lot coverage shall also apply.)

- C. Setbacks from top of bank.

1. Development of single-family homes or attached housing on lands designated as “Habitat and Impact Areas Not Designated as HCAs” shall require a structural setback of 15 feet from any top of bank that represents the edge of the land designated as “Habitat and Impact Areas Not Designated as HCAs.”

Response: The subject property does not have any land designated as “Habitat and Impact Areas Not Designated as HCAs.” This criterion does not apply.

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2. At-grade water-permeable patios or decks within 30 inches of grade may encroach into that setback but must keep five feet from top of bank and cannot cantilever over the top of bank or into the five-foot setback area.

Response: The Applicant acknowledges this standard regarding encroachments for at-grade, water-permeable patios or decks within 30 inches of grade. This criterion can be met.

3. For properties that lack a distinct top of bank the applicant shall identify the boundary of the area designated as “Habitat and Impact Areas Not Designated as HCAs” which is closest to the river. A structural setback of 15 feet is required from that boundary line. That 15-foot measurement extends from the boundary line away from the river. At-grade water-permeable patios or decks within 30 inches of grade may encroach into that setback 10 feet but must keep five feet from the boundary and cannot cantilever into the five-foot setback area. For vacant lots of record that comprise no lands with “Habitat and Impact Areas Not Designated as HCAs” designation or insufficient lands with those designations so that the above setbacks cannot be met, the house shall be set back as far from river as possible to accommodate house as part of the allowed 5,000 square feet of impermeable surfaces.

Response: The subject property is a vacant lot of record and does not comprise any lands classified as “Habitat and Impact Areas Not Designated as HCAs”. Subsequently, the conceptual future home has been placed as far from the Willamette River as possible and as demonstrated above, can be achieved within the allowable impervious surface maximum area. The criterion is met.

...

E. Hardship provisions and non-conforming structures.

1. For the purpose of this chapter, non-conforming structures are existing structures whose building footprint is completely or partially on HCA lands. Any additions, alterations, replacement, or rehabilitation of existing non-conforming non-water-related structures (including decks), roadways, driveways, accessory uses and accessory structures shall avoid encroachment upon the HCAs, especially high HCAs, except that:
 - a. A 10-foot lateral extension of an existing building footprint is allowed if the lateral extension does not encroach any further into the HCA or closer to the river or water resource area than the portion of the existing footprint immediately adjacent.
 - b. An addition to the existing structure on the side of the structure opposite to the river or water resource area shall be allowed. There will be no square footage limitation in this direction except as described in subsection (E)(1)(c) of this section.
 - c. The same allowance for the use of, and construction of, 5,000 square feet of total impervious surface for sites in HCAs per subsections (B)(2) through (4) of this section shall apply to lots in this section.
 - d. Vertical additions are permitted including the construction of additional floors.
 - e. The provisions of Chapter 66 CDC, Non-conforming Structures, shall not apply.

Response: This application does not include a hardship request involving any “non-conforming structures.” These criteria do not apply.

F. Access and property rights.

-
1. Private lands within the protection area shall be recognized and respected.
 2. Where a legal public access to the river or elsewhere in the protection area exists, that legal public right shall be recognized and respected.

Response: The Applicant recognizes the protection areas and will respect them accordingly. The site does not abut the river or provide opportunities for public access to the river.

3. To construct a water-dependent structure such as a dock, ramp, or gangway shall require that all pre-existing legal public access or similar legal rights in the protection area be recognized and respected. Where pre-existing legal public access, such as below the OLV, is to be obstructed by, for example, a ramp, the applicant shall provide a reasonable alternate route around, over or under the obstruction. The alternate route shall be as direct as possible. The proposed route, to include appropriate height clearances under ramps/docks and specifications for safe passage over or around ramps and docks, shall be reviewed and approved by the Planning Director for adequacy.
4. Any public or private water-dependent use or facility shall be within established DSL-authorized areas.
5. Legal access to, and along, the riverfront in single-family residential zoned areas shall be encouraged and pursued especially when there are reasonable expectations that a continuous trail system can be facilitated. The City recognizes the potential need for compensation where nexus and proportionality tests are not met. Fee simple ownership by the City shall be preferred. The trail should be dimensioned and designed appropriate to the terrain it traverses and the user group(s) it can reasonably expect to attract. The City shall be responsible for signing the trail and delineating the boundary between private and public lands or access easements.

Response: This application does not include a request to construct a water-dependent structure, facility, or trail. These criteria do not apply.

I. Docks and other water-dependent structures.

...

Response: This application does not include a request to construct docks or other water-dependent structures. The criteria do not apply.

J. Joint docks.

...

Response: This application does not include a request to build any joint docks. These criteria do not apply.

L. Roads, driveways, utilities, or passive use recreation facilities. Roads, driveways, utilities, public paths, or passive use recreation facilities may be built in those portions of HCAs that include wetlands, riparian areas, and water resource areas when no other practical alternative exists but shall use water-permeable materials unless City engineering standards do not allow that. Construction to the minimum dimensional standards for roads is required. Full mitigation and revegetation is required, with the applicant to submit a mitigation plan pursuant to CDC 32.070 and a revegetation plan pursuant to CDC 32.080. The maximum disturbance width for utility corridors is as follows:

1. For utility facility connections to utility facilities, no greater than 10 feet wide.
2. For upgrade of existing utility facilities, no greater than 15 feet wide.

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3. For new underground utility facilities, no greater than 25 feet wide, and disturbance of no more than 200 linear feet of water quality resource area, or 20 percent of the total linear feet of water quality resource area, whichever is greater.

Response: Based on the underlying soils and other geotechnical characteristics, the Geotechnical Engineering Report, in Exhibit G, recommends against the use of permeable materials on this site.

The Preliminary Composite Utility and Site Plan included in the attached Exhibit A illustrates the design for driveways and utilities within the HCA at the minimum dimensional standards for construction. The planned utility facilities are for new construction and will be placed underground in the existing 20-foot-wide Private Access and Utility Easement (Doc. No. 2019-006706 recorded in Clackamas County Records). The Preliminary Demolition and Grading Plan in Exhibit A includes a Summary of Site Disturbance chart which illustrates the total disturbed area within the WRA for both affected lots. The required mitigation and revegetation plan under CDC 32.080 are included in the Site Assessment Report attached as Exhibit F to this application. The criteria are met.

- M. Structures. All buildings and structures in HCAs and riparian areas, including all exterior mechanical equipment, should be screened, colored, or surfaced so as to blend with the riparian environment. Surfaces shall be non-polished/reflective or at least expected to lose their luster within a year. In addition to the specific standards and criteria applicable to water-dependent uses (docks), all other provisions of this chapter shall apply to water dependent uses, and any structure shall be no larger than necessary to accommodate the use.

Response: Building-specific information is not available at this time. At time of the building permit submittal, the City will confirm that building plans are consistent with the applicable requirements stated herein. These criteria can be met.

- N. Water-permeable materials for hardscapes. The use of water-permeable materials for parking lots, driveways, patios, and paths as well as flow-through planters, box filters, bioswales and drought tolerant plants are strongly encouraged in all “a” and “b” land classifications and shall be required in all “c” and “d” land classifications. The only exception in the “c” and “d” classifications would be where it is demonstrated that water-permeable driveways/hardscapes could not structurally support the axle weight of vehicles or equipment/storage load using those areas. Flow through planters, box filters, bioswales, drought tolerant plants and other measures of treating and/or detaining runoff would still be required in these areas.

Response: Based on the underlying soils and other geotechnical characteristics, the Geotechnical Report, attached as Exhibit G, recommends against the use of permeable materials on this site. The criterion is met.

- O. Signs and graphics. No sign or graphic display inconsistent with the purposes of the protection area shall have a display surface oriented toward or visible from the Willamette or Tualatin River. A limited number of signs may be allowed to direct public access along legal routes in the protection area.

Response: This application does not include a request for any signs or graphic displays on the subject property. This criterion does not apply.

- P. Lighting. Lighting shall not be focused or oriented onto the surface of the river except as required by the Coast Guard. Lighting elsewhere in the protection area shall be the minimum necessary and shall not create off-site glare or be omni-directional. Screens and covers will be required.

Response: The Applicant is aware that the lighting placement on the subject property must be focused or oriented away from the protection area. The minimum necessary lighting will be directed so as not to create off-site glare or be omni-directional. This criterion can be met.

Q. Parking. Parking and unenclosed storage areas located within or adjacent to the protection area boundary shall be screened from the river in accordance with Chapter 46 CDC, Off-Street Parking, Loading and Reservoir Areas. The use of water-permeable material to construct the parking lot is either encouraged or required depending on HCA classification per CDC 28.110(N)(4).

Response: The Applicant is aware of the requirements for parking and unenclosed storage areas and has responded with the standards of CDC Chapters 46 and 28, respectively. This criterion can be met.

R. Views. Significant views of the Willamette and Tualatin Rivers shall be protected as much as possible as seen from the following public viewpoints: Mary S. Young Park, Willamette Park, Cedar Oak Park, Burnside Park, Maddox Park, Cedar Island, the Oregon City Bridge, Willamette Park, and Fields Bridge Park.

Where options exist in the placement of ramps and docks, the applicant shall select the least visually intrusive location as seen from a public viewpoint. However, if no options exist, then the ramp, pilings and dock shall be allowed at the originally proposed location.

Response: The subject site is not located between the above-listed viewpoints and the Willamette River. The criterion does not apply.

S. Aggregate deposits. Extraction of aggregate deposits or dredging shall be conducted in a manner designed to minimize adverse effects on water quality, fish and wildlife, vegetation, bank stabilization, stream flow, visual quality, noise and safety, and to promote necessary reclamation.

Response: This application does not seek approval for extraction of aggregate deposits. This criterion does not apply.

T. Changing the landscape/grading.

1. Existing predominant topographical features of the bank line and escarpment shall be preserved and maintained except for disturbance necessary for the construction or establishment of a water related or water dependent use. Measures necessary to reduce potential bank and escarpment erosion, landslides, or flood hazard conditions shall also be taken.

Any construction to stabilize or protect the bank with rip rap, gabions, etc., shall only be allowed where there is clear evidence of erosion or similar hazard and shall be the minimum needed to stop that erosion or to avoid a specific and identifiable hazard. A geotechnical engineer's stamped report shall accompany the application with evidence to support the proposal.

Response: This application does not impact the bank line. The criterion does not apply.

2. The applicant shall establish to the satisfaction of the approval authority that steps have been taken to minimize the impact of the proposal on the riparian environment (areas between the top of the bank and the low water mark of the river including lower terrace, beach and river edge).

Response: Although the subject property is located in the WRG, the site is approximately 850 feet north of the Willamette River and is not in the associated riparian corridor. As such, the

application will not result in impacts to the riparian environment. The criterion does not apply.

3. The applicant shall demonstrate that stabilization measures shall not cause subsequent erosion or deposits on upstream or downstream properties.
4. Prior to any grading or development, that portion of the HCA that includes wetlands, creeks, riparian areas and water resource area shall be protected with an anchored chain link fence (or approved equivalent) at its perimeter and shall remain undisturbed except as specifically allowed by an approved Willamette and Tualatin River Protection and/or water resource area (WRA) permit. Such fencing shall be maintained until construction is complete. That portion of the HCA that includes wetlands, creeks, riparian areas and water resource area shall be identified with City-approved permanent markers at all boundary direction changes and at 30- to 50-foot intervals that clearly delineate the extent of the protected area.
5. Full erosion control measures shall be in place and approved by the City Engineer prior to any grading, development or site clearing.

Response: As shown in the Preliminary Grading, Erosion Control, and Construction Management Plan, included in the attached Exhibit A, chain link fencing will delineate the boundary of disturbance areas on site. This fencing will be maintained throughout the duration of site construction. Additionally, Exhibit A illustrates the extent of all required erosion control structures. The criteria are met.

- U. Protect riparian and adjacent vegetation. Vegetative ground cover and trees upon the site shall be preserved, conserved, and maintained according to the following provisions:
1. Riparian vegetation below OHW removed during development shall be replaced with indigenous vegetation, which shall be compatible with and enhance the riparian environment and approved by the approval authority as part of the application.

Response: This application does not anticipate that vegetation removal below the OHW will occur. This criterion does not apply.

2. Vegetative improvements to areas within the protection area may be required if the site is found to be in an unhealthy or disturbed state by the City Arborist or his or her designated expert. "Unhealthy or disturbed" includes those sites that have a combination of native trees, shrubs, and groundcover on less than 80 percent of the water resource area and less than 50 percent tree canopy coverage in the primary and secondary habitat conservation area to be preserved. "Vegetative improvements" will be documented by submitting a revegetation plan meeting CDC 28.160 criteria that will result in the primary and secondary habitat conservation area to be preserved having a combination of native trees, shrubs, and groundcover on more than 80 percent of its area, and more than 50 percent tree canopy coverage in its area. The vegetative improvements shall be guaranteed for survival for a minimum of two years. Once approved, the applicant is responsible for implementing the plan prior to final inspection.

Response: Applicant has made contact with the City Arborist to perform a Significant Tree Determination in relation to the proposed development. The Site Assessment Report, attached as Exhibit F, includes a Revegetation Plan for all vegetative improvements. This criterion is met.

3. Tree cutting shall be prohibited in the protection area except that:
 - a. Diseased trees or trees in danger of falling may be removed with the City Arborist's approval; and

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- b. Tree cutting may be permitted in conjunction with those uses listed in CDC 28.030 with City Arborist approval; to the extent necessary to accommodate the listed uses;
 - c. Selective cutting in accordance with the Oregon Forest Practices Act, if applicable, shall be permitted with City Arborist approval within the area between the OHW and the greenway boundary provided the natural scenic qualities of the greenway are maintained.

Response: Tree Tables are illustrated in the Preliminary Demolition and Tree Preservation and Removal Plan included in Exhibit A and identify the scheduled tree removal necessary to accommodate a new home on Tax Lot 800 that minimizes WRA and associated impacts. Tree removal below the OHW is not anticipated. Applicant anticipates that the City Arborist will determine that none of the removed trees are significant. The criteria are met.

28.120 Site Plan

- A. All site plans and maps shall include the name, address and telephone number of the applicant, a lineal scale of the plot plan, a north arrow and a vicinity map.
- B. The applicant shall submit a site plan drawn to an appropriate scale (in order of preference: one inch equals 10 feet to one inch equals 30 feet), which contains the following information:
 - 1. Assessor's Map number and tax lot number.
 - 2. The lot or parcel boundaries, dimensions and gross area.
 - 3. The applicant's property and the surrounding property to a distance sufficient to determine the relationship between the applicant's property and proposed development to the adjacent property and development.
 - 4. The location, dimensions, and names of all existing and platted streets and other public ways and easements on adjacent property and on the site.
 - 5. The location, dimensions and setback distances of all:
 - a. Existing structures, improvements, utility facilities and drainageways on site and on adjoining properties;
 - b. Proposed structures or changes to existing structures, improvements, utility facilities and drainageways on the site.
 - 6. All developments shall define and map existing public access rights on, and adjacent to, the subject property.
 - 7. A slope contour map at minimum two-foot intervals showing slope classifications of zero to 25 percent and greater than 25 percent.
 - 8. If a wetland on the West Linn Local Wetland Inventory is identified on the property and the proposed activity is expected to encroach within 25 feet of the wetland, a delineation of the precise boundaries of that wetland prepared by a wetland biologist.
 - 9. The location of the ordinary high water mark and the ordinary low water mark on the property and on abutting properties.
 - 10. The delineation of areas designated "Habitat and Impact Areas Not Designated as HCAs" and HCA areas by low, medium and high designation shall be mapped based on the HCA Map and any necessary verification shall be done by the Planning Director.

Response: This application includes Preliminary Plans, attached as Exhibit A, which include a Preliminary Composite Utility and Site Plan that illustrates the applicable information as required above. The criteria are met.

28.130 Grading Plan

The grading plan shall be at the same scale as the site plan (CDC 28.120) and shall show or attach:

- A. The location and extent to which grading will take place indicating general contour lines, slope ratios, slope stabilization proposals, and location and height of retaining walls, if proposed.
- B. Tables and maps identifying acreage, location and type of development constraints due to site characteristics such as slope, drainage and geologic hazards. For Type I, II, and III lands (refer to definitions in Chapter 02 CDC), the applicant must provide a geologic report, with text, figures and attachments as needed to meet the industry standard of practice, prepared by a certified engineering geologist and/or a geotechnical professional engineer, that includes:
 - 1. Site characteristics, geologic descriptions and a summary of the site investigation conducted;
 - 2. Assessment of engineering geological conditions and factors;
 - 3. Review of the City of West Linn's Natural Hazard Mitigation Plan and applicability to the site; and
 - 4. Conclusions and recommendations focused on geologic constraints for the proposed land use or development activity, limitations and potential risks of development, recommendations for mitigation approaches and additional work needed at future development stages including further testing and monitoring.
- C. Sufficient factual data to support the conclusions of the plan.
- D. Identification information, including the name and address of the owner, developer, project designer, and the project engineer.

Response: A Preliminary Grading Impact Plan is included in Exhibit A which identifies development constraints as described above. A Geotechnical Engineering Report prepared by a certified geotechnical professional engineer is attached as Exhibit G. All other applicable information is provided throughout this narrative. The criteria are met.

28.140 Architectural Drawings

- A. Architectural drawings shall be submitted at the same scale as the site plan scale, as described in the site plan, showing:
 - 1. Elevations of structure(s). For additions, the drawings should clearly distinguish between existing structure and proposed addition and show distance from addition and existing structure to the protected water resource.
 - 2. The exterior building materials: type, color, and texture.
 - 3. For docks, all pilings and their heights shall be shown. The applicant shall indicate the depth from the end of the dock to the river bottom during typical summer months. The applicant shall also provide any available product literature and photographs from the manufacturer or installer.
 - 4. For docks, the applicant shall provide a plan view of the structure in relation to the shoreline and river. The plans shall also indicate graphically the OLW and the OHW and the DSL's preference rights and authorized areas.

Response: Architectural details for a new home on Tax Lot 800 are currently unknown. The City will ensure the applicable criteria listed above are met during the building permit submittal. The criteria do not apply.

28.150 Landscape Plan

- A. The landscape plan shall be prepared per site plan standards (CDC 28.120) and in addition shall show:
1. The location, size and type of existing trees and location and type of vegetation to be removed and to be retained;
 2. The location and design of landscaped areas;
 3. The varieties and sizes of trees and materials to be planted;
 4. The location and height of fences and other buffering or screening materials; and
 5. The location, materials, dimensions and design of terraces, decks, patios, shelters, footpaths, retaining walls and play areas.
- B. Revegetation plan per CDC 32.080.

Response: A Preliminary Landscape Plan is included in the attached Exhibit A which illustrates the details as required above, including a revegetation plan. The revegetation plan is further described in the Site Assessment Report attached as Exhibit F. The criteria are met.

28.160 Mitigation Plan

If any HCA is permanently disturbed as a result of the proposed development of any uses or structures, the applicant shall prepare and implement a revegetation and mitigation plan pursuant to the provisions of CDC 32.070 and 32.080.

Response: A revegetation and mitigation plan is included in the Site Assessment Report attached as Exhibit F. Responses to CDC 32.070 and 32.080 are included later in this narrative. This criterion is met.

Chapter 32 – WATER RESOURCE AREA PROTECTION

32.020 Applicability

- A. This chapter applies to all development, activity or uses within WRAs identified on the WRA Map. It also applies to all verified, unmapped WRAs. The WRA Map shall be amended to include the previously unmapped WRAs.

Response: This application includes a request for new development of a single family home within the WRA and identified as such on the WRA Map. This criterion is met.

- B. The burden is on the property owner to demonstrate that the requirements of this chapter are met, or are not applicable to the land, development activity, or other proposed use or alteration of land. The Planning Director may make a determination of applicability based on the WRA Map, field visits, and any other relevant maps, site plans and information, as to:
1. The existence of a WRA;
 2. The exact location of the WRA; and/or
 3. Whether the proposed development, activity or use is within the WRA boundary.

In cases where the location of the WRA is unclear or disputed, the Planning Director may require a survey, delineation, or sworn statement prepared by a natural resource professional/wetland biologist or specialist that no WRA exists on the site. Any required survey, delineation, or statement shall be prepared at the applicant's sole expense.

Response: The Site Assessment Report, attached as Exhibit F, illustrates that the subject property is located within the WRA and provides the delineated boundary of the WRA. The wetlands on the site have been field delineated by an AKS Engineering & Forestry professional natural resources specialist. These criteria are met.

32.030 Prohibited Uses

Alteration, development, or use of real property designated as, and within, a WRA is strictly prohibited except as specifically allowed or exempted in this chapter.

Table 32-1: Summary Of Where Development And Activities May Occur In Areas Subject To This Chapter		
Type of Development or Activity	In Water Resource	Water Resource Area
New house, principal structure(s)	No	No, except by hardship, CDC 32.100. Geotechnical study may reduce WRA width per Table 32-2 (footnote 4).
Additions to existing house, principal structure(s) and replacement in kind (replacement in kind does not count against the 500 sq. ft. limit so long as it remains within the existing footprint)	No	Yes, so long as it gets no closer to the WRA than building footprint that existed January 1, 2006. Max. 500 sq. ft. of addition(s) to side or 500 sq. ft. to side of building footprint furthest from WRA. No limit on vertical additions within existing footprint. (CDC 32.040(C)). Geotechnical study may reduce the WRA width per Table 32-2 (footnote 4).
New cantilevered decks (over 30 inches), balconies, roof overhangs and pop outs towards the WRA from existing house or principal structure(s)	No	Yes, but only 5 ft. into the WRA. Foundation or supports of structure cannot extend vertically to grade in the WRA. Geotechnical study may reduce the WRA width per Table 32-2 (footnote 4).
Decks within 30 inches of grade, at grade patios	No	Yes, but only to within 50 ft. of the water resource or 10 ft. behind the top of slope (ravine), whichever is greater. ¹ Geotechnical study may reduce the WRA width per Table 32-2 (footnote 4).
New accessory structure under 120 sq. ft. and 10 ft. tall	No	Yes, but only if it is a minimum of 50 ft. from the water resource or 10 ft. behind the top of slope (ravine), whichever is greater. ¹
Repair and maintenance to existing accessory structures	No	Yes, but no increase in footprint or height.
Storm water treatment and detention (e.g., rain gardens, storm outfall/energy dissipaters)	No	Yes, private and public facilities including outfall and energy dissipaters are permitted if no reasonable alternatives exist.
Driveways/streets/bridges and parking lots	No, unless a WRA crossing is the only available route. No parking lots.	No, unless a WRA crossing is the only available route, or it is part of a hardship application. Parking lots only allowed in hardship cases the maximum distance from water resource.

New fence(s)	No markers or posts in a water resource.	Yes, but only to within 50 ft. of the water resource or behind the top of slope (ravine), whichever is greater. ¹ In remainder of a WRA, only City approved property markers or posts every 25 ft. to delineate property.
Demolition of structure and/or removal of impervious surfaces in the WRA	Yes, restoration and re-vegetation required.	Yes, restoration and re-vegetation required.
Exterior lighting	No	No, except on existing buildings, additions or hardship cases, but light must be directed away from the WRA and less than 12 ft. high.
Public passive recreation facilities	No, except for bridges and utility crossings.	Yes, but only soft or permeable surface trails, bridges and elevated paths, interpretive facilities and signage. Hard surface ADA trails are allowed in WRA above top of slope associated with well-defined ravine WRAs.
Public active recreation facilities	No, except for bridges and utility crossings.	Yes, but natural surface playing fields and playground areas only in WRA above top of slope associated with well-defined ravine WRAs.
Grading, fill (see also TDAs)	No, except for bridges and utility crossings.	Yes, after a WRA permit is obtained. Restoration and re-vegetation required.
Temporarily disturbed areas (TDAs) (e.g., buried utilities)	No, except as allowed by WRA permit.	Yes, restoration and re-vegetation required.
Removal of existing vegetation or planting new vegetation	No, except invasive plants and hazard trees per CDC 32.040(A)(2) or per CDC 32.100.	Yes, if it is replaced by native vegetation. Exemption CDC 32.040(A)(3) applies.
Realigning water resources	Yes, after “alternate review” process	Not applicable

¹ Development to within 50 feet of the water resource applies to Table 32-2 WRA types (A), (C), (D), and (H). Development behind top of slope (ravine) applies to WRA type (B).

Response: This application includes a request for a Water Resource Area Permit that would accommodate the placement of one single-family home on Tax Lot 800 at some point in the future. The Applicant is aware that restoration and revegetation is required. A Revegetation Plan is included in the Site Assessment Report attached as Exhibit F. The criteria are met.

32.040 Exemptions

The following development, activities or uses are exempt from a WRA permit but must conform to any applicable requirements of this section.

A. Vegetation maintenance, planting and removal.

1. The routine maintenance of any existing WRA, consistent with the provisions of this chapter such as, but not limited to, removing pollutants, trash, unauthorized fill, and dead or dying vegetation that constitutes a hazard to life or property.

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2. Removal of plants identified as nuisance, invasive or prohibited plants; provided, that after plant removal, re-vegetation of disturbed areas is performed pursuant to CDC 32.100.
 3. The planting or propagation of plants identified as native plants on the Portland Plant List.
 4. Maintenance of existing gardens, pastures, lawns, and landscape perimeters, including the installation of new irrigation systems within existing gardens, lawns, and landscape perimeters.
 5. The use of pesticides and herbicides with applicable state (e.g., Oregon DEQ) permits.

Response: The Applicant acknowledges the vegetation maintenance requirements. This application includes a request for a WRA permit for the development of the subject property. The vegetation maintenance, planting, and removal exemption does not apply.

B. Building, paving, grading, and testing.

1. Maintenance. Routine repair, maintenance and replacement of legally established above and below ground utilities and related components (including storm water catch basins, intakes, etc.), roads, driveways, paths, trails, fences and manmade water control facilities such as constructed ponds, wastewater facilities, and storm water treatment facilities that do not expand the disturbed area at grade or footprint, provided re-vegetation of disturbed areas or corridors is performed pursuant to CDC 32.100.
2. Trails. The establishment of unpaved trails constructed of non-hazardous, pervious materials with a maximum width of four feet in generalized corridors approved in a parks or trails master plan; provided, that:
 - a. The trail is set back from the water resource at least 30 feet, except at stream crossing points or at points where the topography forces the trail closer to the stream.
 - b. Foot bridge crossings shall be kept to a minimum. When the stream bank adjacent to the foot bridge is accessible (e.g., due to limited vegetation or topography), fences or railings shall be installed from the foot bridge and extend 15 feet beyond the terminus of the foot bridge to discourage trail users and pets from accessing the stream bank, disturbing wildlife and habitat areas, and causing vegetation loss, stream bank erosion and stream turbidity.
 - c. Trails shall be designed to minimize disturbance to existing vegetation, work with natural contours, avoid the fall line on slopes where possible, and avoid areas with evidence of slope failure to ensure that trail runoff does not create channels in the WRA.
3. Site investigations. Temporary and minor clearing outside of wetlands not to exceed 200 square feet per acre or site, whichever is more; provided, that no individual area is greater than 200 feet in size, for the purpose of site investigations and pits for preparing soil profiles; provided, that such areas are restored to their original condition when the investigation is complete. While such temporary and minor clearing is exempt from the provisions of this chapter, it is subject to all other City codes, including provisions for erosion control and tree removal.
4. Support structures for overhead power or communication lines where the support structures are outside of the WRA.
5. The installation, within the developed portions of street rights-of-way, of new utilities, the maintenance or replacement of existing utilities and street repaving projects.

Response: This application includes a WRA Permit for the development of the subject property. The Applicant acknowledges the building, paving, grading, testing, and maintenance exemption requirements herein stated. This exemption does not apply.

C. Non-conforming structures.

1. Expansion of the principal non-conforming structure. Additions to the existing building footprint of a principal non-conforming structure within, or partially within, the WRA are exempt, and additionally exempt from Chapter 66 CDC, Non-Conforming Structures, as long as the addition(s) meets the following restrictions:
 - a. Re-vegetation of temporarily disturbed areas will be performed per CDC 32.100 after the addition is completed;
 - b. There is no net increase in storm water runoff flowing toward the water resource as a result of the addition(s);
 - c. The addition to the principal structure is not closer to the water resource than the existing principal structure;
 - d. If it is a lateral addition, it does not extend more than 25 feet laterally from the side of the existing principal structure;
 - e. The addition does not increase the footprint of the existing principal structure by more than 500 square feet, at any one time or incrementally;
 - f. Lateral additions to decks cannot come closer to the water resource than the existing deck;
 - g. Vertical additions to existing principal structures that comply with the maximum height requirements of the underlying zone are exempt.
2. Repair, replacement and removal of non-conforming structures.
 - a. Interior remodeling of a non-conforming structure.
 - b. Repair, maintenance, rehabilitation and replacement of non-conforming structures, accessory structures, utilities and related components, roads, driveways, paths, trails, fences, and manmade water and storm water control facilities that do not expand the disturbed area or footprint. Re-vegetation of temporarily disturbed areas or corridors pursuant to CDC 32.100 is required.
 - c. This section also applies in the event that a non-conforming structure burned down or was otherwise damaged by natural or other disaster. The structure could be re-built so long as the structure did not expand the original footprint and the original access driveway (PDA) was used.
 - d. Demolition and removal of non-conforming structure's impervious surfaces are exempt as long as the affected areas are restored with native vegetation pursuant to CDC 32.100.

Response: This application includes a WRA Permit for the development of the subject property and does not include any non-conforming structures. This exemption does not apply.

D. New construction activities allowed in the WRA.

1. Structures shall be located out of the WRA, except that eaves, balconies, decks, "pop outs," and similar additions, may cantilever over the outer boundary of the WRA a maximum of five feet. No vertical supports may extend down to grade within the WRA.

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2. Construction of an accessory structure, less than 120 square feet in size and under 10 feet tall, may be constructed to within 50 feet of the water resource or 10 feet behind the top of slope (ravine, per Figure 32-4), whichever is greater. No more than one accessory structure is permitted in the WRA. Accessory structures in the WRA that existed prior to January 1, 2006, may remain in place and not count against the limitation in new accessory structures.
 3. Construction of a water permeable patio or deck within 30 inches of the original grade and construction of approved water permeable footpaths may be constructed to within 50 feet of the water resource or 10 feet behind the top of slope (ravine, per Figure 32-4), whichever is greater.
 4. Fences may be built to within 50 feet of the water resource or behind the top of slope (ravine), whichever is greater.

Response: This application is eligible to utilize the hardship provisions in CDC 32.110, which establish different development-related standards for lots created prior to January 2006. Please see responses under CDC 32.110. This exemption is not applicable.

- E. Emergency activities. Actions authorized by the City Manager that must be taken immediately or within a period of time too short to fully comply with this chapter to:
1. Prevent immediate danger to life or property;
 2. Prevent immediate threat of serious environmental degradation;
 3. Restore existing utility service; or
 4. Reopen a public thoroughfare to traffic.

However, after the emergency has passed any disturbed area shall be restored, pursuant to CDC 32.100.

Response: This application does not seek approval for any of the emergency activities listed above. This exemption for emergency activities does not apply.

- F. Exempt areas.
1. The Tualatin or Willamette Rivers are regulated by Chapter 28 CDC and are not subject to this chapter. However, wetlands and buffers, regardless of their proximity to these rivers, are subject to this chapter. In areas where there is overlap with Chapter 28 CDC, this chapter shall prevail.
 2. Existing enclosed or piped sections of streams, including any development at right angles to the enclosed or piped sections.

Response: The Applicant acknowledges the above exempt areas. This exemption is not applicable.

- G. Metro Code Chapter 3.07 Urban Growth Management Functional Plan – Exempt uses and conditioned activities. Where construction of a residence was completed before January 1, 2006, the owners or residents shall not be restricted from engaging in any development that was allowed prior to September 22, 2005; unless such development required obtaining a land use decision, or a building, erosion control, or grading permit.

Response: This application does not include a request affecting a residence constructed prior to January 2006. This exemption is not applicable.

32.050 Application

- A. An application requesting approval for a use or activity regulated by this chapter shall be initiated by the property owner, or the owner's authorized agent, and shall include an application form and the appropriate deposit or fee as indicated on the master fee schedule.

Response: Application forms signed by the property owners are included in the attached Exhibit B. The appropriate fees are also included with this application submittal. The criterion is met.

B. A pre-application conference shall be a prerequisite to the filing of the application.

Response: A pre-application conference to discuss this project was held on June 20, 2019 at West Linn City Hall. A copy of the Pre-application Summary is attached as Exhibit H. This criterion is met.

C. The applicant shall submit maps and diagrams at 11 by 17 inches and a written narrative addressing the approval criteria and requirements of this chapter, and any additional copies required by the Planning Director.

Response: This narrative and supporting documentation are included herein. Attached as Exhibit A are the Preliminary Plans which include the maps required for the submittal. The criterion is met.

D. Where review of soil maps, Department of Geology and Mineral Industries (DOGAMI) maps, or on-site inspection by the City Engineer reveals evidence of slope failures or that WRA slopes are potentially unstable or prone to failure, geotechnical studies may be required to demonstrate that the proposed development will not cause, or contribute to, slope failure or increased erosion or sedimentation in the WRA or adversely impact surface or modify groundwater flow or hydrologic conditions. These geotechnical studies shall include all necessary measures to avoid or correct the potential hazard.

Response: A geotechnical report is attached as Exhibit G and accounts for the above-listed potential impacts in its analysis and provides recommendations for siting a new home on the subject site. This criterion is met.

E. Applications proposing that streets or utilities cross water resources, or any other development that modifies the water resource, shall present evidence in the form of adopted utility master plans or transportation master plans, or findings from a registered Oregon civil engineer, certified engineering geologist or similarly qualified professional to demonstrate that the development or improvements are consistent with accepted engineering practices.

Response: This application does not include a request for streets or utilities that cross water resources. This criterion does not apply.

F. Site plan. The applicant shall submit a site plan which contains the following information, as applicable:

1. The name, address, and telephone number of the applicant, the scale (lineal) of the plan, and a north arrow.

Response: The Preliminary Plans, attached as Exhibit A, include the required information above. The criterion is met.

2. Property lines, rights-of-way, easements, etc.

Response: The Preliminary Plans, attached as Exhibit A, illustrate the property lines, rights-of-way, and easements as required above. This criterion is met.

3. A storm detention and treatment plan and narrative statement pursuant to CDC 92.010(E).

Response: A Preliminary Stormwater Report is attached as Exhibit I. This criterion is met.

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4. Tables and maps identifying acreage, location and type of development constraints due to site characteristics such as slope, drainage and geologic hazards. For Type I, II, and III lands (refer to definitions in Chapter 02 CDC), the applicant must provide a geologic report, with text, figures and attachments as needed to meet the industry standard of practice, prepared by a certified engineering geologist and/or a geotechnical professional engineer, that includes:
 - a. Site characteristics, geologic descriptions and a summary of the site investigation conducted;
 - b. Assessment of engineering geological conditions and factors;
 - c. Review of the City of West Linn's Natural Hazard Mitigation Plan and applicability to the site; and
 - d. Conclusions and recommendations focused on geologic constraints for the proposed land use or development activity, limitations and potential risks of development, recommendations for mitigation approaches and additional work needed at future development stages including further testing and monitoring.

Response: Attached as Exhibit G is a Geotechnical Engineering Report prepared by a geotechnical professional engineer that includes the requirements stated above. The criteria are met.

5. Boundaries of the WRA, specifically delineating the water resource, and any riparian corridor boundary. If the proposal includes development of a wetland, a wetlands delineation prepared by a professional wetland specialist will be required. The wetland delineation may be required to be accepted or waived through the Department of State Lands (DSL) delineation review process.

Response: Attached as Exhibit E is a DSL Wetland Delineation approval for the proposed development area. This criterion is met.

6. Location of existing and proposed development, including all existing and proposed structures, accessory structures, any areas of fill or excavation, water resource crossings, alterations to vegetation, or other alterations to the site's natural state.

Response: The Preliminary Plans, attached as Exhibit A, illustrate all applicable requirements stated above. The criterion is met.

7. Identify the location and square footage of previously disturbed areas, areas that are to be temporarily disturbed, and area to be permanently disturbed or developed.

Response: The Preliminary Grading Impact Plan in the attached Exhibit A includes a Summary of Site Disturbance table which identifies the temporarily and permanently disturbed areas. This criterion is met.

8. When an application proposes development within the WRA, an inventory of vegetation within the WRA, sufficient to categorize the existing condition of the WRA, including:
 - a. The type and general quality of ground cover, including the identification of dominant species and any occurrence of non-native, invasive species;
 - b. Square footage of ground cover; and
 - c. Square footage of tree canopy as measured either through aerial photographs or by determining the tree drip lines. Where only a portion of a WRA is to be disturbed, the tree inventory need only apply to the impacted area. The remaining treed area shall be depicted by outlining the canopy cover.

Response: The entire subject property is covered with some level of groundcover vegetation. Attached as Exhibit F is a Site Assessment Report together with the Site Plan (Figure 7A) which identifies the applicable requirements stated above. The criteria are met.

9. Locations of all significant trees as defined by the City Arborist.

Response: Applicant has contacted the City Arborist on December 2, 2020 and requested a Significant Tree Determination. The City Arborist has previously performed a site visit for the land use process in the City’s File No. WAP-20-01/WRG-20-01/MIS-20-01/LLA-20-01 and stated that there were no significant trees on Tax Lot 800. We anticipate a similar formal response from Mr. Ron Jones, the City Arborist by the time this application is received by the City. This criterion can be met.

10. Identify adopted transportation, utility and other plan documents applicable to this proposal.

11. For cases processed under CDC 32.110 (hardship), provide the maximum disturbed area (MDA) calculations.

Response: This application is eligible for review under CDC 32.110. Per CDC 32.11.B, a disturbance of 5,000 square feet or 30 percent of the total area of the WRA, whichever is greater, is allowed. Using the calculation of 30 percent of the total WRA (53,689 square feet), the maximum disturbed area (MDA) allowed in the WRA is ±16,107 square feet. The Preliminary Grading and Impact Plan included in the attached Exhibit A shows the calculation of disturbed area for the affected tax lots as follows:

CALCULATION OF DISTURBED AREA	
Tax Lot 800	
Permanently disturbed area:	±4,322 square feet
Temporarily disturbed area:	±88 square feet
Total disturbed area:	±4,751 square feet
Tax Lot 300	
Permanently disturbed area:	±1,570 square feet
Temporarily disturbed area:	±0 square feet
Total disturbed area:	±4,969 square feet
Tax Lot 802	
Permanently disturbed area:	±223 square feet
Temporarily disturbed area:	±446 square feet
Total disturbed area:	±1,053 square feet

The criteria are met.

G. Construction management plan. The applicant shall submit a construction management plan which includes the following:

1. The location of proposed TDAs (site ingress/egress for construction equipment, areas for storage of material, construction activity areas, grading and trenching, etc.) that will subsequently be restored to original grade and replanted with native vegetation, shall be identified, mapped and enclosed with fencing per subsection (G)(3) of this section.
2. Appropriate erosion control measures consistent with Clackamas County Erosion Prevention and Sediment Control Planning and Design Manual, rev. 2008, and a tentative schedule of work.

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3. The WRA shall be protected, prior to construction, with an anchored chain link fence (or equivalent approved by the City) at its perimeter that shall remain undisturbed, except as specifically authorized by the approval authority. Additional fencing to delineate approved TDAs may be required. Fencing shall be mapped and identified in the construction management plan and maintained until construction is complete.

Response: A Grading, Erosion Control, and Construction Management Plan is included in the attached Exhibit A and contains the above-referenced information. The criteria are met.

H. Mitigation plan prepared in accordance with the requirements in CDC 32.090.

Response: A Mitigation Plan is included in the Site Assessment Report, attached as Exhibit F. This criterion is met.

I. Re-vegetation plan prepared in accordance with the requirements in CDC 32.100.

Response: A Re-vegetation Plan is included in the Site Assessment Report, attached as Exhibit F. This criterion is met.

J. The Planning Director may modify the submittal requirements per CDC 99.035.

Response: Applicant acknowledges that the Planning Director may modify the submittal requirements per CDC 99.035.

K. The following additional requirements apply to applications being submitted under the alternative review process pursuant to CDC 32.070 and 32.080.

...

Response: This application does not seek approval through the alternative review process. The criteria do not apply.

32.090 Mitigation Plan

- A. A mitigation plan shall only be required if development is proposed within a WRA (including development of a PDA). (Exempted activities of CDC 32.040 do not require mitigation unless specifically stated. Temporarily disturbed areas, including TDAs associated with exempted activities, do not require mitigation, just grade and soil restoration and re-vegetation.) The mitigation plan shall satisfy all applicable provisions of CDC 32.100, Re-Vegetation Plan Requirements.

Response: A Mitigation Plan is included in the Site Assessment Report, attached as Exhibit F, as required by CDC 32.090. The plan addresses all applicable requirements for the proposed development within the WRA. This criterion is met.

- B. Mitigation shall take place in the following locations, according to the following priorities (subsections (B)(1) through (4) of this section):

1. On-site mitigation by restoring, creating or enhancing WRAs.
2. Off-site mitigation in the same sub-watershed will be allowed, but only if the applicant has demonstrated that:
 - a. It is not practicable to complete mitigation on-site, for example, there is not enough area on-site; and
 - b. The mitigation will provide equal or superior ecological function and value.
3. Off-site mitigation outside the sub-watershed will be allowed, but only if the applicant has demonstrated that:
 - a. It is not practicable to complete mitigation on-site, for example, there is not enough area on-site; and

b. The mitigation will provide equal or superior ecological function and value.

4. Purchasing mitigation credits through DSL or other acceptable mitigation bank.

Response: All proposed mitigation will be located entirely on Tax Lot 800. The proposed Mitigation Plan in the attached Exhibit F includes on-site mitigation by restoring, creating, and enhancing the WRA located on the project site. Included in the Site Assessment Report, Figure 7 and 7A are color maps which illustrates the impact, mitigation, and WRA areas within the project boundaries. The criteria are met.

C. Amount of mitigation.

1. The amount of mitigation shall be based on the square footage of the permanent disturbance area by the application. For every one square foot of non-PDA disturbed area, on-site mitigation shall require one square foot of WRA to be created, enhanced or restored.
2. For every one square foot of PDA that is disturbed, on-site mitigation shall require one half a square foot of WRA vegetation to be created, enhanced or restored.
3. For any off-site mitigation, including the use of DSL mitigation credits, the requirement shall be for every one square foot of WRA that is disturbed, two square feet of WRA shall be created, enhanced or restored. The DSL mitigation credits program or mitigation bank shall require a legitimate bid on the cost of on-site mitigation multiplied by two to arrive at the appropriate dollar amount.

Response: The amount of mitigation required is based on the square footage of permanently disturbed area and non-previously disturbed area, where 1 square foot of created, enhanced, or restored area on site is required for every square foot of disturbance. Included in the Site Assessment Report, attached as Exhibit F, is a Site Plan (Figure 7) which illustrates the locations of the mitigated area in color. This criterion is met.

D. The Planning Director may limit or define the scope of the mitigation plan and submittal requirements commensurate with the scale of the disturbance relative to the resource and pursuant to the authority of Chapter 99 CDC. The Planning Director may determine that a consultant is required to complete all or a part of the mitigation plan requirements.

Response: The Applicant acknowledges that the Planning Director may limit or define the scope of the Mitigation Plan and requirements. The Mitigation Plan included in the Site Assessment Report, attached as Exhibit F, was prepared by a professional natural resources specialist.

E. A mitigation plan shall contain the following information:

1. A list of all responsible parties including, but not limited to, the owner, applicant, contractor, or other persons responsible for work on the development site.
2. A map showing where the specific adverse impacts will occur and where the mitigation activities will occur.
3. A re-vegetation plan for the area(s) to be mitigated that meets the standards of CDC 32.100.
4. An implementation schedule, including timeline for construction, mitigation, mitigation maintenance, monitoring, and reporting. All in-stream work in fish bearing streams shall be done in accordance with the Oregon Department of Fish and Wildlife.
5. Assurances shall be established to rectify any mitigation actions that are not successful within the first three years. This may include bonding or other surety.

Response: The planting specifications described in the Preliminary Mitigation Planting Plan included in Exhibit A, state that monitoring of the mitigation site is the ongoing responsibility of the property owner and plants that die must be replaced in kind. The criteria are met.

32.100 Re-vegetation Plan Requirements

A. In order to achieve the goal of re-establishing forested canopy, native shrub and ground cover and to meet the mitigation requirements of CDC 32.090 and vegetative enhancement of CDC 32.080, tree and vegetation plantings are required according to the following standards:

1. All trees, shrubs and ground cover to be planted must be native plants selected from the Portland Plant List.
2. Plant size. Replacement trees must be at least one-half inch in caliper, measured at six inches above the ground level for field grown trees or above the soil line for container grown trees (the one-half inch minimum size may be an average caliper measure, recognizing that trees are not uniformly round), unless they are oak or madrone which may be one gallon size. Shrubs must be in at least a one-gallon container or the equivalent in ball and burlap and must be at least 12 inches in height.
3. Plant coverage.
 - a. Native trees and shrubs are required to be planted at a rate of five trees and 25 shrubs per every 500 square feet of disturbance area (calculated by dividing the number of square feet of disturbance area by 500, and then multiplying that result times five trees and 25 shrubs, and rounding all fractions to the nearest whole number of trees and shrubs; for example, if there will be 330 square feet of disturbance area, then 330 divided by 500 equals 0.66, and 0.66 times five equals 3.3, so three trees must be planted, and 0.66 times 25 equals 16.5, so 17 shrubs must be planted). Bare ground must be planted or seeded with native grasses or herbs. Non-native sterile wheat grass may also be planted or seeded, in equal or lesser proportion to the native grasses or herbs.

Response: Total WRA and HCA impacts on the subject site is equal to ±7,954 square feet. Applying the rate of mitigation plantings to this disturbance area equals a total of 80 trees ((7,954 / 500) x 5 = 79.54) and 398 shrubs ((7,954 / 500) x 25 = 397.7). Mitigation is provided in two discrete areas on Lot 800 accounting for the full mitigation required here (see Exhibit F, Appendix 7 for complete details). The criteria are met.

	Tax Lot 800	Tax Lot 300	Tax Lot 802	Total
WRA Permanent Impacts	±4,584 square feet	±1,570 square feet	±6 square feet	±6,160 square feet
HCA Permanent Impacts	±320 square feet	±1,474 square feet	--	±1,794 square feet
TOTAL	±4,904 square feet	±3,044 square feet	±6 square feet	±7,954 square feet

- b. Trees shall be planted between eight and 12 feet on center and shrubs shall be planted between four and five feet on center, or clustered in single species groups of no more than four plants, with each cluster planted between eight and 10 feet on center. When planting near existing trees, the dripline of the existing tree shall be the starting point for plant spacing measurements.

Response: The Mitigation Planting Specifications (Appendix D) in the Site Assessment Report attached as Exhibit F, provides detailed planting specifications, including scientific name,

common name, size, spacing, and quantities of all revegetation. Also included is a Preliminary Mitigation Planting Plan included in Exhibit A. This criterion is met.

4. **Plant diversity.** Shrubs must consist of at least two different species. If 10 trees or more are planted, then no more than 50 percent of the trees may be of the same genus.

Response: A Preliminary Mitigation Planting Plan included in Exhibit A illustrates the various plants and trees. No more than 50 percent of the trees are of the same genus. This criterion is met.

5. **Invasive vegetation.** Invasive non-native or noxious vegetation must be removed within the mitigation area prior to planting.
6. **Tree and shrub survival.** A minimum survival rate of 80 percent of the trees and shrubs planted is expected by the third anniversary of the date that the mitigation planting is completed.
7. **Monitoring and reporting.** Monitoring of the mitigation site is the ongoing responsibility of the property owner. Plants that die must be replaced in kind.
8. **To enhance survival of tree replacement and plantings, the following practices are required:**
 - a. **Mulching.** Mulch new plantings a minimum of three inches in depth and 18 inches in diameter to retain moisture and discourage weed growth.
 - b. **Irrigation.** Water new plantings one inch per week between June 15th to October 15th, for the three years following planting.
 - c. **Weed control.** Remove, or control, non-native or noxious vegetation throughout maintenance period.
 - d. **Planting season.** Plant bare root trees between December 1st and February 28th, and potted plants between October 15th and April 30th.
 - e. **Wildlife protection.** Use plant sleeves or fencing to protect trees and shrubs against wildlife browsing and resulting damage to plants.

Response: The Preliminary Mitigation Planting Plan, located in Exhibit A, states that monitoring and reporting of the mitigation site is the ongoing responsibility of the property owner, and that plants that die must be replaced in kind. These criteria are met.

- B. **When weather or other conditions prohibit planting according to schedule, the applicant shall ensure that disturbed areas are correctly protected with erosion control measures and shall provide the City with funds in the amount of 125 percent of a bid from a recognized landscaper or nursery which will cover the cost of the plant materials, installation and any follow up maintenance. Once the planting conditions are favorable the applicant shall proceed with the plantings and receive the funds back from the City upon completion, or the City will complete the plantings using those funds.**

Response: The Preliminary Plans, attached as Exhibit A, identify the erosion and sediment control measures to be taken during the development of this project. The Applicant understands that funds are to be held at the City when weather prohibits construction and changes to the planting schedule are essential. This criterion can be met.

32.110 Hardship Provisions

The purpose of this section is to ensure that compliance with this chapter does not deprive an owner of reasonable use of land. To avoid such instances, the requirements of this chapter may be reduced. The decision-making authority may impose such conditions as are deemed necessary to limit any adverse impacts that may result from granting relief. The burden shall be on the applicant to demonstrate that the standards of this chapter, including Table 32-2, Required Width of WRA, will deny the applicant “reasonable use” of his/her property.

- A. The right to obtain a hardship allowance is based on the existence of a lot of record recorded with the County Assessor’s Office on, or before, January 1, 2006. The lot of record may have been, subsequent to that date, modified from its original platted configuration but must meet the minimum lot size and dimensional standards of the base zone.

Response: The vesting deeds, included in the attached Exhibit C, show that the subject site comprises legal lots of record with the Clackamas County Assessor’s Office. This criterion is met.

- B. For lots described in subsection A of this section that are located completely or partially inside the WRA, development is permitted, consistent with this section. The maximum disturbed area (MDA) of the WRA shall be determined on a per lot basis. The MDA shall be the greater of:
1. Five thousand square feet of the WRA; or
 2. Thirty percent of the total area of the WRA.

Response: As shown in the Site Assessment Report, Figure 7A, attached as Exhibit F, the total WRA occupies ±53,689 square feet of Lot 800. Using the calculation of 30 percent of the total WRA, the maximum disturbed area (MDA) allowed in the WRA is ±16,107 square feet ($\pm 53,689 \text{ square feet} \times 0.30 = \pm 16,107 \text{ square feet}$). The criteria are met.

- C. The MDA shall be located as follows:
1. In areas where the development will result in the least square footage encroachment into the WRA.
 2. The applicant shall demonstrate, through site and building design, that the proposed development is the maximum practical distance from the water resource based on the functional needs of the proposed use.
 3. The minimum distance from a water resource shall be 15 feet.
 4. Access driveways shall be the minimum permitted width; select an alignment that is least impactful upon the WRA; and shall share use of the driveway, where possible.

Response: Careful consideration for reducing impacts to the WRA was made in the preparation for the layout of the proposed development. The home is shifted as far to the north (away from the water resource) as possible while accommodating a reasonable building footprint and driveway from the shared accessway. Moreover, the Applicant successfully completed a property line adjustment to accommodate placement of the home further east, which reduces the length of a driveway needed to serve this lot and subsequently further reduces WRA impacts. Finally, no impacts will occur within 15 feet of the water resource. The criteria are met.

- D. The MDA shall include:
1. The footprints of all structures, including accessory structures, decks and paved water impermeable surfaces including sidewalks, driveways, parking pads, paths, patios and parking lots, etc. Only 75 percent of water permeable surfaces at grade shall be included in the MDA.

2. All graded, disturbed or modified areas that are not subsequently restored to their original grade and replanted with native ground cover per an approved plan.

Response: As described under the Hardship Provisions section of the Site Assessment Report, attached as Exhibit F, MDAs were calculated based on the methodology established here. The criteria are met.

E. The MDA shall not include:

1. Temporarily disturbed areas (TDAs) adjacent to an approved structure or development area for the purpose of grading, material storage, construction activity, trenched or buried utilities and other temporary activities so long as these areas are subsequently restored to the original grades and soil permeability, and re-vegetated with native plants per CDC 32.100, such that they are at least equal in functional value to the area prior to the initiation of the permitted activity;
2. Bay windows and similar cantilevered elements (including decks, etc.) of the principal or secondary structure so long as they do not extend more than five feet towards the WRA from the vertical plane of the house, and have no vertical supports from grade;
3. PDAs that are not built upon as part of the development proposal will not count in the MDA (e.g., use of an existing access driveway). (Conversely, PDAs that are built upon as part of the development proposal will count in the MDA.);
4. The installation of public streets and public utilities that are specifically required to meet either the transportation system plan or a utility master plan so long as all trenched public utilities are subsequently restored to the original grades and soil permeability, and revegetated with native plants per CDC 32.100, such that they are at least equal in functional value to the area prior to the initiation of the permitted activity. All areas displaced by streets shall be mitigated for.

Table 32-5: MDA Calculation Summary	
Type of Development	Square footage included in MDA calculation?
All structures	YES
Non-water permeable paved surfaces including driveways, parking lots, patios, and paths	YES
Approved water permeable paved surfaces including driveways, parking lots, patios, and paths	YES but at 75% of total water permeable surface square footage
TDAs/graded areas that are restored and re-vegetated with native vegetation	NO
TDAs/all utility trenches and buried utilities restored or re-vegetated with native vegetation	NO
PDAs that are built upon or developed as part of the application	YES
PDAs that are not built upon or developed as part of the application	NO
Storm water detention or treatment pond	YES
Rain garden or bioswale with the native plantings as part of re-vegetation plan	NO
Storm water outfall, energy dissipaters (at, or above, grade)	YES
Non-native landscaping	YES
Sharing an existing driveway	NO
Development of lands that are not within the WRA	NO

Response: As described under the Hardship Provisions section of the Site Assessment Report, attached as Exhibit F, MDAs were calculated based on the methodology established here. The criteria are met.

F. Development allowed under subsection A of this section may use the following provisions:

1. Setbacks required by the underlying zoning district may be reduced up to 50 percent where necessary to avoid construction within the WRA, as long as the development would otherwise meet the standards of this chapter. However, front loading garages shall be set back a minimum of 18 feet, while side loading garages shall be set back a minimum of three feet.

Response: This application includes a request to reduce the front setback from 20 feet to 15 feet to minimize impacts to the WRA. This will allow the building footprint to be moved further from the wetland boundary. This criterion is met.

2. Landscaping and parking requirements may be reduced for hardship properties but only if all or part of the WRA is dedicated pursuant to CDC 32.060(C) or if a restrictive deed covenant is established. These reductions shall be permitted outright and, to the extent that the practices are inconsistent with other provisions or standards of the West Linn CDC, this section is given precedence so that no variance is required. The allowable reductions include:

- a. Elimination of landscaping for the parking lot interior.
- b. Elimination of the overall landscape requirement (e.g., 20 percent for commercial uses).
- c. Elimination of landscaping between parking lots and perimeter non-residential properties.
- d. Landscaping between parking lots and the adjacent right-of-way may be reduced to eight feet. This eight-foot-wide landscaped strip may be used for vegetated storm water detention or treatment.
- e. A 25 percent reduction in total required parking is permitted to minimize or avoid intrusion into the WRA.
- f. Adjacent improved street frontage with curb and sidewalk may be counted towards the parking requirement at a rate of one parking space per 20 lineal feet of street frontage adjacent to the property, subject to City Engineer approval based on the street width and classification.
- g. The current compact and full sized parking mix may be modified to allow up to 100 percent compact spaces and no full sized spaces. However, any required ADA compliant spaces shall be provided.

Response: This application does not seek modification to the parking and landscape requirements as provided above. The criteria do not apply.

G. Where a property owner owns multiple platted lots of record where each lot could be built upon under the hardship provisions, the property owner may either use the MDA for each lot on an individual lot by lot basis or may transfer 100 percent of the cumulative MDA of all the lots to those lots that are further away from, or less impactful upon, the WRA. Lot line adjustments may also be used to facilitate the density transfer. See Figure 32-8.

Response: The application does not seek to transfer available MDA from abutting properties owned by the Applicant (Tax Lots 802 or 803). The criterion does not apply.

H. Mitigation and re-vegetation of disturbed WRAs shall be completed per CDC 32.090 and 32.100 respectively.

Response: Mitigation and re-vegetation of disturbed WRAs has been addressed in responses to CDC 32.090 and 32.100 respectively and as further detailed in the Site Assessment Report, attached as Exhibit F. This criterion is met.

- I. Any further modification of the standards of this chapter or the underlying zone shall require approval of a variance pursuant to Chapter 75 CDC.

Response: This application does not include a request for modification of the standards of this chapter or the underlying zone that would require a variance. This criterion does not apply.

Chapter 46 – OFF-STREET PARKING, LOADING AND RESERVOIR AREAS

46.020 Applicability and General Provisions

- A. At the time a structure is erected or enlarged, or the use of a structure or unit of land is changed within any zone, parking spaces, loading areas and reservoir areas shall be provided in accordance with the requirements of this chapter unless other requirements are otherwise established as a part of the development approval process.

Response: The Preliminary Plans, attached as Exhibit A, demonstrate the required off-street parking for a new single-family detached home can be provided on Lot 800. This criterion is met.

- B. The provision and maintenance of off-street parking and loading spaces are the continuing obligation of the property owner.

Response: The Applicant is aware of the property owner’s obligations in relation to the provision and maintenance of off-street parking and loading spaces. This criterion can be met.

- C. No building or other permit shall be issued until plans are approved that show the property that is and will remain available for exclusive use as off-street parking and loading space as required by this chapter.

- D. Required parking spaces and loading areas shall be improved to the standards contained in this chapter and shall be available for use at the time of the final building inspection except as provided in CDC 46.150.

Response: Preliminary Plans attached as Exhibit A show that parking spaces can be improved to the standards of this chapter. This criterion can be met.

46.090 Minimum Off-Street Parking Space Requirements

A.		Residential parking space requirements.	
	1.	Single-family residences (attached or detached).	1 space for each dwelling unit; may or may not be in garage or carport.

Response: Preliminary Plans attached as Exhibit A illustrate that at a minimum, at least one off-street parking space will be provided. This criterion is met.

- F. Maximum parking. Parking spaces (except for single-family and two-family residential uses) shall not exceed the minimum required number of spaces by more than 10 percent.

Response: The Applicant intends to site a single-family home on Lot 800. This criterion does not apply.

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- G. Parking reductions. An applicant may reduce parking up to 10 percent for development sites within one-quarter mile of a transit corridor or within a mixed-use commercial area, and up to 10 percent for commercial development sites adjacent to multi-family residential sites with the potential to accommodate more than 20 dwelling units.

Response: This application does not include a request to reduce parking for the subject site. This criterion does not apply.

- H. For office, industrial, and public uses where there are more than 20 parking spaces for employees on the site, at least 10 percent of the required employee parking spaces shall be reserved for carpool use before 9:00 a.m. on weekdays. The spaces will be the closest to the building entrance, except for any disabled parking and those signed for exclusive customer use. The carpool/vanpool spaces shall be clearly marked “Reserved – Carpool/Vanpool Before 9:00 a.m.”

Response: The Applicant intends to site a single-family home on Lot 800. This criterion does not apply.

- I. Existing developments along transit streets or near transit stops may redevelop up to 10 percent of the existing parking spaces to provide transit-oriented facilities, including bus pullouts, bus stops and shelters, park and ride stations, and other similar facilities.

Response: The subject site is a vacant lot. This criterion does not apply.

- J. Development in water resource areas may reduce the required number of parking spaces by up to 25 percent. Adjacent improved street frontage with curb and sidewalk may also be counted towards the parking requirement at a rate of one parking space per 20 lineal feet of street frontage adjacent to the property.

Response: This application does not include a request to reduce the required number of parking spaces. This criterion does not apply.

46.150 Design and Standards

The following standards apply to the design and improvement of areas used for vehicle parking, storage, loading, and circulation:

A. Design standards.

1. “One standard parking space” means a minimum for a parking stall of eight feet in width and 16 feet in length. These stalls shall be identified as “compact.” To accommodate larger cars, 50 percent of the required parking spaces shall have a minimum dimension of nine feet in width and 18 feet in length (nine feet by 18 feet). When multi-family parking stalls back onto a main driveway, the stalls shall be nine feet by 20 feet. Parking for development in water resource areas may have 100 percent compact spaces.

Response: The Preliminary Plans, attached as Exhibit A, show the conceptual driveway to the house from the accessway measures 30 feet wide by 20 feet in length, which exceeds the minimum dimensions described above and accommodates the single off-street parking space required by CDC 46.090(A). This criterion is met.

2. Disabled parking and maneuvering spaces shall be consistent with current federal dimensional standards and subsection B of this section and placed nearest to accessible building entryways and ramps.
3. Repealed by Ord. 1622.
4. Service drives shall be designed and constructed to facilitate the flow of traffic, provide maximum safety of traffic access and egress, and maximum safety of pedestrians and vehicular traffic on the site.

-
5. Each parking and/or loading space shall have clear access, whereby the relocation of other vehicles to utilize the parking space is not required.

Response: The Preliminary Plans, attached as Exhibit A, illustrate the conceptual parking design meeting the minimum dimensions required for the planned use. These criteria can be met.

6. Except for single- and two-family residences, any area intended to be used to meet the off-street parking requirements as contained in this chapter shall have all parking spaces clearly marked using a permanent paint. All interior drives and access aisles shall be clearly marked and signed to show direction of flow and maintain vehicular and pedestrian safety. Permeable parking surface spaces may have an alternative delineation for parking spaces.
7. Except for residential parking, and parking for public parks and trailheads, at least 50 percent of all areas used for the parking and/or storage and/or maneuvering of any vehicle, boat and/or trailer shall be improved with asphalt or concrete surfaces according to the same standards required for the construction and acceptance of City streets. The remainder of the areas used for parking may use a permeable paving surface designed to reduce surface runoff. Parking for public parks or trailheads may use a permeable paving surface designed to reduce surface runoff for all parking areas. Where a parking lot contains both paved and unpaved areas, the paved areas shall be located closest to the use which they serve.

Response: The subject site is planned to accommodate a single-family residential use. These criteria do not apply.

8. Off-street parking spaces for single- and two-family residences shall be improved with an asphalt or concrete surface, or a permeable parking surface designed to reduce surface runoff, to specifications as approved by the Building Official. Other parking facilities for two- and single-family homes that are to accommodate additional vehicles, boats, recreational vehicles, and trailers, etc., need not be paved. All parking for multi-family residential development shall be paved with concrete or asphalt. Driveways shall measure at least 20 feet from the back of sidewalk to garage or the end of the parking pad to accommodate cars and sport utility vehicles without the vehicles blocking the public sidewalk.

Response: The Preliminary Plans, attached as Exhibit A, show the conceptual driveway to be improved with asphalt, concrete, or a permeable surface designed to reduce surface runoff pursuant to City specifications. This criterion can be met.

9. Access drives from the street to off-street parking or loading areas shall be designed and constructed to facilitate the flow of traffic and provide maximum safety for pedestrian and vehicular traffic on the site. The number of access drives shall be limited to the minimum that will allow the property to accommodate and service the anticipated traffic. Access drives shall be clearly and permanently marked and defined through use of rails, fences, walls, or other barriers or markers on frontage not occupied by service drives.
10. Access drives shall have a minimum vision clearance as provided in Chapter 42 CDC, Clear Vision Areas.

Response: The access drive from the street to off-street parking on Lot 800 is designed to comply with all application standards as illustrated in the Preliminary Plans attached as Exhibit A. The criteria are met.

11. Parking spaces along the boundaries of a parking lot or adjacent to interior landscaped areas or sidewalks shall be provided with a wheel stop at least four inches high located two feet back from the front of the parking stall. Such parking spaces may be provided

without wheel stops if the sidewalks or landscaped areas adjacent the parking stalls are two feet wider than the minimum width.

Response: The application does not include a parking lot. This criterion does not apply.

12. Off-street parking and loading areas shall be drained in accordance with plans and specifications approved by the City Engineer. Storm drainage at commercial sites may also have to be collected to treat oils and other residue.

Response: A Preliminary Stormwater Report is attached as Exhibit I and illustrates the means by which stormwater runoff will appropriately be handled. This criterion is met.

13. Artificial lighting on all off-street parking facilities shall be designed to deflect all light downward away from surrounding residences and so as not to create a hazard to the public use of any road or street.

Response: This application does not include any off-street parking facilities. This criterion does not apply.

14. Directional arrows and traffic control devices which are placed on parking lots shall be identified.

Response: This application does not include any off-street parking facilities. This criterion does not apply.

15. The maximum driveway grade for single-family housing shall be 15 percent. The 15 percent shall be measured along the centerline of the driveway only. Grades elsewhere along the driveway shall not apply. Variations require approval of a Class II variance by the Planning Commission pursuant to Chapter 75 CDC. Regardless, the last 18 feet in front of the garage must maintain a maximum grade of 12 percent as measured along the centerline of the driveway only. Grades elsewhere along the driveway shall not apply.

Response: The Preliminary Access Lane Plan, in Exhibit A, shows the maximum grade along the centerline of the driveway and accessway is ± 7.2 percent, which is within the allowable maximum. The criterion is met.

16. Visitor or guest parking must be identified by painted "GUEST" or "VISITOR."
17. The parking area shall have less than a five percent grade. No drainage across adjacent sidewalks or walkways is allowed.
18. Commercial, office, industrial, and public parking lots may not occupy more than 50 percent of the main lot frontage of a development site. The remaining frontage shall comprise buildings or landscaping. If over 50 percent of the lineal frontage comprises parking lot, the landscape strip between the right-of-way and parking lot shall be increased to 15 feet wide and shall include terrain variations (e.g., one-foot-high berm) plus landscaping. The defensible space of the parking lot should not be compromised.
19. Areas of the parking lot improved with asphalt or concrete surfaces shall be designed into areas of 12 or less spaces through the use of defined landscaped area. Groups of 12 or less spaces are defined as:
 - a. Twelve spaces in a row, provided there are no abutting parking spaces, as in the case when the spaces are abutting the perimeter of the lot; or
 - b. Twelve spaces in a group with six spaces abutting together; or
 - c. Two groups of 12 spaces abutting each other, but separated by a 15-foot-wide landscape area including a six-foot-wide walkway.

- d. Parking areas improved with a permeable parking surface may be designed using the configurations shown in subsections (A)(19)(a), (b) and (c) of this section except that groups of up to 18 spaces are allowed.
 - e. The requirements of this chapter relating to total parking lot landscaping, landscaping buffers, perimeter landscaping, and landscaping the parking lot islands and interior may be waived or reduced pursuant to CDC 32.110(F) in a WRA application without a variance being required.
20. Pedestrian walkways shall be provided in parking areas having 20 or more spaces. Walkways or sidewalks shall be constructed between major buildings/activity areas (an example in multi-family housing: between recreation center, swimming pool, manager's office, park or open space areas, parking lots, etc.) within a development, between adjacent developments and the new development, as feasible, and between major buildings/activity areas within the development and adjacent streets and all adjacent transit stops. Internal parking lot circulation and design should maintain ease of access for pedestrians from streets and transit stops. Walkways shall be constructed using a material that visually contrasts with the parking lot and driveway surface. Walkways shall be further identifiable to pedestrians and motorists by grade separation, walls, curbs, surface texture (surface texture shall not interfere with safe use of wheelchairs, baby carriages, shopping carts, etc.), and/or landscaping. Walkways shall be six feet wide. The arrangement and layout of the paths shall depend on functional requirements.
21. The parking and circulation patterns are easily comprehended and defined. The patterns shall be clear to minimize traffic hazards and congestion and to facilitate emergency vehicles.

Response: This application does not include any off-street parking facilities or pedestrian walkways as described above. This criterion does not apply.

22. The parking spaces shall be close to the related use.

Response: The Preliminary Plans, attached as Exhibit A, show the required parking space is located close to the related use. This criterion is met.

23. Permeable parking spaces shall be designed and built to City standards.

Response: The application does not anticipate the use of permeable pavement. This criterion does not apply.

B. Accessible parking standards for persons with disabilities. If any parking is provided for the public or visitors, or both, the needs of the people with disabilities shall be based upon the following standards or current applicable federal standards, whichever are more stringent:

...

Response: This application does not include any off-street parking facilities. This criterion does not apply.

C. Landscaping in parking areas. Reference Chapter 54 CDC, Landscaping.

Response: This application does not include any off-street parking facilities. This criterion does not apply.

D. Bicycle facilities and parking.

- 1. Provisions shall be made for pedestrian and bicycle ways if such facilities are shown on an adopted plan.
- 2. Bicycle parking facilities shall either be lockable enclosures in which the bicycle is stored, or secure stationary racks which accommodate bicyclist's locks securing the

frame and both wheels. The bicycle parking shall be no more than 50 feet from the entrance to the building, well-lit, observable, and properly signed.

3. Bicycle parking must be provided in the following amounts:

Response: This application does not include any off-street parking facilities. This criterion does not apply.

Chapter 48 – ACCESS, EGRESS AND CIRCULATION

48.020 Applicability and General Provisions

- A. The provisions of this chapter do not apply where the provisions of the Transportation System Plan or land division chapter are applicable and set forth differing standards.
- B. All lots shall have access from a public street or from a platted private street approved under the land division chapter.

Response: A 20-foot-wide Private Access and Utility Easement was recorded on Tax Lot 300 for the benefit of Tax Lots 300, 800, and 802 and is included in the attached Exhibit K. These criteria are met.

- C. No building or other permit shall be issued until scaled plans are presented to the City and approved by the City as provided by this chapter, and show how the access, egress, and circulation requirements are to be fulfilled. Access to State or County roads may require review, approval, and permits from the appropriate authority.

Response: Exhibit A includes scaled Preliminary Plans to be approved by the City as required in this chapter. The plans include conceptual drawings that show the access and circulation off 9th Street to Lots 300 and 800. This criterion is met.

- D. Should the owner or occupant of a lot, parcel or building enlarge or change the use to which the lot, parcel or building is put, resulting in increasing any of the requirements of this chapter, it shall be unlawful and a violation of this code to begin or maintain such altered use until the provisions of this chapter have been met, and, if required, until the appropriate approval authority under Chapter 99 CDC has approved the change.

Response: The Applicant is aware that any modifications to the planned development require appropriate approval under this chapter.

- E. Owners of two or more uses, structures, lots, parcels, or units of land may agree to utilize jointly the same access and egress when the combined access and egress of both uses, structures, or parcels of land satisfies the requirements as designated in this code; provided, that satisfactory legal evidence is presented to the City Attorney in the form of deeds, easements, leases, or contracts to establish joint use. Copies of said instrument shall be placed on permanent file with the City Recorder.

Response: A 20-foot-wide Private Access and Utility Easement was recorded in Clackamas County Records as Document No. 2019-6706 for the benefit of Tax Lots 300, 800, and 802. A copy of this easement is attached hereto as Exhibit K. This criterion is met.

- F. Property owners shall not be compelled to access their homes via platted stems of flag lots if other driveways and easements are available and approved by the City Engineer.

Response: This application does not include a request including a flag lot. This criterion does not apply.

48.025 Access Control

- B. Access control standards.

-
1. Traffic impact analysis requirements. The City or other agency with access jurisdiction may require a traffic study prepared by a qualified professional to determine access, circulation and other transportation requirements. (See also CDC 55.125, Transportation Impact Analysis.)

Response: The Pre-Application Summary received from the City indicates that a Traffic Impact Analysis is not anticipated for this project. A copy of the Pre-Application Summary is attached as Exhibit H. This criterion is met.

2. The City or other agency with access permit jurisdiction may require the closing or consolidation of existing curb cuts or other vehicle access points, recording of reciprocal access easements (i.e., for shared driveways), development of a frontage street, installation of traffic control devices, and/or other mitigation as a condition of granting an access permit, to ensure the safe and efficient operation of the street and highway system. Access to and from off-street parking areas shall not permit backing onto a public street.

Response: The Preliminary Access Lane Plan, Sheet P-07 in Exhibit A, shows the existing curb cuts and recorded access easement for the shared accessway. This criterion is met.

3. Access options. When vehicle access is required for development (i.e., for off-street parking, delivery, service, drive-through facilities, etc.), access shall be provided by one of the following methods (planned access shall be consistent with adopted public works standards and TSP). These methods are “options” as approved by the City Engineer.
 - a. Option 1. Access is from an existing or proposed alley or mid-block lane. If a property has access to an alley or lane, direct access to a public street is not permitted.
 - b. Option 2. Access is from a private street or driveway connected to an adjoining property that has direct access to a public street (i.e., “shared driveway”). A public access easement covering the driveway shall be recorded in this case to assure access to the closest public street for all users of the private street/drive.
 - c. Option 3. Access is from a public street adjacent to the development lot or parcel. If practicable, the owner/developer may be required to close or consolidate an existing access point as a condition of approving a new access. Street accesses shall comply with the access spacing standards in subsection (B)(6) of this section.

Response: This application includes a request for “Option 2” as stated above. The Applicant and owners of Tax Lot 300 have a shared 20-foot-wide Private Access and Utility Easement that was recorded in Clackamas County Records as Document No. 2019-6706 for the benefit of Tax Lots 300, 800, and 802. Attached is a copy of this Easement as Exhibit K. This criterion is met.

4. Subdivisions fronting onto an arterial street. New residential land divisions fronting onto an arterial street shall be required to provide alleys or secondary (local or collector) streets for access to individual lots. When alleys or secondary streets cannot be constructed due to topographic or other physical constraints, access may be provided by consolidating driveways for clusters of two or more lots (e.g., includes flag lots and mid-block lanes).

Response: This application does not include a request for a subdivision. This criterion does not apply.

-
5. Double-frontage lots. When a lot or parcel has frontage onto two or more streets, access shall be provided first from the street with the lowest classification. For example, access shall be provided from a local street before a collector or arterial street. When a lot or parcel has frontage opposite that of the adjacent lots or parcels, access shall be provided from the street with the lowest classification.

Response: This application does not include a request for double frontage lots. This criterion does not apply.

6. Access spacing.
 - a. The access spacing standards found in the adopted Transportation System Plan (TSP) shall be applicable to all newly established public street intersections and non-traversable medians. Deviation from the access spacing standards may be granted by the City Engineer if conditions are met as described in the access spacing variances section in the adopted TSP.
 - b. Private drives and other access ways are subject to the requirements of CDC 48.060.

Response: This application does not include newly established public street intersections or non-traversable medians. Responses to CDC 48.060 are provided below.

7. Number of access points. For single-family (detached and attached), two-family, and duplex housing types, one street access point is permitted per lot or parcel, when alley access cannot otherwise be provided; except that two access points may be permitted corner lots (i.e., no more than one access per street), subject to the access spacing standards in subsection (B)(6) of this section. The number of street access points for multiple family, commercial, industrial, and public/institutional developments shall be minimized to protect the function, safety and operation of the street(s) and sidewalk(s) for all users. Shared access may be required, in conformance with subsection (B)(8) of this section, in order to maintain the required access spacing, and minimize the number of access points.

Response: The Preliminary Access Lane Plan, Sheet P-07 in Exhibit A, illustrates one access point for Tax Lot 800 by way of a Private Access and Utility Easement recorded in Clackamas County Records as Document No. 2019-6706. A copy of the Easement is attached as Exhibit K. The criteria are met.

8. Shared driveways. The number of driveway and private street intersections with public streets shall be minimized by the use of shared driveways with adjoining lots where feasible. The City shall require shared driveways as a condition of land division or site design review, as applicable, for traffic safety and access management purposes in accordance with the following standards:
 - a. Shared driveways and frontage streets may be required to consolidate access onto a collector or arterial street. When shared driveways or frontage streets are required, they shall be stubbed to adjacent developable parcels to indicate future extension. “Stub” means that a driveway or street temporarily ends at the property line, but may be extended in the future as the adjacent lot or parcel develops. “Developable” means that a lot or parcel is either vacant or it is likely to receive additional development (i.e., due to infill or redevelopment potential).
 - b. Access easements (i.e., for the benefit of affected properties) shall be recorded for all shared driveways, including pathways, at the time of final plat approval or as a condition of site development approval.

-
- c. Exception. Shared driveways are not required when existing development patterns or physical constraints (e.g., topography, lot or parcel configuration, and similar conditions) prevent extending the street/driveway in the future.

Response: The Preliminary Access Lane Plan, Sheet P-07 in Exhibit A, illustrates one driveway for Tax Lot 800 by way of a Private Access and Utility Easement recorded in Clackamas County Records as Document No. 2019-6706. A copy of the Easement is attached as Exhibit K. The criteria are met.

- C. Street connectivity and formation of blocks required. In order to promote efficient vehicular and pedestrian circulation throughout the City, land divisions and large site developments shall produce complete blocks bounded by a connecting network of public and/or private streets, in accordance with the following standards:
 - 1. Block length and perimeter. The maximum block length shall not exceed 800 feet or 1,800 feet along an arterial.
 - 2. Street standards. Public and private streets shall also conform to Chapter 92 CDC, Required Improvements, and to any other applicable sections of the West Linn Community Development Code and approved TSP.
 - 3. Exception. Exceptions to the above standards may be granted when blocks are divided by one or more pathway(s), in conformance with the provisions of CDC 85.200(C), Pedestrian and Bicycle Trails, or cases where extreme topographic (e.g., slope, creek, wetlands, etc.) conditions or compelling functional limitations preclude implementation, not just inconveniences or design challenges.

Response: This application does not include a land division or a large site development. The criteria are met.

48.030 Minimum Vehicular Requirements for Residential Uses

- A. Direct individual access from single-family dwellings and duplex lots to an arterial street, as designated in the transportation element of the Comprehensive Plan, is prohibited for lots or parcels created after the effective date of this code where an alternate access is either available or is expected to be available by imminent development application. Evidence of alternate or future access may include temporary cul-de-sacs, dedications or stubouts on adjacent lots or parcels, or tentative street layout plans submitted at one time by adjacent property owner/developer or by the owner/developer, or previous owner/developer, of the property in question.

In the event that alternate access is not available as determined by the Planning Director and City Engineer, access may be permitted after review of the following criteria:

- 1. Topography.
- 2. Traffic volume to be generated by development (i.e., trips per day).
- 3. Traffic volume presently carried by the street to be accessed.
- 4. Projected traffic volumes.
- 5. Safety considerations such as line of sight, number of accidents at that location, emergency vehicle access, and ability of vehicles to exit the site without backing into traffic.
- 6. The ability to consolidate access through the use of a joint driveway.
- 7. Additional review and access permits may be required by State or County agencies.

Response: This application does not include a request for direct individual access from the proposed development to an arterial street. The criteria are not applicable.

-
- B. When any portion of any house is less than 150 feet from the adjacent right-of-way, access to the home is as follows:
1. One single-family residence, including residences with an accessory dwelling unit as defined in CDC 02.030, shall provide 10 feet of unobstructed horizontal clearance. Dual-track or other driveway designs that minimize the total area of impervious driveway surface are encouraged.

Response: A 12-foot-wide paved driveway is shown in Exhibit A. This criterion is met.

2. Two to four single-family residential homes equals a 14- to 20-foot-wide paved or all-weather surface. Width shall depend upon adequacy of line of sight and number of homes.
3. Maximum driveway grade shall be 15 percent. The 15 percent shall be measured along the centerline of the driveway only. Variations require approval of a Class II variance by the Planning Commission pursuant to Chapter 75 CDC. Regardless, the last 18 feet in front of the garage shall be under 12 percent grade as measured along the centerline of the driveway only. Grades elsewhere along the driveway shall not apply.

Response: As illustrated in the Preliminary Access Lane Plan in the attached Exhibit A, the driveway grade from 9th street along the accessway to the residential driveway and to the structure, ranges from ±3.4 percent to ±7.2 percent. This criterion is met.

4. The driveway shall include a minimum of 20 feet in length between the garage door and the back of sidewalk, or, if no sidewalk is proposed, to the paved portion of the right-of-way.

Response: The Preliminary Access Lane Plan, Sheet P-07 in Exhibit A, shows the conceptual driveway from the accessway to the proposed structure measures 30 feet wide by 20 feet long, which exceeds the minimum dimensions as described above and will include sufficient distance between the garage and the property line. The criterion is met.

- C. When any portion of one or more homes is more than 150 feet from the adjacent right-of-way, the provisions of subsection B of this section shall apply in addition to the following provisions.
1. A turnaround may be required as prescribed by the Fire Chief.
 2. Minimum vertical clearance for the driveway shall be 13 feet, six inches.
 3. A minimum centerline turning radius of 45 feet is required unless waived by the Fire Chief.
 4. There shall be sufficient horizontal clearance on either side of the driveway so that the total horizontal clearance is 20 feet.

Response: The Preliminary Plans, attached as Exhibit A, illustrate the planned home is more than 150 feet from the adjacent right-of-way. Attached as Exhibit L is a copy of correspondence with the Deputy Fire Marshal wherein, he approves the proposed site plan (Exhibit A) without a turnaround, provided that a fire sprinkler system is installed in the proposed home. As a result, a fire sprinkler system will be installed in the proposed home. The criteria will be met.

- F. Where on-site maneuvering and/or access drives are necessary to accommodate required parking, in no case shall said maneuvering and/or access drives be less than that required in Chapters 46 and 48 CDC.

Response: Responses to requirements for on-site maneuvering and access drives are included in CDC Chapters 46 and 48 in this application.

-
- G. The number of driveways or curb cuts shall be minimized on arterials or collectors. Consolidation or joint use of existing driveways shall be required when feasible.

Response: The subject site is not located along an arterial or collector street. This criterion does not apply.

48.060 Width and Location of Curb Cuts and Access Separation Requirements

- A. Minimum curb cut width shall be 16 feet.

Response: As illustrated on the Preliminary Access Lane Plan, Sheet P-07 in Exhibit A, the curb cut width is greater than 16 feet. This criterion is met.

- B. Maximum curb cut width shall be 36 feet, except along Highway 43 in which case the maximum curb cut shall be 40 feet. For emergency service providers, including fire stations, the maximum shall be 50 feet.

Response: As illustrated on the Preliminary Access Lane Plan, Sheet P-07 in Exhibit A, the curb cut width is less than 36 feet. This criterion is met.

- C. No curb cuts shall be allowed any closer to an intersecting street right-of-way line than the following:

1. On an arterial when intersected by another arterial, 150 feet.
2. On an arterial when intersected by a collector, 100 feet.
3. On an arterial when intersected by a local street, 100 feet.
4. On a collector when intersecting an arterial street, 100 feet.
5. On a collector when intersected by another collector or local street, 35 feet.
6. On a local street when intersecting any other street, 35 feet.

Response: New curb cuts are not planned within 35 feet of the nearest local street intersection. The criteria are met.

- D. There shall be a minimum distance between any two adjacent curb cuts on the same side of a public street, except for one-way entrances and exits, as follows:

1. On an arterial street, 150 feet.
2. On a collector street, 75 feet.
3. Between any two curb cuts on the same lot or parcel on a local street, 30 feet.

Response: Lot 800 will have access via a 20-foot-wide Private Access and Utility Easement (Easement) along the south property boundary of Lot 300. The Easement was recorded in Clackamas County Records as Document No. 2019-6706 for the benefit of Tax Lots 300, 800, and 802. A copy of the Easement is attached as Exhibit K. While there are no curbs along this section of 9th Street, Tax Lot 300 has an existing driveway at the north end of the lot which is approximately 70 feet from the planned access lane serving Lot 800. To the extent this applies, the criteria are met.

- E. A rolled curb may be installed in lieu of curb cuts and access separation requirements.

Response: As illustrated on the Preliminary Access Lane Plan, Sheet P-07 in Exhibit A, the proposed design is in compliance with the access separation requirements in this chapter. This criterion is met.

-
- F. Curb cuts shall be kept to the minimum, particularly on Highway 43. Consolidation of driveways is preferred. The standard on Highway 43 is one curb cut per business if consolidation of driveways is not possible.

Response: The Preliminary Access Lane Plan, Sheet P-07 in Exhibit A, shows that curb cuts are not planned. The subject property is not located on Highway 43. This criterion is met.

- G. Adequate line of sight pursuant to engineering standards should be afforded at each driveway or accessway.

Response: Exhibit A shows the accessway is designed with adequate line of sight pursuant to the City's engineering standards. This criterion is met.

Chapter 96 – STREET IMPROVEMENT CONSTRUCTION

96.010 Construction Required

A. New construction.

1. Building permits shall not be issued for the construction of any new building or structure, or for the remodeling of any existing building or structure, which results in an increase in size or includes a change in use, including building permits for single-family dwellings but excepting building permits for alteration or addition to an existing single-family dwelling, unless the applicant for said building permit agrees to construct street improvements as required by the land use decision authorizing the construction activity. The placement of new curbs and the drainage facilities required shall be determined by the City Manager or the Manager's designee.

Response: This application seeks entitlement for the future location of a home on Lot 800, which does not have frontage upon a public street and, therefore, is not subject to the requirements to improve 9th Street. To offset impacts to 9th Street from a future home on Lot 800, the City will collect SDC reserves that can be used for improvements to 9th Street. This criterion is met.

2. If the building permit did not require a prior land use decision, the applicant shall construct street improvements which shall include curbs, sidewalks, drainage facilities, and pavement widening to meet new curbs, along all City streets which abut the property described in the building permits.

Response: A building permit for a new home on Lot 800 will be subject to the approval decision herein. This criterion does not apply.

3. An applicant for a building permit may apply for a waiver of street improvements and the option to make a payment in lieu of construction. The option is available if the City Manager or the Manager's designee determines the transportation system plan does not include the street improvement for which the waiver is requested.

Response: This application does not include a request for a waiver of street improvements. This criterion does not apply.

4. When an applicant applies for and is granted a waiver of street improvements under subsection (A)(3) of this section, the applicant shall pay an in-lieu fee equal to the estimated cost, accepted by the City Engineer, of the otherwise required street improvements. As a basis for this determination, the City Engineer shall consider the cost of similar improvements in recent development projects and may require up to three estimates from the applicant. The in-lieu fee shall be used for in kind or related improvements.

Response: This application does not include a request for a waiver of street improvements. This criterion does not apply.

B. **Remodeling of an existing building.**

...

Response: This application does not include a request for remodeling of an existing building or structure. The criteria do not apply.

C. **Replacement of an existing building.**

...

Response: This application does not include a request for replacement of an existing building or structure. The criteria do not apply.

D. **Notwithstanding any other provisions of this chapter, in cases where the issuance of the building permit pertains to the construction or reconstruction of a building or structure within a large development owned by the same owner or owners, the City Council may, in its sole discretion, authorize the installation of street improvements of equivalent cost on another portion of the total development area.**

Response: This application does not include a request for a building permit for construction of a building or structure within a large development. This criterion does not apply.

96.020 Standards

Street improvements shall be installed according to the City standards and shall be completed prior to the issuance of any occupancy permit for the new or remodeled structure or building. In unimproved areas of the City, the City Engineer may grant a time extension of the provisions of this section; provided, that the applicant provides sufficient security in amount and quantity satisfactory to the City Attorney to assure payment of such improvement costs.

Response: As above, the application does not trigger the City's ability to require street improvements. The criterion does not apply.

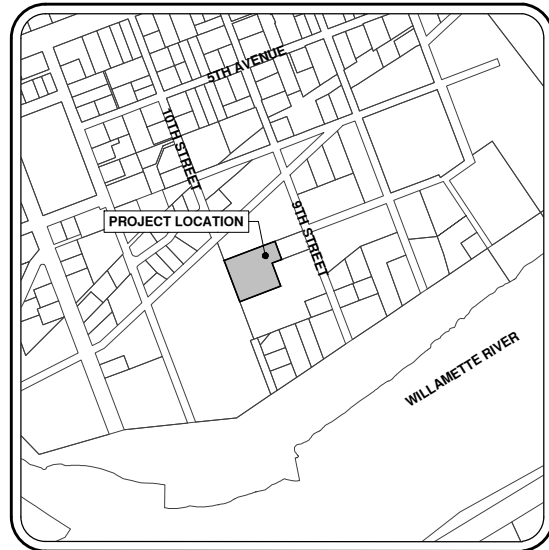
IV. Conclusion

The required findings have been made and this written narrative and accompanying documentation demonstrate that the application is consistent with the applicable provisions of the City of West Linn Community Development Code. The evidence in the record is substantial and supports approval of the application. Therefore, the City can rely upon this information in its approval of the application.

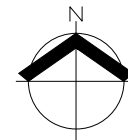
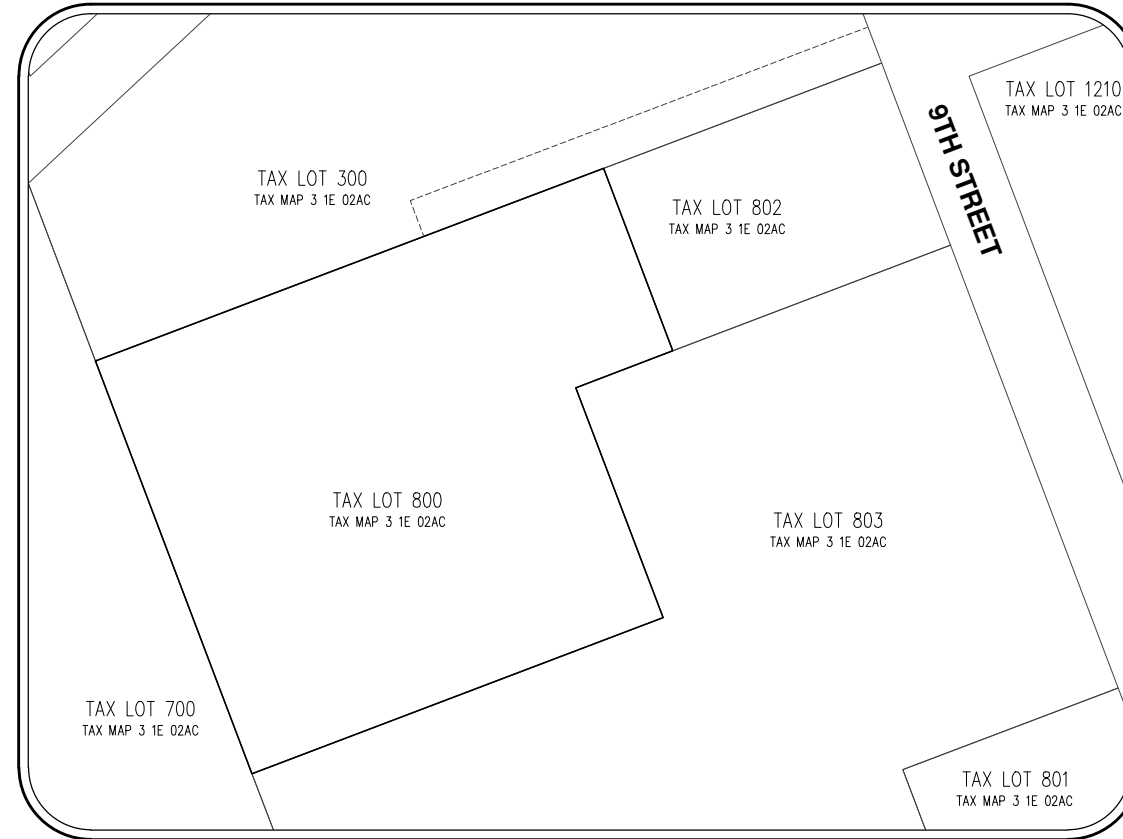
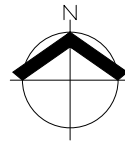
Exhibit A: Preliminary Plans

9TH STREET - TAX LOT 800

PRELIMINARY PLANS



VICINITY MAP
NOT TO SCALE



SITE MAP
SCALE: 1" = 50'

LEGEND

	EXISTING	PROPOSED		EXISTING	PROPOSED
DECIDUOUS TREE			STORM DRAIN CLEAN OUT		
CONIFEROUS TREE			STORM DRAIN CATCH BASIN		
FIRE HYDRANT			STORM DRAIN AREA DRAIN		
WATER BLOWOFF			STORM DRAIN MANHOLE		
WATER METER			GAS METER		
WATER VALVE			GAS VALVE		
DOUBLE CHECK VALVE			GUY WIRE ANCHOR		
AIR RELEASE VALVE			UTILITY POLE		
SANITARY SEWER CLEAN OUT			POWER VAULT		
SANITARY SEWER MANHOLE			POWER JUNCTION BOX		
SIGN			POWER PEDESTAL		
STREET LIGHT			COMMUNICATIONS VAULT		
MAILBOX			COMMUNICATIONS JUNCTION BOX		
			COMMUNICATIONS RISER		
	EXISTING	PROPOSED			
RIGHT-OF-WAY LINE					
BOUNDARY LINE					
PROPERTY LINE					
CENTERLINE					
DITCH					
CURB					
EDGE OF PAVEMENT					
EASEMENT					
FENCE LINE					
GRAVEL EDGE					
POWER LINE					
OVERHEAD WIRE					
COMMUNICATIONS LINE					
FIBER OPTIC LINE					
GAS LINE					
STORM DRAIN LINE					
SANITARY SEWER LINE					
WATER LINE					

APPLICANT:
MALIBAR GROUP, LLC
615 NW TERRITORIAL ROAD
CANBY, OR 97013

PLANNING/CIVIL ENGINEERING/SURVEYING/ LANDSCAPE ARCHITECTURE/ARBORISTS

(APPLICANT'S CONSULTANT):
AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN ROAD, SUITE 100
TUALATIN, OR 97062
CONTACT: JONATHON MORSE/ZACH PELZ
PHONE: (503) 563-6151
FAX: (503) 563-6152

SITE LOCATION AND ZONING:

CLACKAMAS COUNTY ASSESSOR'S MAP 3 1E 2AC TAX LOT 800
WEST LINN, OR 97068
ZONING: R10

SITE DESCRIPTION:

TAX LOT 800, CLACKAMAS COUNTY ASSESSOR'S MAP 3 1E 2AC.
LOCATED IN THE SOUTHWEST 1/4 OF THE NORTHEAST 1/4 OF
SECTION 2, TOWNSHIP 3 SOUTH, RANGE 1 EAST, WILLAMETTE
MERIDIAN, CITY OF WEST LINN, CLACKAMAS COUNTY, OREGON.

PROJECT PURPOSE:

CONSTRUCTION OF ONE SINGLE FAMILY
HOME ON TAX LOT 800, ACCESSWAY, AND
ASSOCIATED FRONTAGE IMPROVEMENTS.

BENCHMARK:

VERTICAL DATUM: ELEVATIONS ARE BASED ON NGS
BENCHMARK NO. RD1501, LOCATED ON HWY 99E
ELEVATION = 81.25 FEET (NAVD 88).

SHEET INDEX

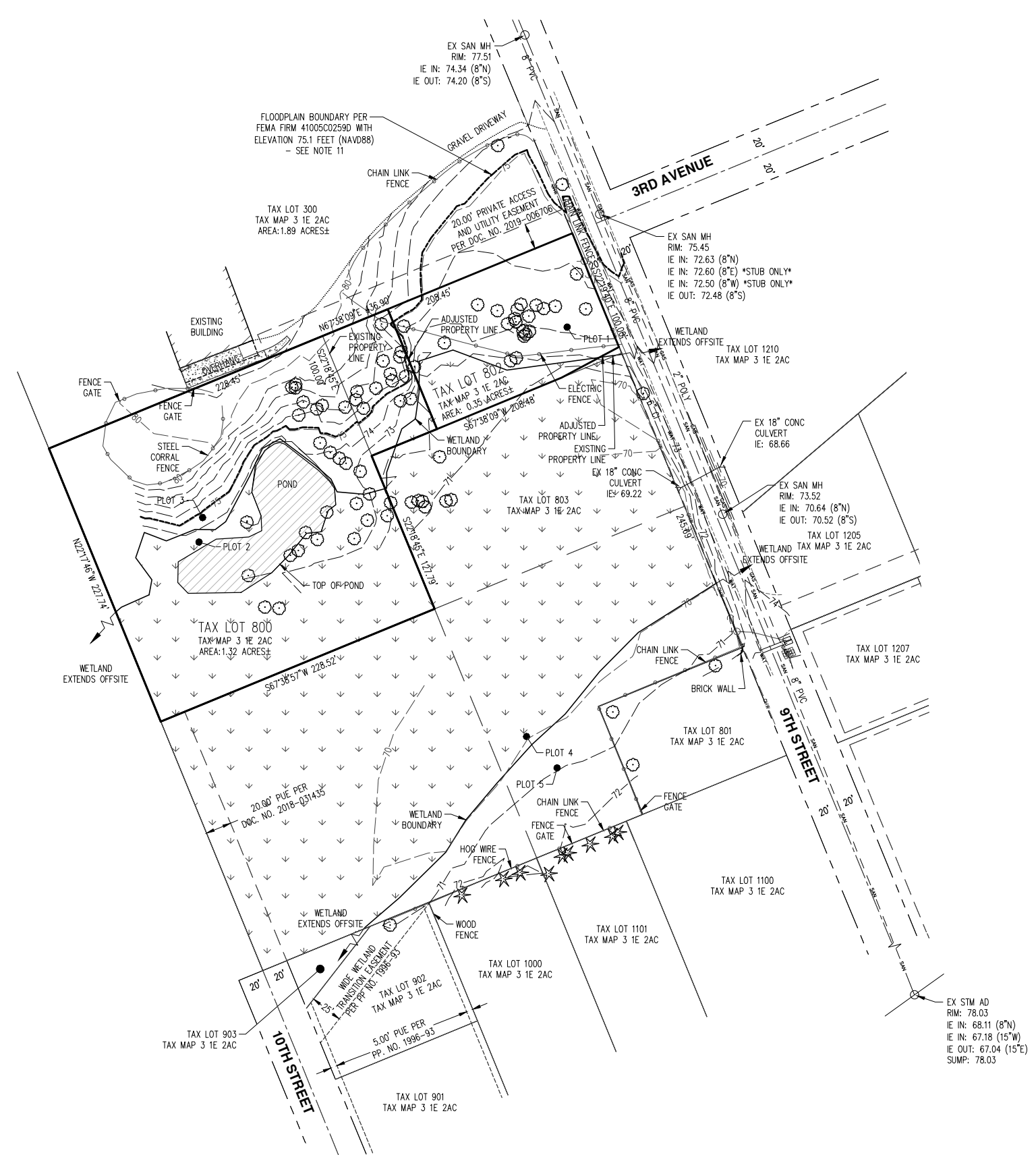
- P-01 COVER SHEET WITH VICINITY AND SITE MAP
- P-02 EXISTING CONDITIONS PLAN
- P-03 PRELIMINARY DEMOLITION AND TREE PRESERVATION AND REMOVAL PLAN
- P-04 PRELIMINARY GRADING IMPACT PLAN
- P-05 GRADING, EROSION CONTROL, AND CONSTRUCTION MANAGEMENT PLAN
- P-06 PRELIMINARY COMPOSITE UTILITY AND SITE PLAN
- P-07 PRELIMINARY ACCESS LANE PLAN
- P-08 PRELIMINARY STREET PLAN
- P-09 PRELIMINARY AERIAL PHOTOGRAPH PLAN
- P-10 PRELIMINARY LANDSCAPE PLAN
- P-11 PRELIMINARY MITIGATION PLANTING PLAN



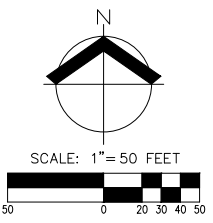
**EXISTING CONDITIONS PLAN
 9TH STREET
 TAX LOT 800 DEVELOPMENT
 WEST LINN, OREGON (TAX MAP 3 1E 2AC)**

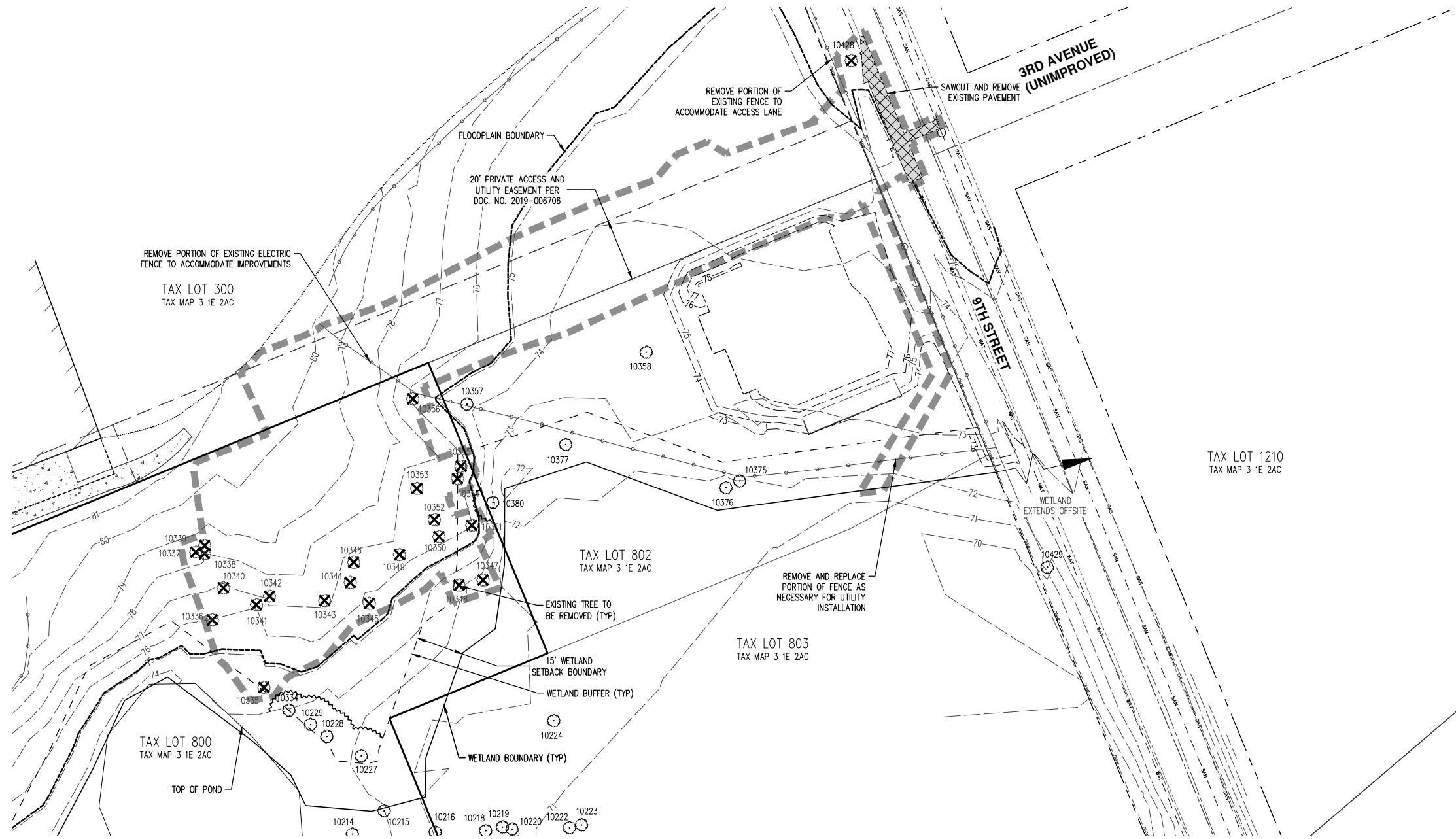
REGISTERED PROFESSIONAL LAND SURVEYOR
 JANUARY 2005
 ROBERT D. RETTIG
 00124LS
 RENEWS: 12/31/22

JOB NUMBER: 5926
 DATE: 12/04/2020
 DESIGNED BY:
 DRAWN BY: MTB
 CHECKED BY: RDR



- NOTES:**
- UTILITIES SHOWN ARE BASED ON UNDERGROUND UTILITY LOCATE MARKINGS AS PROVIDED BY OTHERS, PROVIDED PER UTILITY LOCATE TICKET NUMBER 17115124. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND LOCATES REPRESENT THE ONLY UTILITIES IN THE AREA. CONTRACTORS ARE RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS PRIOR TO BEGINNING CONSTRUCTION.
 - FIELD WORK WAS CONDUCTED MAY 16-17, 2017.
 - VERTICAL DATUM: ELEVATIONS ARE BASED ON NGS BENCHMARK NO. RD1501, LOCATED ON HWY 99E ELEVATION = 81.25 FEET (NAVD 88).
 - THIS MAP DOES NOT CONSTITUTE A PROPERTY BOUNDARY SURVEY.
 - SURVEY IS ONLY VALID WITH SURVEYOR'S STAMP AND SIGNATURE.
 - BUILDING FOOTPRINTS ARE MEASURED TO SIDING UNLESS NOTED OTHERWISE. CONTACT SURVEYOR WITH QUESTIONS REGARDING BUILDING TIES.
 - CONTOUR INTERVAL IS 1 FOOT.
 - TREES WITH DIAMETER OF 6" AND GREATER ARE SHOWN. TREE DIAMETERS WERE MEASURED UTILIZING A DIAMETER TAPE AT BREAST HEIGHT. TREE INFORMATION IS SUBJECT TO CHANGE UPON ARBORIST INSPECTION.
 - WETLAND BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC. ON MARCH 27, 2017 AND WERE PROFESSIONALLY SURVEYED BY AKS ON JUNE 23, 2017.
 - SUBJECT PROPERTY IS SUBJECT TO FEMA FLOOD INSURANCE RATE MAP (FIRM) 41005C0259D WITH AN EFFECTIVE DATE OF JUNE 17, 2008. PORTIONS OF PROPERTY BELOW THE BASE FLOOD ELEVATION (ELEVATION 75.1 - NAVD88) ARE IN ZONE AE.



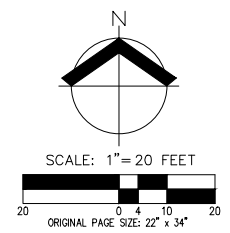


TREE NO.	TYPE	DBH(IN.)	ONSITE/OFFSITE	REMOVE/PRESERVE
10215	DECIDUOUS	29	ONSITE	PRESERVE
10216	DECIDUOUS	7 5 8	ONSITE	PRESERVE
10218	DECIDUOUS	5 6 9	OFFSITE	PRESERVE
10219	DECIDUOUS	8	OFFSITE	PRESERVE
10220	DECIDUOUS	6	OFFSITE	PRESERVE
10222	DECIDUOUS	6	OFFSITE	PRESERVE
10223	DECIDUOUS	65	OFFSITE	PRESERVE
10224	DECIDUOUS	13	ONSITE	PRESERVE
10227	DECIDUOUS	7 7 9	ONSITE	PRESERVE
10228	DECIDUOUS	9 8 8	ONSITE	PRESERVE
10229	DECIDUOUS	11 8	ONSITE	PRESERVE
10334	DECIDUOUS	9 8	ONSITE	PRESERVE
10335	DECIDUOUS	9 8 8 7	ONSITE	REMOVE
10336	DECIDUOUS	10	ONSITE	REMOVE
10337	DECIDUOUS	11 10	ONSITE	REMOVE
10338	DECIDUOUS	10	ONSITE	REMOVE
10339	DECIDUOUS	6	ONSITE	REMOVE
10340	DECIDUOUS	13	ONSITE	REMOVE
10341	DECIDUOUS	34	ONSITE	REMOVE
10342	DECIDUOUS	13 12	ONSITE	REMOVE
10343	DECIDUOUS	29	ONSITE	REMOVE
10344	DECIDUOUS	22	ONSITE	REMOVE
10345	DECIDUOUS	23	ONSITE	REMOVE
10346	DECIDUOUS	10	ONSITE	REMOVE
10347	DECIDUOUS	8 14 20	ONSITE	REMOVE
10348	DECIDUOUS	9 16 16 16 7	ONSITE	REMOVE
10349	DECIDUOUS	16	ONSITE	REMOVE
10350	DECIDUOUS	20	ONSITE	REMOVE
10351	DECIDUOUS	22	ONSITE	REMOVE
10352	DECIDUOUS	7 9	ONSITE	REMOVE
10353	DECIDUOUS	20	ONSITE	REMOVE
10354	DECIDUOUS	26	ONSITE	REMOVE
10355	DECIDUOUS	12 7	ONSITE	REMOVE
10356	DECIDUOUS	20	ONSITE	REMOVE

10357	DECIDUOUS	9	OFFSITE	PRESERVE
10358	DECIDUOUS	42	OFFSITE	PRESERVE
10375	DECIDUOUS	8 10	OFFSITE	PRESERVE
10376	DECIDUOUS	12	OFFSITE	PRESERVE
10377	DECIDUOUS	11 9	OFFSITE	PRESERVE
10380	DECIDUOUS	6	OFFSITE	PRESERVE
10428	DECIDUOUS	34	OFFSITE	REMOVE
10429	DECIDUOUS	6 8 8 6	OFFSITE	PRESERVE

LEGEND

- EXISTING GROUND CONTOUR (1 FT) ---74---
- EXISTING GROUND CONTOUR (5 FT) ---75---
- FINISHED GRADE CONTOUR (1 FT) ---74---
- FINISHED GRADE CONTOUR (5 FT) ---75---
- LIMITS OF DISTURBANCE
- AC PAVEMENT TO BE REMOVED [Hatched Box]
- SAWCUT LINE [Dashed Line]
- TREE PROTECTION/CONSTRUCTION FENCE [Wavy Line]
- EXISTING CONIFEROUS TREE [Star Symbol]
- EXISTING DECIDUOUS TREE [Circle with Dot]
- TREE REMOVAL [X Symbol]
- ASSUMED TREE ROOT ZONE (1-FT RADIUS PER 1-IN OF DBH) [Circle]



PRELIMINARY DEMOLITION AND TREE PRESERVATION AND REMOVAL PLAN
9TH STREET
TAX LOT 800 DEVELOPMENT
WEST LINN, OREGON (TAX MAP 3 1E 2AC)



RENEWAL DATE: 12/31/20
 JOB NUMBER: 5926
 DATE: 12/16/2020
 DESIGNED BY: APC, AJR, & RLB
 DRAWN BY: APC, AJR, & RLB
 CHECKED BY: JMM

**PRELIMINARY GRADING IMPACT PLAN
 9TH STREET
 TAX LOT 800 DEVELOPMENT
 WEST LINN, OREGON (TAX MAP 3 1E 2AC)**

RENEWAL DATE: 12/31/20
 JOB NUMBER: 5926
 DATE: 12/16/2020
 DESIGNED BY: APC, AJR, & RLB
 DRAWN BY: APC, AJR, & RLB
 CHECKED BY: JMM

TL 300 Elevations Table

Number	Minimum Elevation	Maximum Elevation	AREA (SF)	Color
1	-0.076	0.000	7	Orange
2	0.000	3.278	3849	Blue

TL 800 Elevations Table

Number	Minimum Elevation	Maximum Elevation	AREA (SF)	Color
1	-0.050	0.000	0	Orange
2	0.000	5.407	125	Blue

TL 803 CUT TABLE

NUMBER	MINIMUM ELEVATION	MAXIMUM ELEVATION	AREA (SF)	COLOR
1	-0.374	0.000	625	Orange

FLOODPLAIN VOLUME SUMMARY:
TAX LOT 300:
 *FILL VOLUME: 233± C.Y.
TAX LOT 800:
 *FILL VOLUME: 1± C.Y.
TAX LOT 803:
 CUT VOLUME: 234± C.Y.
TOTAL:
 NET FLOODPLAIN VOLUME CHANGE: 0± C.Y.
 *FILL WITHIN FLOODPLAIN BOUNDARY ON TAX LOTS 300 & 800 TO BE BALANCED WITH CUT ON TAX LOT 803.

SUMMARY OF SITE DISTURBANCE

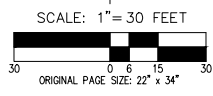
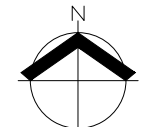
TAX LOT 800
 MAXIMUM DISTURBED AREA (MDA) ALLOWED IN WATER RESOURCE AREA: 16,107± SF
 PERMANENTLY DISTURBED AREA IN WATER RESOURCE AREA: 4,322± SF
 TEMPORARILY DISTURBED AREA IN WATER RESOURCE AREA: 88± SF
 TOTAL DISTURBED AREA ON TAX LOT 800: 4,751± SF

TAX LOT 300
 MAXIMUM DISTURBED AREA (MDA) ALLOWED IN WATER RESOURCE AREA: 16,107± SF
 PERMANENTLY DISTURBED AREA IN WATER RESOURCE AREA: 1,570± SF
 TEMPORARILY DISTURBED AREA IN WATER RESOURCE AREA: 0± SF
 TOTAL DISTURBED AREA ON TAX LOT 300: 4,969± SF

TAX LOT 802
 MAXIMUM DISTURBED AREA (MDA) ALLOWED IN WATER RESOURCE AREA: 16,107± SF
 PERMANENTLY DISTURBED AREA IN WATER RESOURCE AREA: 223± SF
 TEMPORARILY DISTURBED AREA IN WATER RESOURCE AREA: 446± SF
 TOTAL DISTURBED AREA ON TAX LOT 802: 1,053± SF

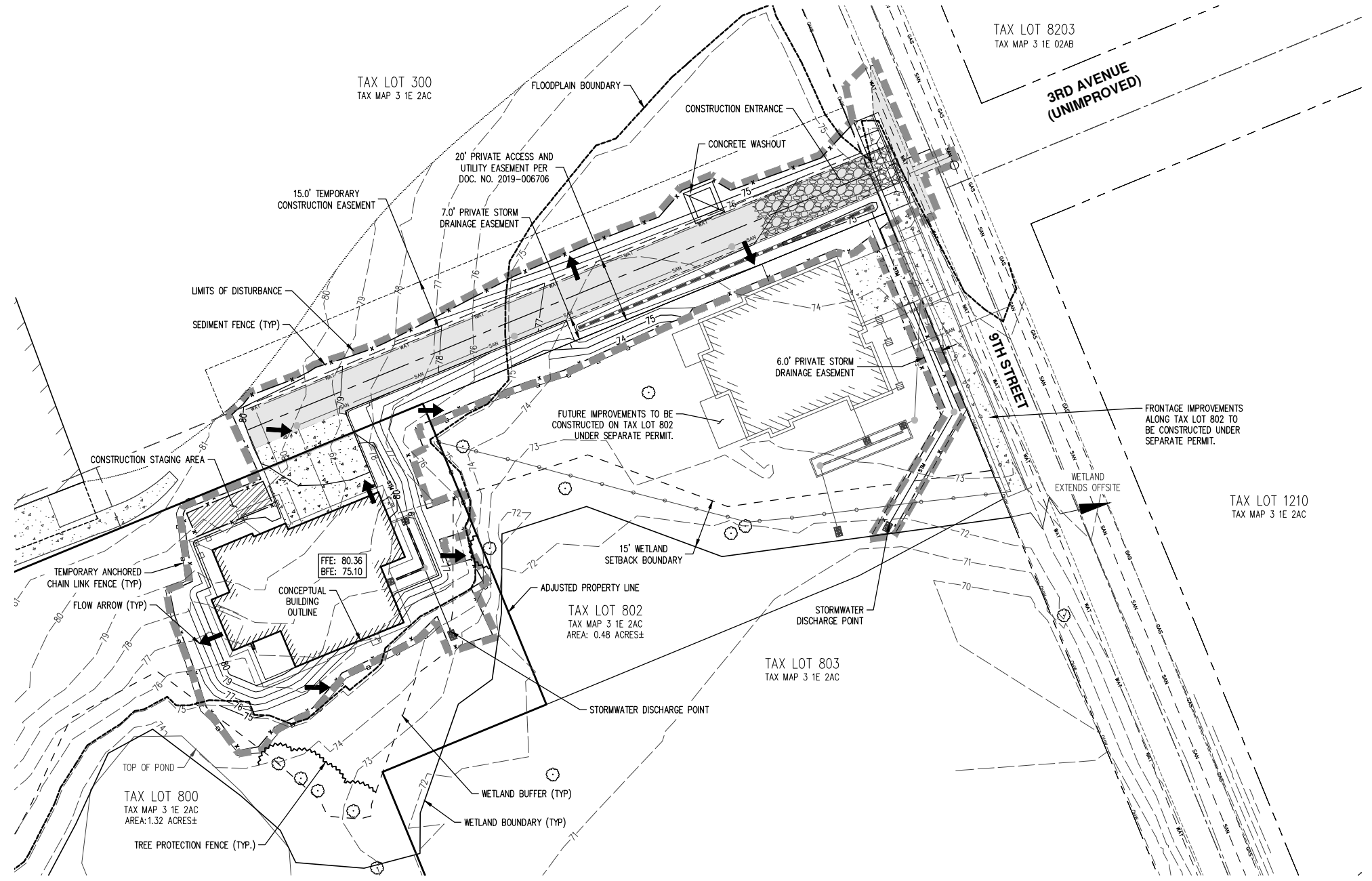
HATCH LEGEND:

WATER RESOURCE AREA
 DISTURBANCE LIMITS



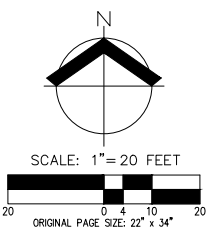
NOTE:
 CUT AND FILL DEPTHS SHOWN ARE
 PRELIMINARY AND SUBJECT TO CHANGE.





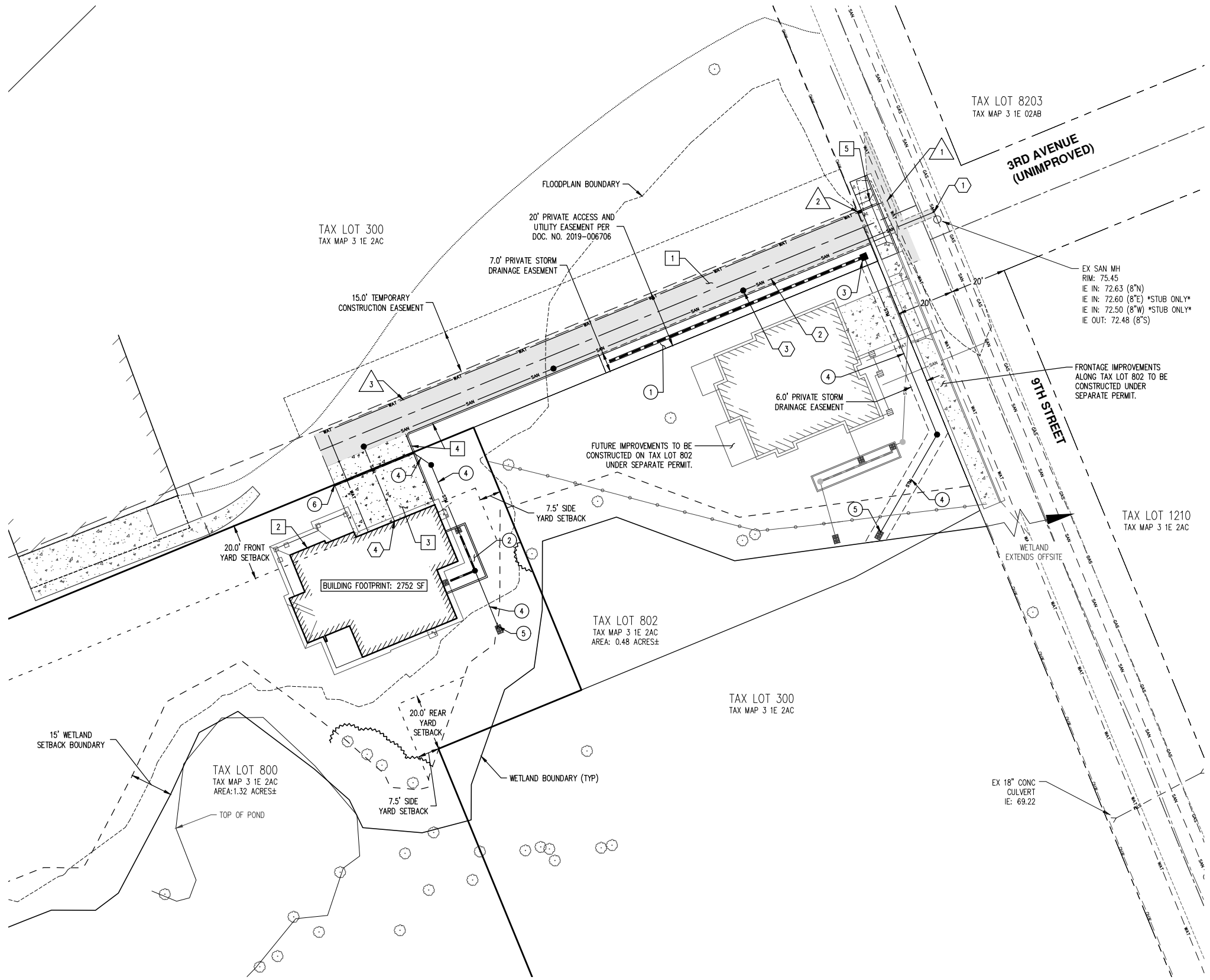
LEGEND

EXISTING GROUND CONTOUR (1 FT)	---
EXISTING GROUND CONTOUR (5 FT)	---350---
FINISHED GRADE CONTOUR (1 FT)	---
FINISHED GRADE CONTOUR (5 FT)	---345---
SEDIMENT FENCE (TO BE INSTALLED PRIOR TO GRADING)	-x-x-
TEMPORARY ANCHORED CHAIN LINK FENCE	-o-o-
CONCRETE WASHOUT AREA	
DRAINAGE FLOW DIRECTION	
GRAVEL CONSTRUCTION ENTRANCE	
LIMITS OF DISTURBANCE	- - - - -
TREE PROTECTION/CONSTRUCTION FENCE	- ~ - ~ - ~ -



GRADING, EROSION CONTROL, AND CONSTRUCTION MANAGEMENT PLAN
9TH STREET
TAX LOT 800 DEVELOPMENT
WEST LINN, OREGON (TAX MAP 3 1E 2AC)

RENEWAL DATE: 12/31/20
 JOB NUMBER: 5926
 DATE: 12/16/2020
 DESIGNED BY: APC, AJR, & RLB
 DRAWN BY: APC, AJR, & RLB
 CHECKED BY: JMM



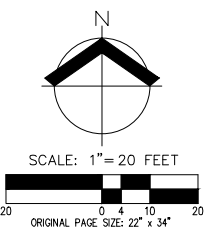
- # STORMWATER DRAINAGE KEYED NOTES**
1. NEW STORMWATER SWALE TO MANAGE STORMWATER RUNOFF FROM THE ACCESS LANE.
 2. NEW LINED STORMWATER PLANTER TO MANAGE STORMWATER RUNOFF FROM TAX LOT 800. FINAL LOCATION TO BE DETERMINED WITH BUILDING PERMIT.
 3. NEW DITCH INLET OVERFLOW.
 4. NEW PVC STORM PIPE.
 5. NEW STORMWATER OUTFALL.
 6. INSTALL DRIVEWAY STRIP DRAIN AND ROUTE TO STORMWATER PLANTER.

- # SANITARY SEWER KEYED NOTES**
1. CONNECTION TO EXISTING PUBLIC SANITARY SEWER MAIN.
 2. NEW SANITARY SEWER LATERAL.
 3. NEW SANITARY SEWER CLEANOUT (TYP).
 4. SANITARY SEWER SERVICE CONNECTION TO NEW BUILDING.

- # WATER PLAN KEYED NOTES**
1. CONNECTION TO EXISTING WATER SERVICE MAIN.
 2. NEW WATER METER.
 3. NEW WATER SERVICE FROM METER TO NEW BUILDING.

- # SITE PLAN KEYED NOTES**
1. NEW 12' WIDE ASPHALT CONCRETE ACCESS LANE.
 2. CONCEPTUAL BUILDING OUTLINE FOR TAX LOT 800.
 3. NEW CONCRETE DRIVEWAY FOR TAX LOT 800.
 4. NEW CONCRETE CURB.
 5. NEW RESIDENTIAL DRIVEWAY DROP.

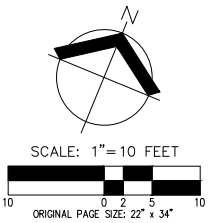
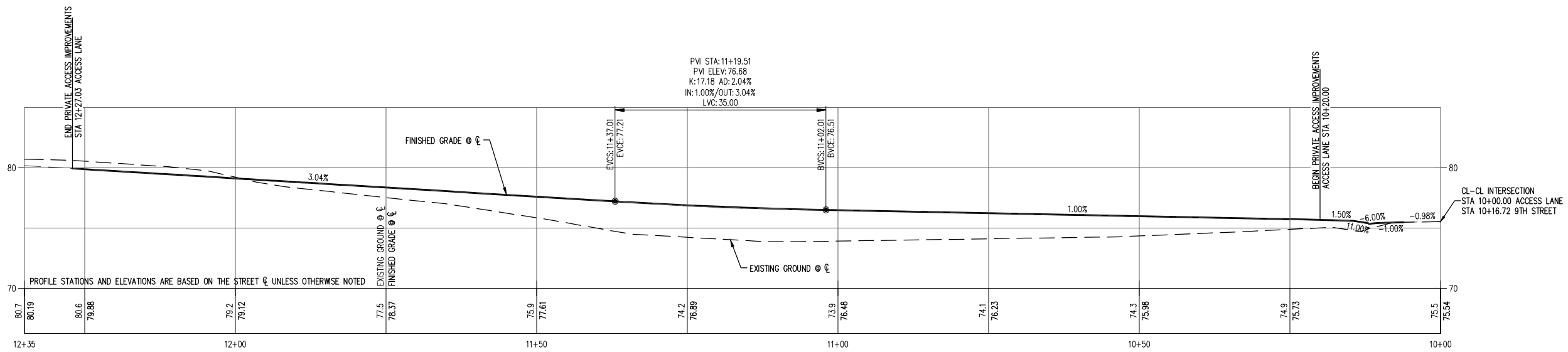
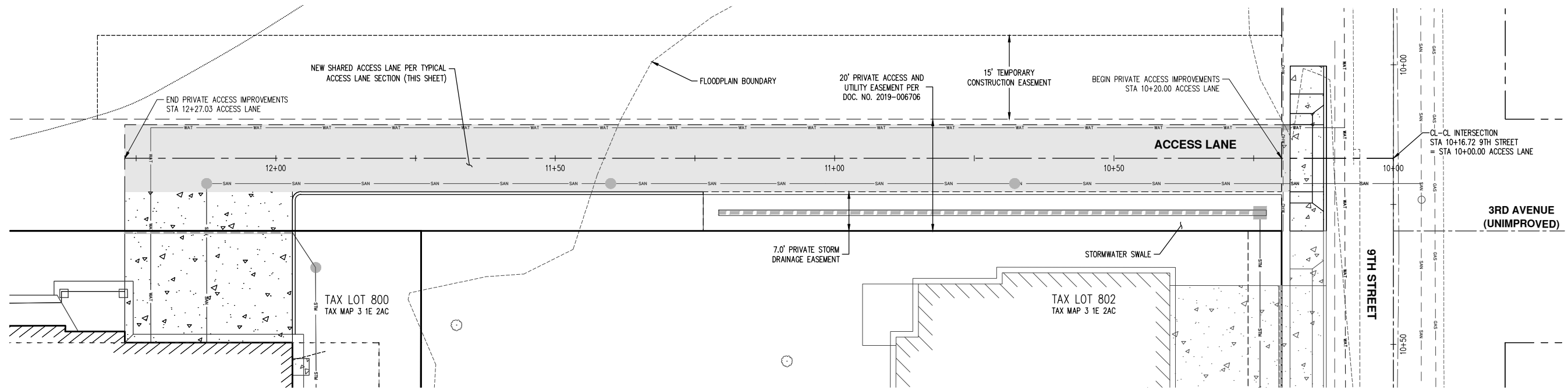
- NOTES:**
1. UTILITIES SHOWN ARE CONCEPTUAL AND FOR PLANNING PURPOSES ONLY.
 2. DRIVEWAY LOCATION IS CONCEPTUAL AND FOR PLANNING PURPOSES ONLY.
 3. HOME SHALL BE SERVICED BY A FIRE SPRINKLER SYSTEM.



**PRELIMINARY COMPOSITE UTILITY AND SITE PLAN
 9TH STREET
 TAX LOT 800 DEVELOPMENT
 WEST LINN, OREGON (TAX MAP 3 1E 2AC)**

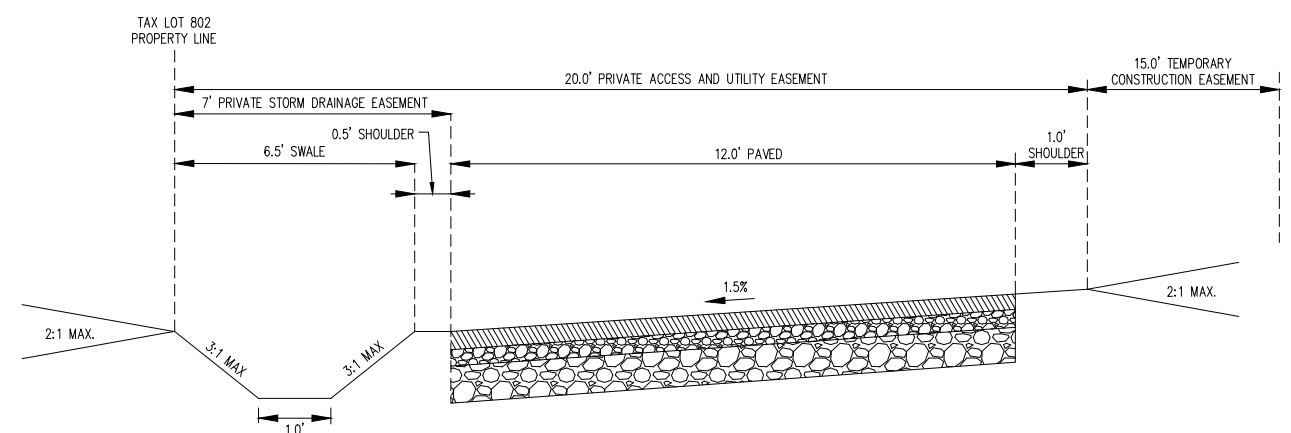
REGISTERED PROFESSIONAL
 LAND SURVEYOR
 STATE OF OREGON
 No. 1222
 JOHN M. VOISE
 RENEWAL DATE: 12/31/20
 JOB NUMBER: 5926
 DATE: 12/16/2020
 DESIGNED BY: APC, AJR, & RLB
 DRAWN BY: APC, AJR, & RLB
 CHECKED BY: JMM

AKS DRAWING FILE: 5926-1 UTILITY.DWG | LAYOUT: P-06 UTILITY

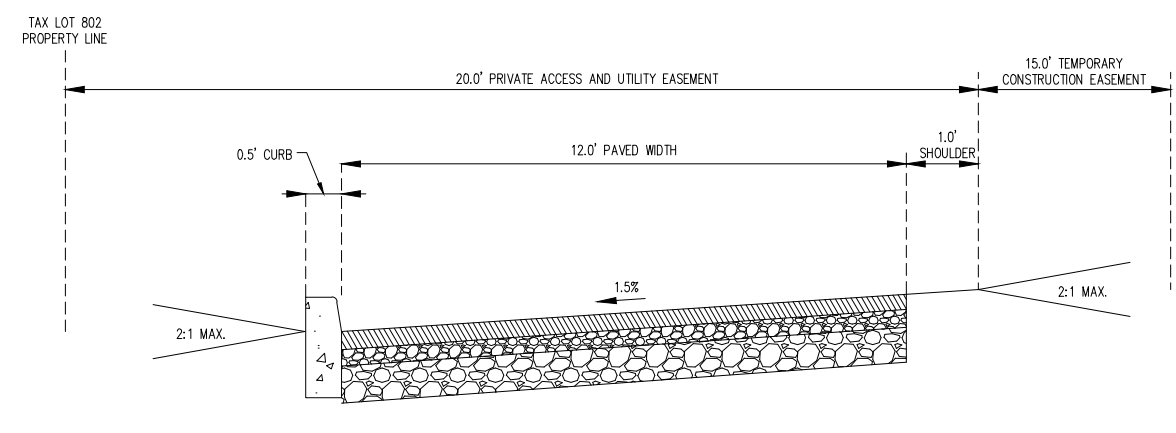


ACCESS LANE
 HOR. SCALE: 1" = 12'
 VERT. SCALE: 1" = 6'

NOTE:
 DRIVEWAY LOCATION FOR TAX LOT 800 IS CONCEPTUAL AND FOR PLANNING PURPOSES ONLY.



ACCESS LANE TYPICAL SECTION WITH SWALE
 NTS

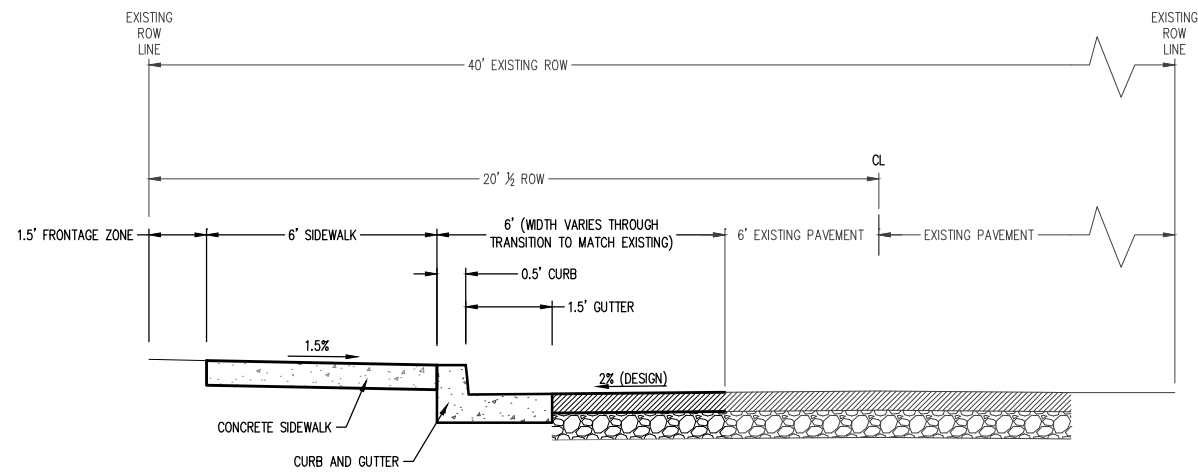
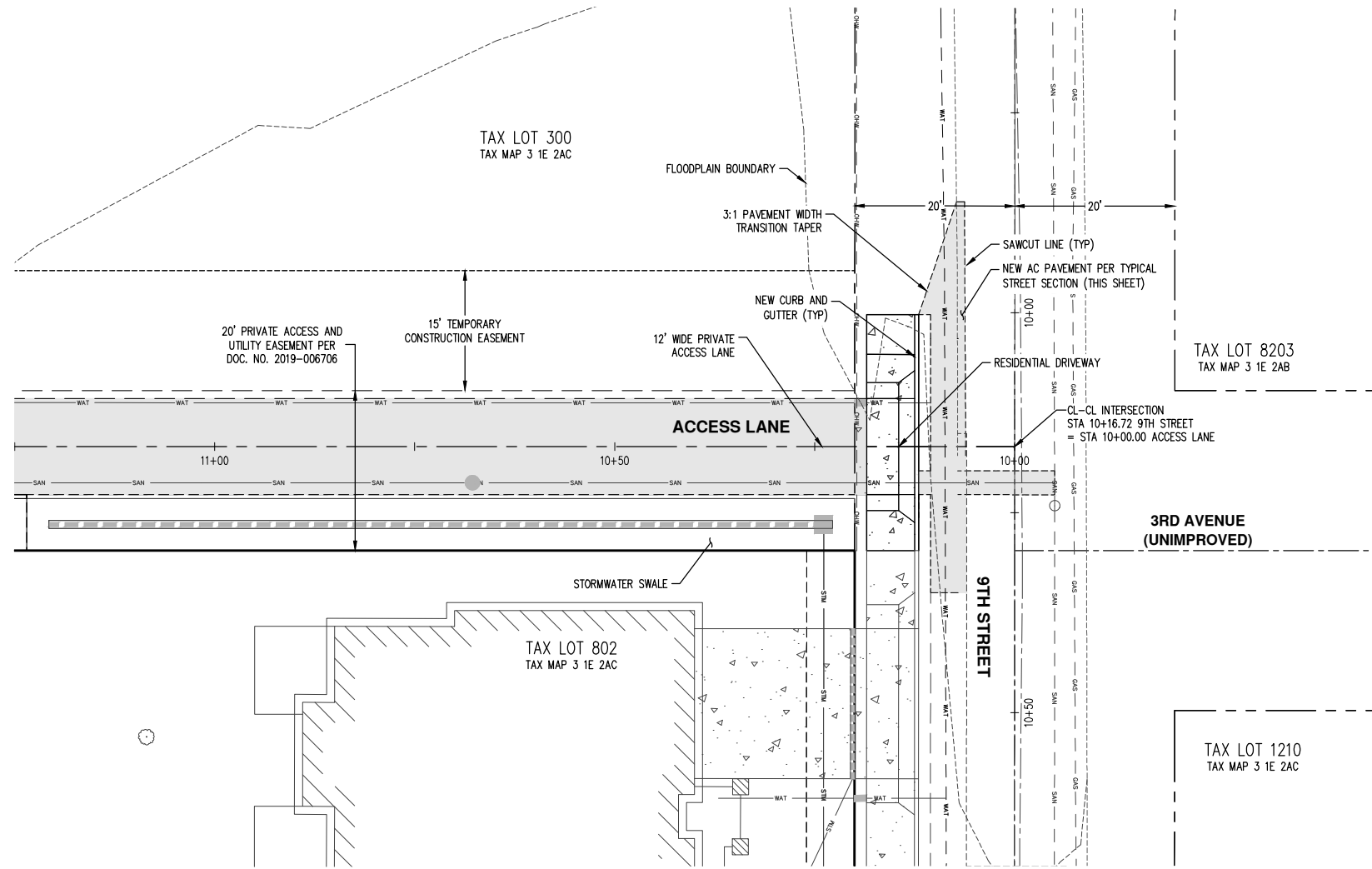


ACCESS LANE TYPICAL SECTION WITH CURB
 NTS

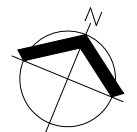
PRELIMINARY ACCESS LANE PLAN
 9TH STREET
 TAX LOT 800 DEVELOPMENT
 WEST LINN, OREGON (TAX MAP 3 1E 2AC)



RENEWAL DATE: 12/31/20
 JOB NUMBER: 5926
 DATE: 12/16/2020
 DESIGNED BY: APC, AJR, & RLB
 DRAWN BY: APC, AJR, & RLB
 CHECKED BY: JMM



9TH STREET TYPICAL SECTION
 NOT TO SCALE



SCALE: 1" = 10 FEET
 ORIGINAL PAGE SIZE: 22" x 34"

PRELIMINARY STREET PLAN
9TH STREET
TAX LOT 800 DEVELOPMENT
WEST LINN, OREGON (TAX MAP 3 1E 2AC)



RENEWAL DATE: 12/31/20
 JOB NUMBER: 5926
 DATE: 12/16/2020
 DESIGNED BY: APC, AJR, & RLB
 DRAWN BY: APC, AJR, & RLB
 CHECKED BY: JMM



AKS ENGINEERING & FORESTRY, LLC
 12965 SW HERMAN RD., STE 100
 TUALATIN, OR 97062
 503.563.6151
 WWW.AKS-ENG.COM

ENGINEERING • SURVEYING • NATURAL RESOURCES
 FORESTRY • PLANNING • LANDSCAPE ARCHITECTURE

**PRELIMINARY AERIAL PHOTOGRAPH PLAN
 9TH STREET
 TAX LOT 800 DEVELOPMENT
 WEST LINN, OREGON (TAX MAP 3 1E 2AC)**

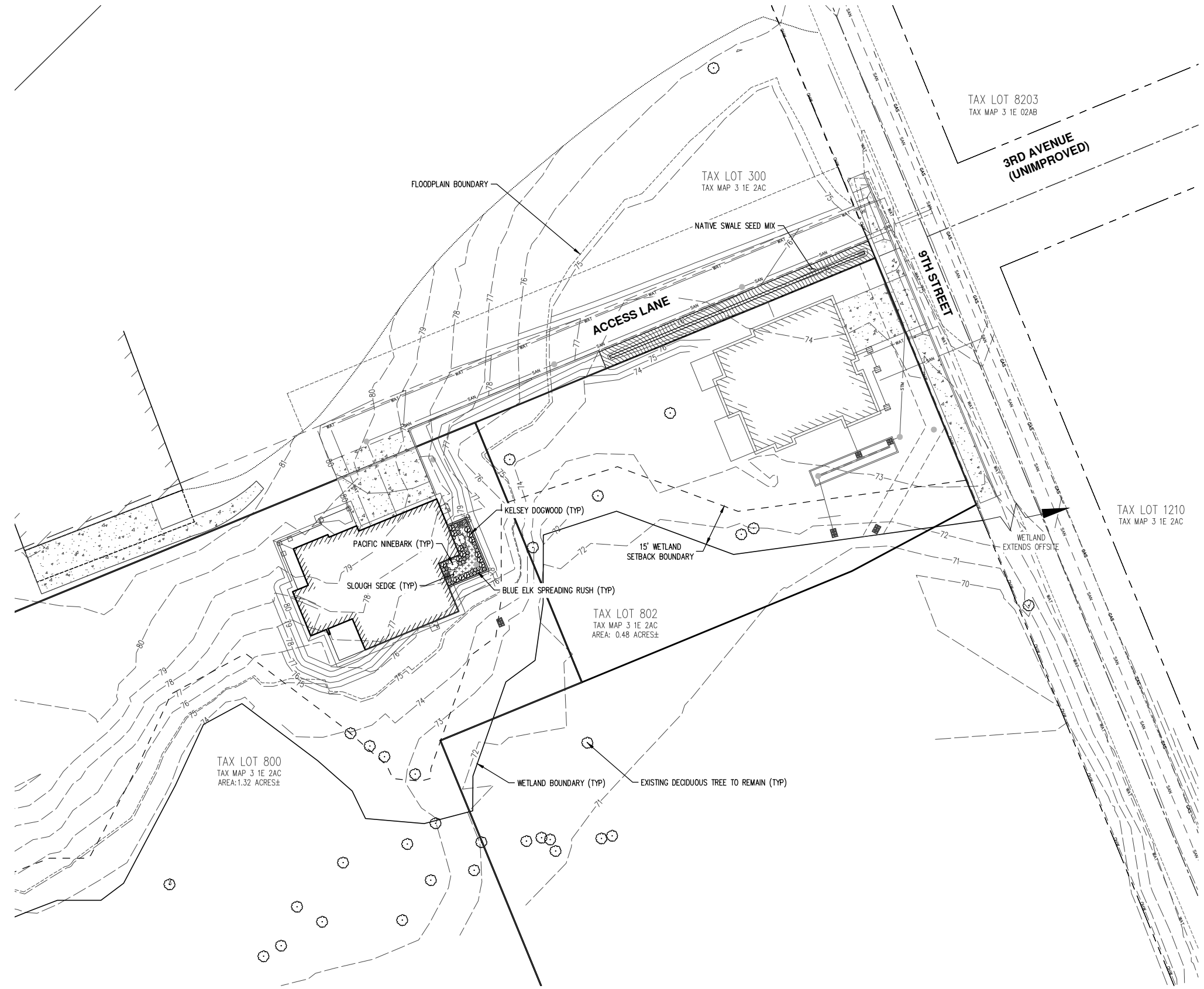


RENEWAL DATE: 12/31/20
 JOB NUMBER: 5926
 DATE: 12/16/2020
 DESIGNED BY: APC, AJR, & RLB
 DRAWN BY: APC, AJR, & RLB
 CHECKED BY: JMM



SCALE: 1" = 50 FEET





PLANT SCHEDULE - STORMWATER PLANTER

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
⊙	15	CORNUS SERICEA 'KELSEY'	KELSEY DOGWOOD	1 GAL. CONT.	24" o.c.
○	29	JUNCUS PATENS 'ELK BLUE'	SPREADING RUSH	1 GAL. CONT.	15" o.c.
⊗	2	PHYSOCARPUS CAPITATUS	PACIFIC NINEBARK	3 GAL. CONT.	48" o.c.

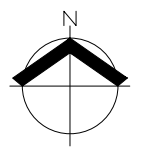
HERBACEOUS PLANTS	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
▨	38	CAREX OBNUPA	SLOUGH SEDGE	1 GAL. CONT.	15" o.c.

PLANT SCHEDULE - STORMWATER SWALE

GROUND COVERS	QTY	DESCRIPTION
▨	± 673 SF	NATIVE SWALE SEED MIX - SUNMARK SEEDS (OR APPROVED EQUAL) BLUE WILDRYE 50%; NATIVE RED FESCUE 5%; MEADOW BARLEY 10%; NORTHWESTERN MANNAGRASS 10%; AMERICAN SLOUGH GRASS 10%; TUFTED HAIRGRASS 5%; APPLY AT A RATE OF 1 LB. PER 1,000 SF OR AS RECOMMENDED BY SUPPLIER

GENERAL NOTES

- CONTRACTOR IS RESPONSIBLE FOR VERIFYING PLANT AND MATERIAL QUANTITIES. IF DISCREPANCIES OCCUR, DESIGN INTENT PREVAILS OVER QUANTITIES LISTED.
- ALL PLANTS INSTALLED WITHIN THE CITY OF WEST LINN SHALL CONFORM WITH AMERICAN STANDARDS FOR NURSERY STOCK, ANSI Z60.1 CURRENT EDITION IN ALL WAYS. PLANTS SHALL BE SOUND, HEALTHY, VIGOROUS, AND FREE OF PLANT DISEASE AND INSECT PESTS AND THEIR EGGS. CONTAINER STOCK SHALL BE GROWN FOR AT LEAST 8-MONTHS IN CONTAINERS IN WHICH DELIVERED AND SHALL NOT BE ROOT BOUND OR HAVE GIRDLING ROOTS. PLANTS WITH BROKEN TOPS, BRANCHES OR INJURED TRUNKS SHALL BE REJECTED.
- MULCH: APPLY 3" DEEP WELL-AGED MEDIUM GRIND OR SHREDDED DARK HEMLOCK BARK MULCH IN PLANTING BEDS, EXCLUDING STORMWATER PLANTER AND SWALE, TAKING CARE NOT TO COVER FOLIAGE OR BURY ROOT CROWNS OF PLANT MATERIAL.
- ALL PLANTS AND PLANTINGS WITHIN THE STORMWATER PLANTER SHALL CONFORM TO STORMWATER DESIGN STANDARDS AS ADOPTED BY CITY OF WEST LINN AND TO AMERICAN NURSERY STANDARDS (ANSI Z60.1). PLANTINGS SHOULD PREFERABLY BE INSTALLED BETWEEN FEBRUARY 1 AND MAY 1 OR BETWEEN OCTOBER 1 AND NOVEMBER 15. IF PLANTING OCCURS DURING OTHER TIMES OF THE YEAR, ADDITIONAL MEASURES, SUCH AS DEEP WATERING, MAY BE NECESSARY TO ENSURE PLANT SURVIVAL.
- SOIL PLACEMENT AND PLANTING SHALL OCCUR IN CONDITIONS THAT DO NOT RESULT IN OVER-COMPACTION OR EROSION, SATURATED SOIL OR OTHER CONDITIONS SUCH AS FREEZING OR ABOVE AVERAGE TEMPERATURES, RAINY CONDITIONS, ETC. SOIL SHALL BE IN FRIABLE (WORKABLE) CONDITION WHEN PLACED. FINISH GRADE OF NEW PLANTING AREAS SHALL SEAMLESSLY MEET FINISH GRADE SET IN GRADING PLANS.
- TEMPORARY IRRIGATION HAND WATERING, OR OTHER METHODS OF IRRIGATION FOR NEW PLANTS SHALL BE PROVIDED FOR 2 YEARS OR UNTIL ESTABLISHED.
- STORMWATER PLANTER AND SWALE ARE TO BE MAINTAINED IN GOOD CONDITION, FREE OF WEEDS AND OTHER INVASIVE SPECIES.

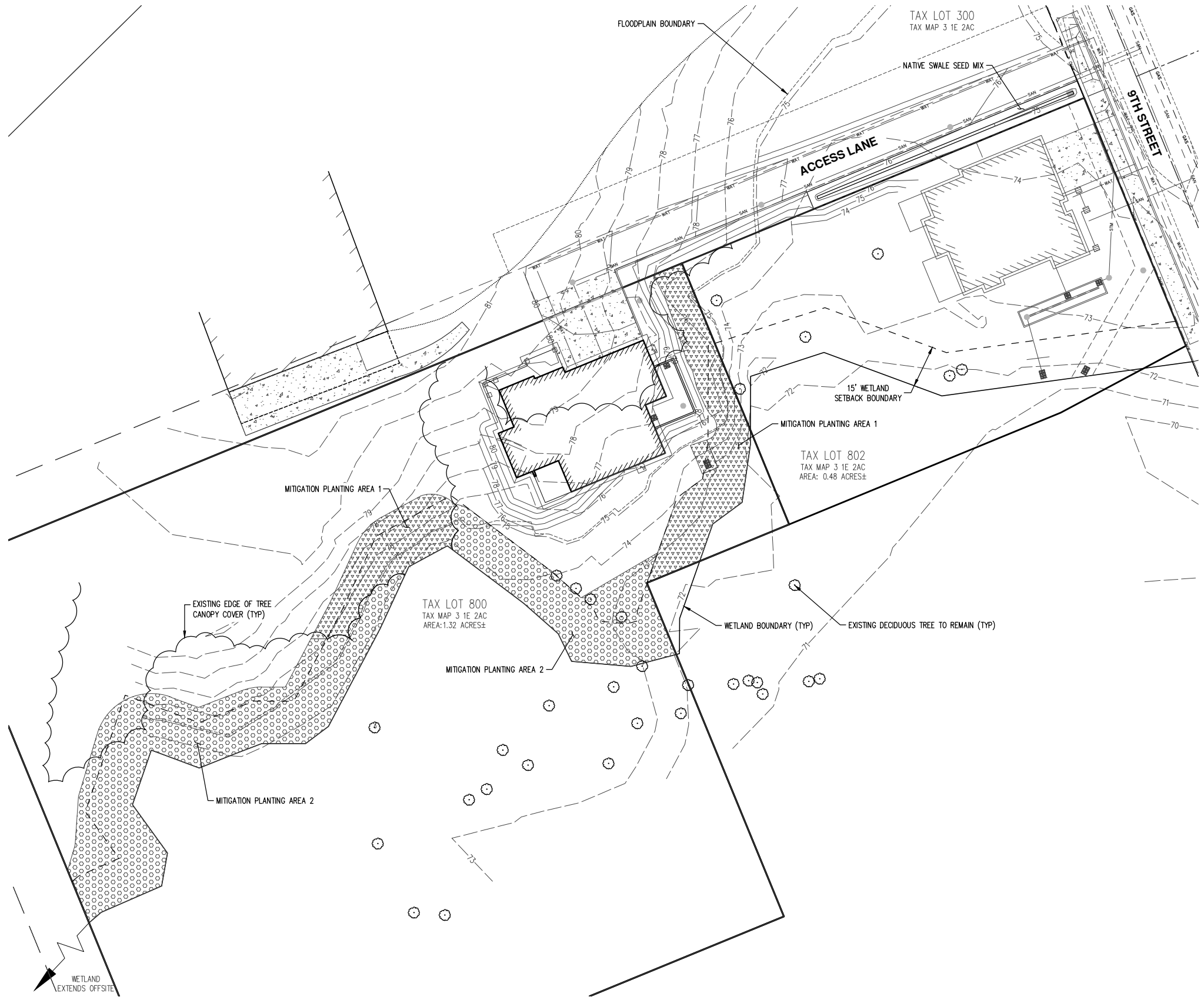


SCALE: 1" = 20 FEET
 ORIGINAL PAGE SIZE: 22" x 34"

PRELIMINARY LANDSCAPE PLAN
9TH STREET
TAX LOT 800 DEVELOPMENT
WEST LINN, OREGON (TAX MAP 3 1E 2AC)



JOB NUMBER: 5926
 DATE: 12/16/2020
 DESIGNED BY: TEB
 DRAWN BY: TEB
 CHECKED BY: KAH/TEB



Mitigation Planting Area 1

Planting specifications for the enhancement of 2,487 square feet of mitigation area and 59 square feet of temporarily disturbed WRA area.

Scientific Name	Common Name	Size ¹	Spacing/Seeding Rate ²	Quantity
Trees (total 25)				
<i>Alnus rubra</i>	Red alder	1 gallon	10-12 feet on center	10
<i>Populus trichocarpa</i>	Black cottonwood	1 gallon	10-12 feet on center	8
<i>Pseudotsuga menziesii</i>	Douglas fir	1 gallon	10-12 feet on center	7
Shrubs (total 127)				
<i>Holodiscus discolor</i>	Oceanspray	1 gallon	4-5 feet on center	40
<i>Oemleria cerasiformis</i>	Indian plum	1 gallon	4-5 feet on center	40
<i>Symphoricarpos albus</i>	Common snowberry	1 gallon	Clustered	47

¹Bare-root plants may be substituted for container plants based on availability. If bare-root plants are used, they must be planted during the late winter/early spring dormancy period.
²Clustered - Clusters of no more than 4 plants of a single species, with each cluster planted between 8 and 10 feet on center.

Mitigation Planting Area 2

Planting specifications for the enhancement of 5,432 square feet of mitigation area.

Scientific Name	Common Name	Size ¹	Spacing/Seeding Rate ²	Quantity
Trees (total 54)				
<i>Salix scouleriana</i>	Scouler's willow	1 gallon	10-12 feet on center	40
<i>Populus trichocarpa</i>	Black cottonwood	1 gallon	10-12 feet on center	14
Shrubs (total 272)				
<i>Cornus sericea</i>	Redosier dogwood	1 gallon	Clustered	100
<i>Physocarpus capitatus</i>	Pacific ninebark	1 gallon	Clustered	100
<i>Rosa nootkana</i>	Nootka rose	1 gallon	Clustered	72

¹Bare-root plants may be substituted for container plants based on availability. If bare-root plants are used, they must be planted during the late winter/early spring dormancy period.
²Clustered - Clusters of no more than 4 plants of a single species, with each cluster planted between 8 and 10 feet on center.

Planting Notes (per City of West Linn Community Development Code (CDC) Chapter 32, Water Resource Area Protection, Section 32.100, Re-Vegetation Plan Requirements):

- Plantings should preferably be installed between December 1 and February 28 for bare roots and seeds and between October 15 and April 30 for containers.
- Tree plantings must be at least 0.5 inches in caliper measured at 6 inches above the ground level or soil line. Shrub plantings must be in at least a 1-gallon container, or the equivalent in ball and burlap, and must be at least 12 inches in height. All plantings must be selected from the Portland Plant List.
- All non-native, invasive, or noxious vegetation shall be removed from mitigation planting area prior to installing native enhancement plantings. Invasive species control shall continue throughout the maintenance period.
- Irrigation may be necessary for the survival of the enhancement plantings. Irrigation or other water practices (i.e., polymer plus watering) are recommended during the three-year monitoring period following planting. Watering shall be provided at a rate of at least 1 inch per week between June 15 and October 15.
- Plantings shall be mulched a minimum of 3 inches in depth and 18 inches in diameter to retain moisture and discourage weed growth around newly installed plant material.
- When weather or other conditions prohibit planting according to schedule, the applicant will ensure that disturbed areas are correctly protected with erosion control measures and provide the City with funds in the amount of 125% of a bid from a recognized landscaper or nursery to cover the cost of the plant materials, installation, and any follow-up maintenance. Once the planting conditions are favorable, the applicant will proceed with the plantings and receive the funds back from the City upon completion, or the City will complete the plantings using those funds.

Maintenance and Monitoring Plan

- Monitoring and Reporting:** The City requires a three-year maintenance period for the WRA mitigation enhancement area. Monitoring of the mitigation site is the ongoing responsibility of the property owner. Plants that die must be replaced in kind.
- Plant Survival:** The City's success criterion for WRA enhancement is 80% survival of tree and shrub plantings expected by the third anniversary of the date the mitigation planting was installed. If any mortality is noted on the site, the factor likely to have caused mortality of the plantings is to be determined and corrected if possible. If survival falls below 80% at any time during the three-year maintenance period, the plantings shall be replaced and other corrective measures, such as mulching or irrigation, may need to be implemented.

PRELIMINARY MITIGATION PLANTING PLAN
9TH STREET
TAX LOT 800 DEVELOPMENT
WEST LINN, OREGON (TAX MAP 3 1E 2AC)



JOB NUMBER: 5926
 DATE: 12/16/2020
 DESIGNED BY: TEB
 DRAWN BY: TEB
 CHECKED BY: KAH/TEB

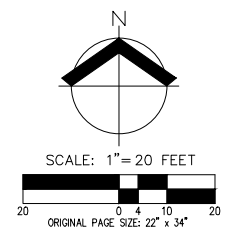


Exhibit B: Development Review Applications

DEVELOPMENT REVIEW APPLICATION

For Office Use Only		
STAFF CONTACT	PROJECT No(s).	PRE-APPLICATION No.
NON-REFUNDABLE FEE(S)	REFUNDABLE DEPOSIT(S)	TOTAL

Type of Review (Please check all that apply):

- | | | |
|---|--|---|
| <input type="checkbox"/> Annexation (ANX)
<input type="checkbox"/> Appeal and Review (AP)
<input type="checkbox"/> Conditional Use (CUP)
<input type="checkbox"/> Design Review (DR)
<input type="checkbox"/> Easement Vacation
<input type="checkbox"/> Extraterritorial Ext. of Utilities
<input type="checkbox"/> Final Plat or Plan (FP)
<input checked="" type="checkbox"/> Flood Management Area
<input type="checkbox"/> Hillside Protection & Erosion Control | <input type="checkbox"/> Historic Review
<input type="checkbox"/> Legislative Plan or Change
<input type="checkbox"/> Lot Line Adjustment (LLA)
<input type="checkbox"/> Minor Partition (MIP) (Preliminary Plat or Plan)
<input type="checkbox"/> Non-Conforming Lots, Uses & Structures
<input type="checkbox"/> Planned Unit Development (PUD)
<input type="checkbox"/> Pre-Application Conference (PA)
<input type="checkbox"/> Street Vacation | <input type="checkbox"/> Subdivision (SUB)
<input type="checkbox"/> Temporary Uses
<input type="checkbox"/> Time Extension
<input type="checkbox"/> Variance (VAR)
<input type="checkbox"/> Water Resource Area Protection/Single Lot (WAP)
<input checked="" type="checkbox"/> Water Resource Area Protection/Wetland (WAP)
<input checked="" type="checkbox"/> Willamette & Tualatin River Greenway (WRG)
<input type="checkbox"/> Zone Change |
|---|--|---|

Home Occupation, Pre-Application, Sidewalk Use, Sign Review Permit, and Temporary Sign Permit applications require different or additional application forms, available on the City website or at City Hall.

Site Location/Address: Clackamas County Assessor's Map No. 31E02AC, Tax Lots 800 and 300	Assessor's Map No.: 31E02AC
	Tax Lot(s): 800 and 300
	Total Land Area: ±3.21 acres

Brief Description of Proposal:

HCA, FMA, WRG, and WRA for TL 800 and accessway affecting TL 300.

Applicant Name: Roy Marvin <small>(please print)</small>	Phone: *Please contact Consultant
Address: 615 NW Territorial Road	Email: *Please contact Consultant
City State Zip: Canby, OR 97013	

Owner Name (required): Malibar Group LLC, Retirement Plan fbo Roy Marvin (TL 800) <small>(please print)</small>	Phone: *Please contact Consultant
Address: 615 NW Territorial Road	Email: *Please contact Consultant
City State Zip: Canby, OR 97013	

Consultant Name: Zach Pelz, AICP, AKS Engineering & Forestry, LLC <small>(please print)</small>	Phone: (503) 400-8028
Address: 3700 River Road N, Suite 1	Email: PelzZ@aks-eng.com
City State Zip: Keizer, OR 97303	

1. All application fees are non-refundable (excluding deposit). Any overruns to deposit will result in additional billing.
2. The owner/applicant or their representative should be present at all public hearings.
3. A decision may be reversed on appeal. No permit will be in effect until the appeal period has expired.
4. One complete hard-copy set of application materials must be submitted with this application.
 One complete digital set of application materials must also be submitted electronically in PDF format.
 If large sets of plans are required in application please submit one set.

The undersigned property owner(s) hereby authorizes the filing of this application, and authorizes on site review by authorized staff. I hereby agree to comply with all code requirements applicable to my application. Acceptance of this application does not infer a complete submittal. All amendments to the Community Development Code and to other regulations adopted after the application is approved shall be enforced where applicable. Approved applications and subsequent development is not vested under the provisions in place at the time of the initial application.

 Applicant's signature	Date	 Owner's signature (required)	Date
---	------	---	------

DEVELOPMENT REVIEW APPLICATION

For Office Use Only

STAFF CONTACT	PROJECT No(s).	PRE-APPLICATION No.
NON-REFUNDABLE FEE(S)	REFUNDABLE DEPOSIT(S)	TOTAL

Type of Review (Please check all that apply):

- | | | |
|--|---|--|
| <input type="checkbox"/> Annexation (ANX) | <input type="checkbox"/> Historic Review | <input type="checkbox"/> Subdivision (SUB) |
| <input type="checkbox"/> Appeal and Review (AP) | <input type="checkbox"/> Legislative Plan or Change | <input type="checkbox"/> Temporary Uses |
| <input type="checkbox"/> Conditional Use (CUP) | <input type="checkbox"/> Lot Line Adjustment (LLA) | <input type="checkbox"/> Time Extension |
| <input type="checkbox"/> Design Review (DR) | <input type="checkbox"/> Minor Partition (MIP) (Preliminary Plat or Plan) | <input type="checkbox"/> Variance (VAR) |
| <input type="checkbox"/> Easement Vacation | <input type="checkbox"/> Non-Conforming Lots, Uses & Structures | <input type="checkbox"/> Water Resource Area Protection/Single Lot (WAP) |
| <input type="checkbox"/> Extraterritorial Ext. of Utilities | <input type="checkbox"/> Planned Unit Development (PUD) | <input checked="" type="checkbox"/> Water Resource Area Protection/Wetland (WAP) |
| <input type="checkbox"/> Final Plat or Plan (FP) | <input type="checkbox"/> Pre-Application Conference (PA) | <input checked="" type="checkbox"/> Willamette & Tualatin River Greenway (WRG) |
| <input checked="" type="checkbox"/> Flood Management Area | <input type="checkbox"/> Street Vacation | <input type="checkbox"/> Zone Change |
| <input type="checkbox"/> Hillside Protection & Erosion Control | | |

Home Occupation, Pre-Application, Sidewalk Use, Sign Review Permit, and Temporary Sign Permit applications require different or additional application forms, available on the City website or at City Hall.

Site Location/Address: Clackamas County Assessor's Map No. 31E02AC, Tax Lots 800 and 300	Assessor's Map No.: 31E02AC
	Tax Lot(s): 800 and 300
	Total Land Area: ±3.21 acres

Brief Description of Proposal:

HCA, FMA, WRG, and WRA for TL 800 and accessway affecting TL 300.

Applicant Name: Roy Marvin <small>(please print)</small> Address: 615 NW Territorial Road City State Zip: Canby, OR 97013	Phone: *Please contact Consultant Email: *Please contact Consultant
Owner Name (required): Andrew Persse and Kami Persse (TL 300) <small>(please print)</small> Address: 1220 9th Street City State Zip: West Linn, OR 97068	Phone: *Please contact Consultant Email: *Please contact Consultant
Consultant Name: Zach Pelz, AICP, AKS Engineering & Forestry, LLC <small>(please print)</small> Address: 3700 River Road N, Suite 1 City State Zip: Keizer, OR 97303	Phone: (503) 400-6028 Email: PelzZ@aks-eng.com

1. All application fees are non-refundable (excluding deposit). **Any overruns to deposit will result in additional billing.**
2. The owner/applicant or their representative should be present at all public hearings.
3. A decision may be reversed on appeal. No permit will be in effect until the appeal period has expired.
4. **One complete hard-copy set of application materials must be submitted with this application.**
One complete digital set of application materials must also be submitted electronically in PDF format.
If large sets of plans are required in application please submit one set.

The undersigned property owner(s) hereby authorizes the filing of this application, and authorizes on site review by authorized staff. I hereby agree to comply with all code requirements applicable to my application. Acceptance of this application does not infer a complete submittal. All amendments to the Community Development Code and to other regulations adopted after the application is approved shall be enforced where applicable. Approved applications and subsequent development is not vested under the provisions in place at the time of the initial application.

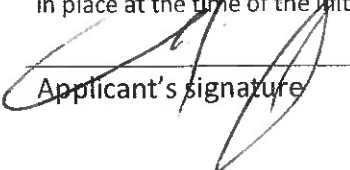
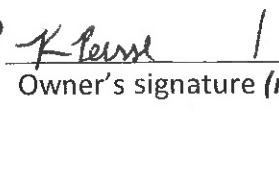
 Applicant's signature	12/4/20 Date	 Owner's signature (required)	12.4.20 Date
---	-----------------	--	-----------------

Exhibit C: Verification of Property Ownership

BLLL NO PART OF ANY STEVENS-NESS FORM MAY BE REPRODUCED IN ANY FORM OR BY ANY ELECTRONIC OR MECHANICAL MEANS.



53

ENCORE HOMES LLC.
 7989 SE TOWHEE CT.
 MILWAUKIE, OR. 97267
Grantor's Name and Address
 MALIBAR GROUP LLC. RETIREMENT
 PLAN FBO ROY MARVIN
 2332 BLUE SKY LN, ASHLAND, OR 97520
Grantee's Name and Address

Clackamas County Official Records
 Sherry Hall, County Clerk 2017-048042
 \$53.00
 02067407201700480420010013 07/14/2017 09:53:09 AM

After recording, return to (Name and Address):
 Roy Marvin - Counter
 2332 Bluesky Ln
 Ashland OR 97520

D-D Cnt=1 Stn=2 COUNTER3
 \$5.00 \$16.00 \$22.00 \$10.00

Until requested otherwise, send all tax statements to (Name and Address):
 Roy Marvin
 2332 Blue Sky Ln
 Ashland OR 97520

QUITCLAIM DEED - STATUTORY FORM

ENCORE HOMES LLC
 releases and quitclaims to MALIBAR GROUP LLC, RETIREMENT PLAN FBO ROY MARVIN, Grantor,
 all right, title and interest in and to the following described real property situated in CLACKAMAS, Grantee,
 Oregon: TRACTS A, B AND C, BLOCK 20 WILLAMETTE AND TUALATIN TRACTS IN THE CITY OF WEST LINN, OREGON TAX LOT 800 County,

(IF SPACE INSUFFICIENT, CONTINUE DESCRIPTION ON REVERSE)

The true consideration for this conveyance is \$ 500. (Here, comply with the requirements of ORS 93.030.)

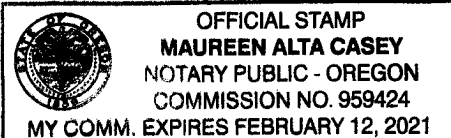
DATED 5-24-2017; any signature on behalf of a business or other entity is made with the authority of that entity. ENCORE HOMES, LLC

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

Signature of Encore Homes, LLC

STATE OF OREGON, County of Washington ss.

This instrument was acknowledged before me on _____
 by _____
 This instrument was acknowledged before me on 5-24-2017
 by EMERY SMITH
 as MEMBER
 of ENCORE HOMES, LLC



Notary Public for Oregon
 My commission expires 2-12-21

30

RECORDING COVER SHEET (Please Print or Type) this cover sheet was prepared by the person presenting the instrument for recording. The information on this sheet is a reflection of the attached instrument and was added for the purpose of meeting first page recording requirements in the State of Oregon, ORS 205.234, and does NOT affect the instrument.

AFTER RECORDING RETURN TO:

Roy Marvyn
615 Territorial Rd NW
Candy, OR 97013

Clackamas County Official Records
Sherry Hall, County Clerk

2017-055155



02075643201700551550030034

\$63.00

08/14/2017 11:32:21 AM

SEND TAX STATEMENTS TO:

Malibu Group LLC, Retirement Plan # 60 Roy Marvyn
615 NW Territorial Rd
Candy, OR 97013

D-D Cnt=1 Stn=9 COUNTER1
\$15.00 \$16.00 \$22.00 \$10.00

TITLE(S) OF THE TRANSACTION(S) ORS 205.234(a)

Quitclaim Deed

DIRECT PARTY(S) -- (i.e., DEEDS: Seller/Grantor; MORTGAGES: Borrower/Grantor; LIENS; Creditor/Plaintiff)
ORS 205.125(1) (b) and 205.160

Encore Homes LLC

Malibu Group LLC Retirement Plan # 60 Roy Marvyn

INDIRECT PARTY(S) -- (i.e., DEEDS: Buyer/Grantee; MORTGAGES: Beneficiary/Lender; LIENS: Debtor/Defendant)
ORS 205.125(1) (a) and 205.160

TRUE AND ACTUAL CONSIDERATION-- (Amount in dollars or other) ORS 93.030(5)

\$ 500

JUDGMENT AMOUNT-- (obligation imposed by the order or warrant) ORS 205.125(1) (c)

\$

8) If this instrument is being Re-Recorded, complete the following statement, in accordance with ORS 205.244:

"RERECORDED AT THE REQUEST OF *Dept of Assessment & Taxation*
TO CORRECT *Legal Description*
See Attached Exhibit A For New Legal

PREVIOUSLY RECORDED IN BOOK/PAGE/FEE NUMBER *2017-098042*

BLL NO PART OF ANY STEVENS-NESS FORM MAY BE REPRODUCED IN ANY FORM OR BY ANY ELECTRONIC OR MECHANICAL MEANS.



53

ENCORE HOMES LLC
7909 SE TOWHEE CT.
MILWAUKIE, OR. 97267

Grantor's Name and Address

MALIBAR GROUP LLC, RETIREMENT
PLAN FBO ROY MARVIN

2332 BLUE SKY LN, ASHLAND, OR 97520

Grantee's Name and Address

After recording, return to (Name and Address):

Roy Marvin - Counter
2332 Bluesky Ln
Ashland OR 97520

Until requested otherwise, send all tax statements to (Name and Address):

Roy Marvin
2332 Blue Sky Ln
Ashland OR 97520

Clackamas County Official Records
Sherry Hall, County Clerk

2017-048042



\$53.00

02067407201700480420010013

07/14/2017 09:53:09 AM

D-D Cnt=1 Stn=2 COUNTER3
\$5.00 \$16.00 \$22.00 \$10.00

QUITCLAIM DEED - STATUTORY FORM

ENCORE HOMES LLC

releases and quitclaims to MALIBAR GROUP LLC, RETIREMENT PLAN FBO ROY MARVIN, Grantor,

all right, title and interest in and to the following described real property situated in CLACKAMAS, Grantee,
Oregon: TRACTS A, B AND C, BLOCK 20 WILLAMETTE AND TUALATIN TRACTS County,

IN THE CITY OF WEST LINN, OREGON TAX LOT 800

(IF SPACE INSUFFICIENT, CONTINUE DESCRIPTION ON REVERSE)

The true consideration for this conveyance is \$ 500 (Here, comply with the requirements of ORS 93.030.)

DATED 5-24-2017; any signature on behalf of a business or other entity is made with the authority of that entity.

ENCORE HOMES, LLC

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

STATE OF OREGON, County of Washington ss.

This instrument was acknowledged before me on

by This instrument was acknowledged before me on 5-24-2017

by EMERY SMITH

as MEMBER

of ENCORE HOMES, LLC



OFFICIAL STAMP
MAUREEN ALTA CASEY
NOTARY PUBLIC - OREGON
COMMISSION NO. 959424
MY COMM. EXPIRES FEBRUARY 12, 2021

Notary Public for Oregon

My commission expires 2-12-21

Exhibit A



After recording return to:
Encore Homes, LLC
7989 SE Towhee Court
Milwaukie, OR 97267

Until a change is requested all tax
statements shall be sent to the
following address:
Encore Homes, LLC
7989 SE Towhee Court
Milwaukie, OR 97267

File No.: 7031-2830854 (mac)
Date: March 14, 2017

THIS SPACE RESERVED FOR RECORDER'S USE	
Clackamas County Official Records Sherry Hall, County Clerk	2017-031854
	05/12/2017 10:19:00 AM
D-D Cnt=1 Str=0 CONNIE \$10.00 \$16.00 \$10.00 \$22.00	\$58.00

STATUTORY WARRANTY DEED

Thomas C. Farwell and Susan H. Farwell, Grantor, conveys and warrants to **Encore Homes, LLC**, Grantee, the following described real property free of liens and encumbrances, except as specifically set forth herein:

LEGAL DESCRIPTION: Real property in the County of Clackamas, State of Oregon, described as follows:

TRACTS A, B, C AND D, BLOCK 20, WILLAMETTE & TUALATIN TRACTS, IN THE CITY OF WEST LINN, CLACKAMAS COUNTY AND STATE OF OREGON. EXCEPTING THEREFROM THAT PORTION CONVEYED TO SCOTT CASEY CLARK AND DAISY H. CLARK AS DESCRIBED IN THAT CERTAIN LOT LINE ADJUSTMENT DEED RECORDED JANUARY 10, 2003 AS FEE NO. 2003-003474.

Subject to:

1. Covenants, conditions, restrictions and/or easements, if any, affecting title, which may appear in the public record, including those shown on any recorded plat or survey.

The true consideration for this conveyance is **\$125,000.00**. (Here comply with requirements of ORS 93.030)

2830854.6V
FIRST AMERICAN

WFG Title 18-237870 SS

File No.: 18-237870

Clackamas County Official Records Sherry Hall, County Clerk	2018-075762
	12/18/2018 02:22:00 PM
D-D Cnt=1 Stn=4 STEPHEN	
\$15.00 \$16.00 \$10.00 \$62.00	\$103.00

Grantor
Thomas C. Farwell and Heather Susan Farwell 1220 9th Street West Linn, OR 97068
Grantee
Andrew Persse and Kami Persse 16210 Apperson Boulevard Oregon City, OR 97045
After recording return to
Andrew Persse and Kami Persse 1220 9th Street West Linn, OR 97068
Until requested, all tax statements shall be sent to
Andrew Persse and Kami Persse 1220 9th Street West Linn, OR 97068 Tax Acct No(s): 31E02AC00300, 00748613

Reserved for Recorder's Use

STATUTORY WARRANTY DEED

Thomas C. Farwell and Heather Susan Farwell, Grantor(s) convey and warrant to Andrew Persse and Kami Persse, Grantee(s), the real property described in the attached Exhibit A, free of encumbrances EXCEPT covenants, conditions, restrictions, easements, and encumbrances of record as of the date hereof.

The true consideration for this conveyance is **\$600,000.00**. (Here comply with requirements of ORS 93.030)

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009 AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

Executed this 14 day of December, 2018

[Signature]
Thomas C. Farwell
[Signature]
Heather Susan Farwell

STATE OF OREGON
COUNTY OF CLACKAMAS

This instrument was acknowledged before me this 14th day of December, 2018 by Thomas C. Farwell and Heather Susan Farwell.

[Signature]
Notary Public for Oregon
My Commission Expires: 10/12/19

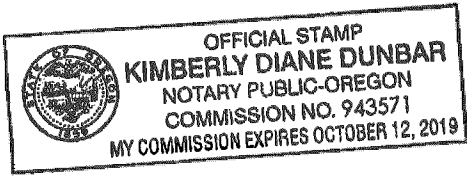


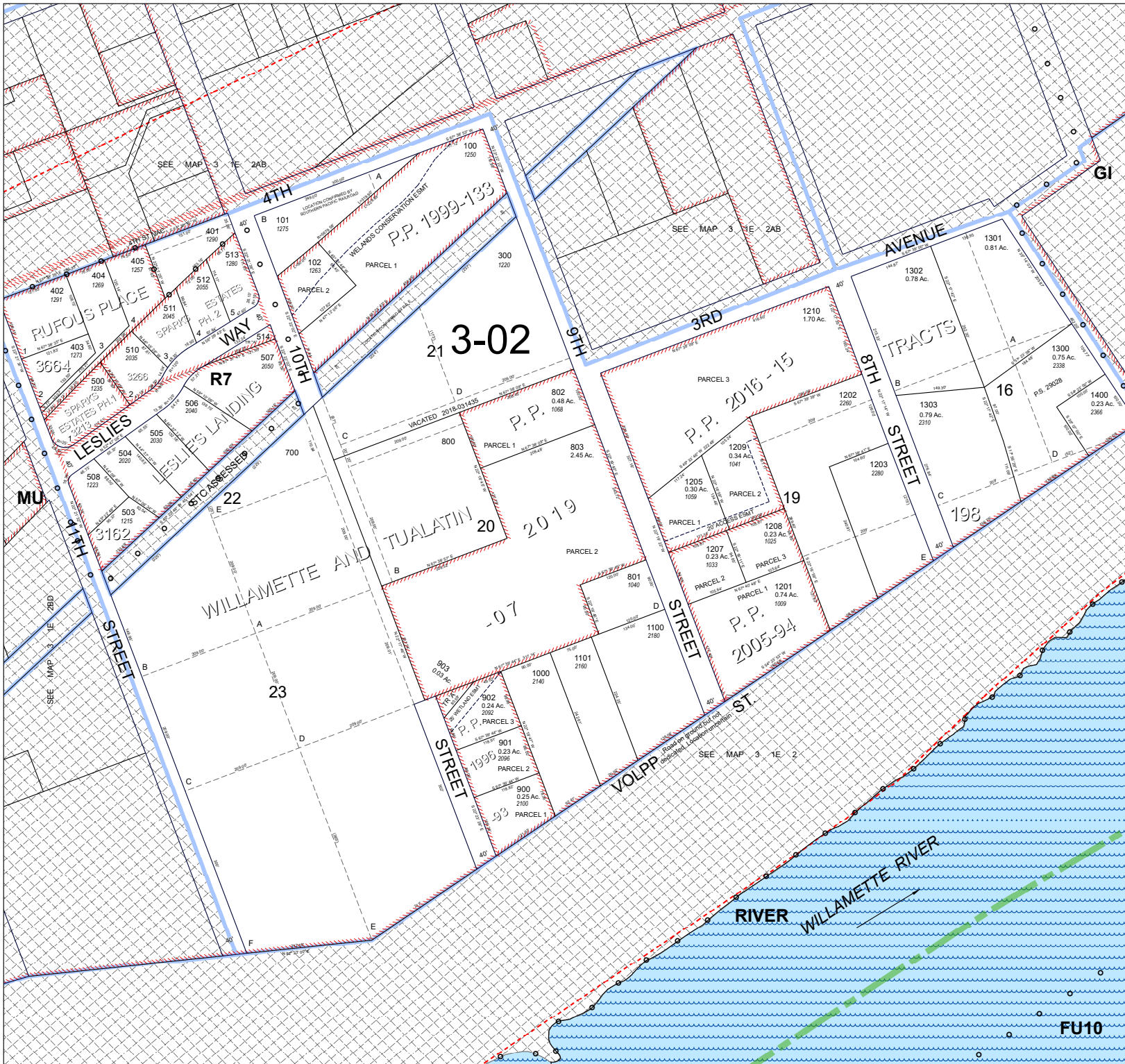
EXHIBIT "A"
LEGAL DESCRIPTION

Tracts C and D, Block 21, Willamette & Tualatin Tracts, in the City of West Linn, County of Clackamas and State of Oregon. Together with that portion of vacated Third Avenue that inured to Tracts C and D, Block 21, Willamette & Tualatin Tracts, in the City of West Linn, County of Clackamas and State of Oregon, as set forth in Ordinance Recorded May 22, 2018, as Fee No. 2018-031435

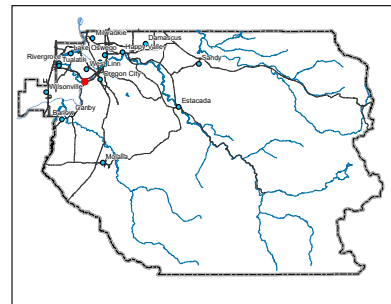
Exhibit D: Clackamas County Tax Assessor's Map

Cancelled Taxlots

- 200
- 800
- 500U1
- 590U1
- 590U2
- 502
- 190
- 501
- 509
- 1200
- 400
- 1204
- 1206



- Parcel Boundary
- Private Road ROW
- Historical Boundary
- Railroad Centerline
- TaxCodeLines
- Map Index
- WaterLines
- Land Use Zoning
- Plats
- Water
- Corner
- Section Corner
- 1/16th Line
- Govt Lot Line
- DLC Line
- Meander Line
- PLSS Section Line
- Historic Corridor 40'
- Historic Corridor 20'



THIS MAP IS FOR ASSESSMENT PURPOSES ONLY



FU10

Exhibit E: DSL Wetland Delineation Report and DSL Concurrence



Oregon

Kate Brown, Governor

Department of State Lands

775 Summer Street NE, Suite 100

Salem, OR 97301-1279

(503) 986-5200

FAX (503) 378-4844

www.oregon.gov/dsl

State Land Board

December 19, 2019

Malibar Group, LLC
Attn: Roy Marvin
615 NW Territorial Rd
Canby, OR 97013

Kate Brown
Governor

Bev Clarno
Secretary of State

Re: WD # 2019-0614 **Approved**
Wetland Delineation Report for Tax Lots 800, 802, 803
Clackamas County; T3S R1E S2AC TLs 800, 802, 803
West Linn Local Wetlands Inventory, W1-01

Tobias Read
State Treasurer

Dear Mr. Marvin:

The Department of State Lands has reviewed the wetland delineation report prepared by AKS Engineering & Forestry, LLC for the site referenced above. Based upon the information presented in the report, we concur with the wetland and waterway boundaries as mapped in Figure 5 of the report. Please replace all copies of the preliminary wetland map with this final Department-approved map.

Within the study area, one wetland (Wetland A, totaling approximately 2.67 acres) and one pond were identified. The wetland and pond are subject to the permit requirements of the state Removal-Fill Law. Under current regulations, a state permit is required for cumulative fill or annual excavation of 50 cubic yards or more in wetlands or below the ordinary high-water line (OHWL) of the waterway (or the 2-year recurrence interval flood elevation if OHWL cannot be determined).

This concurrence is for purposes of the state Removal-Fill Law only. We recommend that you attach a copy of this concurrence letter to any subsequent state permit application to speed application review. Federal or local permit requirements may apply as well. The U.S. Army Corps of Engineers will determine jurisdiction under the Clean Water Act, which may require submittal of a complete Wetland Delineation Report.

Please be advised that state law establishes a preference for avoidance of wetland impacts. Because measures to avoid and minimize wetland impacts may include reconfiguring parcel layout and size or development design, we recommend that you work with Department staff on appropriate site design before completing the city or county land use approval process.

This concurrence is based on information provided to the agency. The jurisdictional determination is valid for five years from the date of this letter unless new information necessitates a revision. Circumstances under which the Department may change a determination are found in OAR 141-090-0045 (available on our web site or upon request). In addition, laws enacted by the legislature and/or rules adopted by the Department may result in a change in jurisdiction; individuals and applicants are subject to the regulations that are in effect at the time of the removal-fill activity or complete permit application. The applicant, landowner, or agent may submit a request for reconsideration of this determination in writing within six months of the date of this letter.

Thank you for having the site evaluated. If you have any questions, please contact Chris Stevenson, the Jurisdiction Coordinator for Clackamas County at (503) 986-5246.

Sincerely,

Peter Ryan Digitally signed by Peter Ryan
Date: 2019.12.19 14:18:31 -08'00'

Peter Ryan, PWS
Aquatic Resource Specialist

Enclosures

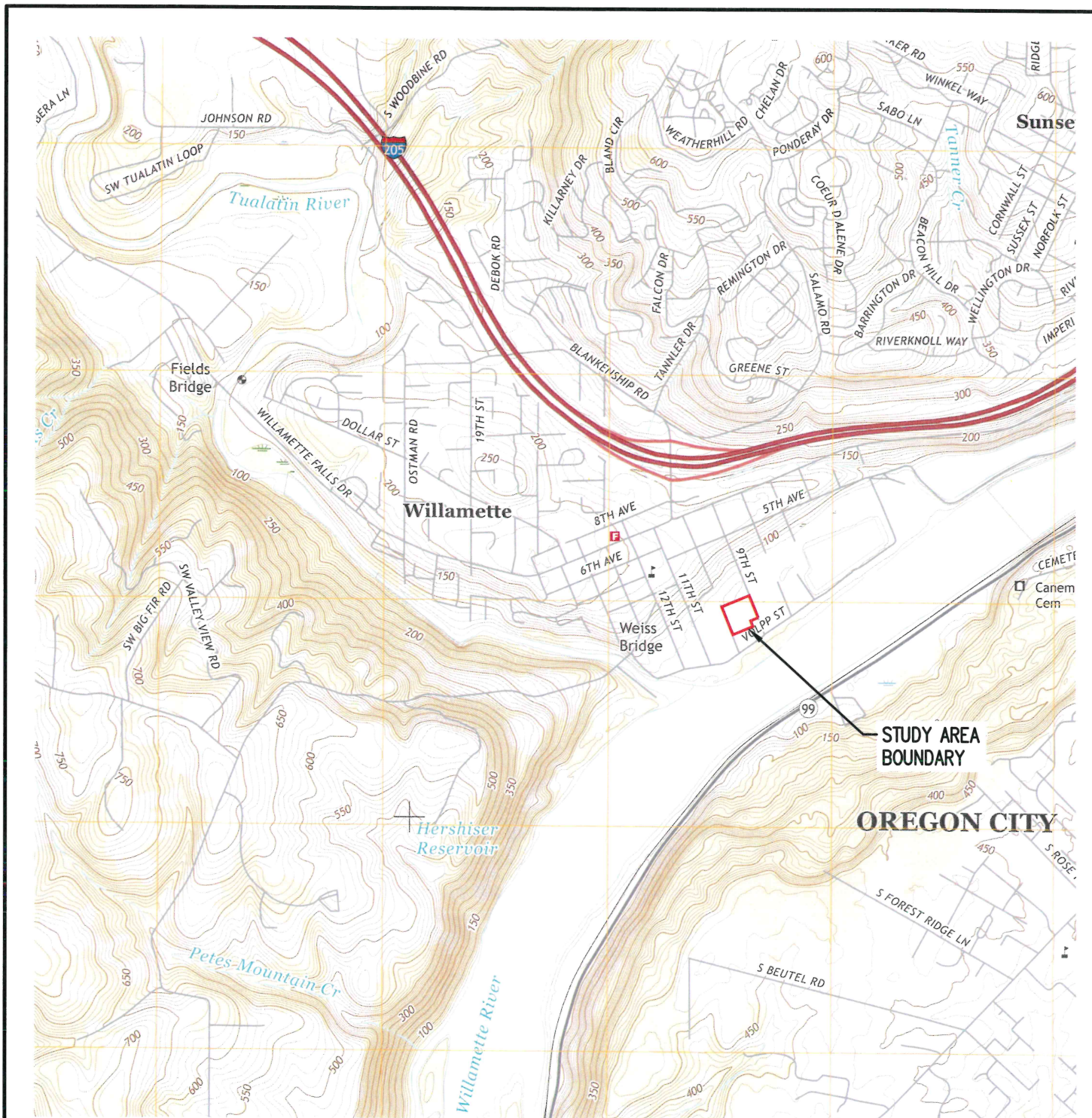
ec: Stacey Reed, PWS, AKS Engineering & Forestry, LLC
City of West Linn Planning Department (Maps enclosed for updating LWI)
Jessica Menichino, Corps of Engineers
Anita Huffman, DSL

WETLAND DELINEATION / DETERMINATION REPORT COVER FORM

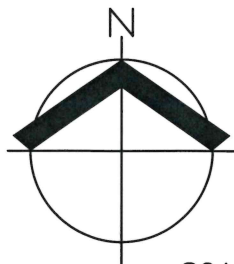
Fully completed and signed report cover forms and applicable fees are required before report review timelines are initiated by the Department of State Lands. Make checks payable to the Oregon Department of State Lands. To pay fees by credit card, go online at: <https://apps.oregon.gov/DSL/EPS/program?key=4>.

Attach this completed and signed form to the front of an unbound report or include a hard copy with a digital version (single PDF file of the report cover form and report, minimum 300 dpi resolution) and submit to: **Oregon Department of State Lands, 775 Summer Street NE, Suite 100, Salem, OR 97301-1279**. A single PDF of the completed cover form and report may be e-mailed to: **Wetland_Delineation@dsl.state.or.us**. For submittal of PDF files larger than 10 MB, e-mail DSL instructions on how to access the file from your ftp or other file sharing website.

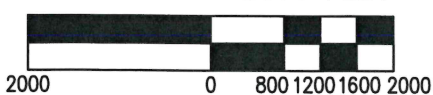
Contact and Authorization Information	
<input checked="" type="checkbox"/> Applicant <input checked="" type="checkbox"/> Owner Name, Firm and Address: Malibar Group, LLC Attn: Roy Marvin 615 NW Territorial Road Canby, OR 97013	Business phone # Mobile phone # (optional) E-mail: marvinfamily@aol.com
<input type="checkbox"/> Authorized Legal Agent, Name and Address (if different):	Business phone # Mobile phone # (optional) E-mail:
I either own the property described below or I have legal authority to allow access to the property. I authorize the Department to access the property for the purpose of confirming the information in the report, after prior notification to the primary contact.	
Typed/Printed Name: <u>Roy marvin</u> Signature: Date: <u>11/05/2019</u> Special instructions regarding site access: _____	
Project and Site Information	
Project Name: <u>Tax Lots 800, 802, and 803</u>	Latitude: <u>45.341461</u> Longitude: <u>-122.647849</u> decimal degree - centroid of site or start & end points of linear project
Proposed Use: <u>Residential</u>	Tax Map # <u>3S 1E 2AC</u> Tax Lot(s) <u>800, 802, 803</u>
Project Street Address (or other descriptive location): <u>West of 9th Street and north of 1040 9th Street.</u>	Tax Map # Tax Lot(s)
City: <u>West Linn</u> County: <u>Clackamas</u>	Township <u>3S</u> Range <u>1E</u> Section <u>2</u> QQ <u>AC</u> Use separate sheet for additional tax and location information
Waterway: <u>NA</u>	River Mile: <u>NA</u>
Wetland Delineation Information	
Wetland Consultant Name, Firm and Address: AKS Engineering & Forestry, LLC Stacey Reed, PWS 12965 SW Herman Road, Suite 100 Tualatin, OR 97062	Phone # (503) 563-6151 Mobile phone # (if applicable) E-mail: staceyr@aks-eng.com
The information and conclusions on this form and in the attached report are true and correct to the best of my knowledge.	
Consultant Signature:	Date: <u>11/14/2019</u>
Primary Contact for report-review and site access is <input checked="" type="checkbox"/> Consultant <input type="checkbox"/> Applicant/Owner <input type="checkbox"/> Authorized Agent	
Wetland/Waters Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Study Area size: <u>4.16</u> Total Wetland Acreage: <u>2.8200</u>	
Check Applicable Boxes Below	
<input type="checkbox"/> R-F permit application submitted	<input checked="" type="checkbox"/> Fee payment submitted \$ <u>454</u>
<input type="checkbox"/> Mitigation bank site	<input type="checkbox"/> Fee (\$100) for resubmittal of rejected report
<input type="checkbox"/> Industrial Land Certification Program Site	<input type="checkbox"/> Request for Reissuance. See eligibility criteria. (no fee) DSL # _____ Expiration date _____
<input type="checkbox"/> Wetland restoration/enhancement project (not mitigation)	
<input type="checkbox"/> Previous delineation/application on parcel If known, previous DSL # _____	<input checked="" type="checkbox"/> LWI shows wetlands or waters on parcel Wetland ID code <u>WI-01</u>
For Office Use Only	
DSL Reviewer: <u>CS</u> Fee Paid Date: ____ / ____ / ____	DSL WD # <u>2019-0614</u>
Date Delineation Received: <u>11 / 15 / 19</u> Scanned: <input type="checkbox"/> Electronic: <input type="checkbox"/>	DSL App.# _____



USGS 7.5' TOPOGRAPHIC SERIES
 QUADRANGLE: CANBY, OR (2017)



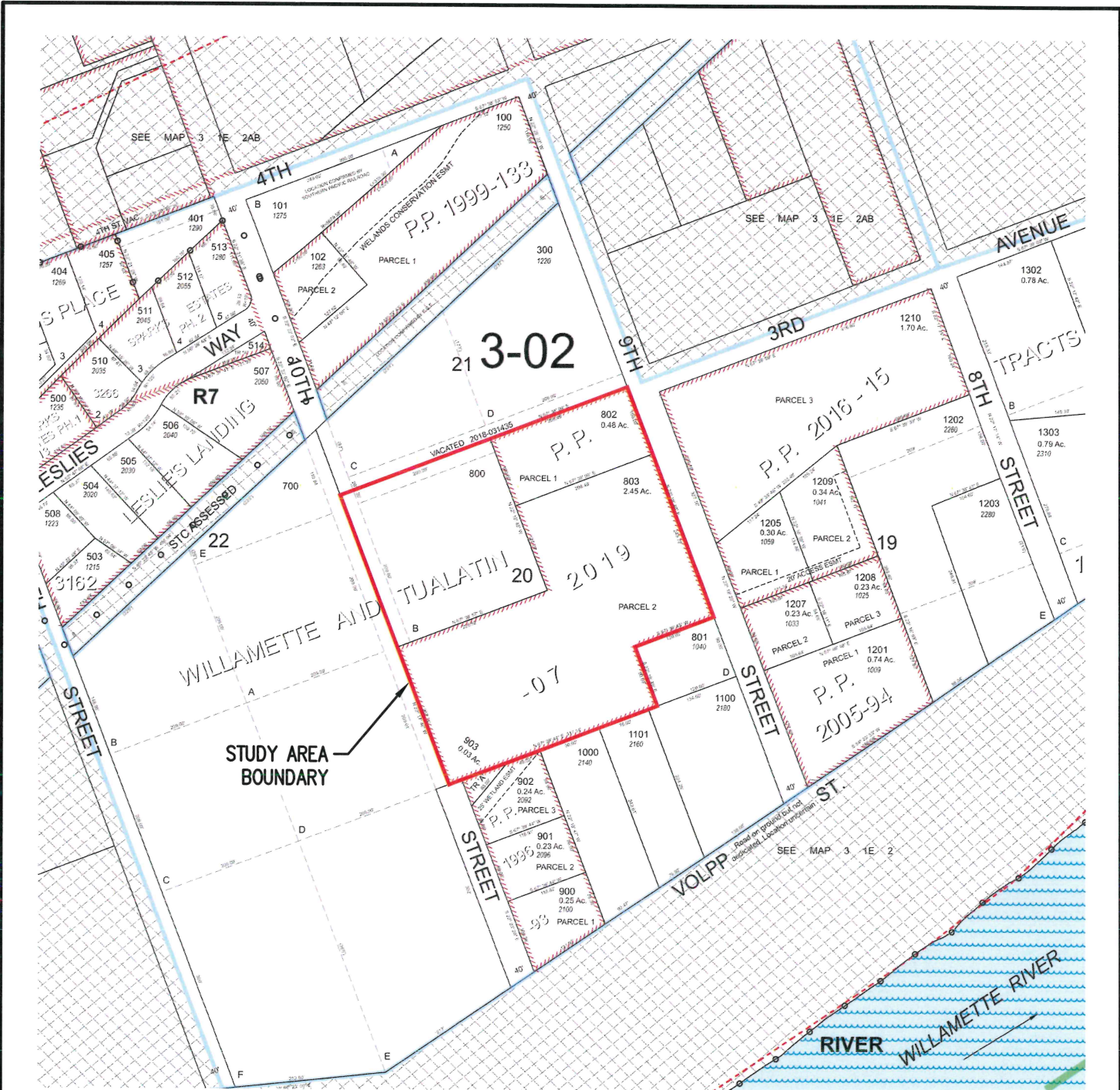
SCALE: 1" = 2000 FEET



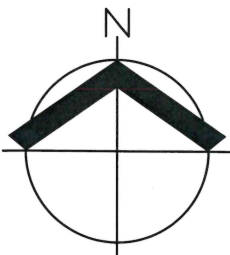
DATE: 08/28/2019

USGS VICINITY MAP		FIGURE 1
9TH STREET WEST LINN WETLAND DELINEATION REPORT		
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM		DRWN: SAS CHKD: SAR AKS JOB: 5926

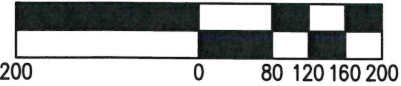




CLACKAMAS COUNTY
 TAX LOTS 800, 802, & 803
 TAX MAP 3 1E 2AC



SCALE: 1" = 200 FEET



DATE: 10/08/2019

CLACKAMAS COUNTY ASSESSOR'S TAX MAP 9TH STREET WEST LINN WETLAND DELINEATION REPORT		FIGURE 2
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM		DRWN: SAS CHKD: SAR AKS JOB: 5926



DSL WD # 2019-0614
 Approval Issued 12/19/2019
 Approval Expires 12/19/2024

LEGEND:


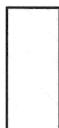

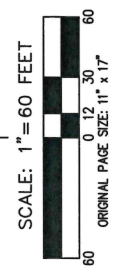
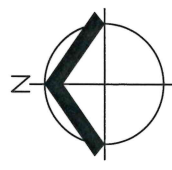
-  ON-SITE WETLAND A AREA: 116,431 SF± (2.67 ACRES±)
-  APPROXIMATE ON-SITE POND AREA WITHIN WETLAND A: 6,368 SF± (0.15 ACRES±)
-  TOTAL WETLAND A AREA INCLUDING POND: 122,799 SF± (2.82 ACRES±)

PHOTO POINT LOCATIONS

WETLAND BOUNDARY SHOWN WAS DELINEATED BY AKS ENGINEERING & FORESTRY, LLC. ON MARCH 27, 2017, AND WAS PROFESSIONALLY SURVEYED BY AKS ON MAY 16-17, 2017.

1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

TREES WITH DIAMETER OF 6" AND GREATER ARE SHOWN. TREE DIAMETERS WERE MEASURED UTILIZING A DIAMETER TAPE AT BREAST HEIGHT. TREE INFORMATION IS SUBJECT TO CHANGE UPON ARBORIST INSPECTION.



DATE: 10/08/2019
 FIGURE

WETLAND DELINEATION MAP
 9TH STREET WEST LINN WETLAND DELINEATION REPORT

AKS ENGINEERING & FORESTRY, LLC
 12965 SW HERMAN RD, STE 100
 TUALATIN, OR 97062
 503.563.6151 WWW.AKS-ENG.COM



DRWN: JRI
 CHKD: SAR
 AKS JOB: 5926

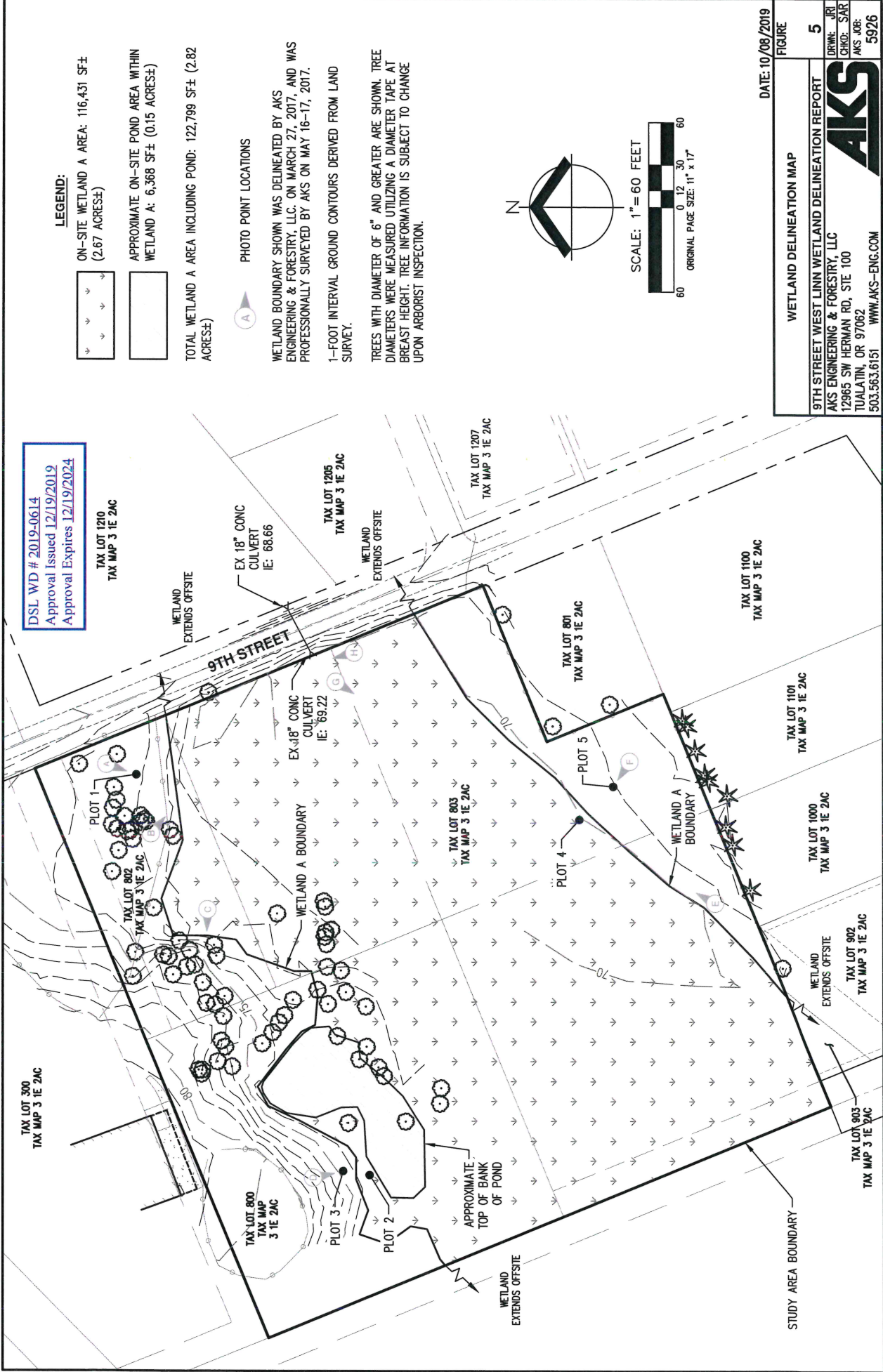


Exhibit F: Site Assessment Report

Tax Lot 800 West Linn, Oregon Site Assessment Report

Date: December 2020

Prepared for: Malibar Group, LLC
615 NW Territorial Road
Canby, OR 97013

Prepared by: AKS Engineering & Forestry, LLC
Julie Wirth-McGee, PWS, Senior Environmental Specialist
(503) 400-6028 | wirthmcgee@aks-eng.com

Study Area: South of 1220 9th Street
West Linn, Clackamas County, Oregon
Clackamas County Assessor's Map 3 1E 2AC
Tax Lot 800

AKS Job Number: 5926



12965 SW Herman Road, Suite 100
Tualatin, OR 97062
(503) 563-6151

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Existing Condition of the WRA	2
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Figure 2. Tax Map (Map 3 1E 2AC)
Figure 3. NRCS Soil Survey Map
Figure 4. Local Wetland Inventory Map
Figure 5. City of West Linn WRA Map
Figure 6. City of West Linn HCA Map
Figure 7. Site Plan Overview
Figure 7A. Site Plan
Appendix B. WD#2019-0614
Appendix C. Plot A Data Sheet
Appendix D. Representative Photographs
Appendix E. Mitigation Planting Specifications

Introduction

This Site Assessment Report was prepared by AKS Engineering & Forestry, LLC (AKS) for proposed development activities on Tax Lot 800 of Clackamas County Assessor's Map 3 1E 2AC, which is located south of 1220 9th Street in West Linn, Clackamas County, Oregon (Figures 1-2, Appendix A). The applicant requests approval to construct a single-family home on Tax Lot 800, with a 12-foot-wide access and vegetated swale on adjacent Tax Lot 300 to the north, and a 6-square-foot stormwater outfall pad on adjacent Tax Lot 802 to the east.

This report describes the results of a previous delineation of one palustrine forested/emergent (PFO/EM) wetland (referred to as Wetland A) and associated 65-foot Water Resource Area (WRA) within the Willamette River watershed. In addition, a Metro Title 13 Moderate Value Habitat Conservation Area (HCA) is mapped extending through the entire site, except for a small area on Tax Lot 300 that is designated for development ("Allow Development"). The original study area boundary assessed by AKS included Tax Lots 800, 802, and 803 to determine the extent of water resources within the project area; however, this report will only focus on the extent and condition of water resources within the project area.

Proposed construction activities will require unavoidable encroachment into the WRA and HCA, requiring mitigation in accordance with the West Linn Community Development Code (CDC). The WRA and HCA provisions of the CDC prevent reasonable use of the site. Therefore, the applicant is seeking approval through the hardship provisions in accordance with Sections 32.110 and 28.110 of the West Linn CDC. On-site enhancement is proposed to compensate for the unavoidable WRA/HCA encroachments, and will meet the required 1:1 mitigation ratio.

This report has been prepared to meet the provisions of Chapter 28, Willamette and Tualatin River Protection, and Chapter 32, Water Resource Area Protection, of the West Linn CDC. Report maps and figures are provided in Appendix A.

Site Conditions and Protected Resources

The project area consists of an undeveloped field with a forested riparian area to the north of Wetland A and an existing pond. The site and much of the surrounding land is located within the Federal Emergency Management Agency (FEMA) 100-year floodplain. An electric fence runs east-west in the northern portion of the study area. Topography on most of the site is generally flat (less than 5 percent slope), with a gradual-to-moderate slope to the south. According to the Natural Resources Conservation Service (NRCS) Clackamas County Area Soil Survey Map, the following soil units are mapped within the study area, (Appendix A, Figure 3):

- (Unit 19) Cloquato silt loam, Non-hydric with 3 percent hydric inclusions
- (Unit 84) Wapato silty clay loam, Hydric

According to the City of West Linn's Local Wetland Inventory (LWI) map, a wetland, pond, and drainage are mapped in the project area (Appendix A, Figure 4). A wetland is also mapped within the vicinity of the LWI-mapped features on the City's WRA maps (Appendix A, Figure 5), and the City-maintained HCA map shows Moderate Value HCA mapped on the entire project site, except for a small area on Tax Lot 300 that is designated for development (Appendix A, Figure 6).

A site visit was conducted on March 27, 2017 by AKS Senior Wetland Scientist Stacey Reed, PWS and Natural Resource Specialist Haley Teach to determine whether potentially jurisdictional wetlands and waters were present on site. During the reconnaissance, AKS staff identified one wetland, Wetland A, and a small pond within the project area in the approximate location of the mapped features; a drainage was not observed on site during the study. Wetland A is located in the southern portion of the site and is dominated by reed canary grass (*Phalaris arundinacea*, FACW), yellow-skunk-cabbage (*Lysichiton americanus*, OBL), field meadow foxtail (*Alopecurus pratensis*, FAC), and creeping buttercup (*Ranunculus repens*, FAC). Vegetation within the forested portion of the wetland is dominated by balsam poplar (*Populus balsamifera*, FAC), pacific ninebark (*Physocarpus capitatus*, FACW), tall false rye grass (*Schedonorus arundinaceus*, FAC), and reed canary grass. Wetland A is a PFO/EM wetland that extends off site in all directions but north. Under the Hydrogeomorphic (HGM) classification system, Wetland A belongs to the Slopes class. AKS submitted a wetland delineation report to the Oregon Department of State Lands (DSL), receiving concurrence on December 19, 2019 under File WD#2019-0614 (Appendix B). The delineated wetland boundary is depicted on Figures 7 and 7A (Appendix A).

Extent of Water Resource Area (WRA)

According to Table 32-2 of Section 32.060 in the West Linn CDC, the width of the WRA varies depending on the type of resource present on-site and the slope adjacent to that resource. Based on the City's criteria, the full WRA buffer width for Wetland A is 65 feet, as slopes adjacent to the wetland are less than 25 percent. The setback extends from the edge of the delineated wetland boundary. The total area of the on-site WRA is shown on the attached Site Plan (Appendix A, Figure 7).

Existing Condition of the WRA

The existing condition of the on-site WRA was determined based on an assessment of the vegetation cover across all three stratum and overall tree canopy cover. Based on the results of the assessment, the existing condition of the on-site WRA is characterized by one vegetation community, which was documented at Plot A. This community is dominated by a tree canopy comprised mostly of balsam poplar and a willow species (*Salix* sp.), with an herbaceous layer comprised mostly of non-native tall false rye grass with other non-native and invasive species also present. Though the canopy cover is comprised of native species, the on-site WRA was determined to be in marginal condition because the canopy is not continuous, the area lacks a substantial shrub layer and structural complexity, and the area is dominated by a non-native understory. The data sheet for Plot A is included in Appendix C, and the plot location is shown on Figure 7. The edge of tree canopy cover within the project area is also shown on Figure 7. Representative photos documenting existing site conditions are included in Appendix D.

Project Details

The project involves a request for approval to construct a new residence on Tax Lot 800, a driveway access and vegetated swale on Tax Lot 300 to the north, and a 6-square-foot stormwater outfall pad on Tax Lot 802 to the east. Due to the extent of the on-site WRA and HCA, permanent impacts are necessary to facilitate construction of the building pad and associated amenities and utilities. Erosion and sediment control best management practices (BMPs) will be implemented to ensure no wetland impacts occur during construction, as shown on the land use submittal construction documents. Site Plans depicting the construction footprint in relation to the on-site resources are included as Figures 7 and 7A.

Hardship Provisions

If a property is located on a lot of record and is partially or completely within the WRA, development is permitted if it is designed consistent with CDC Section 32.110 requirements. According to the code, the total maximum disturbed area (MDA) within the WRA is either 5,000 square feet or 30 percent of the on-site WRA, whichever is greater. Further, the MDA must be situated where the least encroachment into the WRA will occur and can be located no closer than 15 feet from the WRA resource (Wetland A). As depicted in the provided Site Plan, the project meets all the hardship provisions listed in Section 32.110.

Similarly, almost the entire project area is within City/Metro-mapped Moderate/Medium HCA (not “Non-HCA” or “Habitat and Impact Areas Not Designated as HCA”). According to Section 28.110 of the West Linn CDC, when only HCA land is available to build upon, the total impervious surface area created by the project must be less than 5,000 square feet, and the proposed development must be placed as far from the on-site water resource as possible. As depicted in the provided Site Plan, the project also meets the hardship provisions listed in Section 32.110.

Impact Analysis

The project will require temporary impacts within the on-site WRA, as well as permanent impacts within both the WRA and HCA, as discussed below. All MDA and non-MDA items are consistent with Table 32-5 of the West Linn CDC.

Temporarily Disturbed Areas

The project will require temporary disturbance within the WRA for grading activities associated with the installation of a stormwater pipe that will extend from the proposed treatment swale on Tax Lot 800 down to the proposed outfall dissipator pad. Per Table 32-5 of the West Linn CDC, this work is considered a temporarily disturbed area so long as the area is subsequently planted with native species to restore ecological functions. As indicated within the planting specifications provided in Appendix E, the temporarily disturbed area for the utility trench will be restored with native shrubs to ensure no future damage occurs to the buried utility line from tree roots.

Permanent Impact Areas

The project will result in permanent encroachment into the on-site WRA/HCA for required site preparation and grading activities to facilitate future construction of the single-family dwelling and associated amenities and utilities. The existing condition of the WRA is marginal, dominant in non-native herbaceous vegetation with native canopy cover. The existing WRA/HCA currently provides low to moderate ecological functions because of invasive and non-native species cover and the lack of structural complexity within the three vegetation strata. Grading activities will require the removal of several trees within the WRA/HCA; however, the canopy impacts will be mitigated through the Mitigation Planting Specifications provided in Appendix E. Implementation of the proposed mitigation plan will ensure that permanent WRA impacts will have no long-term effects on the functional capacity of adjacent Wetland A.

Mitigation

To mitigate the unavoidable permanent WRA/HCA impacts, the Site Plan incorporates on-site mitigation via the enhancement of WRA/HCA that is currently in marginal condition. According to CDC Section 32.090.C, the amount of mitigation required is based on the square footage of the permanent disturbance area, where 1 square foot of created, enhanced, or restored area on-site is required for every square foot

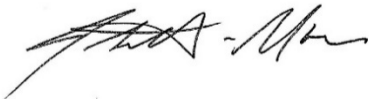
disturbed. Though the permanent impacts will occur on Tax Lots 300, 800, and 802, the proposed mitigation will occur entirely on Tax Lot 800 to improve ecological functions within the existing WRA/HCA adjacent to Wetland A. Further, impacts within Tax Lot 300 will occur within an existing 20-foot-wide easement on a parcel not currently owned by the applicant. As a result, it is believed that all proposed mitigation is occurring on site per the West Linn CDC.

The proposed mitigation area has been divided into two planting areas to account for existing tree canopy that will remain intact post-construction, as these areas will require a different variety of plant species to be installed to ensure survivorship. Both mitigation areas will be densely planted with native woody vegetation per the attached planting specifications in Appendix D, consistent with the revegetation plan requirements outlined in CDC Section 32.100. The mitigation plan has been designed to improve the ecological functions within the marginal condition WRA that is generally dominated by non-native species. The native tree and shrub plantings will provide a significant increase in shade, native cover, and wildlife habitat, thereby increasing the sites ecological functions and values. The location of the proposed mitigation areas is shown on attached Figure 7.

Summary of Results and Conclusions

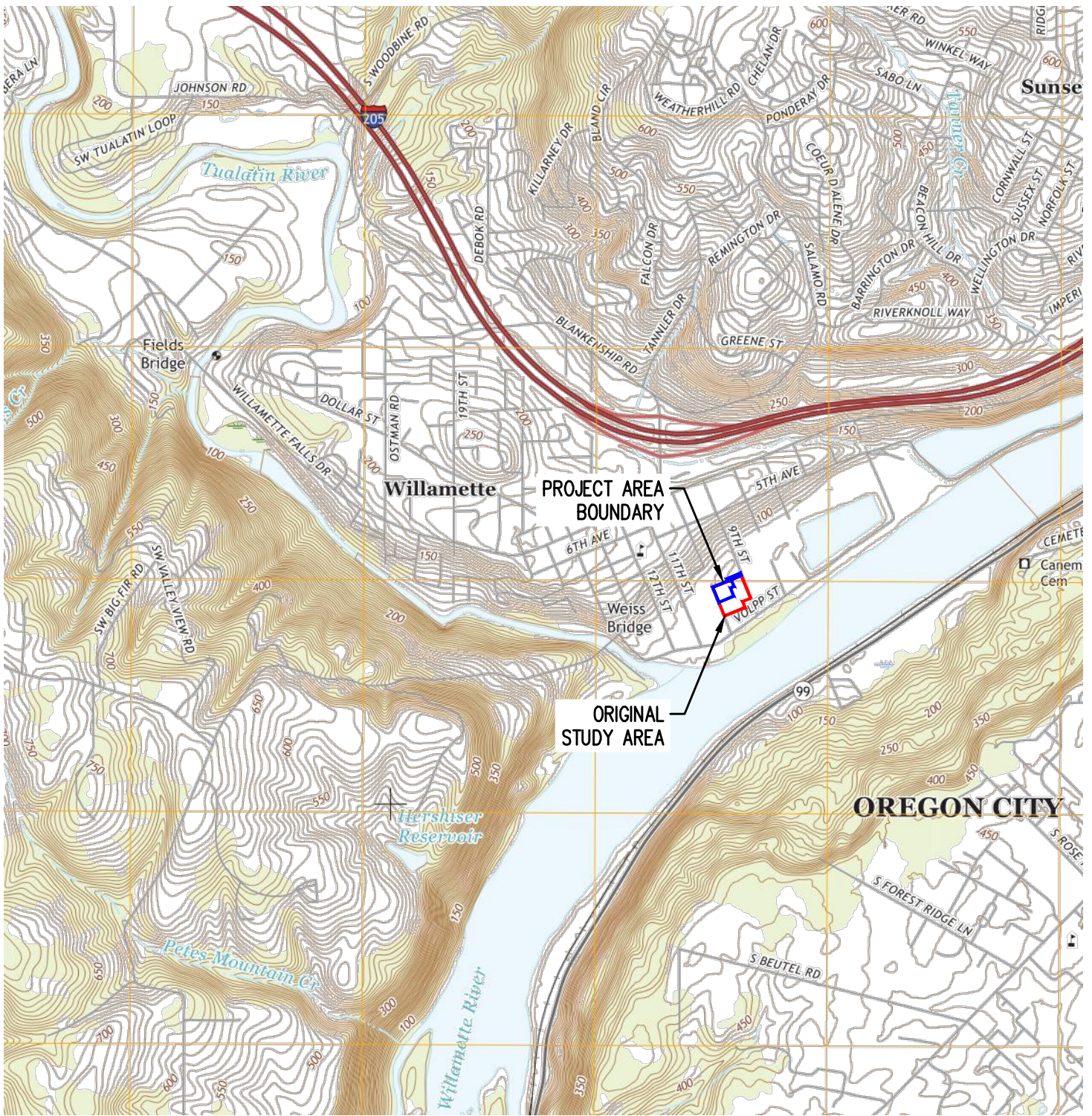
The applicant is requesting approval to site one single-family home on Tax Lot 800 in addition to all required amenities and utilities. This will include the construction of a 12-foot-wide access and vegetated swale on Tax Lot 300 to the north, and the construction of a 6-square-foot stormwater outfall pad on Tax Lot 802 to the east. The project will require temporary and permanent impacts within WRA and Moderate Value HCA. The WRA buffer on site is currently in marginal condition. To mitigate permanent impacts to the WRA/HCA, enhancement of the existing WRA/HCA adjacent to Wetland A is proposed. The proposed enhancement meets the City's 1:1 mitigation ratio requirement and will provide an increase in ecological functions. Further, all temporarily disturbed areas will be revegetated with native species to restore ecological functions. Hardship provisions are required due to the extent of WRA and HCA on the project site. The project has been designed consistent with the West Linn CDC, and all prepared construction plans have carefully considered the City's criteria for development within natural resource areas.

List of Preparers

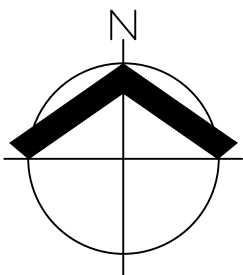


Julie Wirth-McGee, PWS
Senior Environmental Specialist
Report Preparation

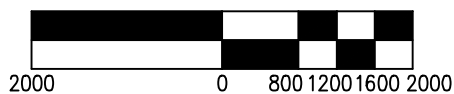
Appendix A: Site Assessment Maps and Figures



USGS 7.5' TOPOGRAPHIC SERIES
 QUADRANGLE: CANBY, OR (2017)



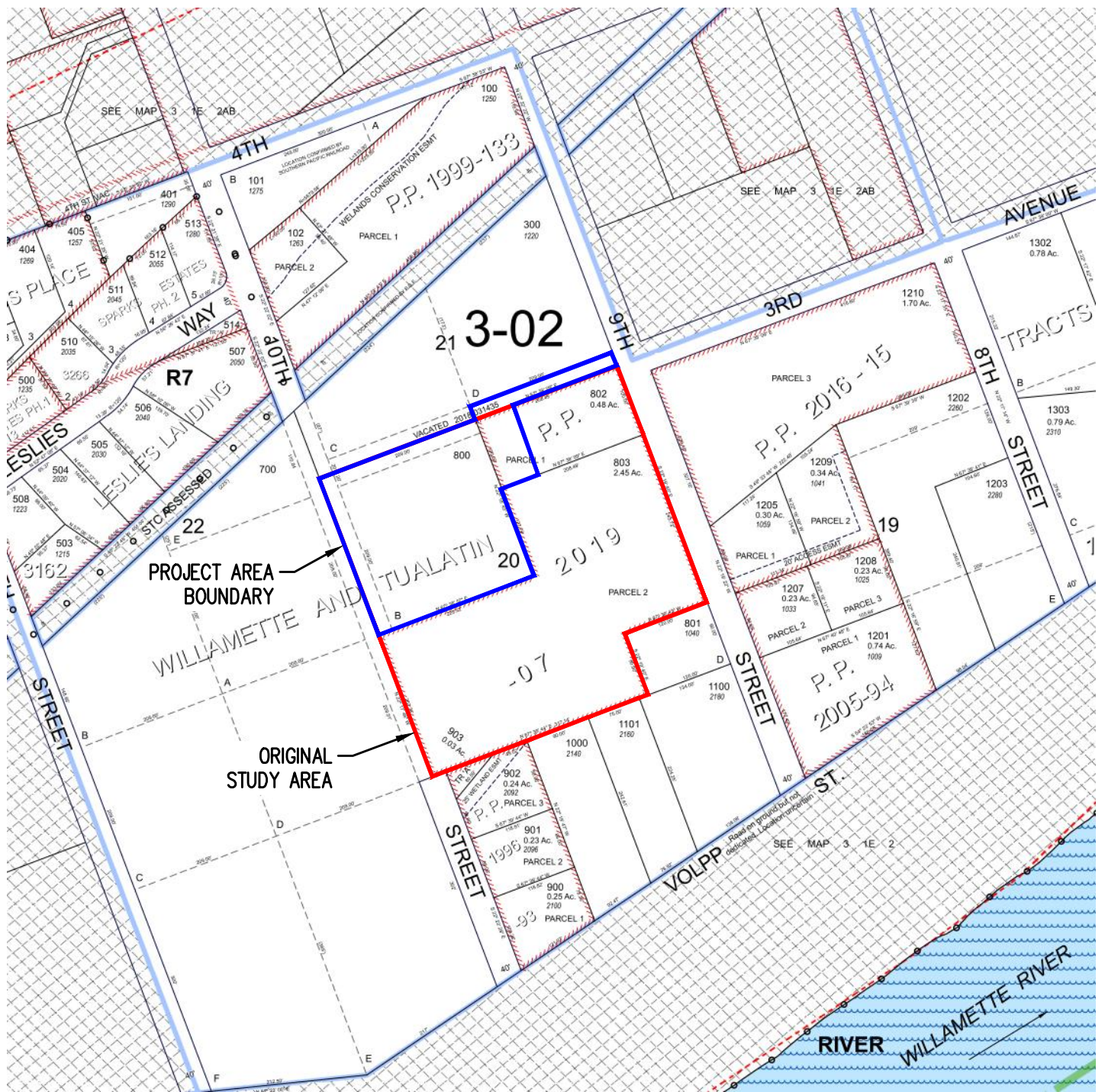
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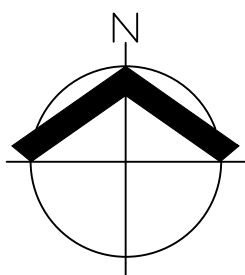
DATE: 12/02/2020

USGS VICINITY MAP TAX LOT 800 SITE ASSESSMENT REPORT		FIGURE 1
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM		DRWN: JWM CHKD: SAR AKS JOB: 5926





CLACKAMAS COUNTY
 TAX LOTS 800, 802, & 803
 TAX MAP 3 1E 2AC

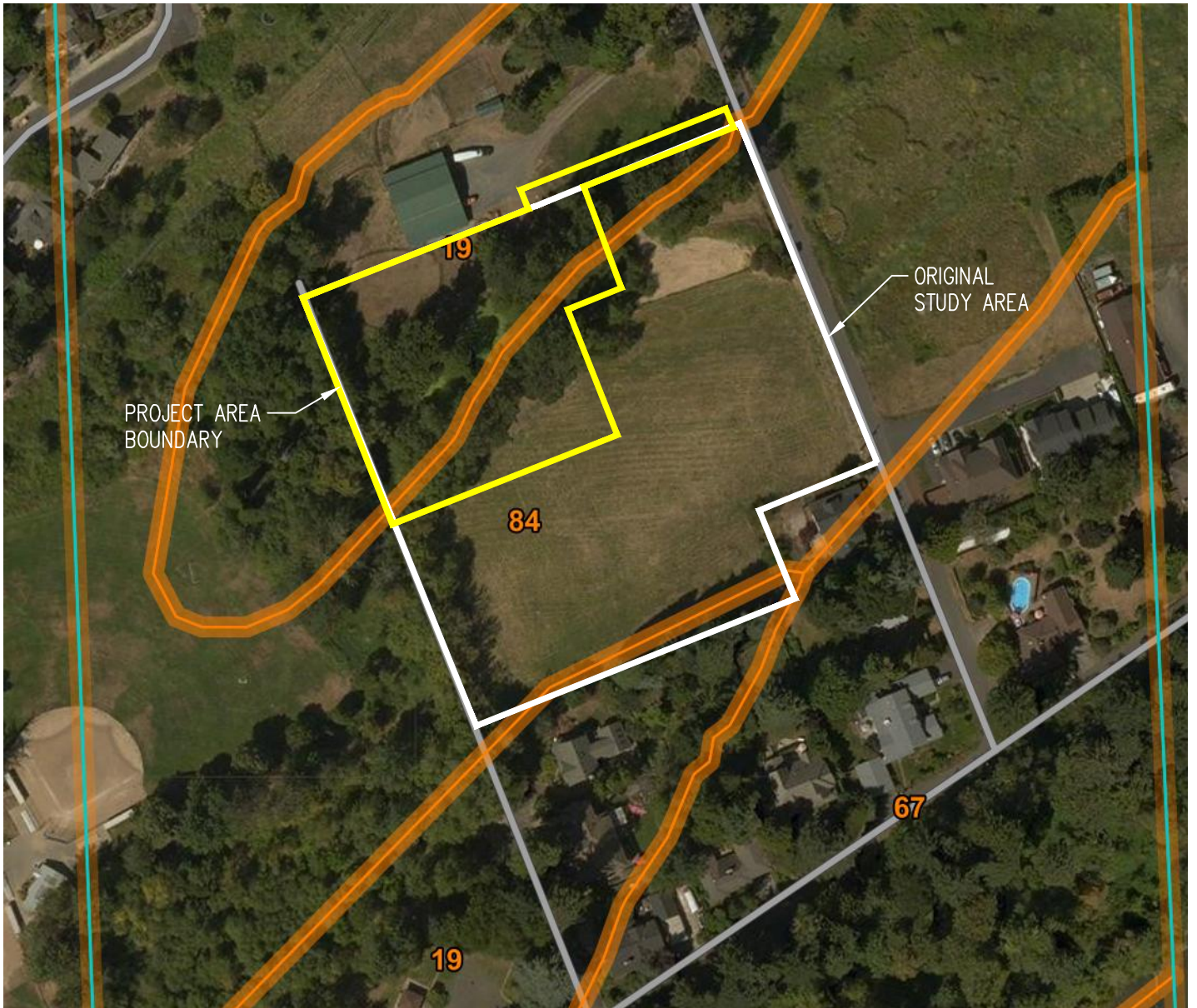


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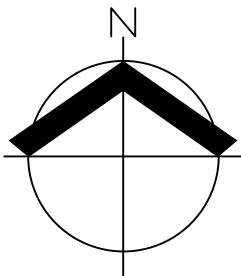
DATE: 12/02/2020

TAX MAP (MAP 3 1E 2AC) TAX LOT 800 SITE ASSESSMENT REPORT		FIGURE 2
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM		DRWN: JWM CHKD: SAR AKS JOB: 5926

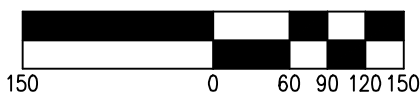


MAP UNIT SYMBOL	MAP UNIT NAME
19	CLOQUATO SILT LOAM; NON-HYDRIC
84	WAPATO SILTY CLAY LOAM; HYDRIC

NRCS WEB SOIL SURVEY FOR
CLACKAMAS COUNTY



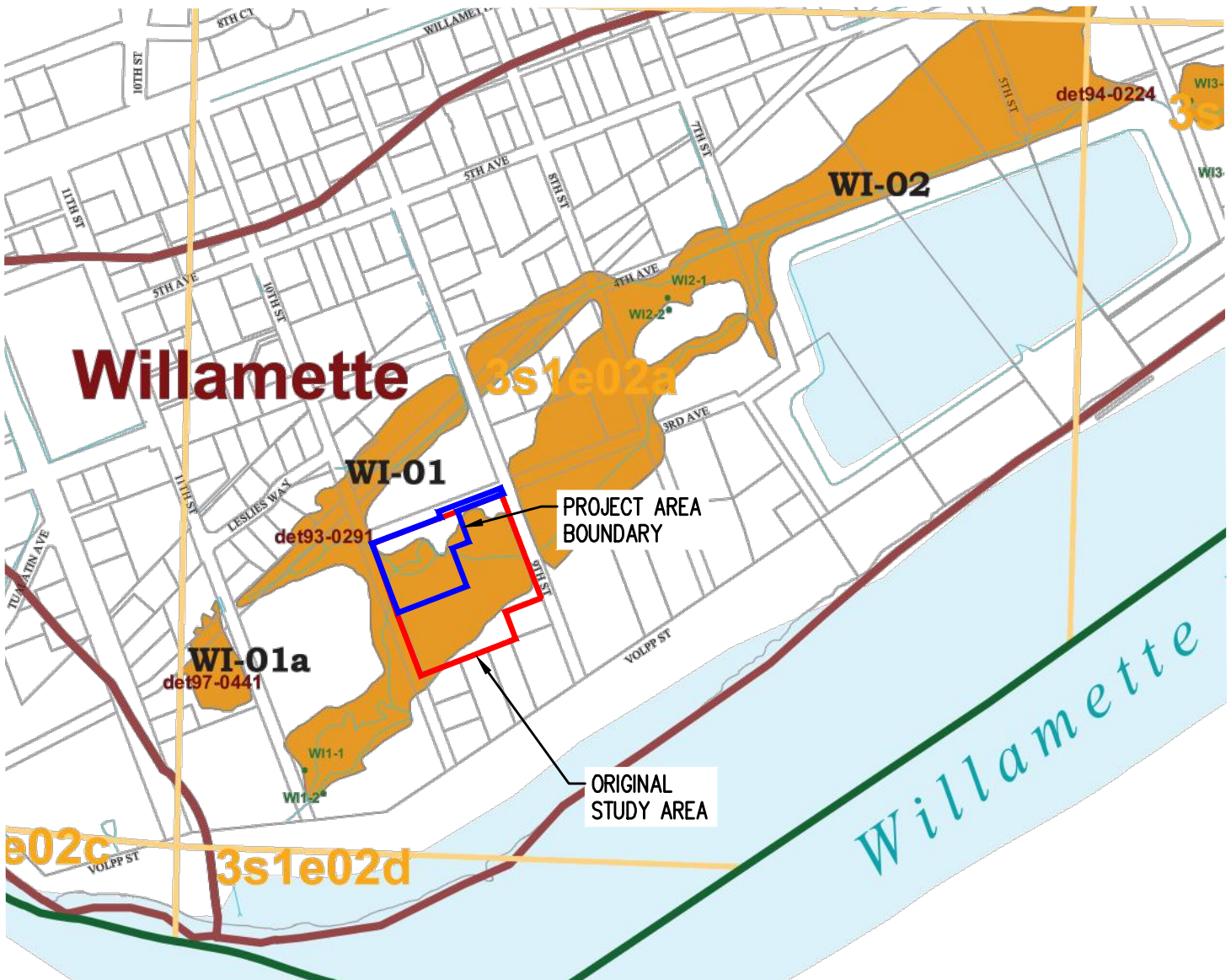
SCALE: 1" = 150 FEET



DATE: 12/02/2020

NRCS SOIL SURVEY MAP TAX LOT 800 SITE ASSESSMENT REPORT		FIGURE 3
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM		DRWN: JWM CHKD: SAR AKS JOB: 5926

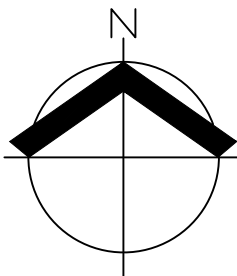




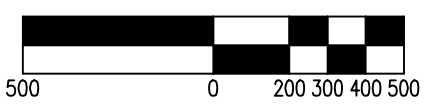
Legend

- Wetlands, Winterbrook Planning 2002
- Field Verified Wetlands, Winterbrook Planning 2002
- Possible Wetlands, Winterbrook Planning 2002
- Wetland Sample Plots, Winterbrook Planning 2002
- Potential Jurisdictional Drainages, West Linn GIS 2002
- Potential Jurisdictional Waters, West Linn GIS 2002
- Taxlot COGO, West Linn GIS 2002
- Basin Boundaries, Winterbrook Planning 2002

CITY OF WEST LINN
LOCAL WETLAND INVENTORY (2004)



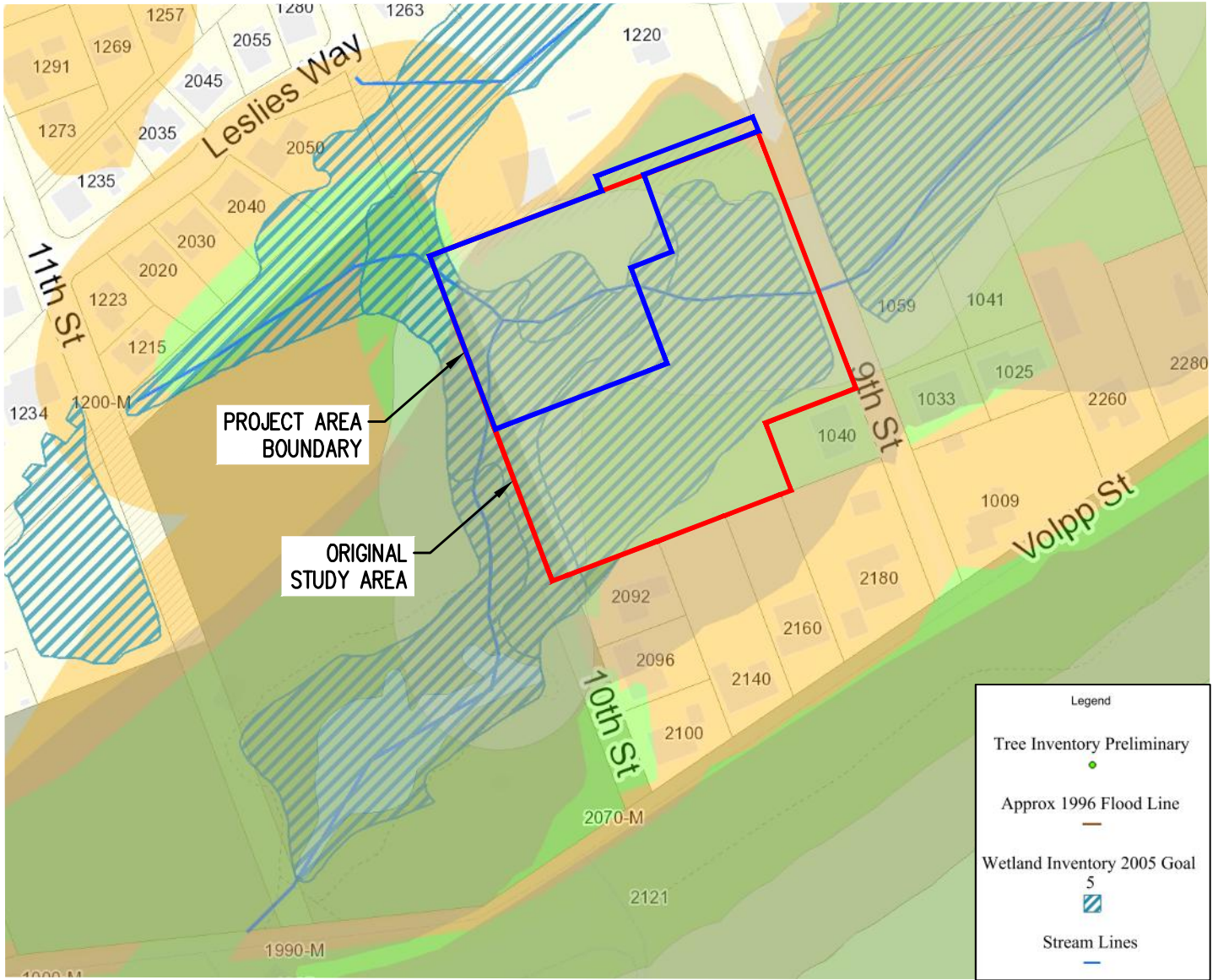
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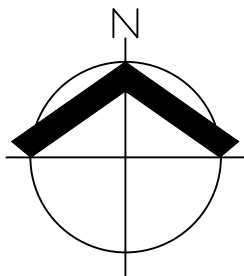
DATE: 12/02/2020

LOCAL WETLAND INVENTORY MAP		FIGURE 4
TAX LOT 800 SITE ASSESSMENT REPORT		
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM		DRWN: JWM CHKD: SAR AKS JOB: 5926

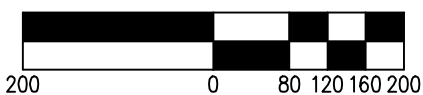




WEST LINN GIS
WATER RESOURCE AREA (WRA) MAP



SCALE: 1" = 200 FEET



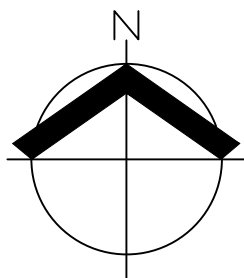
DATE: 12/02/2020

CITY OF WEST LINN WRA MAP TAX LOT 800 SITE ASSESSMENT REPORT		FIGURE 5
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM		DRWN: JWM CHKD: SAR AKS JOB: 5926

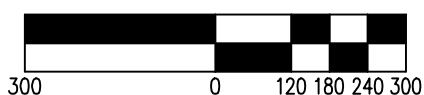




WEST LINN GIS
HABITAT CONSERVATION AREA (HCA) MAP



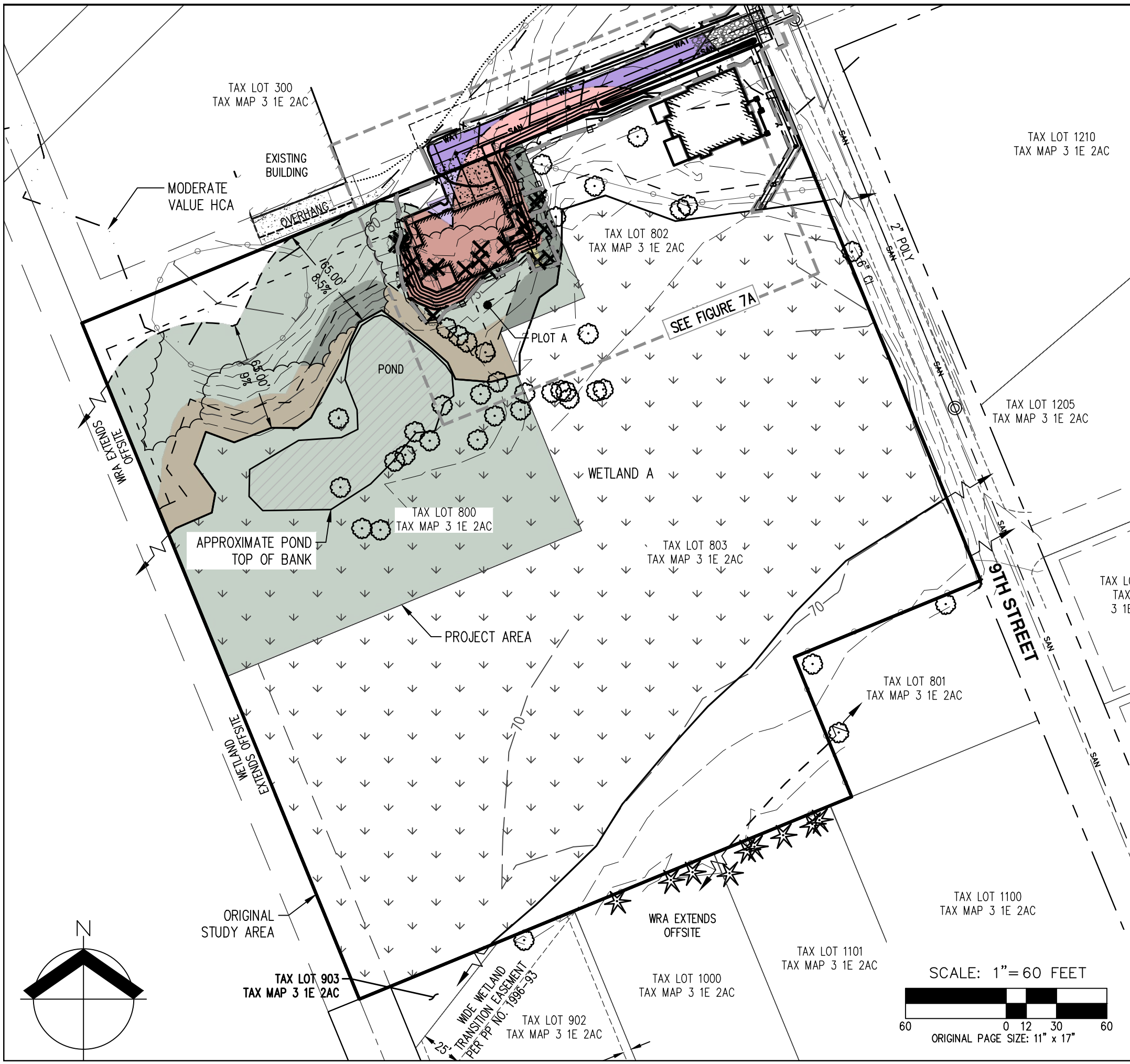
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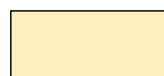


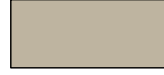



DATE: 12/02/2020

CITY OF WEST LINN HCA MAP TAX LOT 800 SITE ASSESSMENT REPORT		FIGURE 6
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM		DRWN: JWM CHKD: SAR AKS JOB: 5926





LEGEND:

-  TOTAL WETLAND A AREA: 116,431 SF± (2.67 ACRES±)
-  APPROXIMATE POND AREA WITHIN WETLAND A: 6,368 SF± (0.15 ACRES±)
- TOTAL WETLAND A AREA INCLUDING POND: 122,799 SF± (2.82 ACRES±)
- TOTAL WRA ON TAX LOT 800 (WETLAND A AND 65' BUFFER): 53,689 SF± (1.23 ACRES±)
-  MODERATE VALUE HCA BOUNDARY
-  TOTAL WRA PERMANENT IMPACTS (MDA): 6,124 SF± (0.14 ACRES±)
 TAX LOT 800: 4,548 SF± (0.10 ACRES±)
 TAX LOT 300: 1,570 SF± (0.04 ACRES±)
 TAX LOT 802: 6 SF±
-  TOTAL WRA TEMPORARILY DISTURBED AREAS: 59 SF±
-  TOTAL MODERATE VALUE HCA IMPACTS BEYOND WRA: 1,794 SF± (0.04 ACRES±)
 TAX LOT 800: 320 SF± (0.08 ACRES±)
 TAX LOT 300: 1,474 SF± (0.08 ACRES±)
-  NATIVE PLANTING MITIGATION AREA 1: 2,487 SF± (0.06 ACRES±)
-  NATIVE PLANTING MITIGATION AREA 2: 5,432 SF± (0.12 ACRES±)
-  ADDITIONAL WRA TO REMAIN WITHIN TAX LOT 800 (EXCLUDES IMPACT/MITIGATION AREAS): 34,942 SF± (0.80 ACRES±)
-  TREE TO BE REMOVED
-  EXISTING EDGE OF CANOPY COVER PER MAY 2019 GOOGLE EARTH AERIAL
 IMPACTED TREE CANOPY AREA: 3,023 SF± (0.07 ACRES±)

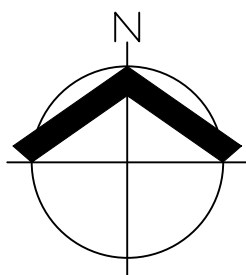
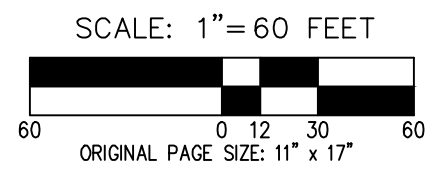
WETLAND BOUNDARY SHOWN WAS DELINEATED BY AKS ENGINEERING & FORESTRY, LLC. ON MARCH 27, 2017, AND WAS PROFESSIONALLY SURVEYED BY AKS ON MAY 16-17, 2017.

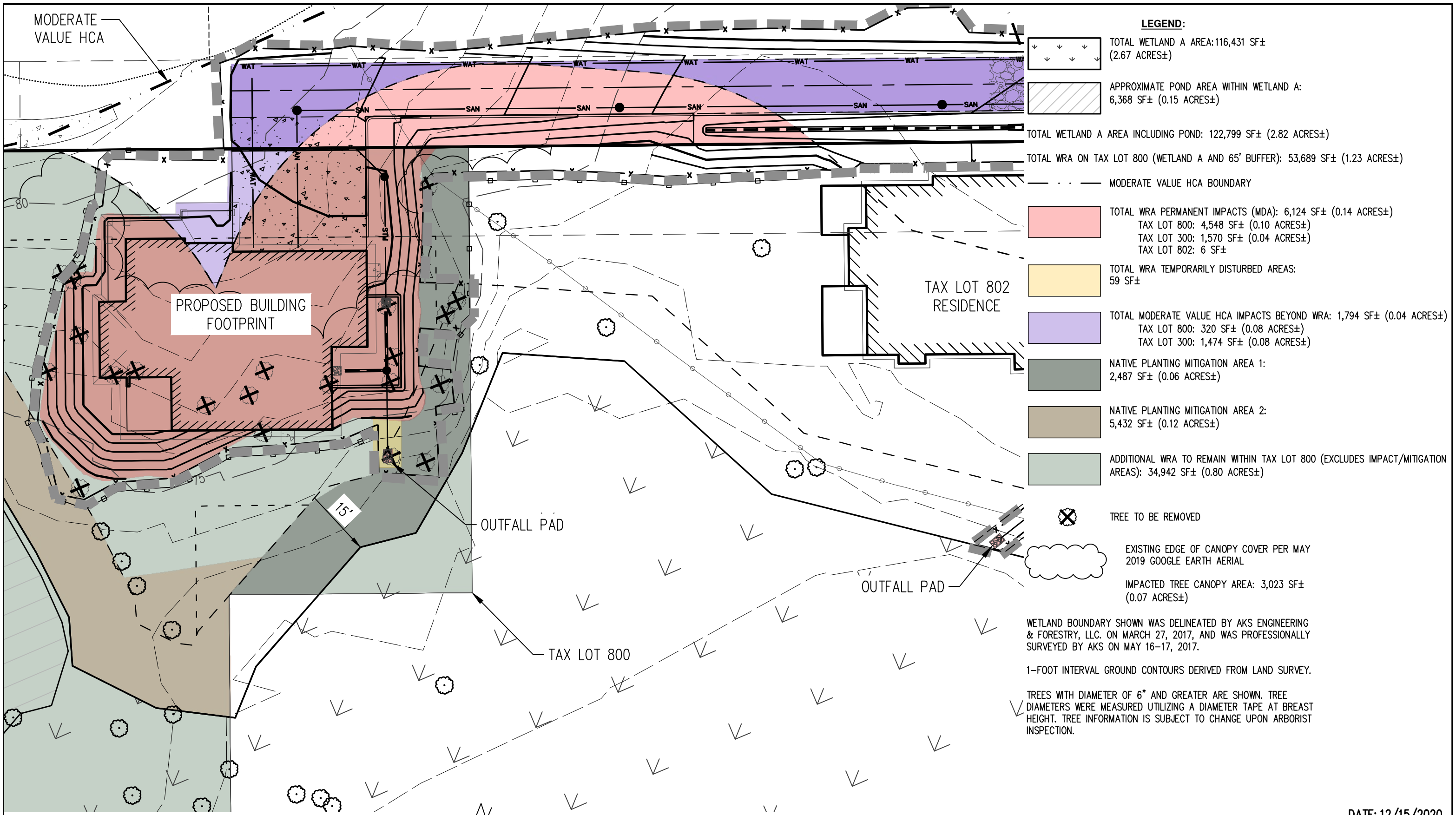
1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

TREES WITH DIAMETER OF 6" AND GREATER ARE SHOWN. TREE DIAMETERS WERE MEASURED UTILIZING A DIAMETER TAPE AT BREAST HEIGHT. TREE INFORMATION IS SUBJECT TO CHANGE UPON ARBORIST INSPECTION.




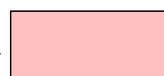







DATE: 12/15/2020

SITE PLAN OVERVIEW	FIGURE
TAX LOT 800 SITE ASSESSMENT REPORT	7
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM	DRWN: JWM CHKD: JRI AKS JOB: 5926





LEGEND:

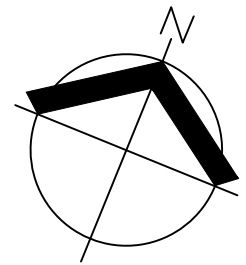
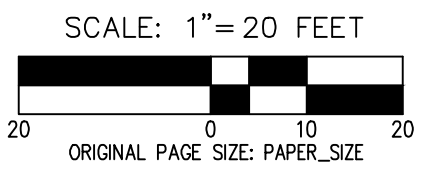
-  TOTAL WETLAND A AREA: 116,431 SF± (2.67 ACRES±)
-  APPROXIMATE POND AREA WITHIN WETLAND A: 6,368 SF± (0.15 ACRES±)
- TOTAL WETLAND A AREA INCLUDING POND: 122,799 SF± (2.82 ACRES±)
- TOTAL WRA ON TAX LOT 800 (WETLAND A AND 65' BUFFER): 53,689 SF± (1.23 ACRES±)
-  MODERATE VALUE HCA BOUNDARY
-  TOTAL WRA PERMANENT IMPACTS (MDA): 6,124 SF± (0.14 ACRES±)
TAX LOT 800: 4,548 SF± (0.10 ACRES±)
TAX LOT 300: 1,570 SF± (0.04 ACRES±)
TAX LOT 802: 6 SF±
-  TOTAL WRA TEMPORARILY DISTURBED AREAS: 59 SF±
-  TOTAL MODERATE VALUE HCA IMPACTS BEYOND WRA: 1,794 SF± (0.04 ACRES±)
TAX LOT 800: 320 SF± (0.08 ACRES±)
TAX LOT 300: 1,474 SF± (0.08 ACRES±)
-  NATIVE PLANTING MITIGATION AREA 1: 2,487 SF± (0.06 ACRES±)
-  NATIVE PLANTING MITIGATION AREA 2: 5,432 SF± (0.12 ACRES±)
-  ADDITIONAL WRA TO REMAIN WITHIN TAX LOT 800 (EXCLUDES IMPACT/MITIGATION AREAS): 34,942 SF± (0.80 ACRES±)
-  TREE TO BE REMOVED
-  EXISTING EDGE OF CANOPY COVER PER MAY 2019 GOOGLE EARTH AERIAL
- IMPACTED TREE CANOPY AREA: 3,023 SF± (0.07 ACRES±)

WETLAND BOUNDARY SHOWN WAS DELINEATED BY AKS ENGINEERING & FORESTRY, LLC. ON MARCH 27, 2017, AND WAS PROFESSIONALLY SURVEYED BY AKS ON MAY 16-17, 2017.

1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

TREES WITH DIAMETER OF 6" AND GREATER ARE SHOWN. TREE DIAMETERS WERE MEASURED UTILIZING A DIAMETER TAPE AT BREST HEIGHT. TREE INFORMATION IS SUBJECT TO CHANGE UPON ARBORIST INSPECTION.

DATE: 12/15/2020



SITE PLAN	FIGURE
TAX LOT 800 SITE ASSESSMENT REPORT	7A
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM	DRWN: JWM CHKD: JRI AKS JOB: 5926



Appendix B: WD#2019-0614



Oregon

Kate Brown, Governor

Department of State Lands

775 Summer Street NE, Suite 100

Salem, OR 97301-1279

(503) 986-5200

FAX (503) 378-4844

www.oregon.gov/dsl

State Land Board

December 19, 2019

Malibar Group, LLC
Attn: Roy Marvin
615 NW Territorial Rd
Canby, OR 97013

Kate Brown
Governor

Bev Clarno
Secretary of State

Re: WD # 2019-0614 **Approved**
Wetland Delineation Report for Tax Lots 800, 802, 803
Clackamas County; T3S R1E S2AC TLs 800, 802, 803
West Linn Local Wetlands Inventory, W1-01

Tobias Read
State Treasurer

Dear Mr. Marvin:

The Department of State Lands has reviewed the wetland delineation report prepared by AKS Engineering & Forestry, LLC for the site referenced above. Based upon the information presented in the report, we concur with the wetland and waterway boundaries as mapped in Figure 5 of the report. Please replace all copies of the preliminary wetland map with this final Department-approved map.

Within the study area, one wetland (Wetland A, totaling approximately 2.67 acres) and one pond were identified. The wetland and pond are subject to the permit requirements of the state Removal-Fill Law. Under current regulations, a state permit is required for cumulative fill or annual excavation of 50 cubic yards or more in wetlands or below the ordinary high-water line (OHWL) of the waterway (or the 2-year recurrence interval flood elevation if OHWL cannot be determined).

This concurrence is for purposes of the state Removal-Fill Law only. We recommend that you attach a copy of this concurrence letter to any subsequent state permit application to speed application review. Federal or local permit requirements may apply as well. The U.S. Army Corps of Engineers will determine jurisdiction under the Clean Water Act, which may require submittal of a complete Wetland Delineation Report.

Please be advised that state law establishes a preference for avoidance of wetland impacts. Because measures to avoid and minimize wetland impacts may include reconfiguring parcel layout and size or development design, we recommend that you work with Department staff on appropriate site design before completing the city or county land use approval process.

This concurrence is based on information provided to the agency. The jurisdictional determination is valid for five years from the date of this letter unless new information necessitates a revision. Circumstances under which the Department may change a determination are found in OAR 141-090-0045 (available on our web site or upon request). In addition, laws enacted by the legislature and/or rules adopted by the Department may result in a change in jurisdiction; individuals and applicants are subject to the regulations that are in effect at the time of the removal-fill activity or complete permit application. The applicant, landowner, or agent may submit a request for reconsideration of this determination in writing within six months of the date of this letter.

Thank you for having the site evaluated. If you have any questions, please contact Chris Stevenson, the Jurisdiction Coordinator for Clackamas County at (503) 986-5246.

Sincerely,

Peter Ryan Digitally signed by Peter Ryan
Date: 2019.12.19 14:18:31 -08'00'

Peter Ryan, PWS
Aquatic Resource Specialist

Enclosures

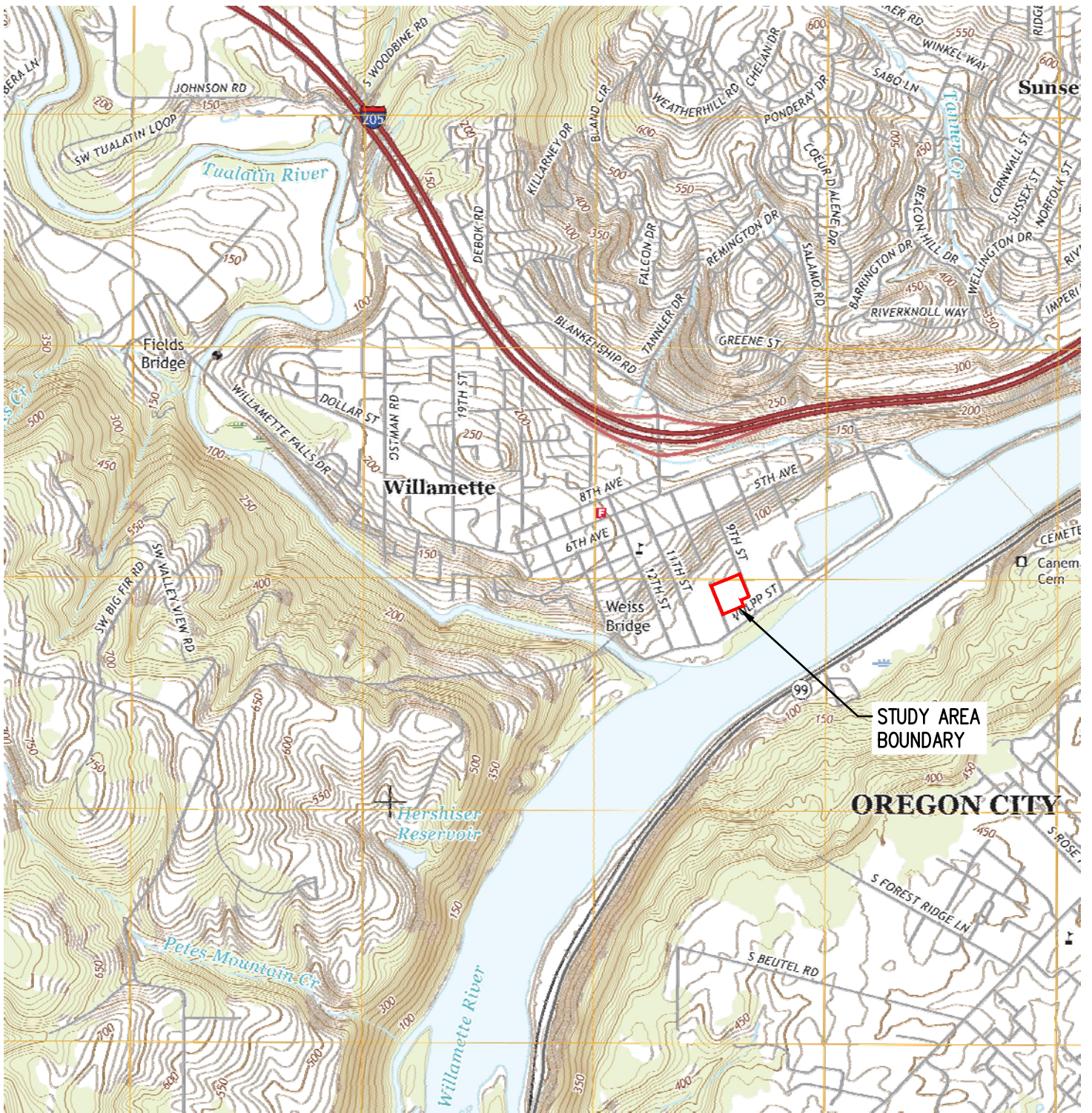
ec: Stacey Reed, PWS, AKS Engineering & Forestry, LLC
City of West Linn Planning Department (Maps enclosed for updating LWI)
Jessica Menichino, Corps of Engineers
Anita Huffman, DSL

WETLAND DELINEATION / DETERMINATION REPORT COVER FORM

Fully completed and signed report cover forms and applicable fees are required before report review timelines are initiated by the Department of State Lands. Make checks payable to the Oregon Department of State Lands. To pay fees by credit card, go online at: <https://apps.oregon.gov/DSL/EPS/program?key=4>.

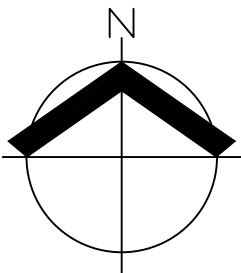
Attach this completed and signed form to the front of an unbound report or include a hard copy with a digital version (single PDF file of the report cover form and report, minimum 300 dpi resolution) and submit to: **Oregon Department of State Lands, 775 Summer Street NE, Suite 100, Salem, OR 97301-1279**. A single PDF of the completed cover form and report may be e-mailed to: **Wetland_Delineation@dsl.state.or.us**. For submittal of PDF files larger than 10 MB, e-mail DSL-instructions on how to access the file from your ftp or other file sharing website.

Contact and Authorization Information	
<input checked="" type="checkbox"/> Applicant <input checked="" type="checkbox"/> Owner Name, Firm and Address: Malibar Group, LLC Attn: Roy Marvin 615 NW Territorial Road Canby, OR 97013	Business phone # Mobile phone # (optional) E-mail: marvinfamily@aol.com
<input type="checkbox"/> Authorized Legal Agent, Name and Address (if different):	Business phone # Mobile phone # (optional) E-mail:
I either own the property described below or I have legal authority to allow access to the property. I authorize the Department to access the property for the purpose of confirming the information in the report, after prior notification to the primary contact.	
Typed/Printed Name: <u>Roy marvin</u> Signature: <u><i>Roy Marvin</i></u> Date: <u>11/05/2019</u> Special instructions regarding site access: _____	
Project and Site Information	
Project Name: <u>Tax Lots 800, 802, and 803</u>	Latitude: <u>45.341461</u> Longitude: <u>-122.647849</u> decimal degree - centroid of site or start & end points of linear project
Proposed Use: <u>Residential</u>	Tax Map # <u>3S 1E 2AC</u> Tax Lot(s) <u>800, 802, 803</u>
Project Street Address (or other descriptive location): <u>West of 9th Street and north of 1040 9th Street.</u>	Tax Map # _____ Tax Lot(s) _____
City: <u>West Linn</u> County: <u>Clackamas</u>	Township <u>3S</u> Range <u>1E</u> Section <u>2</u> QQ AC Use separate sheet for additional tax and location information
	Waterway: <u>NA</u> River Mile: <u>NA</u>
Wetland Delineation Information	
Wetland Consultant Name, Firm and Address: AKS Engineering & Forestry, LLC Stacey Reed, PWS 12965 SW Herman Road, Suite 100 Tualatin, OR 97062	Phone # (503) 563-6151 Mobile phone # (if applicable) E-mail: stacey@aks-eng.com
The information and conclusions on this form and in the attached report are true and correct to the best of my knowledge.	
Consultant Signature: <u><i>Stacey Reed</i></u> Date: <u>11/14/2019</u>	
Primary Contact for report review and site access is <input checked="" type="checkbox"/> Consultant <input type="checkbox"/> Applicant/Owner <input type="checkbox"/> Authorized Agent	
Wetland/Waters Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Study Area size: <u>4.16</u> Total Wetland Acreage: <u>2.8200</u>	
Check Applicable Boxes Below	
<input type="checkbox"/> R-F permit application submitted <input type="checkbox"/> Mitigation bank site <input type="checkbox"/> Industrial Land Certification Program Site <input type="checkbox"/> Wetland restoration/enhancement project (not mitigation) <input type="checkbox"/> Previous delineation/application on parcel If known, previous DSL # _____	<input checked="" type="checkbox"/> Fee payment submitted \$ <u>454</u> <input type="checkbox"/> Fee (\$100) for resubmittal of rejected report <input type="checkbox"/> Request for Reissuance. See eligibility criteria. (no fee) DSL # _____ Expiration date _____ <input checked="" type="checkbox"/> LWI shows wetlands or waters on parcel Wetland ID code <u>WI-01</u>
For Office Use Only	
DSL Reviewer: <u>CS</u> Fee Paid Date: ____ / ____ / ____	DSL WD # <u>2019-0614</u>
Date Delineation Received: <u>11 / 15 / 19</u> Scanned: <input type="checkbox"/> Electronic: <input type="checkbox"/>	DSL App.# _____

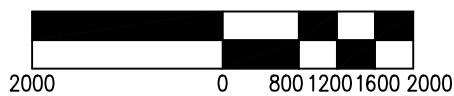


STUDY AREA
BOUNDARY

USGS 7.5' TOPOGRAPHIC SERIES
QUADRANGLE: CANBY, OR (2017)



SCALE: 1" = 2000 FEET



DATE: 08/28/2019

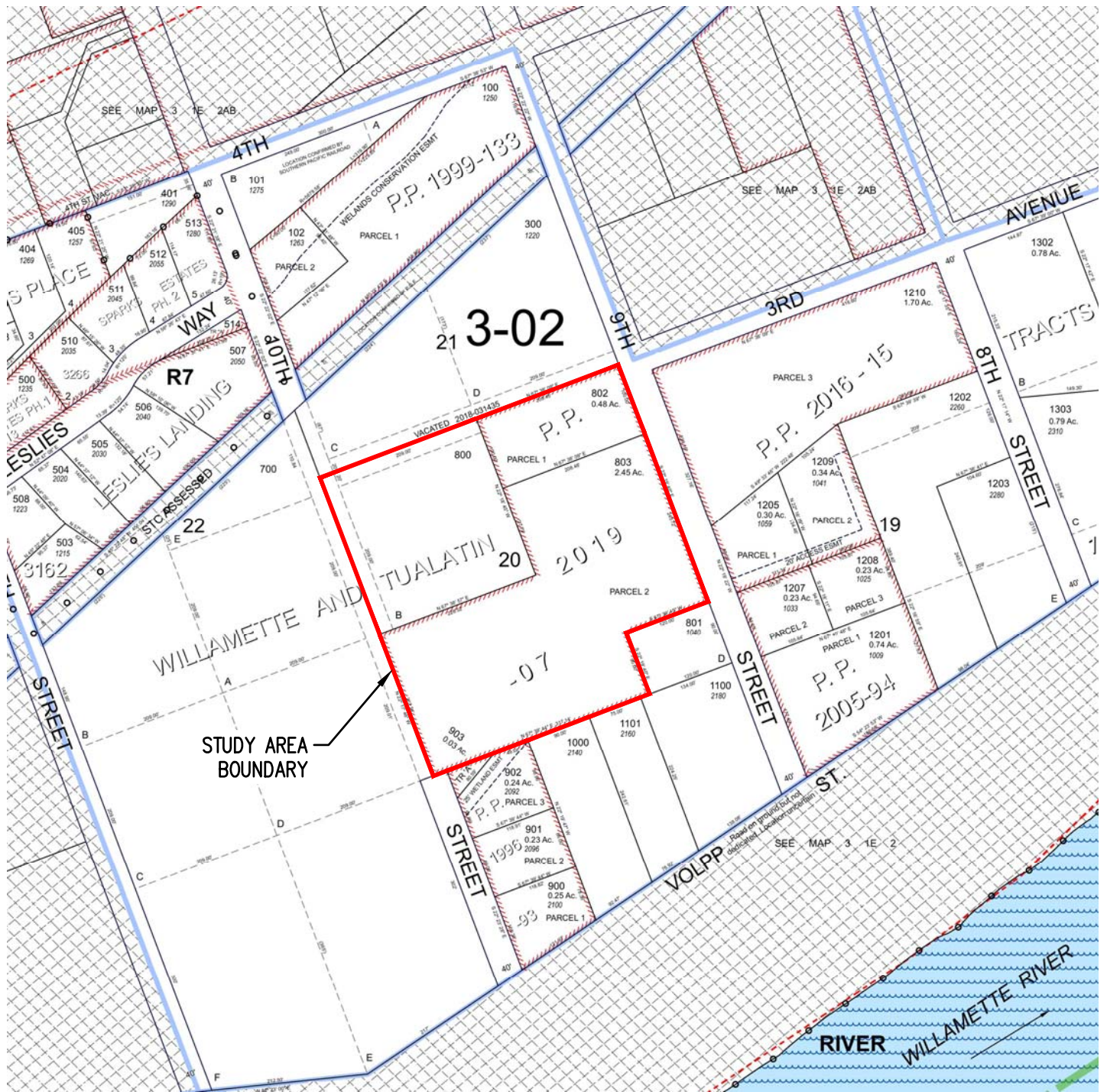
USGS VICINITY MAP
9TH STREET WEST LINN WETLAND DELINEATION REPORT

FIGURE
1

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
503.563.6151 WWW.AKS-ENG.COM



DRWN: SAS
CHKD: SAR
AKS JOB:
5926



CLACKAMAS COUNTY
 TAX LOTS 800, 802, & 803
 TAX MAP 3 1E 2AC

DATE: 10/08/2019

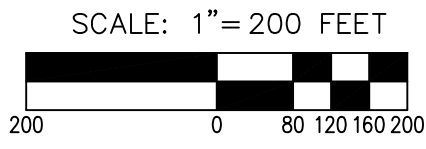
**CLACKAMAS COUNTY ASSESSOR'S TAX MAP
 9TH STREET WEST LINN WETLAND DELINEATION REPORT**

FIGURE
2

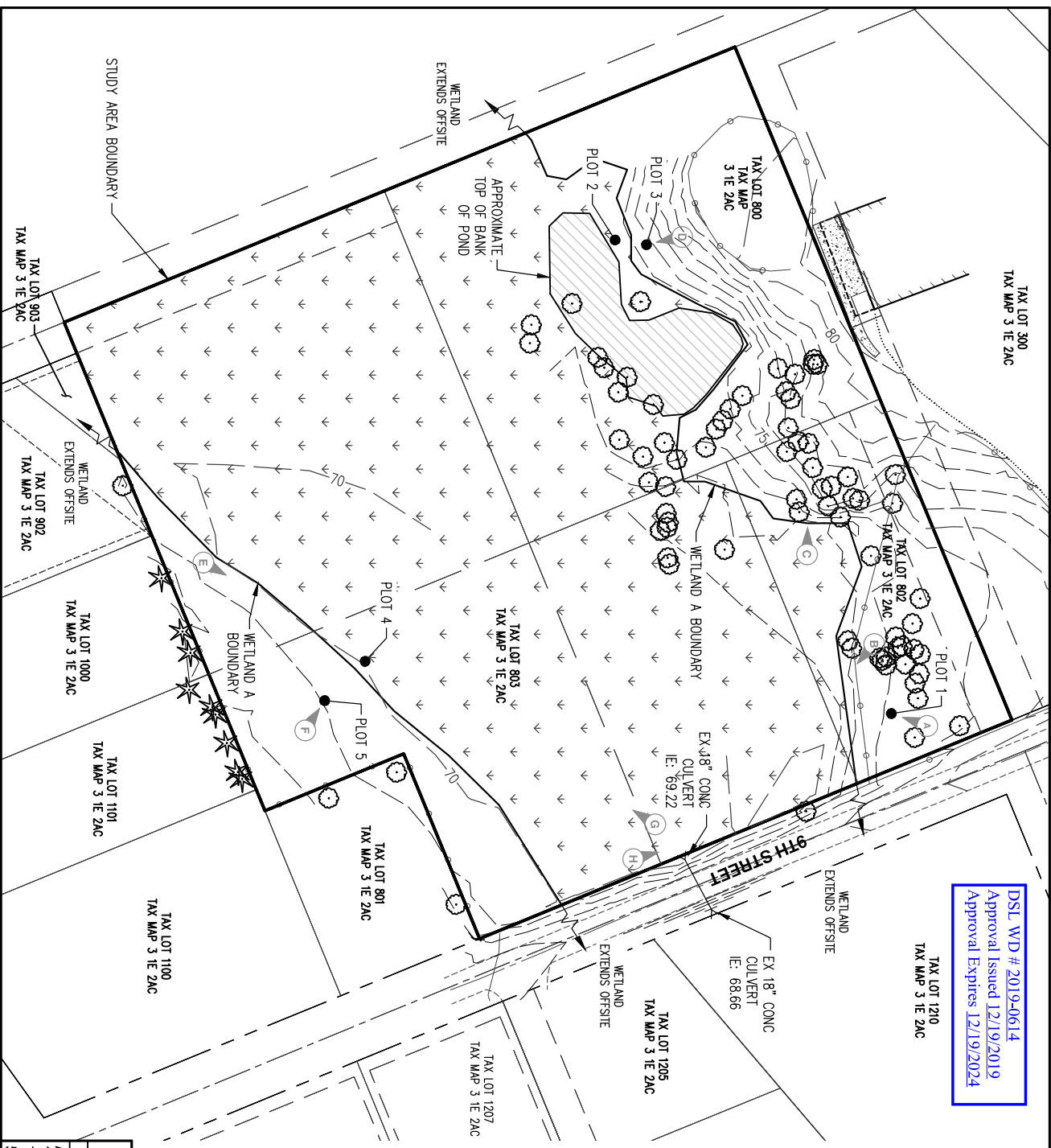
AKS ENGINEERING & FORESTRY, LLC
 12965 SW HERMAN RD, STE 100
 TUALATIN, OR 97062
 503.563.6151 WWW.AKS-ENG.COM



DRWN: SAS
 CHKD: SAR
 AKS JOB:
 5926



DSL WD # 2019-0614
 Approval Issued 12/19/2019
 Approval Expires 12/19/2024



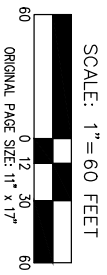
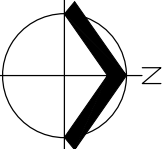
LEGEND:
 ON-SITE WETLAND A AREA: 116,431 SF±
 (2.67 ACRES±)
 APPROXIMATE ON-SITE POND AREA WITHIN
 WETLAND A: 6,368 SF± (0.15 ACRES±)

TOTAL WETLAND A AREA INCLUDING POND: 122,799 SF± (2.82 ACRES±)

PHOTO POINT LOCATIONS

WETLAND BOUNDARY SHOWN WAS DELINEATED BY AKS ENGINEERING & FORESTRY, LLC, ON MARCH 27, 2017, AND WAS PROFESSIONALLY SURVEYED BY AKS ON MAY 16-17, 2017.
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WETLAND DELINEATION MAP

9TH STREET WEST LINN WETLAND DELINEATION REPORT

AKS ENGINEERING & FORESTRY, LLC
 12965 SW HERMAN RD, STE 100
 TUALATIN, OR 97062
 WWW.AKS-ENG.COM

DATE: 10/08/2019

FIGURE 5

DRWN: JRI
 CHDR: SAR
 AKS JOB: 5926

Appendix C: Plot A Data Sheet

WRA Condition Assessment for Tax Lot 800 Site Assessment

Site:	<u>Tax Lot 800</u>		
Job Number:	<u>5926</u>		
Investigators:	<u>Stacey Reed & Haley Teach</u>		
Date:	<u>March 27, 2017</u>		
Community: Cottonwood canopy			
Location: Tax Lot 800			
Plot ID: Plot A			
Tree species, % Cover, Native, Invasive - 30 foot radius, >5% cover:			50%
* <i>Populus balsamifera</i>	balsam poplar	<i>native</i>	40%
* <i>Salix species</i>	willow	<i>native</i>	10%
Shrub species, % Cover, Native, Invasive - 30 foot radius, >5% cover:			5%
* <i>Rubus armeniacus</i>	Himalayan blackberry	<i>invasive</i>	5%
Herb Species, % Cover, Native, Invasive - 10 foot radius, >5% cover:			100%
<i>Schedonorus arundinaceus</i>	tall false rye grass	<i>non-native</i>	75%
<i>Taraxacum officinale</i>	common dandelion	<i>non-native</i>	10%
<i>Geranium molle</i>	dovefoot geranium	<i>non-native</i>	10%
<i>Dactylis glomerata</i>	orchard grass	<i>non-native</i>	5%
* Dominant			
			Total Cover 155%
Absolute areal cover			
% Tree canopy:	50%		
% Cover by natives:	50%		
% Invasive:	5%		
% Non-native:	100%		

	155%		
Corridor Condition:	<i>Marginal</i>		

Appendix D: Representative Site Photographs



Photo A. View of the plant community at Plot A within the marginal condition WRA/HCA.



Photo B. View of one of the cottonwood stands within the marginal condition WRA/HCA.



Photo C. View of the small ponded area within Wetland A located south of the proposed mitigation area. As evidenced in the photo, the proposed mitigation area in this location is dominated by herbaceous species.



Photo D. View facing north across Wetland A towards the project site.

Appendix E: Mitigation Planting Specifications

Mitigation Planting Area 1

Planting specifications for the enhancement of 2,487 square feet of mitigation area and 59 square feet of temporarily disturbed WRA area.

Scientific Name	Common Name	Size ¹	Spacing/Seeding Rate ²	Quantity
Trees (total 25)				
<i>Alnus rubra</i>	Red alder	1 gallon	10-12 feet on center	10
<i>Populus trichocarpa</i>	Black cottonwood	1 gallon	10-12 feet on center	8
<i>Pseudotsuga menziesii</i>	Douglas fir	1 gallon	10-12 feet on center	7
Shrubs (total 127)				
<i>Holodiscus discolor</i>	Oceanspray	1 gallon	4-5 feet on center	40
<i>Oemleria cerasiformis</i>	Indian plum	1 gallon	4-5 feet on center	40
<i>Symphoricarpos albus</i>	Common snowberry	1 gallon	Clustered	47

¹Bare-root plants may be substituted for container plants based on availability. If bare-root plants are used, they must be planted during the late winter/early spring dormancy period.

²Clustered - Clusters of no more than 4 plants of a single species, with each cluster planted between 8 and 10 feet on center.

Mitigation Planting Area 2

Planting specifications for the enhancement of 5,432 square feet of mitigation area.

Scientific Name	Common Name	Size ¹	Spacing/Seeding Rate ²	Quantity
Trees (total 54)				
<i>Salix scouleriana</i>	Scouler's willow	1 gallon	10-12 feet on center	40
<i>Populus trichocarpa</i>	Black cottonwood	1 gallon	10-12 feet on center	14
Shrubs (total 272)				
<i>Cornus sericea</i>	Redosier dogwood	1 gallon	Clustered	100
<i>Physocarpus capitatus</i>	Pacific ninebark	1 gallon	Clustered	100
<i>Rosa nootkana</i>	Nootka rose	1 gallon	Clustered	72

¹Bare-root plants may be substituted for container plants based on availability. If bare-root plants are used, they must be planted during the late winter/early spring dormancy period.

²Clustered - Clusters of no more than 4 plants of a single species, with each cluster planted between 8 and 10 feet on center.

Planting Notes (per City of West Linn Community Development Code (CDC) Chapter 32, Water Resource Area Protection, Section 32.100, Re-Vegetation Plan Requirements):

- 1) Plantings should preferably be installed between December 1 and February 28 for bare roots and seeds and between October 15 and April 30 for containers.
- 2) Tree plantings must be at least 0.5 inches in caliper measured at 6 inches above the ground level or soil line. Shrub plantings must be in at least a 1-gallon container, or the equivalent in ball and burlap, and must be at least 12 inches in height. All plantings must be selected from the Portland Plant List.
- 3) All non-native, invasive, or noxious vegetation shall be removed from mitigation planting area prior to installing native enhancement plantings. Invasive species control shall continue throughout the maintenance period.

-
- 4) Irrigation may be necessary for the survival of the enhancement plantings. Irrigation or other water practices (i.e., polymer plus watering) are recommended during the three-year monitoring period following planting. Watering shall be provided at a rate of at least 1 inch per week between June 15 and October 15.
 - 5) Plantings shall be mulched a minimum of 3 inches in depth and 18 inches in diameter to retain moisture and discourage weed growth around newly installed plant material.
 - 6) When weather or other conditions prohibit planting according to schedule, the applicant will ensure that disturbed areas are correctly protected with erosion control measures and provide the City with funds in the amount of 125% of a bid from a recognized landscaper or nursery to cover the cost of the plant materials, installation, and any follow-up maintenance. Once the planting conditions are favorable, the applicant will proceed with the plantings and receive the funds back from the City upon completion, or the City will complete the plantings using those funds.

Maintenance and Monitoring Plan

- 1) **Monitoring and Reporting:** The City requires a three-year maintenance period for the WRA mitigation enhancement area. Monitoring of the mitigation site is the ongoing responsibility of the property owner. Plants that die must be replaced in kind.
- 2) **Plant Survival:** The City's success criterion for WRA enhancement is 80% survival of tree and shrub plantings expected by the third anniversary of the date the mitigation planting was installed. If any mortality is noted on the site, the factor likely to have caused mortality of the plantings is to be determined and corrected if possible. If survival falls below 80% at any time during the three-year maintenance period, the plantings shall be replaced and other corrective measures, such as mulching or irrigation, may need to be implemented.

Exhibit G: Geotechnical Report



Geotechnical Engineering Report

9th Street
Clackamas County Tax Map 3 1E 02AC Lot 800 and 802
West Linn, Oregon

GeoPacific Engineering, Inc. Project No. 19-5350
November 26, 2019



Real-World Geotechnical Solutions
Investigation • Design • Construction Support

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Real-World Geotechnical Solutions
Investigation • Design • Construction Support

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Photographic Log

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- 2 Lidar Based Vicinity Map with Mapped Landslides
- 3 Site Aerial and Exploration Locations



Real-World Geotechnical Solutions
Investigation • Design • Construction Support

November 26, 2019
Project No. 19-5350

Mr. Roy Marvin
Malibar Group Retirement Plan FBO
615 W Territorial Road
Canby, Oregon 97013
Cellular Phone: 541-621-2109

CC: Zach Pelz, AKS Engineering & Forestry, LLC.
Email: pelzz@aks-eng.com

SUBJECT: GEOTECHNICAL ENGINEERING REPORT
9TH STREET
CLACKAMAS COUNTY TAX LOTS 3 1E 02AC 800 & 802
WEST LINN, OREGON 97068

PROJECT INFORMATION

This report presents the results of a geotechnical engineering study conducted by GeoPacific Engineering, Inc. (GeoPacific) for the above-referenced project. The purpose of our investigation was to evaluate subsurface conditions at the site, and to provide geotechnical recommendations for site development. This geotechnical study was performed in accordance with GeoPacific Proposal No. P-7124, dated October 8, 2019, and your subsequent authorization of our proposal and *General Conditions for Geotechnical Services*.

SITE AND PROJECT DESCRIPTION

The subject property is composed of two parcels, identified as 31E02AC 0800 and 0802 and located on the southwest side of 9th Street in the City of West Linn, Clackamas County, Oregon. The combined parcels are approximately 1.80 acres in size and slope gently to the east at grades of less than 10 percent, in the direction of the Willamette River. The site is bordered by 9th Street to the northeast, by a wooded area and baseball fields to the southwest, by grass fields of a designated wetland to the south east, and by residential properties to the northwest. Ground elevations range from 70 to 80 feet above mean sea level. The site is currently unimproved, however; several flattened areas are present in the western portion of the site, adjacent to a neighboring stable. There is also an existing pond near the center of the western parcel. Vegetation consists of numerous dense trees to the southeast and grass lawns to the northwest.

It is our understanding that proposed development will include construction of two building lots for single family homes, construction of a private drive, improvements to the south bound lane of 9th Street, and associated underground utilities. A grading plan was not provided for our review; however, we anticipate cuts and fill will be less than 4 feet.

REGIONAL GEOLOGIC SETTING

The subject site lies within the Willamette Valley/Puget Sound lowland, a broad structural depression situated between the Coast Range on the west and the Cascade Range on the east. A series of discontinuous faults subdivide the Willamette Valley into a mosaic of fault-bounded, structural blocks (Yeats et al., 1996). Uplifted structural blocks form bedrock highlands, while down-warped structural blocks form sedimentary basins.

The southern portions of the site are underlain by alluvium, consisting of silt and clay with trace sand. The soils were deposited in a flood plain of the modern Willamette River, near the mouth of a tributary, the Tualatin River (Gannet and Caldwell, 1998, Beeson et al., 1989).

The alluvium and northern portion of the site are underlain by the Quaternary age (last 2.6 million years) Willamette Formation, a catastrophic flood deposit associated with repeated glacial outburst flooding of the Willamette Valley (Yeats et al., 1996). The last of these outburst floods occurred about 10,000 years ago. These deposits typically consist of horizontally layered, micaceous, silt to coarse sand forming poorly-defined to distinct beds less than 3 feet thick.

The Willamette Formation is underlain by the Columbia River Basalt Formation (Madin, 1990). The Miocene aged (about 14.5 to 16.5 million years ago) Columbia River Basalts are a thick sequence of lava flows which form the crystalline basement of the Tualatin Valley. The basalts are composed of dense, finely crystalline rock that is commonly fractured along blocky and columnar vertical joints. Individual basalt flow units typically range from 25 to 125 feet thick and interflow zones are typically vesicular, scoriaceous, brecciated, and sometimes include sedimentary rocks.

REGIONAL SEISMIC SETTING

At least three major fault zones capable of generating damaging earthquakes are thought to exist in the vicinity of the subject site. These include the Cascadia Subduction Zone, the Portland Hills Fault Zone, and the Bolton Fault Zone.

Cascadia Subduction Zone

The Cascadia Subduction Zone is a 680-mile-long zone of active tectonic convergence where oceanic crust of the Juan de Fuca Plate is subducting beneath the North American continent at a rate of 4 cm per year (Goldfinger et al., 1996). A growing body of geologic evidence suggests that prehistoric subduction zone earthquakes have occurred (Atwater, 1992; Carver, 1992; Peterson et al., 1993;

Geomatrix Consultants, 1995). This evidence includes: (1) buried tidal marshes recording episodic, sudden subsidence along the coast of northern California, Oregon, and Washington, (2) burial of subsided tidal marshes by tsunami wave deposits, (3) paleoliquefaction features, and (4) geodetic uplift patterns on the Oregon coast. Radiocarbon dates on buried tidal marshes indicate a recurrence interval for major subduction zone earthquakes of 250 to 650 years with the last event occurring 300 years ago (Atwater, 1992; Carver, 1992; Peterson et al., 1993; Geomatrix Consultants, 1995). The inferred seismogenic portion of the plate interface lies roughly along the Oregon coast at depths of between 20 and 40 miles.

Portland Hills Fault Zone

The Portland Hills Fault Zone is a series of NW-trending faults that include the central Portland Hills Fault, the western Oatfield Fault, and the eastern East Bank Fault. These faults occur in a northwest-trending zone that varies in width between 3.5 and 5.0 miles. The combined three faults vertically displace the Columbia River Basalt by 1,130 feet and appear to control thickness changes in late Pleistocene (approx. 780,000 years) sediment (Madin, 1990).

The Portland Hills Fault occurs along the Willamette River at the base of the Portland Hills and is about 5 miles northeast of the site. The Oatfield Fault occurs along the western side of the Portland Hills and is about 4 miles east of the site. The Oatfield Fault is considered to be potentially seismogenic (Wong, et al., 2000). Madin and Mabey (1993) indicate the Portland Hills Fault Zone has experienced Late Quaternary (last 780,000 years) fault movement; however, movement has not been detected in the last 20,000 years. The East Bank Fault occurs along the eastern margin of the Willamette River, and is located approximately 12 miles north of the site. The accuracy of the fault mapping is stated to be within 500 meters (Wong, et al., 2000).

No historical seismicity is correlated with the mapped portion of the Portland Hills Fault Zone, but in 1991 a M3.5 earthquake occurred on a NW-trending shear plane located 1.3 miles east of the fault (Yelin, 1992). Although there is no definitive evidence of recent activity, the Portland Hills Fault Zone is assumed to be potentially active (Geomatrix Consultants, 1995).

Bolton Fault Zone

The Bolton Fault Zone is a NW-trending fault that lies about 2 miles northeast of the subject site (DOGAMI: HazVu, 2019). The USGS: Earthquake Hazards Program and geologic mapping of the area (Beeson et al, 1989) indicate that a large northeast-facing cliff of Miocene Columbia River Basalt is caused by offset of approximately 200 meters in the fault, which is likely a southwest-dipping reverse fault. This cliff face roughly parallels the existing Highway 43 in the City of West Linn. Unambiguous evidence of Quaternary (last 2.6 million years) displacement has not been presented to date, but the fault is considered potentially active due to the bedrock escarpment along the alignment of the fault (Unruh et al., 1994).

FIELD EXPLORATION AND SUBSURFACE CONDITIONS

On November 13, 2019, GeoPacific explored subsurface conditions at the site by excavating four exploratory test pits to depths of 9 to 11 feet with an extendable back-hoe, operated by Dan Fischer Excavating. The approximate test pit locations are shown on Figure 2. It should be noted that test pit locations were located in the field by pacing or taping distances from apparent property corners and other site features shown on the plans provided. As such, the locations of the explorations should be considered approximate.

A GeoPacific geologist continuously monitored the field exploration program and logged the test pit explorations. Soils observed in the explorations were classified in general accordance with the Unified Soil Classification System. Rock hardness was classified in accordance with Table 1, modified from the ODOT Rock Hardness Classification Chart. During exploration, our geologist also noted geotechnical conditions such as soil consistency, moisture and groundwater conditions. Logs of test pits are attached to this report. The following report sections are based on the exploration program and summarize subsurface conditions encountered at the site.

Table 1. Rock Hardness Classification Chart

ODOT Rock Hardness Rating	Field Criteria	Unconfined Compressive Strength	Typical Equipment Needed for Excavation
Extremely Soft (R0)	Indented by thumbnail	<100 psi	Small excavator
Very Soft (R1)	Scratched by thumbnail, crumbled by rock hammer	100-1,000 psi	Small excavator
Soft (R2)	Not scratched by thumbnail, indented by rock hammer	1,000-4,000 psi	Medium excavator (slow digging with small excavator)
Medium Hard (R3)	Scratched or fractured by rock hammer	4,000-8,000 psi	Medium to large excavator (slow to very slow digging), typically requires chipping with hydraulic hammer or mass excavation)
Hard (R4)	Scratched or fractured w/ difficulty	8,000-16,000 psi	Slow chipping with hydraulic hammer and/or blasting
Very Hard (R5)	Not scratched or fractured after many blows, hammer rebounds	>16,000 psi	Blasting

Summary test pit logs are attached. The stratigraphic contacts shown on the individual logs represent the approximate boundaries between soil types. The actual transitions may be more gradual. The soil and groundwater conditions depicted are only for the specific dates and locations reported, and therefore, are not necessarily representative of other locations and times. Soil and groundwater conditions encountered in the explorations are summarized below.

At the completion of exploration, the test pits were backfilled with the excavated spoils and tamped with the backhoe bucket. This backfill should not be expected to behave as compacted structural fill and some minor settling of the ground surface may occur.

Soils

Topsoil Horizon: Directly underlying the ground surface in all test pit explorations was a topsoil horizon consisting of dark brown, highly organic SILT (OL). The topsoil horizon was generally loose, contained fine roots throughout, and extended to depths of 6 to 12 inches.

Undocumented Fill: Beneath the topsoil layer in test pits TP-1, TP-2 and TP-4 was undocumented fill consisting of asphaltic concrete fragments and cobbles to boulders up to several feet in diameter mixed with clayey-silt soils. The undocumented fill extended to 6.5 feet below existing surface grade in test pit TP-1, 7 feet in test pit TP-2 and 3.5 feet in test pit TP-4.

Willamette Formation: Underlying undocumented fill in test pits TP-1, TP-2 and TP-4 and the topsoil horizon in test pit TP-3 were fine-grained soils belonging to the Willamette Formation. Near surface soils in test pit TP-3 were a light brown, moist, clayey SILT (ML) that was stiff to very stiff consistency. Field pocket penetrometer measurements indicate an approximate unconfined compressive strength of 3.0 to 4.5 tons/ft² in the upper four feet of test pit TP-3. At depth in test pit TP-3 and beneath the undocumented fill in test pits TP-1, TP-2 and TP-4 was soft to stiff, CLAY (CL) to SILT (ML) with trace fine-grained sand, that ranged in color from light tan with orange and gray mottling to a blue-gray. The Willamette Formation soils ranged from moist to wet and were generally soft in areas of seepage. This material extended beyond the maximum depth of our explorations, approximately 11 feet below the ground surface.

Groundwater and Soil Moisture

On November 13, 2019, groundwater seepage was encountered in all our test pit explorations. Locations and depths of seepage observed are presented below in Table 2. Soil moistures observed were generally considered to be moist to wet. Soils observed at depth, particularly in the southern test pits, TP-1 and TP-4, display a blue-gray color typically observed in anaerobic environments and areas where moisture is present throughout the year.

According to the *Estimated Depth to Groundwater in the Portland, Oregon Area, (United States Geological Survey, 2019)*, groundwater is expected to be present at an approximate depth of 4-10 feet below the ground surface. It is anticipated that groundwater conditions will vary depending on the season, local subsurface conditions, changes in site utilization, and other factors. Perched groundwater may be encountered in localized areas. Seeps and springs may exist in areas not explored and may become evident during site grading.

Table 2- Summary of Groundwater Seepage Encountered

Exploration Designation	Depth (feet)	Soil Type	Visually Estimated Flow Rate
TP-1	4 & 10	Fill & SILT (ML)	¼ Gal/min
TP-2	6 to 7	Organic SILT (OL)	¼ gal/min
TP-3	8 to 11	SILT (ML)	Static
TP-4	2, 4 & 7	Fill & SILT (ML)	½ gal/min

Infiltration Testing

On November 13, 2019, soil infiltration testing was not performed due to groundwater seepage observed at various depths in all of our test pits explorations. It is our opinion that onsite infiltration is not a feasible option for the proposed structures.

CONCLUSIONS AND RECOMMENDATIONS

Our investigation indicates that the proposed development is geotechnically feasible, provided that the recommendations of this report are incorporated into the design and sufficient geotechnical monitoring is incorporated into the construction phases of the project. The primary geotechnical concerns associated with development at the property are:

- 1) The presence of soft to loose undocumented fill. Undocumented fill consisting of asphaltic concrete fragments, cobbles to boulders and soil was observed in test pits TP-1, TP-2 and TP-4 to depths of 6.5 feet, 7 feet and 3.5 feet, respectfully.
- 2) The presence of groundwater seepage and low permeability of onsite soils. Onsite infiltration testing could not be performed due to the presence of groundwater seepage at various elevations in all of our test pit explorations (see test pit logs) and the fine-grained native soil types observed in our explorations typically exhibit low permeability.

Site Preparation Recommendations

Areas of proposed buildings, new roadways, and areas to receive fill should be cleared of vegetation and any organic and inorganic debris or fill. Existing buried structures should be demolished and any cavities structurally backfilled. Inorganic debris and organic materials from clearing should be removed from the site.

Existing fill and any organic-rich topsoil should then be stripped from construction areas of the site or where engineered fill is to be placed. The estimated depth necessary for removal of topsoil is approximately 8 to 10 inches – deeper stripping may be necessary to remove large tree roots in isolated areas. Undocumented fill was encountered in test pits TP-1, TP-2 and TP-4 to depths of 6.5 feet, 7 feet and 3.5 feet, respectfully.

The final depth of soil removal will be determined on the basis of a site inspection after the stripping/excavation has been performed. Stripped topsoil should preferably be removed from the site. Any remaining topsoil should be stockpiled only in designated areas and stripping operations should be observed and documented by the geotechnical engineer or his representative.

Any remaining undocumented fills and subsurface structures (tile drains, basements, driveway and landscaping fill, old utility lines, septic leach fields, etc.) should be removed and the excavations backfilled with engineered fill.

Once stripping of a particular area is approved, the area must be ripped or tilled to a depth of 12 inches, moisture conditioned, root-picked, and compacted in-place prior to the placement of engineered fill or crushed aggregate base for pavement. Exposed subgrade soils should be evaluated by the geotechnical engineer. For large areas, this evaluation is normally performed by proof-rolling the exposed subgrade with a fully loaded scraper or dump truck. For smaller areas where access is restricted, the subgrade should be evaluated by probing the soil with a steel probe. Soft/loose soils identified during subgrade preparation should be compacted to a firm and unyielding condition, over-excavated and replaced with engineered fill (as described below) or stabilized with rock prior to placement of engineered fill. The depth of over-excavation, if required, should be evaluated by the geotechnical engineer at the time of construction.

Engineered Fill

All grading for the proposed development should be performed as engineered grading in accordance with the applicable building code at time of construction with the exceptions and additions noted herein.

Proper test frequency and earthwork documentation usually requires daily observation and testing during stripping, rough grading, and placement of engineered fill. Imported fill material must be approved by the geotechnical engineer prior to being imported to the site. Oversize material greater than 6 inches in size should not be used within 3 feet of foundation footings, and material greater than 12 inches in diameter should not be used in engineered fill.

Engineered fill should be compacted in horizontal lifts not exceeding 8 inches using standard compaction equipment. We recommend that engineered fill be compacted to at least 95% of the maximum dry density determined by ASTM D698 (Standard Proctor) or equivalent. Field density testing should conform to ASTM D2922 and D3017, or D1556. All engineered fill should be observed and tested by the project geotechnical engineer or his representative. Rocky fill may need to be evaluated by proofrolling and should be placed wet of optimum moisture content. Typically, one density test is performed for at least every 2 vertical feet of fill placed or every 500 yd³, whichever requires more testing. Because testing is performed on an on-call basis, we recommend that the earthwork contractor be held contractually responsible for test scheduling and frequency.

Site earthwork will be impacted by soil moisture and shallow groundwater conditions. Earthwork in wet weather would likely require extensive use of cement or lime treatment, or other special measures, at considerable additional cost compared to earthwork performed under dry-weather conditions.

Excavating Conditions and Utility Trench Backfill

All temporary cuts in excess of 4 feet in height should be sloped in accordance with U.S. Occupational Safety and Health Administration (OSHA) regulations (29 CFR Part 1926) or be shored. The existing native soils classify as Type B Soil and temporary excavation side slope inclinations as steep as 1H:1V may be assumed for planning purposes. This cut slope inclination is applicable to excavations above the water table only. Maintenance of safe working conditions, including temporary excavation stability, is the responsibility of the contractor. Actual slope inclinations at the time of construction should be determined based on safety requirements and actual soil and groundwater conditions.

Saturated soils and groundwater may be encountered in utility trenches, particularly during the wet season. We anticipate that dewatering systems consisting of ditches, sumps and pumps would be adequate for control of perched groundwater. Regardless of the dewatering system used, it should be installed and operated such that in-place soils are prevented from being removed along with the groundwater.

Vibrations created by traffic and construction equipment may cause some caving and raveling of excavation walls. In such an event, lateral support for the excavation walls should be provided by the contractor to prevent loss of ground support and possible distress to existing or previously constructed structural improvements.

PVC pipe should be installed in accordance with the procedures specified in ASTM D2321. We recommend that trench backfill be compacted to at least 95% of the maximum dry density obtained by Modified Proctor ASTM D1557 or equivalent. Initial backfill lift thickness for a ¾"-0 crushed aggregate base may need to be as great as 4 feet to reduce the risk of flattening underlying flexible pipe. Subsequent lift thickness should not exceed 1 foot. If imported granular fill material is used, then the lifts for large vibrating plate-compaction equipment (e.g. hoe compactor attachments) may be up to 2 feet, provided that proper compaction is being achieved and each lift is tested. Use of large vibrating compaction equipment should be carefully monitored near existing structures and improvements due to the potential for vibration-induced damage.

Adequate density testing should be performed during construction to verify that the recommended relative compaction is achieved. Typically, one density test is taken for every 4 vertical feet of backfill on each 200-lineal-foot section of trench.

Erosion Control Considerations

During our field exploration program, we did not observe soil types that would be considered highly susceptible to erosion except in areas of moderately sloping topography. In our opinion, the primary concern regarding erosion potential will occur during construction, in areas that have been stripped of vegetation. Erosion at the site during construction can be minimized by implementing the project erosion control plan, which should include judicious use of straw wattles and silt fences. If used, these erosion control devices should be in place and remain in place throughout site preparation and construction.

Erosion and sedimentation of exposed soils can also be minimized by quickly re-vegetating exposed areas of soil, and by staging construction such that large areas of the project site are not denuded and exposed at the same time. Areas of exposed soil requiring immediate and/or temporary protection against exposure should be covered with either mulch or erosion control netting/blankets. Areas of exposed soil requiring permanent stabilization should be seeded with an approved grass seed mixture, or hydroseeded with an approved seed-mulch-fertilizer mixture.

Wet Weather Earthwork

Soils underlying the site are likely to be moisture sensitive and may be difficult to handle or traverse with construction equipment during periods of wet weather. Earthwork is typically most economical when performed under dry weather conditions. Earthwork performed during the wet-weather season will probably require expensive measures such as cement treatment or imported granular material to compact areas where fill may be proposed to the recommended engineering specifications. If earthwork is to be performed or fill is to be placed in wet weather or under wet conditions when soil moisture content is difficult to control, the following recommendations should be incorporated into the contract specifications.

- Earthwork should be performed in small areas to minimize exposure to wet weather. Excavation or the removal of unsuitable soils should be followed promptly by the placement and compaction of clean engineered fill. The size and type of construction equipment used may have to be limited to prevent soil disturbance. Under some circumstances, it may be necessary to excavate soils with a backhoe to minimize subgrade disturbance caused by equipment traffic;
- The ground surface within the construction area should be graded to promote run-off of surface water and to prevent the ponding of water;
- Material used as engineered fill should consist of clean, granular soil containing less than 5 percent passing the No. 200 sieve. The fines should be non-plastic. Alternatively, cement treatment of on-site soils may be performed to facilitate wet weather placement;
- The ground surface within the construction area should be sealed by a smooth drum vibratory roller, or equivalent, and under no circumstances should be left uncompacted and exposed to moisture. Soils which become too wet for compaction should be removed and replaced with clean granular materials;

- Excavation and placement of fill should be observed by the geotechnical engineer to verify that all unsuitable materials are removed, and suitable compaction and site drainage is achieved; and
- Geotextile silt fences, straw wattles, and fiber rolls should be strategically located to control erosion.

Spread Foundations

The proposed residential structures may be supported on shallow foundations bearing on engineered fill placed and compacted over competent native soils, appropriately designed and constructed as recommended in this report. Foundation design, construction, and setback requirements should conform to the applicable building code at the time of construction. For maximization of bearing strength and protection against frost heave, spread footings should be embedded at a minimum depth of 12 inches below exterior grade. Foundations should be designed by a licensed structural engineer.

The anticipated allowable soil bearing pressure is 1,500 lbs/ft² for footings bearing on moisture conditioned and re-compacted native soils and/or structural fill. A maximum chimney and column load of 30 kips is recommended for the site. The recommended maximum allowable bearing pressure may be increased by 1/3 for short-term transient conditions such as wind and seismic loading. For heavier loads, the geotechnical engineer should be consulted. The coefficient of friction between on-site soil and poured-in-place concrete may be taken as 0.42, which includes no factor of safety. The maximum anticipated total and differential footing movements (generally from soil expansion and/or settlement) are 1 inch and ¾ inch over a span of 20 feet, respectively. We anticipate that the majority of the estimated settlement will occur during construction, as loads are applied. Excavations near structural footings should not extend within a 1H:1V plane projected downward from the bottom edge of footings.

Footing excavations should penetrate through topsoil and any loose soil to competent subgrade that is either

- 1) suitable for bearing support,
- 2) moisture conditioned and compacted and/or
- 3) over-excavated and replaced with structural fill.

All footing excavations should be trimmed neat, and all loose or softened soil should be removed from the excavation bottom prior to placing reinforcing steel bars. Due to the moisture sensitivity of on-site native soils, foundations constructed during the wet weather season may require over-excavation of footings and backfill with compacted, crushed aggregate.

Our recommendations are for house construction incorporating raised wood floors and conventional spread footing foundations. If living space of the structures will incorporate basements, a geotechnical engineer should be consulted to make additional recommendations for retaining walls, water-proofing, underslab drainage and wall subdrains. After site development, a Final Soil Engineer's Report should either confirm or modify the above recommendations.

Concrete Slabs-on-Grade

Preparation of areas beneath concrete slab-on-grade floors should be performed as recommended in the *Site Preparation* section. Care should be taken during excavation for foundations and floor slabs, to avoid disturbing subgrade soils. If subgrade soils have been adversely impacted by wet weather or otherwise disturbed, the surficial soils should be scarified to a minimum depth of 8 inches, moisture conditioned to within about 3 percent of optimum moisture content and compacted to engineered fill specifications. Alternatively, disturbed soils may be removed, and the removal zone backfilled with additional crushed rock.

For evaluation of the concrete slab-on-grade floors using the beam on elastic foundation method, a modulus of subgrade reaction of 150 kcf (87 pci) should be assumed for the fine-grained soils anticipated to be present in the upper four feet at the site. This value assumes the concrete slab system is designed and constructed as recommended herein, with a minimum thickness of 8 inches of 1½"-0 crushed aggregate beneath the slab. The total thickness of crushed aggregate will be dependent on the subgrade conditions at the time of construction and should be verified visually by proof-rolling. Under-slab aggregate should be compacted to at least 90 percent of its maximum dry density as determined by ASTM D1557 (Modified Proctor) or equivalent.

In areas where moisture will be detrimental to floor coverings or equipment inside the proposed structure, appropriate vapor barrier and damp-proofing measures should be implemented. A commonly applied vapor barrier system consists of a 10-mil polyethylene vapor barrier placed directly over the capillary break material. Other damp/vapor barrier systems may also be feasible. Appropriate design professionals should be consulted regarding vapor barrier and damp proofing systems, ventilation, building material selection and mold prevention issues, which are outside GeoPacific's area of expertise.

Permanent Below-Grade Walls

Lateral earth pressures against below-grade retaining walls will depend upon the inclination of any adjacent slopes, type of backfill, degree of wall restraint, method of backfill placement, degree of backfill compaction, drainage provisions, and magnitude and location of any adjacent surcharge loads. At-rest soil pressure is exerted on a retaining wall when it is restrained against rotation. In contrast, active soil pressure will be exerted on a wall if its top is allowed to rotate or yield a distance of roughly 0.001 times its height or greater.

If the subject retaining walls will be free to rotate at the top, they should be designed for an active earth pressure equivalent to that generated by a fluid weighing 35 pcf for level backfill against the wall. For restrained wall, an at-rest equivalent fluid pressure of 55 pcf should be used in design, again assuming level backfill against the wall. These values assume that the recommended drainage provisions are incorporated, and hydrostatic pressures are not allowed to develop against the wall.

During a seismic event, lateral earth pressures acting on below-grade structural walls will increase by an incremental amount that corresponds to the earthquake loading. Based on the Mononobe-Okabe equation and peak horizontal accelerations appropriate for the site location, seismic loading should be modeled using the active or at-rest earth pressures recommended above, plus an incremental rectangular-shaped seismic load of magnitude $6.5H$, where H is the total height of the wall.

We assume relatively level ground surface below the base of the walls. As such, we recommend passive earth pressure of 320 pcf for use in design, assuming wall footings are cast against competent native soils or engineered fill. If the ground surface slopes down and away from the base of any of the walls, a lower passive earth pressure should be used and GeoPacific should be contacted for additional recommendations.

A coefficient of friction of 0.42 may be assumed along the interface between the base of the wall footing and subgrade soils. The recommended coefficient of friction and passive earth pressure values do not include a safety factor, and an appropriate safety factor should be included in design. The upper 12 inches of soil should be neglected in passive pressure computations unless it is protected by pavement or slabs on grade.

The above recommendations for lateral earth pressures assume that the backfill behind the subsurface walls will consist of properly compacted structural fill, and no adjacent surcharge loading. If the walls will be subjected to the influence of surcharge loading within a horizontal distance equal to or less than the height of the wall, the walls should be designed for the additional horizontal pressure. For uniform surcharge pressures, a uniformly distributed lateral pressure of 0.3 times the surcharge pressure should be added. Traffic surcharges may be estimated using an additional vertical load of 250 psf (2 feet of additional fill), in accordance with local practice.

The recommended equivalent fluid densities assume a free-draining condition behind the walls so that hydrostatic pressures do not build-up. This can be accomplished by placing a 12 to 18-inch wide zone of sand and gravel containing less than 5 percent passing the No. 200 sieve against the walls. A 3-inch minimum diameter perforated, plastic drain pipe should be installed at the base of the walls and connected to a suitable discharge point to remove water in this zone of sand and gravel. The drain pipe should be wrapped in filter fabric (Mirafi 140N or other as approved by the geotechnical engineer) to minimize clogging.

Wall drains are recommended to prevent detrimental effects of surface water runoff on foundations – not to dewater groundwater. Drains should not be expected to eliminate all potential sources of water entering a basement or beneath a slab-on-grade. An adequate grade to a low point outlet drain in the crawlspace is required by code. Underslab drains are sometimes added beneath the slab when placed over soils of low permeability and shallow, perched groundwater.

Water collected from the wall drains should be directed into the local storm drain system or other suitable outlet. A minimum 0.5 percent fall should be maintained throughout the drain and non-perforated pipe outlet. Down spouts and roof drains should not be connected to the wall drains in

order to reduce the potential for clogging. The drains should include clean-outs to allow periodic maintenance and inspection. Grades around the proposed structure should be sloped such that surface water drains away from the building.

GeoPacific should be contacted during construction to verify subgrade strength in wall keyway excavations, to verify that backslope soils are in accordance with our assumptions, and to take density tests on the wall backfill materials.

Structures should be located a horizontal distance of at least 1.5H away from the back of the retaining wall, where H is the total height of the wall. GeoPacific should be contacted for additional foundation recommendations where structures are located closer than 1.5H to the top of any wall.

Drainage

The upslope edge of perimeter footings may be provided with a drainage system consisting of 3-inch diameter, slotted, plastic pipe embedded in a minimum of 1 ft³ per lineal foot of clean, free-draining gravel or uncompacted 3/4"-0 rock. Water collected from the footing drains should be directed into the local storm drain system or another suitable outlet. A minimum 0.5 percent fall should be maintained throughout the drain and non-perforated pipe outlet. Down spouts and roof drains should not be connected to the foundation drains in order to reduce the potential for clogging. The footing drains should include clean-outs to allow periodic maintenance and inspection. Grades around the proposed structure should be sloped such that surface water drains away from the building. Footing drain recommendations are given to prevent detrimental effects of groundwater on foundations and should not be expected to eliminate all potential sources of water entering a crawlspace. An adequate grade to a low point outlet drain in the crawlspace is required by code.

Flexible Pavement Design: 9th Street Half Street Improvement

We understand that, as part of development, improvements must be made to the existing south bound lane of 9th Street, within the property boundaries. The City of West Linn Public Works Design Standards, Section Five – Street Requirements states an approved section for Local / Neighborhood streets. Table 3 presents the approved Local / Neighborhood street section for the City of West Linn with estimated structural coefficients.

Table 3 – City of West Linn Minimum Dry-Weather Pavement Section for 9th Street

Material Layer	Section Thickness (in.)	Structural Coefficient	Compaction Standard
Asphaltic Concrete (AC)	4	0.42	91%/ 92% of Rice Density AASHTO T-209
Crushed Aggregate Base ¾"-0 (leveling course)	2	0.10	95% of Modified Proctor AASHTO T-180
Crushed Aggregate Base 1½"-0	10	0.10	95% of Modified Proctor AASHTO T-180
Subgrade	12	5,000 PSI	95% of Standard Proctor AASHTO T-99 or equivalent
Calculated Structural Number		1.88	

Road Subgrade Preparation

The subgrade should be ripped or tilled to a depth of 12 inches, moisture conditioned, root-picked, and compacted in-place prior to the placement of crushed aggregate base for pavement. Any pockets of organic debris or loose fill encountered during ripping or tilling should be removed and replaced with engineered fill (see *Site Preparation* section). In order to verify subgrade strength, we recommend proof-rolling directly on subgrade with a loaded dump truck during dry weather and on top of base course in wet weather. Soft areas that pump, rut, or weave should be stabilized prior to paving.

If pavement areas are to be constructed during wet weather, the subgrade and construction plan should be reviewed by the project geotechnical engineer at the time of construction so that condition specific recommendations can be provided. The moisture sensitive subgrade soils make the site a difficult wet weather construction project. General recommendations for wet weather pavement sections are provided below.

During placement of pavement section materials, density testing should be performed to verify compliance with project specifications. Generally, one subgrade, one base course, and one asphalt compaction test is performed for every 100 to 200 linear feet of paving.

Wet Weather Construction Pavement Section

This section presents our recommendations for wet weather pavement section and construction for new pavement sections at the project. These wet weather pavement section recommendations are intended for use in situations where it is not feasible to compact the subgrade soils, due to wet subgrade soil conditions, and/or construction during wet weather.

Based on our site review, we recommend a wet weather section with a minimum subgrade deepening of 6 inches to accommodate a working subbase of additional 1½"-0 crushed rock. Geotextile fabric, Mirafi 500x or equivalent, should be placed on subgrade soils prior to placement of base rock.

In some instances, it may be preferable to use Special Treated Base (STB) in combination with over-excavation and increasing the thickness of the rock section. GeoPacific should be consulted for additional recommendations regarding use of STB in wet weather pavement sections if it is desired to pursue this alternative. Cement treatment of the subgrade may also be considered instead of over-excavation. For planning purposes, we anticipate that treatment of the onsite soils would involve mixing cement powder to approximately 6 percent cement content and a mixing depth on the order of 12 to 18 inches.

With implementation of the above recommendations, it is our opinion that the resulting pavement section will provide equivalent or greater structural strength than the dry weather pavement section currently planned. However, it should be noted that construction in wet weather is risky and the performance of pavement subgrades depend on a number of factors including the weather conditions, the contractor's methods, and the amount of traffic the road is subjected to. There is a potential that soft spots may develop even with implementation of the wet weather provisions recommended in this letter. If soft spots in the subgrade are identified during roadway excavation, or develop prior to paving, the soft spots should be over-excavated and backfilled with additional crushed rock.

During subgrade excavation, care should be taken to avoid disturbing the subgrade soils. Removals should be performed using an excavator with a smooth-bladed bucket. Truck traffic should be limited until an adequate working surface has been established. We suggest that the crushed rock be spread using bulldozer equipment rather than dump trucks, to reduce the amount of traffic and potential disturbance of subgrade soils.

Care should be taken to avoid over-compaction of the base course materials, which could create pumping, unstable subgrade soil conditions. Heavy and/or vibratory compaction efforts should be applied with caution. Following placement and compaction of the crushed rock to project specifications (95 percent of Modified Proctor), a finish proof-roll should be performed before paving.

The above recommendations are subject to field verification. GeoPacific should be on-site during construction to verify subgrade strength and to take density tests on the engineered fill, base rock and asphaltic pavement materials.

Seismic Design

The Oregon Department of Geology and Mineral Industries (Dogami), Oregon HazVu: Statewide GeoHazards Viewer indicates that the site is in an area where *severe* ground shaking is anticipated during an earthquake (Dogami HazVu, 2019). Structures should be designed to resist earthquake loading in accordance with the methodology described in the 2018 International Building Code (IBC) with applicable Oregon Structural Specialty Code (OSSC) revisions (current 2019). We recommend Site Class D be used for design per the OSSC, Table 1613.5.2 and as defined in ASCE 7-16, Chapter 20, Table 20.3-1. Design values determined for the site using the ATC (Applied Technology Council) *ASCE7-10 Hazards by Location online Tool* website are summarized in Table 3.

Table 3 - Recommended Earthquake Ground Motion Factors (ASCE 7-16)

Parameter	Value
Location (Lat, Long), degrees	45.3426, -122.6486
Probabilistic Ground Motion Values, 2% Probability of Exceedance in 50 yrs	
Site Modified Peak Ground Acceleration	0.459 g
Short Period, S_s	0.831 g
1.0 Sec Period, S_1	0.376 g
Soil Factors for Site Class D:	
F_a	1.168
F_v	1.924
$SD_s = 2/3 \times F_a \times S_s$	0.647 g
$SD_1 = 2/3 \times F_v \times S_1$	0.482 g
Seismic Design Category	D

* F_v value reported in the above table is a straight-line interpolation of mapped spectral response acceleration at 1-second period, S_1 per Table 1613.2.3(2) of OSSC 2019 with the assumption that Exception 2 of ASCE 7-16 Chapter 11.4.8 is met per the Structural Engineer. If Exception 2 is not met, and the long-period site coefficient (F_v) is required for design, GeoPacific Engineering can be consulted to provide a site-specific procedure as per ASCE 7-16, Chapter 21.

Soil Liquefaction

Soil liquefaction is a phenomenon wherein saturated soil deposits temporarily lose strength and behave as a liquid in response to ground shaking caused by strong earthquakes. Soil liquefaction is generally limited to loose, sands and granular soils located below the water table. The Oregon Department of Geology and Mineral Industries (DOGAMI), Oregon HazVu: 2019 Statewide GeoHazards Viewer indicates that the site is in an area considered to be at *low* to *high* risk for soil liquefaction during an earthquake (DOGAMI:HazVu, 2019).

An in-depth analysis of seismic hazards is beyond the scope of this study. However, if additional information is desired regarding the potential for soil liquefaction during a seismic event, GeoPacific may be consulted to perform additional subsurface explorations, consisting of soil borings and/or CPT testing, and to perform a quantitative liquefaction analysis.

UNCERTAINTIES AND LIMITATIONS

We have prepared this report for the owner and his/her consultants for use in design of this project only. The conclusions and interpretations presented in this report should not be construed as a warranty of the subsurface conditions. Experience has shown that soil and groundwater conditions can vary significantly over small distances. Inconsistent conditions can occur between explorations that may not be detected by a geotechnical study. If, during future site operations, subsurface conditions are encountered which vary appreciably from those described herein, GeoPacific should be notified for review of the recommendations of this report, and revision of such if necessary.

Within the limitations of scope, schedule and budget, GeoPacific executed these services in accordance with generally accepted professional principles and practices in the fields of geotechnical engineering and engineering geology at the time the report was prepared. No warranty, express or implied, is made. The scope of our work did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous or toxic substances in the soil, surface water, or groundwater at this site.

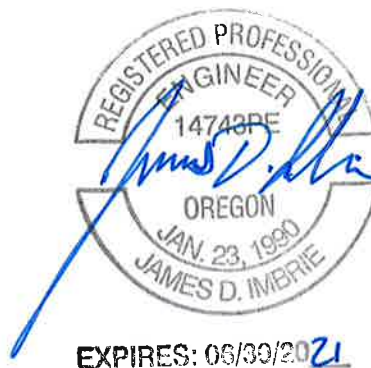
We appreciate this opportunity to be of service.

Sincerely,

GEO PACIFIC ENGINEERING, INC.



Michael T. Baker, G.I.T.
Geotechnical Staff



James D. Imbrie, G.E., C.E.G.
Principal Geotechnical Engineer

REFERENCES

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Geotechnical Engineering Report
Project No. 19-5350, 9th Street, West Linn, Oregon



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CHECKLIST OF RECOMMENDED GEOTECHNICAL TESTING AND OBSERVATION

Item No.	Procedure	Timing	By Whom	Done
1	Preconstruction meeting	Prior to beginning site work	Contractor, Developer, Civil and Geotechnical Engineers	
2	Fill removal from site or sorting and stockpiling	Prior to mass stripping	Soil Technician/ Geotechnical Engineer	
3	Stripping, aeration, and root-picking operations	During stripping	Soil Technician	
4	Compaction testing of engineered fill (95% of Standard Proctor)	During filling, tested every 2 vertical feet	Soil Technician	
5	Compaction testing of trench backfill (95% of Standard Proctor)	During backfilling, tested every 4 vertical feet for every 200 lineal feet	Soil Technician	
6	Street Subgrade Inspection	Prior to placing base course	Soil Technician	
7	Base course compaction (95% of Modified Proctor)	Prior to paving, tested every 200 lineal feet	Soil Technician	
8	Footing Subgrade Inspection	Prior to placement of forms	Soil Technician/ Geotechnical Engineer	
9	Final Geotechnical Engineer's Report	Completion of project	Geotechnical Engineer	



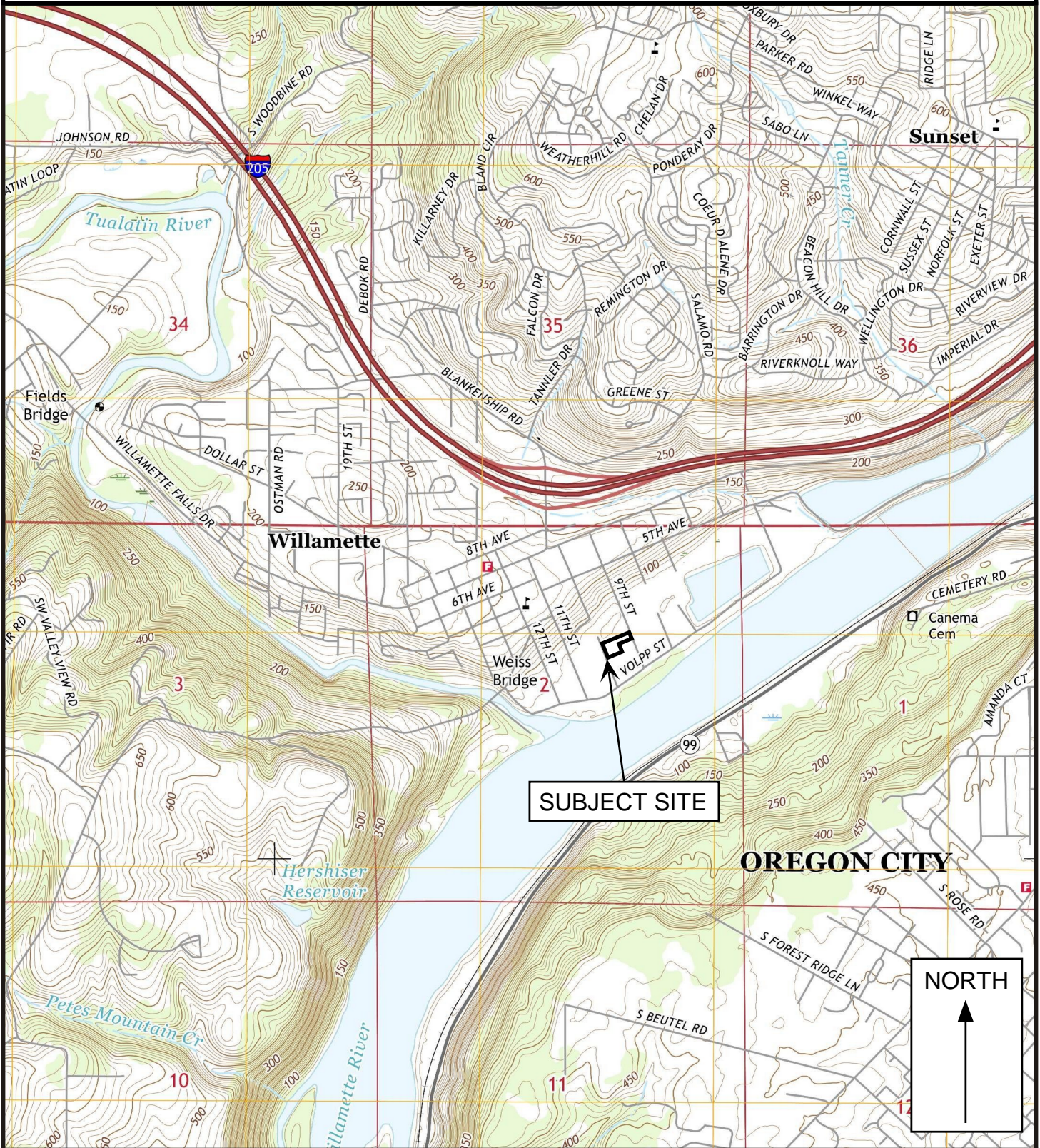
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FIGURES



14835 SW 72nd Avenue
 Portland, Oregon 97224
 Tel: (503) 598-8445 Fax: (503) 941-9281

VICINITY MAP



Legend

Approximate Scale 1 in = 2,000 ft

Date: 11.20.2019
 Drawn by: MTB

Base maps: U.S. Geological Survey 7.5 minute Topographic Map Series, Canby, Oregon Quadrangle, 2017.

Project: 9th Street
 West Linn, Oregon

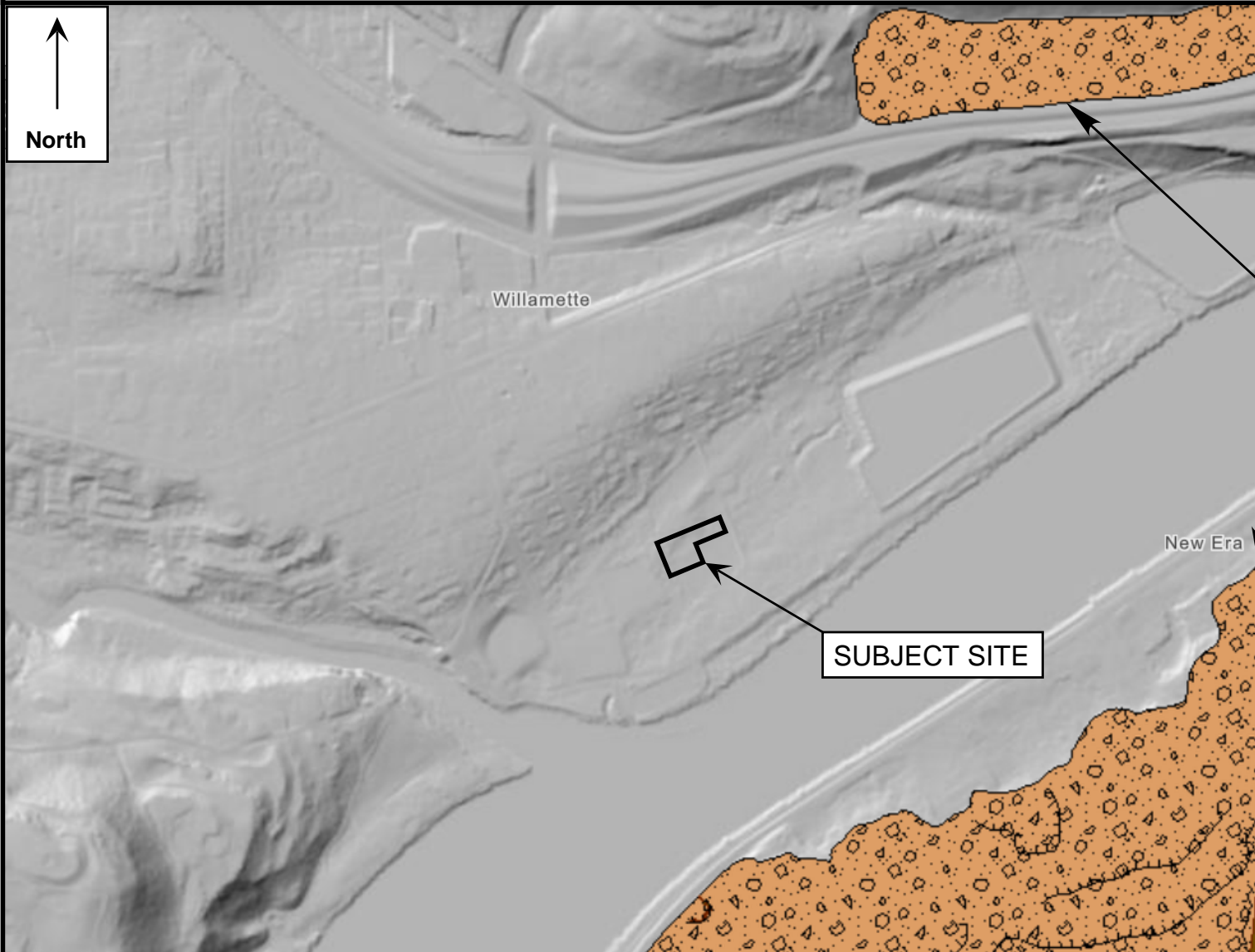
Project No. 19-5350

FIGURE 1A



14835 SW 72nd Avenue
Portland, Oregon 97224
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LIDAR BA
WITH MA



Legend

Approximate Scale 1 in = 1000 ft

Base map: Oregon Department of Geology and Mineral Industries, 2019, Statewide Landslide Information Database for
<http://www.gis.dogami.oregon.gov/slido>

Project: 9th Street
West Linn, Oregon

Project No. 19-5350



Base image provided by AKS Engineering & Forestry, LLC. and PortlandMaps

Legend



Site Boundary



Test Pit Designation, Approximate Location
 and Approximate Depth of Fill including Buried Topsoil



PDCP Designation
 and Approximate Location

Project: 9th Street
 West Linn, Oregon

Project No. 19-5350

AP

NOTE:
 POTENTIAL OF
 DESIGNATION FROM CITY OF
 DRIVEWAY
 MINIMUM DRIVEWAY SETBACK
 50' FROM STREET
 SETBACK
 FRONT SETBACK
 REAR SETBACK
 INTERNAL SETBACK



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EXPLORATION LOGS









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TEST PIT LOG

Project: 9th Street West Linn, Oregon	Project No. 19-5350	Exploration No. TP-1
--	---------------------	-----------------------------

Depth (ft)	Sample Type	tons/sq.ft.	Moisture Content (%)	Water Bearing Zone	Material Description
1		4.0			Soft, organic SILT (OL), brown, grass roots, very moist [Topsoil Horizon] ----- Loose, GRAVEL (GM), composed of fractured rock and asphalt fragments up to 12 inch in diameter with sand and silt, moist [Undocumented Fill] -----
2		1.0			
3		1.0			Soft to medium stiff, lean CLAY (CL), light brown, homogenous, tree roots, moist [Undocumented Fill] -----
4		1.5			
5					Soft to medium stiff, CLAY (CL-CH), dark gray to brown, very plastic, moist, in lower portion this layer was dark brown to black fragments of extremely soft (R0) to soft (R1) minerals from 1/4 inch to 1.5 inch in diameter, fragments of angular vesicular medium hard (R3) BASALT, moist [Undocumented Fill] -----
6					
7					
8					
9					Medium stiff to stiff, SILT (ML) with sand, blue-gray, slightly plastic, homogenous, very moist to wet [Willamette Formation] -----
10					
11					Test Pit terminated at 11 feet. Groundwater seepage encountered in excavation at 4 feet and 10.5 feet. Flow visually estimated at 1/4 gallons per minute.
12					
13					
14					



LEGEND  Bag Sample  Split-Spoon  Shelby Tube Sample  Seepage  Static Water Table  Water Bearing Zone	Date Drilled: 11.13.2019 Logged By: MTB Surface Elevation: <u>74 Feet</u>
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


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TEST PIT LOG

Project: 9th Street West Linn, Oregon	Project No. 19-5350	Exploration No. TP-2
--	---------------------	-----------------------------

Depth (ft)	Sample Type	tons/sq.ft.	Moisture Content (%)	Water Bearing Zone	Material Description
1		0.5			Soft, organic SILT (OL), brown, grass roots, moist [Topsoil Horizon]
2		1.0			
3		1.5			Loose to medium dense, GRAVEL (GM), composed of medium hard (R3) angular BASALT and asphaltic concrete fragments up to several feet in diameter in a matrix of soft silty CLAY to clayey SILT (CL-ML), moist [Undocumented Fill]
4		1.5			
6					Soft, organic SILT (OL), brown, grass roots, moist [Buried Topsoil Horizon]
7					
8					Medium stiff, lean CLAY (CL), blue-gray, moderately plastic, homogenous, moist [Willamette Formation]
9					
10					Soft to medium stiff, SILT with fine grained sand to sandy SILT (ML-SM), tan with faint orange mottling in thin bands approximately 1/8 to 1/2 inch in thickness, wet [Willamette Formation]
11					Test Pit terminated at 11 feet.
12					Groundwater seepage encountered in excavation at 6 to 7 feet. Flow visually estimated at 1/4 gallons per minute.
13					
14					

LEGEND  Bag Sample  Split-Spoon  Shelby Tube Sample  Seepage  Static Water Table  Water Bearing Zone	Date Drilled: 11.13.2019 Logged By: MTB Surface Elevation: <u>80 Feet</u>
---	---









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TEST PIT LOG

Project: 9th Street West Linn, Oregon	Project No. 19-5350	Exploration No. TP-3
--	---------------------	-----------------------------

Depth (ft)	Sample Type	tons/sq.ft.	Moisture Content (%)	Water Bearing Zone	Material Description
1		3.0			Stiff, organic SILT (OL), brown, grass roots wood debris, moist [Topsoil Horizon]
2		3.5			
3		4.5			Stiff to very stiff, SILT (ML), light brown, moderately plastic, homogenous, sparse tree roots to 3 feet, moist [Willamette Formation]
4		4.5			
5					
6					
7					
8				▽	Stiff, SILT (ML) with fine-grained sand to sandy SILT (SM), tan with gray and orange mottling, moist to approximately 8 feet than very moist to wet [Willamette Formation]
9					
10					
11					
12					Test Pit terminated at 11 feet.
13					Groundwater seepage encountered in excavation at 8 feet.
14					




LEGEND  Bag Sample  Split-Spoon  Shelby Tube Sample  Seepage  Static Water Table  Water Bearing Zone						Date Drilled: 11.13.2019 Logged By: MTB Surface Elevation: <u>80 Feet</u>
---	--	--	--	--	--	---









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TEST PIT LOG

Project: 9th Street West Linn, Oregon	Project No. 19-5350	Exploration No. TP-4
--	---------------------	-----------------------------

Depth (ft)	Sample Type	tons/sq.ft.	Moisture Content (%)	Water Bearing Zone	Material Description
1		1.0			Soft, organic SILT (OL), brown, grass roots, moist to very moist [Topsoil Horizon]
2		1.0			Soft to very stiff CLAY (CL), reddish brown, black staining, heavily weathered BASALT fragments, moist to wet [Undocumented Fill]
3		4.5			
4		1.0			
5					
6					Medium stiff to stiff, SILT (ML) with sand, blue-gray, slightly plastic, homogenous, very moist to wet [Willamette Formation]
7					
8					
9					Test Pit terminated at 9 feet.
10					Groundwater seepage encountered in excavation at 2, 4 and 7 feet.
11					
12					
13					
14					

LEGEND  Bag Sample  Split-Spoon  Shelby Tube Sample  Seepage  Static Water Table  Water Bearing Zone						Date Drilled: 11.13.2019 Logged By: MTB Surface Elevation: <u>72 Feet</u>
--	--	--	--	--	--	---

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14835 SW 72nd Avenue
Portland, Oregon 97224

Tel (503) 598-8445
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Portable Dynamic Cone Penetrometer (PDCP) / California Bearing Ratio (CBR) Correlation

Project: 9th Street West Linn **Date:** 11.20.2019 **Existing A/C Thickness:** 0 Inches **Test:** PDCP-1
Project No. 19-5350 **Engineer:** MTB **Existing Base Aggregate Thickness:** 0 Inches
Location: SW Shoulder of 9th Street at N Property Corner **Subgrade:** Fill **Notes:** Location on Figures 2
Portable Dynamic Cone: KSE DCP K-100 Model, ASTM D6951, 17.6 lbs Hammer

Length of Shaft	Ref Height at Start	Depth Below Ground at Start
in	in	in
38.75	3.6	2.6

Blows	Ref Height (in)	Depth Below Ground (in)	Depth Below Ground (ft)	Depth Below Ground (mm)	Inches/Blow	mm/Blow	CBR	Corellated PSI
5	10.9	9.9	0.8	251.5	1.5	37.1	5.1	4193
5	13.4	12.4	1.0	315.0	0.5	12.7	16.9	6368
5	21	20.0	1.7	508.0	1.5	38.6	4.9	4127
5	26.7	25.7	2.1	652.8	1.1	29.0	6.7	4617
5	29.5	28.5	2.4	723.9	0.6	14.2	14.9	6092
5	32.9	31.9	2.7	810.3	0.7	17.3	12.0	5648
5	35.9	34.9	2.9	886.5	0.6	15.2	13.8	5931
Average						23.44	8.5	
Average Soil Resilient Modulus per ODOT Pavement Design Guide							5014	

Portable Dynamic Cone Penetrometer (PDCP) / California Bearing Ratio (CBR) Correlation

Project: 9th Street West Linn **Date:** 11.20.2019 **Existing A/C Thickness:** 0 Inches **Test:** PDCP-2
Project No. 19-5350 **Engineer:** MTB **Existing Base Aggregate Thickness:** 0 Inches
Location: SW Shoulder of 9th Street at S Property Corner **Subgrade:** Fill **Notes:** Location on Figures 2
Portable Dynamic Cone: KSE DCP K-100 Model, ASTM D6951, 17.6 lbs Hammer

Length of Shaft	Ref Height at Start	Depth Below Ground at Start
in	in	in
38.75	3	2

Blows	Ref Height (in)	Depth Below Ground (in)	Depth Below Ground (ft)	Depth Below Ground (mm)	Inches/Blow	mm/Blow	CBR	Corellated PSI
5	9.8	8.8	0.7	223.5	1.4	34.5	5.5	4310
5	12.7	11.7	1.0	297.2	0.6	14.7	14.4	6010
5	14.2	13.2	1.1	335.3	0.3	7.6	30.0	7772
5	16.6	15.6	1.3	396.2	0.5	12.2	17.7	6470
5	22.8	21.8	1.8	553.7	1.2	31.5	6.1	4468
5	25.6	24.6	2.1	624.8	0.6	14.2	14.9	6092
5	28	27.0	2.3	685.8	0.5	12.2	17.7	6470
5	32.8	31.8	2.7	807.7	1.0	24.4	8.2	4937
5	34.4	33.4	2.8	848.4	0.3	8.1	27.9	7578
Average						17.72	11.7	
Average Soil Resilient Modulus per ODOT Pavement Design Guide							5592	



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PHOTOGRAPHIC LOG



Overhead of the Property



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Proximity to Willamette River



Test Pits TP-2 & TP-3



Test Pit TP-1 Undocumented Fill



Test Pit TP-1



Test Pit TP-2 Undocumented Fill



Test Pit TP-3



Test Pit TP-4



Test Pit TP-4

Exhibit H: Pre-Application Summary



CITY OF
**West
Linn**

Pre-app Comments

**Project Number: PA-19-14
Single family dwellings
North of 1040 9th Street**

Engineering Contact:

Amy Pepper, PE
apepper@westlinnoregon.gov
Telephone: (503) 722-3437

Project Description: Construct single family homes on existing lots of record north of 1040 9th Street.

Pre-application meeting date: June 20, 2019

The comments provided below are based upon material provided as part of the pre-application packet and are intended to identify potential design challenges associated with the development. Comments are not intended to be exhaustive and do not preclude the engineering department from making additional comments as part of the formal land use application process.

TRANSPORTATION

Minimum Required Improvement:

- 9th St street improvement:
 - 9th Street is identified as a local street in the City's *Transportation System Plan*.
 - Existing right-of-way is unimproved and approximately 40 feet wide.
 - The existing pavement width is approximately 15 feet.
 - Half-street improvements to local street standards will be required at the time of development. Given the WRA restrictions, constrained right-of-way improvements may be supported by the City Engineer. The applicant shall include rationale for any deviations from the 28-foot local street standard.
- Street trees: coordinate with the Park Department to install appropriate number and type of tree, as applicable:
 - Parks Contact: Mike Perkins
mperkins@westlinnoregon.gov
503-742-6046
- A Traffic Impact Analysis (TIA) is not anticipated to be required. Review CDC Chapter 85 and Section 5 of the *City of West Linn Public Works Standards*.
- Driveway standards can be found in Section 5 of the *City of West Linn Public Works Standards*.

SANITARY SEWER

Minimum Required Improvement:

- The existing 8" sanitary sewer line in 9th Street appears to have adequate capacity and is available to serve the proposed single family units. The line is approximately 3-4' below the surface of the roadway.

DOMESTIC WATER

Minimum Required Improvement:

- There is an existing 6" cast iron water line. The Water Master Plan identifies this line needs to be



CITY OF
**West
Linn**

Pre-app Comments

**Project Number: PA-19-14
Single family dwellings
North of 1040 9th Street**

Engineering Contact:

Amy Pepper, PE
apepper@westlinnoregon.gov
Telephone: (503) 722-3437

upgraded to an 8" ductile iron pipe. The construction of single family homes does not trigger the applicant to upsize this line to serve the development unless installation of a new hydrant necessitates upsizing of the line.

- Fire hydrants in the vicinity of the project exceed the desired 400 foot spacing standard for residential zones. As such, the applicant may be required to install a new hydrant along 9th Street. Coordination with Tualatin Valley Fire and Rescue is needed.

SURFACE WATER (STORM SEWER)

Minimum Required Improvement:

- Onsite run-off generated from new impervious areas of greater than 500 square feet must be captured, treated, and disposed of with the *Portland Stormwater Management Manual*, the Uniform Plumbing Code, and *City of West Linn Public Works Standards*.
- Stormwater facilities shall be privately owned and maintained.

OTHER

- The proposed development will disturb less than 1 acre, therefore a West Linn Erosion Control Permit Application, as outlined in Section 2.0065 of the *City of West Linn Public Works Standards*, will be required prior to the commencement of construction.
- The applicant shall pay all applicable System Development Charges (SDCs).

City of West Linn
PRE-APPLICATION CONFERENCE
MEETING SUMMARY NOTES
June 20, 2019

SUBJECT: Proposed Water Resource Area (WRA) Permit, Flood Management Area (FMA) Permit, Willamette River Greenway (WRG) Permit (including Habitat Conservation Area (HCA)) and Possible Public Utility Easement Vacation for development of two to three homes on three existing lots of record south of 0 9th Street (Adjacent to 1220 9 Street).

FILE: PA-19-14

ATTENDEES: Applicant: Roy Marvin, Zach Pelz (AKS)
Staff: Amy Pepper, Development Engineer; Jennifer Arnold, Associate Planner
Others: Gray Smith, Kathie Halicki (WNA), Tony Sanseri, Liz Sanseri

The following is a summary of the meeting discussion provided to you from staff meeting notes. Additional information may be provided to address any "follow-up" items identified during the meeting. These comments are PRELIMINARY in nature. Please contact the Planning Department with any questions regarding approval criteria, submittal requirements, or any other planning-related items. Please note disclaimer statement below.

Site Information

Tax Not No.: Tax lot 800 of Assessor's Map 31E2AC
Site Area: 163,924 square feet
Zoning: R-10 (Single-family residential, 10,000 sq. ft. minimum lot size) Environmental Overlays: FMA, HCA and WRA

Project Details: The applicant proposes to build two to three homes on three existing lots of record: lots A, B and C; Block 20 of the Willamette and Tualatin Tracts subdivision plat. The boundary between lots A and C have been modified by a LLA. Parcel A is now referred to as Parcel 1 and Parcel B is now referenced at Parcel 2, leaving Parcel B the same. The applicant vacated the public right-of-way on the north and west side property lines. A requirement of this vacation was to place a public utility easement over the entire vacated right-of-way for each vacated section. The applicant has proposed to vacate half of the public utility easement in an effort to move the buildable envelope further away from the protected wetland and habitat conservation area.

Discussion: The property is fully encompassed by the 100-year floodplain. Homes will have to be built so that all structural elements of the first habitable floor are one foot above the flood elevation. A Flood Management Area (FMA) permit is required.

A wetland delineation was done by AKS Engineering and Forestry LLC dated March 29, 2017. A Department of State Lands (DSL) jurisdictional determination is required. The WRA setback extends 65 feet south of the wetland per CDC Chapter 32. A WRA permit is required. The homes will be constructed outside of the delineated wetlands.

Per the Metro Habitat Conservation Area (HCA) map, the entire property is in a "Moderate" HCA. HCAs are regulated under CDC Chapter 28: Willamette and Tualatin River Protection (WRG). A WRG permit is required.

Both the WRA and WRG chapters have hardship provisions that accommodate the construction of single family homes on lots of record (including those modified by lot line adjustment). CDC 28.110(E) allows "construction of 5,000 square feet of total impervious surface for sites in HCAs". Although CDC

32.110(B) allows a maximum disturbed area (MDA) of (1) Five thousand square feet of the WRA; or (2) Thirty percent of the total area of the WRA, the lesser allowance of Chapter 28.110(E) means that the MDA is limited to 5,000 square feet. The use of a street in the Third Avenue ROW would not count against the 5,000 square foot allowance (per 32.110(E) (3)). All structures including cantilevered decks will count against the 5,000 square feet. To move closer to the wetland than 15 feet, two options are available: a Class II Variance (CDC Chapter 75) or making use of CDC 32.070/32.080 "ALTERNATE REVIEW PROCESS" that applicants can use when there is reason to believe that the width of the WRA setback is larger than necessary to protect the functions and values of the water resource at a particular site. Similarly, the Metro HCA Map Verification process can be used to modify the HCA boundary per 28.070. A wetlands professional is required to support those WRA/HCA adjustments.

Engineering Division Comments: The applicant should contact Amy Pepper of the Engineering Department to determine required improvements at apepper@westlinnoregon.gov. Street improvements per CDC Chapter 96 will be required for 9th Street. Contact Jason Arn of TVFR at jason.arn@tvfr.com for comments; particularly whether a new hydrant is required.

Process: For the WRA permit, address the submittal requirements of CDC Chapter 32.050 and respond to the approval criteria of 32.060 which is the standard process plus the hardship provisions of 32.110. The fee is \$2,600 plus a \$250 inspection fee. A 1:1 vegetative mitigation plan is required for any development within 65 feet of the wetland boundary per 32.090 and 32.100. Contact DSL for any additional permits.

For the FMA permit, address the submittal requirements of CDC Chapter 27.050 (including a topographic survey of the property) (scaled site plan with lineal scale showing house and driveway footprint) and respond to the criteria of 27.060 and 27.080. The deposit fee is \$1,050. Pre and post construction elevation certificates and residential crawl space flow through designs and calculations must be prepared and stamped by an Oregon licensed engineer. Any net fill proposed within the floodplain will require a HEC RAS "no rise" certificate stamped by a certified engineer. You should contact the Federal Emergency Management Agency (FEMA) regarding any additional permits.

For the WRG permit, address the submittal requirements of CDC Chapter 28.090 (28.120-28.150) and the approval criteria of 28.110. A 1:1 on-site vegetative mitigation plan is required for any development within the HCA per 32.090 and 32.100. The deposit fee is \$1,700.

N/A is not an acceptable response to the approval criteria. The submittal requirements may be waived, but the applicant must first identify the specific submittal requirement and request, in letter form, that it be waived by the Planning Manager and must identify the specific grounds for that waiver. Once the application and deposit/fee are submitted, the City has 30 days to determine if the application is complete or not. If the application is not complete, the applicant has 180 days to make it complete or provide written notice to staff that no other information will be provided. Once the submittal is declared complete, staff will send out public notice of the anticipated Planning Manager's decision date at least 20 days before it occurs. A sign posted on the site. The Planning Manager's decision may be appealed to City Council by the applicant or anyone with standing.

The street vacation is a separate process per ORS 271. The fee is \$1,500 and may require a hearing before City Council. Ideally, the vacation would be undertaken prior to the other permits; but may be done concurrently.

Pre-application notes are void after 18 months. After 18 months with no application approved or in process, a new pre-application conference is required.

Typical land use applications can take 6-10 months from beginning to end.

DISCLAIMER: This summary discussion covers issues identified to date. It does not imply that these are the only issues. The burden of proof is on the applicant to demonstrate that all approval criteria have been met. These notes do not constitute an endorsement of the proposed application **or provide any assurance of potential outcomes**. Staff responses are based on limited material presented at this pre-application meeting. New issues, requirements, etc. could emerge as the application is developed. **A new pre-application conference would have to be scheduled one that period lapses and these notes would no longer be valid. Any changes to the CDC standards may require a different design or submittal.**

Exhibit I: Preliminary Stormwater Report

9th Street
West Linn, Oregon
Preliminary Stormwater Report
(Tax Lot 800)

Date: December 2020

Client: Malibar Group, LLC

Engineering Contact: Jonathon Morse, PE

Engineering Firm: AKS Engineering & Forestry, LLC

AKS Job No.: 5926



12965 SW Herman Road, Suite 100
Tualatin, OR 97062
P: (503) 563-6151
www.aks-eng.com

Engineer's Certification

As the design engineer for the above-mentioned development project, I hereby certify that the storm water management facilities have been designed in accordance with the City of West Linn *Public Works Design Standards* (2010) and the City of Portland *Stormwater Management Manual* (2016). The technical information and data contained in this report was prepared under the direction and supervision of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.



RENEWAL DATE: 12/31/20

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APPENDIX 4-1 STORMWATER FACILITY DESIGN
APPENDIX 5-1 SOIL INFORMATION FROM THE NRCS SOIL SURVEY OF CLACKAMAS COUNTY, OREGON
APPENDIX 6-1 GEOTECHNICAL ENGINEERING REPORT FROM GEOPACIFIC ENGINEERING, INC.
APPENDIX 7-1 OPERATIONS AND MAINTENANCE

Preliminary Stormwater Report

9TH STREET WEST LINN, OREGON

1.0 Purpose Statement

The purpose of this report is to:

- Show compliance with all City of West Linn stormwater drainage requirements and design criteria.
- Provide site data, calculations, maps, drawings, cross-sections, analysis, and other information needed to support and verify the findings and conclusions of the drainage report.
- Prepare a conceptual stormwater drainage plan to mitigate the stormwater drainage impacts of the development.
- Provide evidence (plans) that the planned drainage system and facilities will meet required design criteria, will fit on the site, and will, to the greatest extent possible, avoid or minimize destruction or loss of natural resources.
- Provide design criteria needed to prepare construction plans and specifications.

2.0 Project Overview

2.1 Location

The subject site is located on Tax Lot 800 of Clackamas County Assessor's Map 3 1E 2AC, ±500 feet north of the intersection of Volpp Street and 9th Street and ±400 feet south of the intersection of 9th Street and 4th Avenue. A private driveway will also be constructed within an existing access easement on adjacent Tax Lot 300 to the north.

2.2 Soil Classification

The Natural Resources Conservation Service (NRCS) Soil Survey of Clackamas County, Oregon (Appendix 5-1) classifies the on-site soils as Wapato silty clay loam, 0 to 3 percent slopes (HSG C/D) and Cloquato silt loam, 0 to 3 percent slopes (HSG B).

On November 13th, 2019 the project geotechnical engineer conducted a site evaluation (Appendix 6-1). On-site soil infiltration testing was not performed due to groundwater seepage observed at various depths in all the test pits. It is the opinion of the geotechnical contractor, GeoPacific Engineering, Inc., that on-site stormwater infiltration is not feasible at this site.

2.3 Existing Site

The subject site is currently undeveloped.

2.4 Project Overview

Planned improvements include the construction of a new single-family residence with associated on-site improvements (e.g., paved driveway, utilities, etc.), the construction of 2 private stormwater management facilities, and a paved private access lane constructed from 9th street to the new home.

2.5 Design Criteria

New impervious areas created with this project will be greater than 1,000 square feet. Per the City of West Linn *Public Works Design Standards* (2010) Section 2, Storm Drain Requirements, stormwater quality and detention will be required as follows:

- Stormwater discharge from the subject site for the 2-, 10-, and 25-year storm events shall not exceed that of the pre-developed condition.
- Removal of 70 percent of total suspended solids (TSS) from 90 percent of the average annual runoff is required per the City of Portland *Stormwater Management Manual* (2016) Chapter 1, Requirements and Policies, Stormwater Management and Conveyance Requirements.

2.6 Impervious Area Calculations

This project will add approximately 6,328 square feet of new impervious area, including 2,757 square feet of impervious roof area, 541 square feet of impervious driveway and patio/deck area, and 3,030 square feet of impervious surface for the paved access lane (see Appendix 2-1).

Table 2-1: Impervious Area Table	
Post-Developed Condition	Area (square feet)
New Roof Area (Home and Garage)	2,757
New Driveway, Patio, Deck	541
New Paved Access Lane	3,030
Total New	6,328

3.0 Existing Drainage Characteristics

3.1 On-site Drainage Characteristics

Based on the site topographic survey, onsite slopes range between 2 and 20 percent, with the site generally draining south towards an existing wetland.

3.2 Uphill Drainage Characteristics

There are no observed drainage channels entering the site from the uphill drainage area.

The area uphill of the subject site consists of single-family residential homes on large developed lots with partially landscaped yards.

3.3 Downhill Drainage Characteristics

The subject site drains down slope into the existing wetland to the south. Wetland drainage is conveyed across 9th street via an existing 18-inch culvert.

4.0 Proposed Drainage Conveyance Systems

4.1 On-site Conveyance

Stormwater runoff generated by the newly created impervious areas will be managed on site by a private, lined, and vegetated stormwater planter and a private, lined, and vegetated stormwater swale.

Stormwater runoff from the home's impervious roof area will be captured by the gutter system and routed via closed-conduit storm pipe to the stormwater planter. Stormwater runoff generated by other hardscape areas will be captured by trench drains and piped to the same stormwater planter for treatment and detention.

Stormwater runoff from the private access lane will be captured and treated by a new vegetated swale and routed south to the existing wetland.

The City of Portland's Simplified Approach was used to determine the required size of the stormwater facilities (See Appendix 3-1).

4.2 Uphill Conveyance

The site topographic survey indicates there are no defined drainage channels entering the site and there does not appear to be any significant sheet, shallow concentrated, or channelized flow entering the subject site.

4.3 Downstream Conveyance

Stormwater runoff generated from storm events will be conveyed through the private, lined and vegetated planter or swale and discharged to the adjacent ground via an outlet pipe where it will sheet flow and disperse into the adjacent wetland. Existing wetland flows are conveyed across 9th street via an existing 18" culvert.

5.0 Surface Water Quality and Detention Facilities

5.1 Private Stormwater Management Facility

Stormwater management will consist of a private, lined and vegetated stormwater planter, as well as a private, lined, and vegetated stormwater swale system located on-site. The City of Portland Simplified Approach was used to determine the approximate required size of the planned stormwater facilities. See Appendix 3-1 for the completed Simplified Approach Form and Appendix 4-1 for preliminary stormwater facility design.

6.0 Operations and Maintenance

Per section 4.070 (3) of the West Linn Municipal Code;

Any person responsible for non-public storm treatment and detention facilities such as catch basins, manholes, filter systems, rain gardens, etc., shall enter into a maintenance agreement with the City, and maintain such facilities so as to prevent flooding or damage to other property not possessed or controlled by the person responsible and to prevent injury to any person or property not owned or controlled by the person responsible.

(a) The maintenance agreement shall be recorded in the deed records of Clackamas County, Oregon.

A maintenance agreement outlining the responsibility of the property owner has been prepared and is included in this report (Appendix 7-1).

APPENDIX 1-1
VICINITY MAP



VICINITY MAP

SCALE 1" = 100'

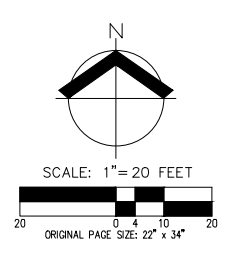
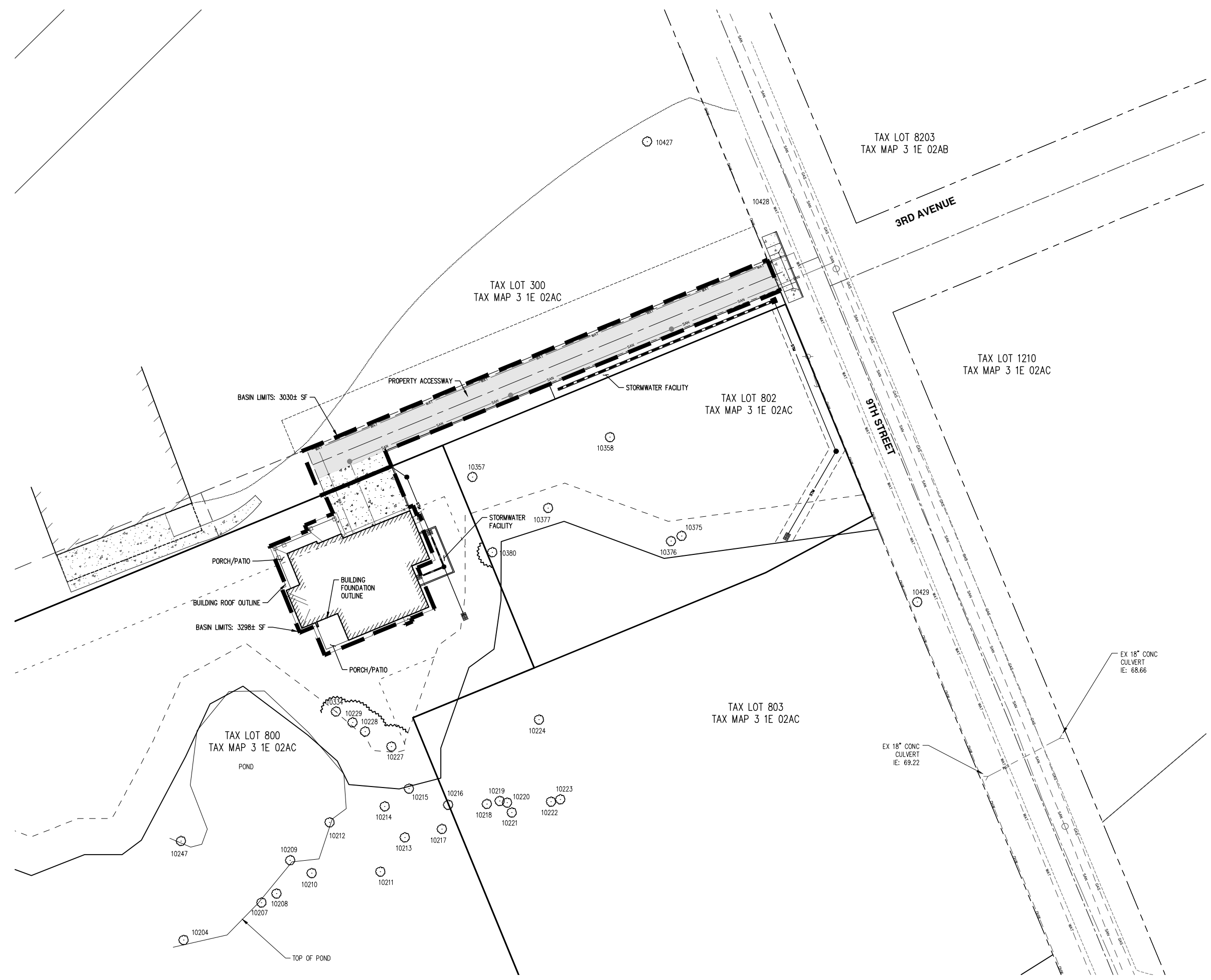
APPENDIX 2-1
BASIN MAP

**BASIN MAP
 9TH STREET
 TAX LOT 800 DEVELOPMENT
 WEST LINN, OREGON (TAX MAP 3 1E 2AC)**

**PRELIMINARY
 NOT FOR
 CONSTRUCTION**

JOB NUMBER:	5926
DATE:	12/16/2020
DESIGNED BY:	APC, AJR, & RLB
DRAWN BY:	APC, AJR, & RLB
CHECKED BY:	JMM

01



APPENDIX 3-1

PORTLAND SIMPLIFIED APPROACH



SIMPLIFIED APPROACH FORM

PROJECT INFORMATION WORKSHEET

PROJECT INFORMATION

Permit Number: _____ Phone: _____

Name: _____ Email: _____

Site Address/R Number(s): _____

Development Description: _____

Total New or Redeveloped Impervious Area: _____

Signature: _____ Date: _____

SITE CHARACTERISTICS

S.1. Do slopes exceed 20% anywhere within the project area? Yes No

S.2. Are there springs, seeps, or a high groundwater table anywhere within the project area? Yes No

If answer to S.1 or S.2 is yes, than lined or partial infiltration facility with an overflow to an approvable discharge point is required.

S.3. Is there a required geotechnical report? Yes No

S.4. Required infiltration testing complete? Yes No

If using prior test results at same site, provide Land Use case/permit number: _____

Required Infiltration Testing

Date of Test: _____

Depth of Excavation (ft): _____

	TEST 1	TEST 2	TEST 3
A. Time (of day)			
B. Duration (hours) (1 hour minimum)			
C. Initial Water Depth (inches)			
D. Final Water Depth (inches)			
E. Infiltration Rate* (inches/hour)			

*Infiltration Rate = Initial Depth (in) – Final Depth (in) / Duration of Test (hours)

SIMPLIFIED INFILTRATION TESTING PROCEDURE

The Simplified Approach provides a method that a nonprofessional can use for design of simple stormwater systems on small projects. A geotechnical report or different infiltration test may be required at the discretion of the assigned BES plan reviewer. See Section 2.3.6 for infiltration testing requirements.

Test instructions:

1. Conduct test in and/or near location of proposed infiltration facility.
2. Excavate a test hole a minimum of 16" in depth, or to the bottom of the proposed infiltration system, whichever is greater. If a hard pan layer is encountered that prevents further excavation, or if noticeable moisture/water is encountered in the soil, stop and measure this depth and note it on the SIM form. If further excavation is not possible, conduct the test at this depth.
3. Fill the hole with water to a depth of at least 6" from the bottom of the hole. Record the amount of time required for the water to draw down to the bottom of the test pit. Check the water level at regular intervals to ensure accurate data collection.
4. Repeat the process two more times for a total of 3 rounds of testing. Conduct the tests in succession to accurately portray the soil's ability to infiltrate at different levels of saturation. The 3rd test provides the best measure of the infiltration rate at saturated conditions.
5. Record infiltration test data in the table at left and certify the results.

Test pit location (site plan sketch)

Key information to include: 1) Site or parcel, 2) Adjacent road(s) or cross street(s), 3) Test pit location with dimensions

See Attached Geotechnical Report



Certification of Infiltration Results (required)

I acknowledge the accuracy of these infiltration testing results.

Signature of tester (required) _____

Print Name _____

Date _____

SIMPLIFIED APPROACH FORM

PROPOSED STORMWATER FACILITIES

Proposed Stormwater Facilities

Please note: Each individual taxlot is required to manage the stormwater runoff it generates from new construction or redevelopment on the same lot to the maximum extent feasible. The following table includes accepted simplified stormwater management facilities as described in Chapter 2 of the 2016 Stormwater Management Manual. Copies of the manual are available online at www.portlandoregon.gov/bes/swmm.

	STORMWATER FACILITY TYPE	TOTAL AREA MANAGED BY FACILITY TYPE (SF)	FACILITY SIZING FORMULA	FACILITY SIZE (SF)
IMPERVIOUS AREA REDUCTION TECHNIQUE	Tree Credit		Complete Tree Credit Worksheet and attach	n/a
	Ecoroof		1:1 ratio only	n/a
	Pervious Pavement		1:1 ratio only	n/a
SURFACE INFILTRATION OR FILTRATION	Downspout Extension		Area x 0.10	
	Rain Garden		Area x 0.10	
	Basin		Area x 0.09	
	Swale		Area x 0.09	
	Planter		Area x 0.06	
	Filter Strip (paved areas only)		Area x 0.20	
SUBSURFACE DISPOSAL UIC	Soakage Trench		Westside soakage trench no longer an option under the simplified approach. Only a single soakage trench sizing possible. <i>See below for sizing information.</i>	
	Drywell		Enter drywell type and quantity for facility size. <i>See below for sizing information.</i>	
TOTAL IMPERVIOUS AREA MANAGED			Total Impervious Area Managed must match Total New or Redeveloped Impervious Area. Site plans must identify stormwater facility location, drainage areas, overflows and escape routes.	

Subsurface facilities can receive overflow from impervious area reduction techniques or surface infiltration/filtration facilities or can be used independently to manage runoff. If stormwater is generated from anything other than roof area, stormwater facilities are subject to UIC requirements (see Chapter 1 for UIC requirements).

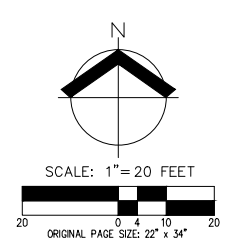
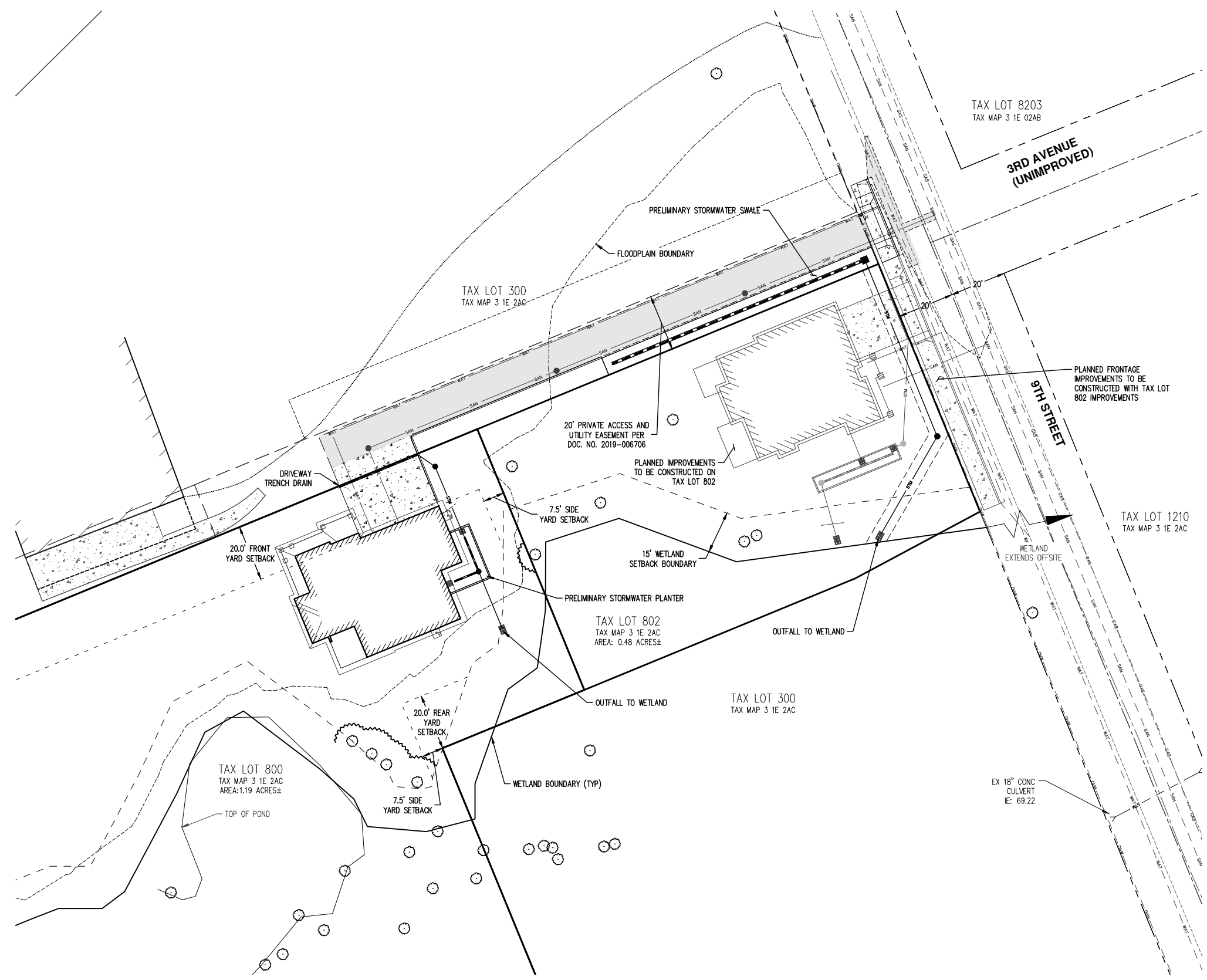
Sizing Charts:

DRYWELL TYPE	AREA MANAGED
2'x2' mini drywell	Up to 500 sf
28"x5'	Up to 1,000 sf
4'x5'	Up to 3,000 sf
4'x10'	Up to 6,000 sf

SOAKAGE TRENCH	LENGTH PER 1,000 SF OF IA	WIDTH	DEPTH	SIZING
Soakage Trench	20'	2.5'	1.5'	AREA x 0.05

APPENDIX 4-1

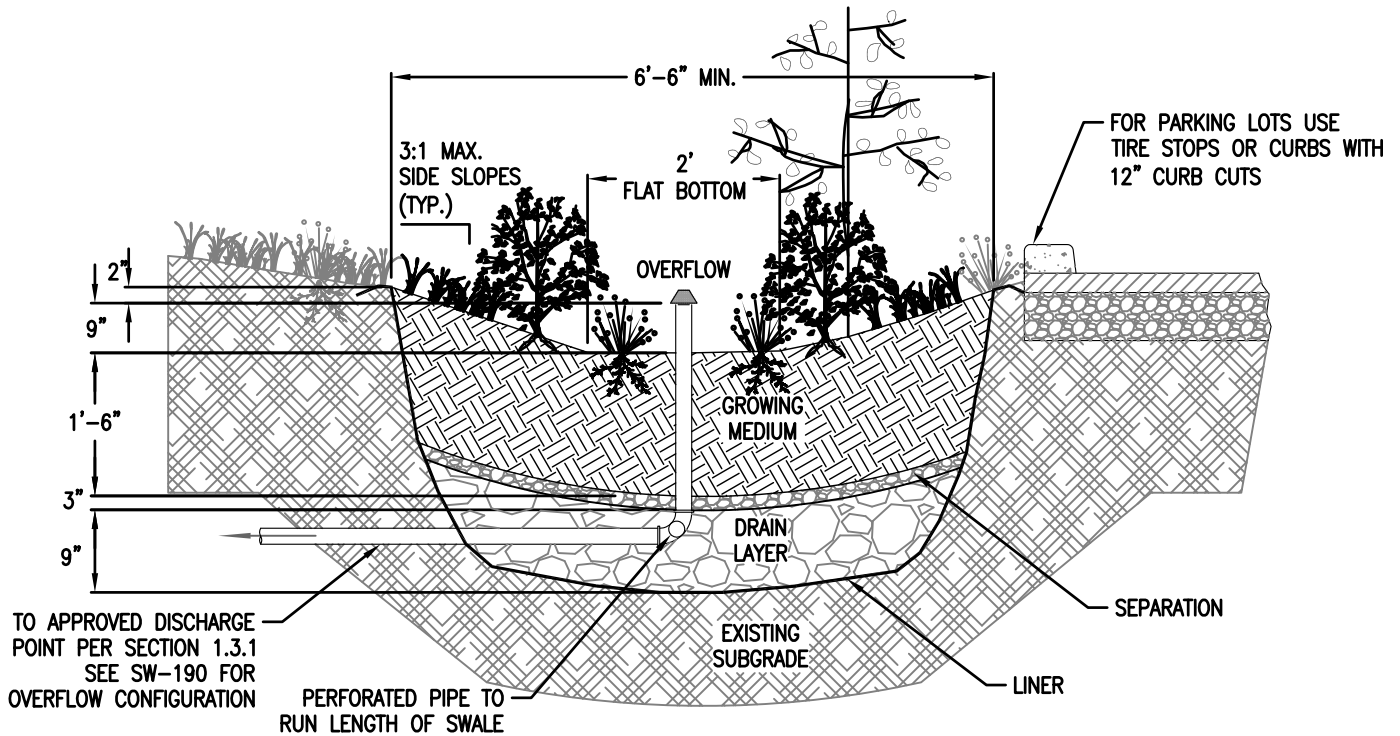
**PRELIMINARY STORMWATER
FACILITY DESIGN**



PRELIMINARY STORMWATER PLAN
9TH STREET
TAX LOT 800 DEVELOPMENT
WEST LINN, OREGON (TAX MAP 3 1E 2AC)

**PRELIMINARY
 NOT FOR
 CONSTRUCTION**

JOB NUMBER:	5926
DATE:	12/16/2020
DESIGNED BY:	APC, AJR, & RLB
DRAWN BY:	APC, AJR, & RLB
CHECKED BY:	JMM



1. Dimensions:
Width of swale: 6'-6" minimum
Depth of swale (from top of growing medium to overflow elevation): 9".
Longitudinal slope of swale: 6.0% or less.
Flat bottom width: 2' recommended.
Side slopes of swale: 3:1 maximum.
2. Overflow: Swales must connect to approved discharge point according to SWMM Section 1.3.1 and detail SW-190.
Inlet elevation must allow for 2" of freeboard, minimum.
Protect from debris and sediment with strainer or grate.
3. Piping must be cast iron, ABS or PVC. 3" pipe required for facilities draining up to 1500 s.f., otherwise 4" minimum pipe. Uniform Plumbing Code also applies.
4. Drain Layer:
3/4" - 1 1/2" washed round rock. Depth: 9".
Separation between drain rock and growing medium:
Pea gravel lens, 2 to 3 inches deep.
5. Growing Medium:
18" minimum depth. Use sand/loam/compost 3-way mix, or approved mix that will support healthy plants.
24" minimum depth is required if the lined facility is also meeting BDS landscape requirements.
6. Vegetation: Follow landscape plans otherwise refer to plant list in SWMM section 2.4.1. Minimum container size is #1. # of plantings per 100sf of facility area:
Zone A (wet): 80 herbaceous plants OR 72 herbaceous plants and 4 small shrubs.
Zone B (moderate to dry): 7 large or small shrubs AND 70 groundcover plants.
The delineation between Zone A and B must be either at the outlet elevation or the check dam elevation, whichever is lowest.
If project area is over 200sf consider adding a tree.
7. Check Dams: Must be placed every 10' where slope exceeds 4% and be equal to the width of the planter.
8. Waterproof Liner: 30 mil EPDM, HDPE or approved equivalent.
9. Splash Block: Install 4-6" washed river rock or splash pad for erosion control at inlets and downspout.
10. Inspections: Call BDS IVR Inspection Line, (503) 823-7000, request 487. 3 inspections required.

- DRAWING NOT TO SCALE -

STORMWATER MANAGEMENT TYPICAL DETAILS

- Simplified Design Approach -
Swale - lined



Bureau of Environmental Services



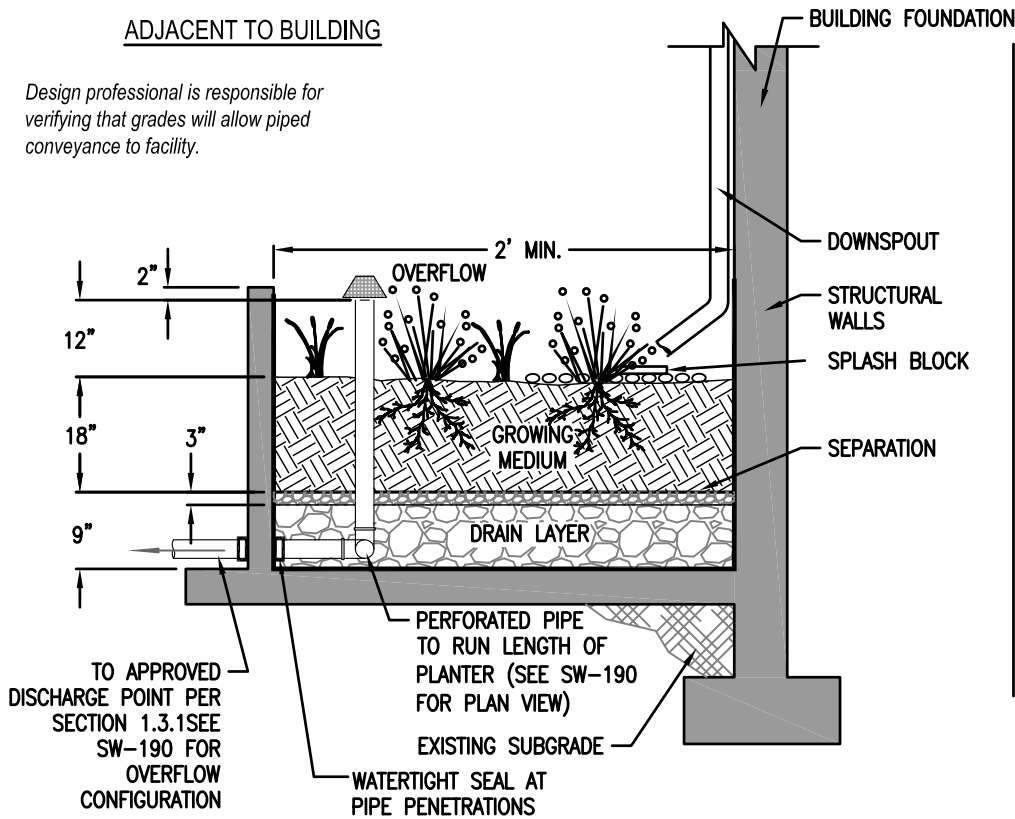
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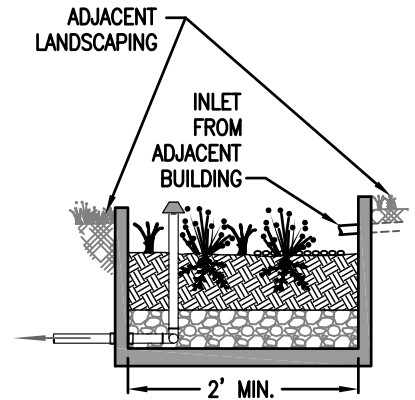
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ADJACENT TO BUILDING

Design professional is responsible for verifying that grades will allow piped conveyance to facility.



FREESTANDING PLANTER



1. Dimensions:
Width of planter: 24" minimum.
Depth of planter (from top of growing medium to overflow elevation): 12".
Longitudinal slope of planter: 0.5% or less.
2. Setbacks:
Planters must be less than 30" in height above finish grade if within 5-feet of property line.
3. Planter Walls:
Material must be monolithically poured concrete. Walls must be included on foundation plans.
4. Waterproofing:
Monolithically poured planter, without joints is required. Check state structural requirements for foundations.
5. Piping must be cast iron, ABS or PVC. 3" pipe required for facilities draining up to 1500 s.f., otherwise 4" minimum pipe. Uniform Plumbing Code also applies.
6. Drain Layer:
3/4" - 1 1/2" washed round rock. Depth: 9".
Separation between drain rock and growing medium:
Pea gravel lens, 2 to 3 inches deep.
7. Overflow:
Planters must connect to approved discharge point according to section 1.3.1 and detail SW-190.
Inlet elevation must allow for 2" of freeboard, minimum.
Protect from debris and sediment with strainer or grate.
8. Growing Medium:
18" minimum depth. Use sand/loam/compost 3-way mix, or approved mix that will support healthy plants.
24" minimum depth is required if the lined facility is also meeting BDS landscape requirements.
9. Vegetation: Refer to plant list in SWMM section 2.4.1. Minimum container size is #1. # of plantings per 100sf of facility area:
80 herbaceous plants OR;
72 herbaceous plants and 4 small shrubs.
10. Splash Block: Install 4-6" washed river rock or splash pad for erosion control at inlets and downspout.
11. Inspections: Call BDS IVR Inspection Line, (503) 823-7000, request 487. 3 inspections required.

- DRAWING NOT TO SCALE -

STORMWATER MANAGEMENT TYPICAL DETAILS

- Simplified Design Approach -
Planter - lined



Bureau of Environmental Services



NUMBER

SW-140
7-1-16

APPENDIX 5-1

**SOIL INFORMATION FROM THE
NRCS SOIL SURVEY OF
CLACKAMAS COUNTY, OREGON**

Custom Soil Resource Report for Clackamas County Area, Oregon

Tax Lot 800



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

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scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

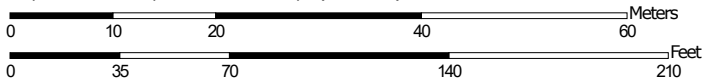
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map




Map Scale: 1:735 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84


MAP LEGEND


Area of Interest (AOI)

 Area of Interest (AOI)




















Soils







 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features


Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Clackamas County Area, Oregon
 Survey Area Data: Version 16, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 13, 2019—Jul 25, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
19	Cloquato silt loam	0.9	74.5%
84	Wapato silty clay loam	0.3	25.5%
Totals for Area of Interest		1.2	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

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onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Clackamas County Area, Oregon

19—Cloquato silt loam

Map Unit Setting

National map unit symbol: 223k
Elevation: 50 to 1,200 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Cloquato and similar soils: 85 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cloquato

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 15 inches: silt loam
H2 - 15 to 42 inches: silt loam
H3 - 42 to 60 inches: sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: None
Available water capacity: High (about 11.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Forage suitability group: Well drained < 15% Slopes (G002XY002OR)
Other vegetative classification: Well drained < 15% Slopes (G002XY002OR)
Hydric soil rating: No

Minor Components

Wapato

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Tread

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Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Aquolls

Percent of map unit: 1 percent
Landform: Flood plains
Hydric soil rating: Yes

84—Wapato silty clay loam

Map Unit Setting

National map unit symbol: 227j
Elevation: 100 to 1,500 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Wapato and similar soils: 85 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wapato

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 18 inches: silty clay loam
H2 - 18 to 45 inches: silty clay loam
H3 - 45 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: FrequentNone
Frequency of ponding: Frequent
Available water capacity: High (about 10.3 inches)

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Interpretive groups

Land capability classification (irrigated): 3w

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: C/D

Forage suitability group: Poorly Drained (G002XY006OR)

Other vegetative classification: Poorly Drained (G002XY006OR)

Hydric soil rating: Yes

Minor Components

Cove

Percent of map unit: 6 percent

Landform: Flood plains

Landform position (three-dimensional): Dip

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: Yes

Humaquepts

Percent of map unit: 4 percent

Landform: Flood plains

Hydric soil rating: Yes

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APPENDIX 6-1

**GEOTECHNICAL ENGINEERING
REPORT FROM GEOPACIFIC
ENGINEERING, INC.**



Geotechnical Engineering Report

9th Street
Clackamas County Tax Map 3 1E 02AC Lot 800 and 802
West Linn, Oregon

GeoPacific Engineering, Inc. Project No. 19-5350
November 26, 2019



Real-World Geotechnical Solutions
Investigation • Design • Construction Support

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- 2 Lidar Based Vicinity Map with Mapped Landslides
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Investigation • Design • Construction Support

November 26, 2019
Project No. 19-5350

Mr. Roy Marvin
Malibar Group Retirement Plan FBO
615 W Territorial Road
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Cellular Phone: 541-621-2109

CC: Zach Pelz, AKS Engineering & Forestry, LLC.
Email: pelzz@aks-eng.com

SUBJECT: GEOTECHNICAL ENGINEERING REPORT
9TH STREET
CLACKAMAS COUNTY TAX LOTS 3 1E 02AC 800 & 802
WEST LINN, OREGON 97068

PROJECT INFORMATION

This report presents the results of a geotechnical engineering study conducted by GeoPacific Engineering, Inc. (GeoPacific) for the above-referenced project. The purpose of our investigation was to evaluate subsurface conditions at the site, and to provide geotechnical recommendations for site development. This geotechnical study was performed in accordance with GeoPacific Proposal No. P-7124, dated October 8, 2019, and your subsequent authorization of our proposal and *General Conditions for Geotechnical Services*.

SITE AND PROJECT DESCRIPTION

The subject property is composed of two parcels, identified as 31E02AC 0800 and 0802 and located on the southwest side of 9th Street in the City of West Linn, Clackamas County, Oregon. The combined parcels are approximately 1.80 acres in size and slope gently to the east at grades of less than 10 percent, in the direction of the Willamette River. The site is bordered by 9th Street to the northeast, by a wooded area and baseball fields to the southwest, by grass fields of a designated wetland to the south east, and by residential properties to the northwest. Ground elevations range from 70 to 80 feet above mean sea level. The site is currently unimproved, however; several flattened areas are present in the western portion of the site, adjacent to a neighboring stable. There is also an existing pond near the center of the western parcel. Vegetation consists of numerous dense trees to the southeast and grass lawns to the northwest.

It is our understanding that proposed development will include construction of two building lots for single family homes, construction of a private drive, improvements to the south bound lane of 9th Street, and associated underground utilities. A grading plan was not provided for our review; however, we anticipate cuts and fill will be less than 4 feet.

REGIONAL GEOLOGIC SETTING

The subject site lies within the Willamette Valley/Puget Sound lowland, a broad structural depression situated between the Coast Range on the west and the Cascade Range on the east. A series of discontinuous faults subdivide the Willamette Valley into a mosaic of fault-bounded, structural blocks (Yeats et al., 1996). Uplifted structural blocks form bedrock highlands, while down-warped structural blocks form sedimentary basins.

The southern portions of the site are underlain by alluvium, consisting of silt and clay with trace sand. The soils were deposited in a flood plain of the modern Willamette River, near the mouth of a tributary, the Tualatin River (Gannet and Caldwell, 1998, Beeson et al., 1989).

The alluvium and northern portion of the site are underlain by the Quaternary age (last 2.6 million years) Willamette Formation, a catastrophic flood deposit associated with repeated glacial outburst flooding of the Willamette Valley (Yeats et al., 1996). The last of these outburst floods occurred about 10,000 years ago. These deposits typically consist of horizontally layered, micaceous, silt to coarse sand forming poorly-defined to distinct beds less than 3 feet thick.

The Willamette Formation is underlain by the Columbia River Basalt Formation (Madin, 1990). The Miocene aged (about 14.5 to 16.5 million years ago) Columbia River Basalts are a thick sequence of lava flows which form the crystalline basement of the Tualatin Valley. The basalts are composed of dense, finely crystalline rock that is commonly fractured along blocky and columnar vertical joints. Individual basalt flow units typically range from 25 to 125 feet thick and interflow zones are typically vesicular, scoriaceous, brecciated, and sometimes include sedimentary rocks.

REGIONAL SEISMIC SETTING

At least three major fault zones capable of generating damaging earthquakes are thought to exist in the vicinity of the subject site. These include the Cascadia Subduction Zone, the Portland Hills Fault Zone, and the Bolton Fault Zone.

Cascadia Subduction Zone

The Cascadia Subduction Zone is a 680-mile-long zone of active tectonic convergence where oceanic crust of the Juan de Fuca Plate is subducting beneath the North American continent at a rate of 4 cm per year (Goldfinger et al., 1996). A growing body of geologic evidence suggests that prehistoric subduction zone earthquakes have occurred (Atwater, 1992; Carver, 1992; Peterson et al., 1993;

Geomatrix Consultants, 1995). This evidence includes: (1) buried tidal marshes recording episodic, sudden subsidence along the coast of northern California, Oregon, and Washington, (2) burial of subsided tidal marshes by tsunami wave deposits, (3) paleoliquefaction features, and (4) geodetic uplift patterns on the Oregon coast. Radiocarbon dates on buried tidal marshes indicate a recurrence interval for major subduction zone earthquakes of 250 to 650 years with the last event occurring 300 years ago (Atwater, 1992; Carver, 1992; Peterson et al., 1993; Geomatrix Consultants, 1995). The inferred seismogenic portion of the plate interface lies roughly along the Oregon coast at depths of between 20 and 40 miles.

Portland Hills Fault Zone

The Portland Hills Fault Zone is a series of NW-trending faults that include the central Portland Hills Fault, the western Oatfield Fault, and the eastern East Bank Fault. These faults occur in a northwest-trending zone that varies in width between 3.5 and 5.0 miles. The combined three faults vertically displace the Columbia River Basalt by 1,130 feet and appear to control thickness changes in late Pleistocene (approx. 780,000 years) sediment (Madin, 1990).

The Portland Hills Fault occurs along the Willamette River at the base of the Portland Hills and is about 5 miles northeast of the site. The Oatfield Fault occurs along the western side of the Portland Hills and is about 4 miles east of the site. The Oatfield Fault is considered to be potentially seismogenic (Wong, et al., 2000). Madin and Mabey (1993) indicate the Portland Hills Fault Zone has experienced Late Quaternary (last 780,000 years) fault movement; however, movement has not been detected in the last 20,000 years. The East Bank Fault occurs along the eastern margin of the Willamette River, and is located approximately 12 miles north of the site. The accuracy of the fault mapping is stated to be within 500 meters (Wong, et al., 2000).

No historical seismicity is correlated with the mapped portion of the Portland Hills Fault Zone, but in 1991 a M3.5 earthquake occurred on a NW-trending shear plane located 1.3 miles east of the fault (Yelin, 1992). Although there is no definitive evidence of recent activity, the Portland Hills Fault Zone is assumed to be potentially active (Geomatrix Consultants, 1995).

Bolton Fault Zone

The Bolton Fault Zone is a NW-trending fault that lies about 2 miles northeast of the subject site (DOGAMI: HazVu, 2019). The USGS: Earthquake Hazards Program and geologic mapping of the area (Beeson et al, 1989) indicate that a large northeast-facing cliff of Miocene Columbia River Basalt is caused by offset of approximately 200 meters in the fault, which is likely a southwest-dipping reverse fault. This cliff face roughly parallels the existing Highway 43 in the City of West Linn. Unambiguous evidence of Quaternary (last 2.6 million years) displacement has not been presented to date, but the fault is considered potentially active due to the bedrock escarpment along the alignment of the fault (Unruh et al., 1994).

FIELD EXPLORATION AND SUBSURFACE CONDITIONS

On November 13, 2019, GeoPacific explored subsurface conditions at the site by excavating four exploratory test pits to depths of 9 to 11 feet with an extendable back-hoe, operated by Dan Fischer Excavating. The approximate test pit locations are shown on Figure 2. It should be noted that test pit locations were located in the field by pacing or taping distances from apparent property corners and other site features shown on the plans provided. As such, the locations of the explorations should be considered approximate.

A GeoPacific geologist continuously monitored the field exploration program and logged the test pit explorations. Soils observed in the explorations were classified in general accordance with the Unified Soil Classification System. Rock hardness was classified in accordance with Table 1, modified from the ODOT Rock Hardness Classification Chart. During exploration, our geologist also noted geotechnical conditions such as soil consistency, moisture and groundwater conditions. Logs of test pits are attached to this report. The following report sections are based on the exploration program and summarize subsurface conditions encountered at the site.

Table 1. Rock Hardness Classification Chart

ODOT Rock Hardness Rating	Field Criteria	Unconfined Compressive Strength	Typical Equipment Needed for Excavation
Extremely Soft (R0)	Indented by thumbnail	<100 psi	Small excavator
Very Soft (R1)	Scratched by thumbnail, crumbled by rock hammer	100-1,000 psi	Small excavator
Soft (R2)	Not scratched by thumbnail, indented by rock hammer	1,000-4,000 psi	Medium excavator (slow digging with small excavator)
Medium Hard (R3)	Scratched or fractured by rock hammer	4,000-8,000 psi	Medium to large excavator (slow to very slow digging), typically requires chipping with hydraulic hammer or mass excavation)
Hard (R4)	Scratched or fractured w/ difficulty	8,000-16,000 psi	Slow chipping with hydraulic hammer and/or blasting
Very Hard (R5)	Not scratched or fractured after many blows, hammer rebounds	>16,000 psi	Blasting

Summary test pit logs are attached. The stratigraphic contacts shown on the individual logs represent the approximate boundaries between soil types. The actual transitions may be more gradual. The soil and groundwater conditions depicted are only for the specific dates and locations reported, and therefore, are not necessarily representative of other locations and times. Soil and groundwater conditions encountered in the explorations are summarized below.

At the completion of exploration, the test pits were backfilled with the excavated spoils and tamped with the backhoe bucket. This backfill should not be expected to behave as compacted structural fill and some minor settling of the ground surface may occur.

Soils

Topsoil Horizon: Directly underlying the ground surface in all test pit explorations was a topsoil horizon consisting of dark brown, highly organic SILT (OL). The topsoil horizon was generally loose, contained fine roots throughout, and extended to depths of 6 to 12 inches.

Undocumented Fill: Beneath the topsoil layer in test pits TP-1, TP-2 and TP-4 was undocumented fill consisting of asphaltic concrete fragments and cobbles to boulders up to several feet in diameter mixed with clayey-silt soils. The undocumented fill extended to 6.5 feet below existing surface grade in test pit TP-1, 7 feet in test pit TP-2 and 3.5 feet in test pit TP-4.

Willamette Formation: Underlying undocumented fill in test pits TP-1, TP-2 and TP-4 and the topsoil horizon in test pit TP-3 were fine-grained soils belonging to the Willamette Formation. Near surface soils in test pit TP-3 were a light brown, moist, clayey SILT (ML) that was stiff to very stiff consistency. Field pocket penetrometer measurements indicate an approximate unconfined compressive strength of 3.0 to 4.5 tons/ft² in the upper four feet of test pit TP-3. At depth in test pit TP-3 and beneath the undocumented fill in test pits TP-1, TP-2 and TP-4 was soft to stiff, CLAY (CL) to SILT (ML) with trace fine-grained sand, that ranged in color from light tan with orange and gray mottling to a blue-gray. The Willamette Formation soils ranged from moist to wet and were generally soft in areas of seepage. This material extended beyond the maximum depth of our explorations, approximately 11 feet below the ground surface.

Groundwater and Soil Moisture

On November 13, 2019, groundwater seepage was encountered in all our test pit explorations. Locations and depths of seepage observed are presented below in Table 2. Soil moistures observed were generally considered to be moist to wet. Soils observed at depth, particularly in the southern test pits, TP-1 and TP-4, display a blue-gray color typically observed in anaerobic environments and areas where moisture is present throughout the year.

According to the *Estimated Depth to Groundwater in the Portland, Oregon Area, (United States Geological Survey, 2019)*, groundwater is expected to be present at an approximate depth of 4-10 feet below the ground surface. It is anticipated that groundwater conditions will vary depending on the season, local subsurface conditions, changes in site utilization, and other factors. Perched groundwater may be encountered in localized areas. Seeps and springs may exist in areas not explored and may become evident during site grading.

Table 2- Summary of Groundwater Seepage Encountered

Exploration Designation	Depth (feet)	Soil Type	Visually Estimated Flow Rate
TP-1	4 & 10	Fill & SILT (ML)	¼ Gal/min
TP-2	6 to 7	Organic SILT (OL)	¼ gal/min
TP-3	8 to 11	SILT (ML)	Static
TP-4	2, 4 & 7	Fill & SILT (ML)	½ gal/min

Infiltration Testing

On November 13, 2019, soil infiltration testing was not performed due to groundwater seepage observed at various depths in all of our test pits explorations. It is our opinion that onsite infiltration is not a feasible option for the proposed structures.

CONCLUSIONS AND RECOMMENDATIONS

Our investigation indicates that the proposed development is geotechnically feasible, provided that the recommendations of this report are incorporated into the design and sufficient geotechnical monitoring is incorporated into the construction phases of the project. The primary geotechnical concerns associated with development at the property are:

- 1) The presence of soft to loose undocumented fill. Undocumented fill consisting of asphaltic concrete fragments, cobbles to boulders and soil was observed in test pits TP-1, TP-2 and TP-4 to depths of 6.5 feet, 7 feet and 3.5 feet, respectfully.
- 2) The presence of groundwater seepage and low permeability of onsite soils. Onsite infiltration testing could not be performed due to the presence of groundwater seepage at various elevations in all of our test pit explorations (see test pit logs) and the fine-grained native soil types observed in our explorations typically exhibit low permeability.

Site Preparation Recommendations

Areas of proposed buildings, new roadways, and areas to receive fill should be cleared of vegetation and any organic and inorganic debris or fill. Existing buried structures should be demolished and any cavities structurally backfilled. Inorganic debris and organic materials from clearing should be removed from the site.

Existing fill and any organic-rich topsoil should then be stripped from construction areas of the site or where engineered fill is to be placed. The estimated depth necessary for removal of topsoil is approximately 8 to 10 inches – deeper stripping may be necessary to remove large tree roots in isolated areas. Undocumented fill was encountered in test pits TP-1, TP-2 and TP-4 to depths of 6.5 feet, 7 feet and 3.5 feet, respectfully.

The final depth of soil removal will be determined on the basis of a site inspection after the stripping/excavation has been performed. Stripped topsoil should preferably be removed from the site. Any remaining topsoil should be stockpiled only in designated areas and stripping operations should be observed and documented by the geotechnical engineer or his representative.

Any remaining undocumented fills and subsurface structures (tile drains, basements, driveway and landscaping fill, old utility lines, septic leach fields, etc.) should be removed and the excavations backfilled with engineered fill.

Once stripping of a particular area is approved, the area must be ripped or tilled to a depth of 12 inches, moisture conditioned, root-picked, and compacted in-place prior to the placement of engineered fill or crushed aggregate base for pavement. Exposed subgrade soils should be evaluated by the geotechnical engineer. For large areas, this evaluation is normally performed by proof-rolling the exposed subgrade with a fully loaded scraper or dump truck. For smaller areas where access is restricted, the subgrade should be evaluated by probing the soil with a steel probe. Soft/loose soils identified during subgrade preparation should be compacted to a firm and unyielding condition, over-excavated and replaced with engineered fill (as described below) or stabilized with rock prior to placement of engineered fill. The depth of over-excavation, if required, should be evaluated by the geotechnical engineer at the time of construction.

Engineered Fill

All grading for the proposed development should be performed as engineered grading in accordance with the applicable building code at time of construction with the exceptions and additions noted herein.

Proper test frequency and earthwork documentation usually requires daily observation and testing during stripping, rough grading, and placement of engineered fill. Imported fill material must be approved by the geotechnical engineer prior to being imported to the site. Oversize material greater than 6 inches in size should not be used within 3 feet of foundation footings, and material greater than 12 inches in diameter should not be used in engineered fill.

Engineered fill should be compacted in horizontal lifts not exceeding 8 inches using standard compaction equipment. We recommend that engineered fill be compacted to at least 95% of the maximum dry density determined by ASTM D698 (Standard Proctor) or equivalent. Field density testing should conform to ASTM D2922 and D3017, or D1556. All engineered fill should be observed and tested by the project geotechnical engineer or his representative. Rocky fill may need to be evaluated by proofrolling and should be placed wet of optimum moisture content. Typically, one density test is performed for at least every 2 vertical feet of fill placed or every 500 yd³, whichever requires more testing. Because testing is performed on an on-call basis, we recommend that the earthwork contractor be held contractually responsible for test scheduling and frequency.

Site earthwork will be impacted by soil moisture and shallow groundwater conditions. Earthwork in wet weather would likely require extensive use of cement or lime treatment, or other special measures, at considerable additional cost compared to earthwork performed under dry-weather conditions.

Excavating Conditions and Utility Trench Backfill

All temporary cuts in excess of 4 feet in height should be sloped in accordance with U.S. Occupational Safety and Health Administration (OSHA) regulations (29 CFR Part 1926) or be shored. The existing native soils classify as Type B Soil and temporary excavation side slope inclinations as steep as 1H:1V may be assumed for planning purposes. This cut slope inclination is applicable to excavations above the water table only. Maintenance of safe working conditions, including temporary excavation stability, is the responsibility of the contractor. Actual slope inclinations at the time of construction should be determined based on safety requirements and actual soil and groundwater conditions.

Saturated soils and groundwater may be encountered in utility trenches, particularly during the wet season. We anticipate that dewatering systems consisting of ditches, sumps and pumps would be adequate for control of perched groundwater. Regardless of the dewatering system used, it should be installed and operated such that in-place soils are prevented from being removed along with the groundwater.

Vibrations created by traffic and construction equipment may cause some caving and raveling of excavation walls. In such an event, lateral support for the excavation walls should be provided by the contractor to prevent loss of ground support and possible distress to existing or previously constructed structural improvements.

PVC pipe should be installed in accordance with the procedures specified in ASTM D2321. We recommend that trench backfill be compacted to at least 95% of the maximum dry density obtained by Modified Proctor ASTM D1557 or equivalent. Initial backfill lift thickness for a ¾"-0 crushed aggregate base may need to be as great as 4 feet to reduce the risk of flattening underlying flexible pipe. Subsequent lift thickness should not exceed 1 foot. If imported granular fill material is used, then the lifts for large vibrating plate-compaction equipment (e.g. hoe compactor attachments) may be up to 2 feet, provided that proper compaction is being achieved and each lift is tested. Use of large vibrating compaction equipment should be carefully monitored near existing structures and improvements due to the potential for vibration-induced damage.

Adequate density testing should be performed during construction to verify that the recommended relative compaction is achieved. Typically, one density test is taken for every 4 vertical feet of backfill on each 200-lineal-foot section of trench.

Erosion Control Considerations

During our field exploration program, we did not observe soil types that would be considered highly susceptible to erosion except in areas of moderately sloping topography. In our opinion, the primary concern regarding erosion potential will occur during construction, in areas that have been stripped of vegetation. Erosion at the site during construction can be minimized by implementing the project erosion control plan, which should include judicious use of straw wattles and silt fences. If used, these erosion control devices should be in place and remain in place throughout site preparation and construction.

Erosion and sedimentation of exposed soils can also be minimized by quickly re-vegetating exposed areas of soil, and by staging construction such that large areas of the project site are not denuded and exposed at the same time. Areas of exposed soil requiring immediate and/or temporary protection against exposure should be covered with either mulch or erosion control netting/blankets. Areas of exposed soil requiring permanent stabilization should be seeded with an approved grass seed mixture, or hydroseeded with an approved seed-mulch-fertilizer mixture.

Wet Weather Earthwork

Soils underlying the site are likely to be moisture sensitive and may be difficult to handle or traverse with construction equipment during periods of wet weather. Earthwork is typically most economical when performed under dry weather conditions. Earthwork performed during the wet-weather season will probably require expensive measures such as cement treatment or imported granular material to compact areas where fill may be proposed to the recommended engineering specifications. If earthwork is to be performed or fill is to be placed in wet weather or under wet conditions when soil moisture content is difficult to control, the following recommendations should be incorporated into the contract specifications.

- Earthwork should be performed in small areas to minimize exposure to wet weather. Excavation or the removal of unsuitable soils should be followed promptly by the placement and compaction of clean engineered fill. The size and type of construction equipment used may have to be limited to prevent soil disturbance. Under some circumstances, it may be necessary to excavate soils with a backhoe to minimize subgrade disturbance caused by equipment traffic;
- The ground surface within the construction area should be graded to promote run-off of surface water and to prevent the ponding of water;
- Material used as engineered fill should consist of clean, granular soil containing less than 5 percent passing the No. 200 sieve. The fines should be non-plastic. Alternatively, cement treatment of on-site soils may be performed to facilitate wet weather placement;
- The ground surface within the construction area should be sealed by a smooth drum vibratory roller, or equivalent, and under no circumstances should be left uncompacted and exposed to moisture. Soils which become too wet for compaction should be removed and replaced with clean granular materials;

- Excavation and placement of fill should be observed by the geotechnical engineer to verify that all unsuitable materials are removed, and suitable compaction and site drainage is achieved; and
- Geotextile silt fences, straw wattles, and fiber rolls should be strategically located to control erosion.

Spread Foundations

The proposed residential structures may be supported on shallow foundations bearing on engineered fill placed and compacted over competent native soils, appropriately designed and constructed as recommended in this report. Foundation design, construction, and setback requirements should conform to the applicable building code at the time of construction. For maximization of bearing strength and protection against frost heave, spread footings should be embedded at a minimum depth of 12 inches below exterior grade. Foundations should be designed by a licensed structural engineer.

The anticipated allowable soil bearing pressure is 1,500 lbs/ft² for footings bearing on moisture conditioned and re-compacted native soils and/or structural fill. A maximum chimney and column load of 30 kips is recommended for the site. The recommended maximum allowable bearing pressure may be increased by 1/3 for short-term transient conditions such as wind and seismic loading. For heavier loads, the geotechnical engineer should be consulted. The coefficient of friction between on-site soil and poured-in-place concrete may be taken as 0.42, which includes no factor of safety. The maximum anticipated total and differential footing movements (generally from soil expansion and/or settlement) are 1 inch and ¾ inch over a span of 20 feet, respectively. We anticipate that the majority of the estimated settlement will occur during construction, as loads are applied. Excavations near structural footings should not extend within a 1H:1V plane projected downward from the bottom edge of footings.

Footing excavations should penetrate through topsoil and any loose soil to competent subgrade that is either

- 1) suitable for bearing support,
- 2) moisture conditioned and compacted and/or
- 3) over-excavated and replaced with structural fill.

All footing excavations should be trimmed neat, and all loose or softened soil should be removed from the excavation bottom prior to placing reinforcing steel bars. Due to the moisture sensitivity of on-site native soils, foundations constructed during the wet weather season may require over-excavation of footings and backfill with compacted, crushed aggregate.

Our recommendations are for house construction incorporating raised wood floors and conventional spread footing foundations. If living space of the structures will incorporate basements, a geotechnical engineer should be consulted to make additional recommendations for retaining walls, water-proofing, underslab drainage and wall subdrains. After site development, a Final Soil Engineer's Report should either confirm or modify the above recommendations.

Concrete Slabs-on-Grade

Preparation of areas beneath concrete slab-on-grade floors should be performed as recommended in the *Site Preparation* section. Care should be taken during excavation for foundations and floor slabs, to avoid disturbing subgrade soils. If subgrade soils have been adversely impacted by wet weather or otherwise disturbed, the surficial soils should be scarified to a minimum depth of 8 inches, moisture conditioned to within about 3 percent of optimum moisture content and compacted to engineered fill specifications. Alternatively, disturbed soils may be removed, and the removal zone backfilled with additional crushed rock.

For evaluation of the concrete slab-on-grade floors using the beam on elastic foundation method, a modulus of subgrade reaction of 150 kcf (87 pci) should be assumed for the fine-grained soils anticipated to be present in the upper four feet at the site. This value assumes the concrete slab system is designed and constructed as recommended herein, with a minimum thickness of 8 inches of 1½"-0 crushed aggregate beneath the slab. The total thickness of crushed aggregate will be dependent on the subgrade conditions at the time of construction and should be verified visually by proof-rolling. Under-slab aggregate should be compacted to at least 90 percent of its maximum dry density as determined by ASTM D1557 (Modified Proctor) or equivalent.

In areas where moisture will be detrimental to floor coverings or equipment inside the proposed structure, appropriate vapor barrier and damp-proofing measures should be implemented. A commonly applied vapor barrier system consists of a 10-mil polyethylene vapor barrier placed directly over the capillary break material. Other damp/vapor barrier systems may also be feasible. Appropriate design professionals should be consulted regarding vapor barrier and damp proofing systems, ventilation, building material selection and mold prevention issues, which are outside GeoPacific's area of expertise.

Permanent Below-Grade Walls

Lateral earth pressures against below-grade retaining walls will depend upon the inclination of any adjacent slopes, type of backfill, degree of wall restraint, method of backfill placement, degree of backfill compaction, drainage provisions, and magnitude and location of any adjacent surcharge loads. At-rest soil pressure is exerted on a retaining wall when it is restrained against rotation. In contrast, active soil pressure will be exerted on a wall if its top is allowed to rotate or yield a distance of roughly 0.001 times its height or greater.

If the subject retaining walls will be free to rotate at the top, they should be designed for an active earth pressure equivalent to that generated by a fluid weighing 35 pcf for level backfill against the wall. For restrained wall, an at-rest equivalent fluid pressure of 55 pcf should be used in design, again assuming level backfill against the wall. These values assume that the recommended drainage provisions are incorporated, and hydrostatic pressures are not allowed to develop against the wall.

During a seismic event, lateral earth pressures acting on below-grade structural walls will increase by an incremental amount that corresponds to the earthquake loading. Based on the Mononobe-Okabe equation and peak horizontal accelerations appropriate for the site location, seismic loading should be modeled using the active or at-rest earth pressures recommended above, plus an incremental rectangular-shaped seismic load of magnitude $6.5H$, where H is the total height of the wall.

We assume relatively level ground surface below the base of the walls. As such, we recommend passive earth pressure of 320 pcf for use in design, assuming wall footings are cast against competent native soils or engineered fill. If the ground surface slopes down and away from the base of any of the walls, a lower passive earth pressure should be used and GeoPacific should be contacted for additional recommendations.

A coefficient of friction of 0.42 may be assumed along the interface between the base of the wall footing and subgrade soils. The recommended coefficient of friction and passive earth pressure values do not include a safety factor, and an appropriate safety factor should be included in design. The upper 12 inches of soil should be neglected in passive pressure computations unless it is protected by pavement or slabs on grade.

The above recommendations for lateral earth pressures assume that the backfill behind the subsurface walls will consist of properly compacted structural fill, and no adjacent surcharge loading. If the walls will be subjected to the influence of surcharge loading within a horizontal distance equal to or less than the height of the wall, the walls should be designed for the additional horizontal pressure. For uniform surcharge pressures, a uniformly distributed lateral pressure of 0.3 times the surcharge pressure should be added. Traffic surcharges may be estimated using an additional vertical load of 250 psf (2 feet of additional fill), in accordance with local practice.

The recommended equivalent fluid densities assume a free-draining condition behind the walls so that hydrostatic pressures do not build-up. This can be accomplished by placing a 12 to 18-inch wide zone of sand and gravel containing less than 5 percent passing the No. 200 sieve against the walls. A 3-inch minimum diameter perforated, plastic drain pipe should be installed at the base of the walls and connected to a suitable discharge point to remove water in this zone of sand and gravel. The drain pipe should be wrapped in filter fabric (Mirafi 140N or other as approved by the geotechnical engineer) to minimize clogging.

Wall drains are recommended to prevent detrimental effects of surface water runoff on foundations – not to dewater groundwater. Drains should not be expected to eliminate all potential sources of water entering a basement or beneath a slab-on-grade. An adequate grade to a low point outlet drain in the crawlspace is required by code. Underslab drains are sometimes added beneath the slab when placed over soils of low permeability and shallow, perched groundwater.

Water collected from the wall drains should be directed into the local storm drain system or other suitable outlet. A minimum 0.5 percent fall should be maintained throughout the drain and non-perforated pipe outlet. Down spouts and roof drains should not be connected to the wall drains in

order to reduce the potential for clogging. The drains should include clean-outs to allow periodic maintenance and inspection. Grades around the proposed structure should be sloped such that surface water drains away from the building.

GeoPacific should be contacted during construction to verify subgrade strength in wall keyway excavations, to verify that backslope soils are in accordance with our assumptions, and to take density tests on the wall backfill materials.

Structures should be located a horizontal distance of at least 1.5H away from the back of the retaining wall, where H is the total height of the wall. GeoPacific should be contacted for additional foundation recommendations where structures are located closer than 1.5H to the top of any wall.

Drainage

The upslope edge of perimeter footings may be provided with a drainage system consisting of 3-inch diameter, slotted, plastic pipe embedded in a minimum of 1 ft³ per lineal foot of clean, free-draining gravel or uncompacted 3/4"-0 rock. Water collected from the footing drains should be directed into the local storm drain system or another suitable outlet. A minimum 0.5 percent fall should be maintained throughout the drain and non-perforated pipe outlet. Down spouts and roof drains should not be connected to the foundation drains in order to reduce the potential for clogging. The footing drains should include clean-outs to allow periodic maintenance and inspection. Grades around the proposed structure should be sloped such that surface water drains away from the building. Footing drain recommendations are given to prevent detrimental effects of groundwater on foundations and should not be expected to eliminate all potential sources of water entering a crawlspace. An adequate grade to a low point outlet drain in the crawlspace is required by code.

Flexible Pavement Design: 9th Street Half Street Improvement

We understand that, as part of development, improvements must be made to the existing south bound lane of 9th Street, within the property boundaries. The City of West Linn Public Works Design Standards, Section Five – Street Requirements states an approved section for Local / Neighborhood streets. Table 3 presents the approved Local / Neighborhood street section for the City of West Linn with estimated structural coefficients.

Table 3 – City of West Linn Minimum Dry-Weather Pavement Section for 9th Street

Material Layer	Section Thickness (in.)	Structural Coefficient	Compaction Standard
Asphaltic Concrete (AC)	4	0.42	91%/ 92% of Rice Density AASHTO T-209
Crushed Aggregate Base ¾"-0 (leveling course)	2	0.10	95% of Modified Proctor AASHTO T-180
Crushed Aggregate Base 1½"-0	10	0.10	95% of Modified Proctor AASHTO T-180
Subgrade	12	5,000 PSI	95% of Standard Proctor AASHTO T-99 or equivalent
Calculated Structural Number		1.88	

Road Subgrade Preparation

The subgrade should be ripped or tilled to a depth of 12 inches, moisture conditioned, root-picked, and compacted in-place prior to the placement of crushed aggregate base for pavement. Any pockets of organic debris or loose fill encountered during ripping or tilling should be removed and replaced with engineered fill (see *Site Preparation* section). In order to verify subgrade strength, we recommend proof-rolling directly on subgrade with a loaded dump truck during dry weather and on top of base course in wet weather. Soft areas that pump, rut, or weave should be stabilized prior to paving.

If pavement areas are to be constructed during wet weather, the subgrade and construction plan should be reviewed by the project geotechnical engineer at the time of construction so that condition specific recommendations can be provided. The moisture sensitive subgrade soils make the site a difficult wet weather construction project. General recommendations for wet weather pavement sections are provided below.

During placement of pavement section materials, density testing should be performed to verify compliance with project specifications. Generally, one subgrade, one base course, and one asphalt compaction test is performed for every 100 to 200 linear feet of paving.

Wet Weather Construction Pavement Section

This section presents our recommendations for wet weather pavement section and construction for new pavement sections at the project. These wet weather pavement section recommendations are intended for use in situations where it is not feasible to compact the subgrade soils, due to wet subgrade soil conditions, and/or construction during wet weather.

Based on our site review, we recommend a wet weather section with a minimum subgrade deepening of 6 inches to accommodate a working subbase of additional 1½"-0 crushed rock. Geotextile fabric, Mirafi 500x or equivalent, should be placed on subgrade soils prior to placement of base rock.

In some instances, it may be preferable to use Special Treated Base (STB) in combination with over-excavation and increasing the thickness of the rock section. GeoPacific should be consulted for additional recommendations regarding use of STB in wet weather pavement sections if it is desired to pursue this alternative. Cement treatment of the subgrade may also be considered instead of over-excavation. For planning purposes, we anticipate that treatment of the onsite soils would involve mixing cement powder to approximately 6 percent cement content and a mixing depth on the order of 12 to 18 inches.

With implementation of the above recommendations, it is our opinion that the resulting pavement section will provide equivalent or greater structural strength than the dry weather pavement section currently planned. However, it should be noted that construction in wet weather is risky and the performance of pavement subgrades depend on a number of factors including the weather conditions, the contractor's methods, and the amount of traffic the road is subjected to. There is a potential that soft spots may develop even with implementation of the wet weather provisions recommended in this letter. If soft spots in the subgrade are identified during roadway excavation, or develop prior to paving, the soft spots should be over-excavated and backfilled with additional crushed rock.

During subgrade excavation, care should be taken to avoid disturbing the subgrade soils. Removals should be performed using an excavator with a smooth-bladed bucket. Truck traffic should be limited until an adequate working surface has been established. We suggest that the crushed rock be spread using bulldozer equipment rather than dump trucks, to reduce the amount of traffic and potential disturbance of subgrade soils.

Care should be taken to avoid over-compaction of the base course materials, which could create pumping, unstable subgrade soil conditions. Heavy and/or vibratory compaction efforts should be applied with caution. Following placement and compaction of the crushed rock to project specifications (95 percent of Modified Proctor), a finish proof-roll should be performed before paving.

The above recommendations are subject to field verification. GeoPacific should be on-site during construction to verify subgrade strength and to take density tests on the engineered fill, base rock and asphaltic pavement materials.

Seismic Design

The Oregon Department of Geology and Mineral Industries (Dogami), Oregon HazVu: Statewide GeoHazards Viewer indicates that the site is in an area where *severe* ground shaking is anticipated during an earthquake (Dogami HazVu, 2019). Structures should be designed to resist earthquake loading in accordance with the methodology described in the 2018 International Building Code (IBC) with applicable Oregon Structural Specialty Code (OSSC) revisions (current 2019). We recommend Site Class D be used for design per the OSSC, Table 1613.5.2 and as defined in ASCE 7-16, Chapter 20, Table 20.3-1. Design values determined for the site using the ATC (Applied Technology Council) *ASCE7-10 Hazards by Location online Tool* website are summarized in Table 3.

Table 3 - Recommended Earthquake Ground Motion Factors (ASCE 7-16)

Parameter	Value
Location (Lat, Long), degrees	45.3426, -122.6486
Probabilistic Ground Motion Values, 2% Probability of Exceedance in 50 yrs	
Site Modified Peak Ground Acceleration	0.459 g
Short Period, S_s	0.831 g
1.0 Sec Period, S_1	0.376 g
Soil Factors for Site Class D:	
F_a	1.168
F_v	1.924
$SD_s = 2/3 \times F_a \times S_s$	0.647 g
$SD_1 = 2/3 \times F_v \times S_1$	0.482 g
Seismic Design Category	D

* F_v value reported in the above table is a straight-line interpolation of mapped spectral response acceleration at 1-second period, S_1 per Table 1613.2.3(2) of OSSC 2019 with the assumption that Exception 2 of ASCE 7-16 Chapter 11.4.8 is met per the Structural Engineer. If Exception 2 is not met, and the long-period site coefficient (F_v) is required for design, GeoPacific Engineering can be consulted to provide a site-specific procedure as per ASCE 7-16, Chapter 21.

Soil Liquefaction

Soil liquefaction is a phenomenon wherein saturated soil deposits temporarily lose strength and behave as a liquid in response to ground shaking caused by strong earthquakes. Soil liquefaction is generally limited to loose, sands and granular soils located below the water table. The Oregon Department of Geology and Mineral Industries (DOGAMI), Oregon HazVu: 2019 Statewide GeoHazards Viewer indicates that the site is in an area considered to be at *low* to *high* risk for soil liquefaction during an earthquake (DOGAMI:HazVu, 2019).

An in-depth analysis of seismic hazards is beyond the scope of this study. However, if additional information is desired regarding the potential for soil liquefaction during a seismic event, GeoPacific may be consulted to perform additional subsurface explorations, consisting of soil borings and/or CPT testing, and to perform a quantitative liquefaction analysis.

UNCERTAINTIES AND LIMITATIONS

We have prepared this report for the owner and his/her consultants for use in design of this project only. The conclusions and interpretations presented in this report should not be construed as a warranty of the subsurface conditions. Experience has shown that soil and groundwater conditions can vary significantly over small distances. Inconsistent conditions can occur between explorations that may not be detected by a geotechnical study. If, during future site operations, subsurface conditions are encountered which vary appreciably from those described herein, GeoPacific should be notified for review of the recommendations of this report, and revision of such if necessary.

Within the limitations of scope, schedule and budget, GeoPacific executed these services in accordance with generally accepted professional principles and practices in the fields of geotechnical engineering and engineering geology at the time the report was prepared. No warranty, express or implied, is made. The scope of our work did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous or toxic substances in the soil, surface water, or groundwater at this site.

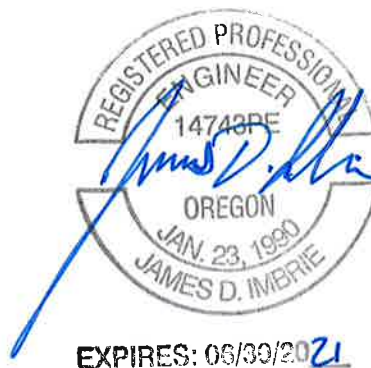
We appreciate this opportunity to be of service.

Sincerely,

GEO PACIFIC ENGINEERING, INC.



Michael T. Baker, G.I.T.
Geotechnical Staff



James D. Imbrie, G.E., C.E.G.
Principal Geotechnical Engineer

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Geotechnical Engineering Report
Project No. 19-5350, 9th Street, West Linn, Oregon



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CHECKLIST OF RECOMMENDED GEOTECHNICAL TESTING AND OBSERVATION

Item No.	Procedure	Timing	By Whom	Done
1	Preconstruction meeting	Prior to beginning site work	Contractor, Developer, Civil and Geotechnical Engineers	
2	Fill removal from site or sorting and stockpiling	Prior to mass stripping	Soil Technician/ Geotechnical Engineer	
3	Stripping, aeration, and root-picking operations	During stripping	Soil Technician	
4	Compaction testing of engineered fill (95% of Standard Proctor)	During filling, tested every 2 vertical feet	Soil Technician	
5	Compaction testing of trench backfill (95% of Standard Proctor)	During backfilling, tested every 4 vertical feet for every 200 lineal feet	Soil Technician	
6	Street Subgrade Inspection	Prior to placing base course	Soil Technician	
7	Base course compaction (95% of Modified Proctor)	Prior to paving, tested every 200 lineal feet	Soil Technician	
8	Footing Subgrade Inspection	Prior to placement of forms	Soil Technician/ Geotechnical Engineer	
9	Final Geotechnical Engineer's Report	Completion of project	Geotechnical Engineer	



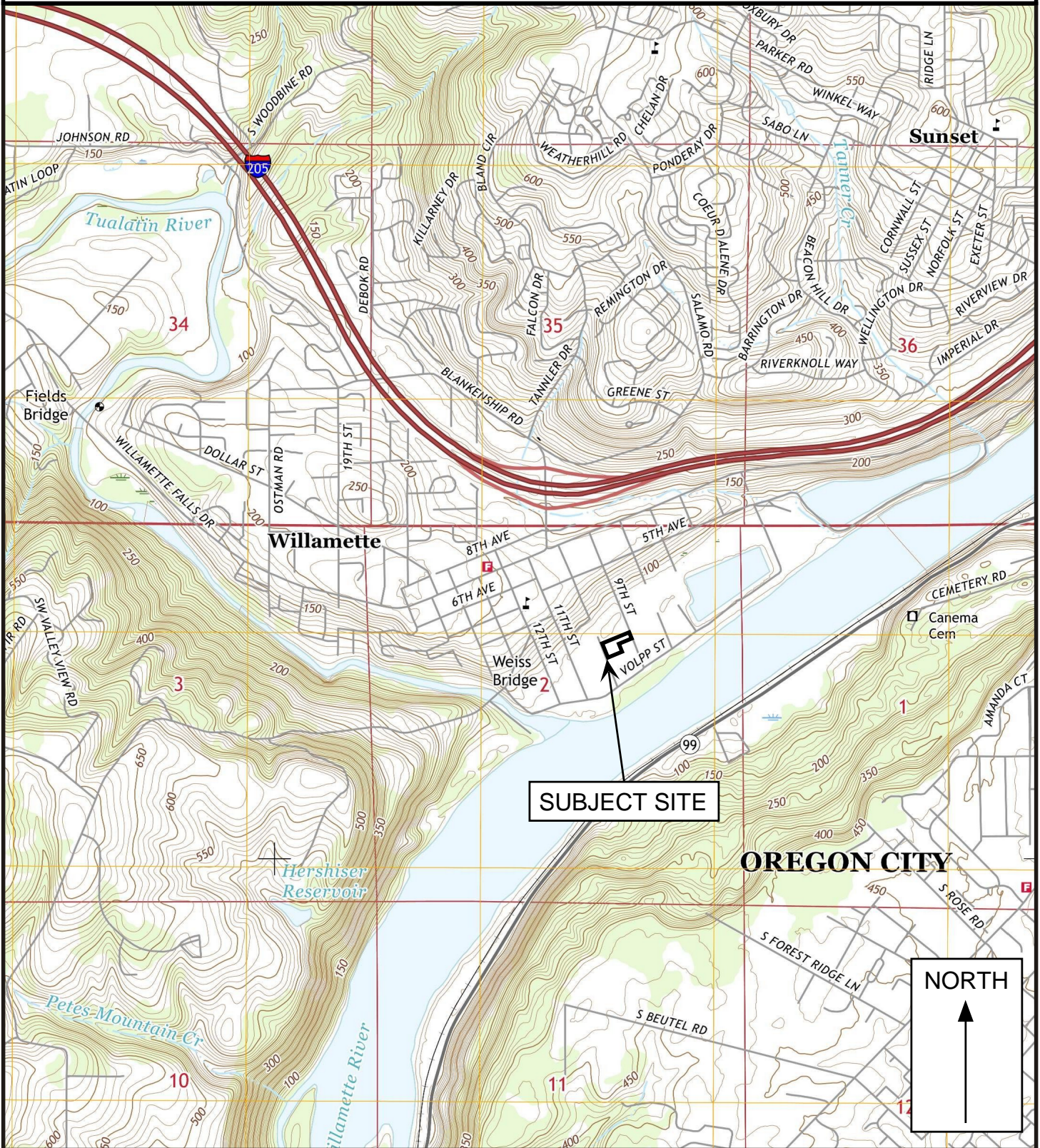
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FIGURES



14835 SW 72nd Avenue
 Portland, Oregon 97224
 Tel: (503) 598-8445 Fax: (503) 941-9281

VICINITY MAP



Legend

Approximate Scale 1 in = 2,000 ft

Date: 11.20.2019
 Drawn by: MTB

Base maps: U.S. Geological Survey 7.5 minute Topographic Map Series, Canby, Oregon Quadrangle, 2017.

Project: 9th Street
 West Linn, Oregon

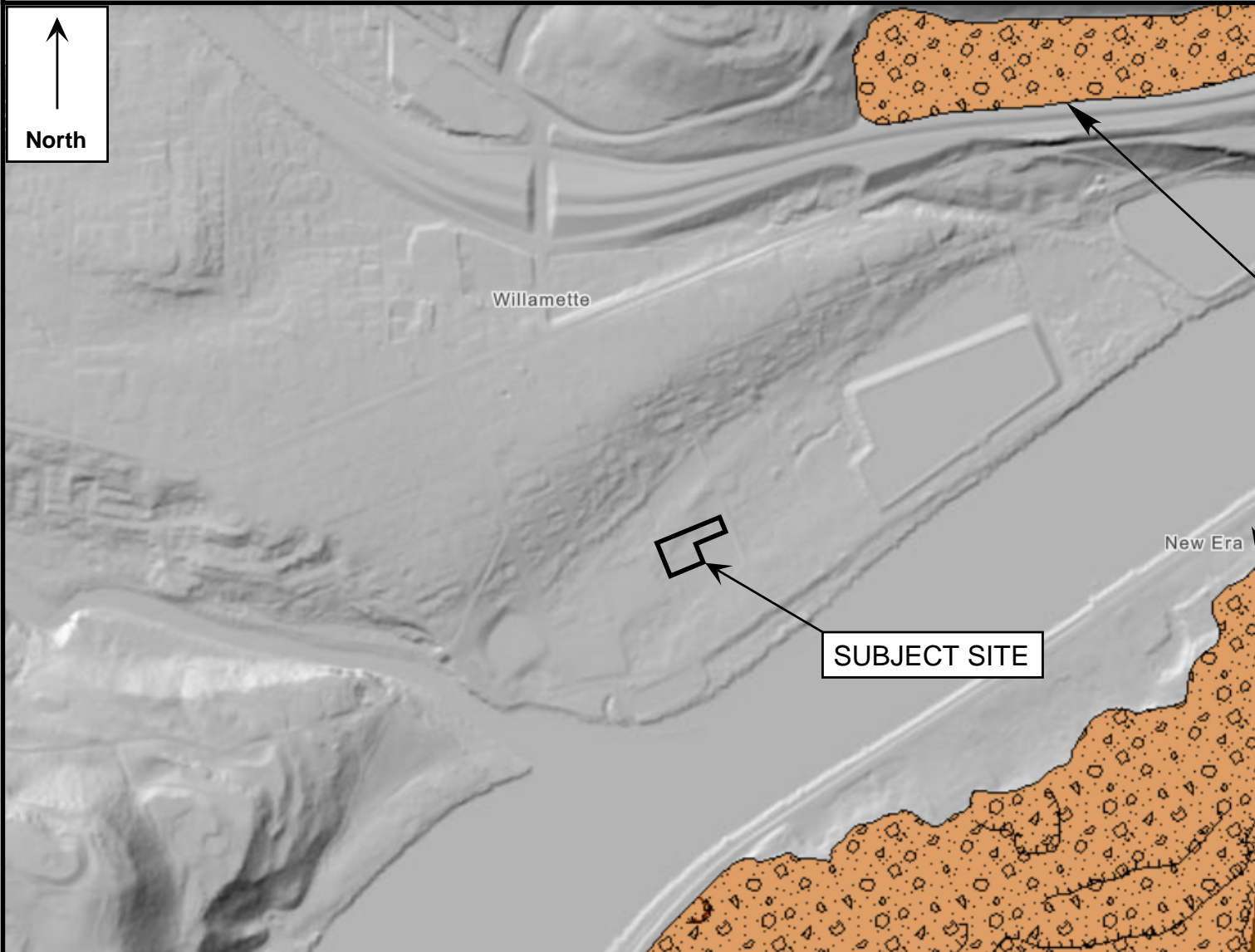
Project No. 19-5350

FIGURE 1A



14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

LIDAR BA
WITH MA



Legend

Approximate Scale 1 in = 1000 ft

Base map: Oregon Department of Geology and Mineral Industries, 2019, Statewide Landslide Information Database for
<http://www.gis.dogami.oregon.gov/slido>

Project: 9th Street
West Linn, Oregon

Project No. 19-5350



Base image provided by AKS Engineering & Forestry, LLC. and PortlandMaps

Legend



Site Boundary



Test Pit Designation, Approximate Location
 and Approximate Depth of Fill including Buried Topsoil



PDCP Designation
 and Approximate Location

Project: 9th Street
 West Linn, Oregon

Project No. 19-5350

AP



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EXPLORATION LOGS



14835 SW 72nd Avenue
 Portland, Oregon 97224
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TEST PIT LOG

Project: 9th Street West Linn, Oregon	Project No. 19-5350	Exploration No. TP-1
--	---------------------	-----------------------------

Depth (ft)	Sample Type	tons/sq.ft.	Moisture Content (%)	Water Bearing Zone	Material Description
1		4.0			Soft, organic SILT (OL), brown, grass roots, very moist [Topsoil Horizon] ----- Loose, GRAVEL (GM), composed of fractured rock and asphalt fragments up to 12 inch in diameter with sand and silt, moist [Undocumented Fill] -----
2		1.0			
3		1.0			Soft to medium stiff, lean CLAY (CL), light brown, homogenous, tree roots, moist [Undocumented Fill] -----
4		1.5			
5					Soft to medium stiff, CLAY (CL-CH), dark gray to brown, very plastic, moist, in lower portion this layer was dark brown to black fragments of extremely soft (R0) to soft (R1) minerals from 1/4 inch to 1.5 inch in diameter, fragments of angular vesicular medium hard (R3) BASALT, moist [Undocumented Fill] -----
6					
7					
8					
9					Medium stiff to stiff, SILT (ML) with sand, blue-gray, slightly plastic, homogenous, very moist to wet [Willamette Formation] -----
10					
11					
12					Test Pit terminated at 11 feet.
13					Groundwater seepage encountered in excavation at 4 feet and 10.5 feet. Flow visually estimated at 1/4 gallons per minute.
14					



LEGEND Bag Sample Split-Spoon Shelby Tube Sample Seepage Static Water Table Water Bearing Zone	Date Drilled: 11.13.2019 Logged By: MTB Surface Elevation: <u>74 Feet</u>
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


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 Tel: (503) 598-8445 Fax: (503) 941-9281

TEST PIT LOG

Project: 9th Street West Linn, Oregon	Project No. 19-5350	Exploration No. TP-2
--	---------------------	-----------------------------

Depth (ft)	Sample Type	tons/sq.ft.	Moisture Content (%)	Water Bearing Zone	Material Description
1		0.5			Soft, organic SILT (OL), brown, grass roots, moist [Topsoil Horizon]
2		1.0			
3		1.5			Loose to medium dense, GRAVEL (GM), composed of medium hard (R3) angular BASALT and asphaltic concrete fragments up to several feet in diameter in a matrix of soft silty CLAY to clayey SILT (CL-ML), moist [Undocumented Fill]
4		1.5			
6					Soft, organic SILT (OL), brown, grass roots, moist [Buried Topsoil Horizon]
7					
8					Medium stiff, lean CLAY (CL), blue-gray, moderately plastic, homogenous, moist [Willamette Formation]
9					
10					Soft to medium stiff, SILT with fine grained sand to sandy SILT (ML-SM), tan with faint orange mottling in thin bands approximately 1/8 to 1/2 inch in thickness, wet [Willamette Formation]
11					Test Pit terminated at 11 feet.
12					Groundwater seepage encountered in excavation at 6 to 7 feet. Flow visually estimated at 1/4 gallons per minute.
13					
14					

LEGEND  Bag Sample  Split-Spoon  Shelby Tube Sample  Seepage  Static Water Table  Water Bearing Zone						Date Drilled: 11.13.2019 Logged By: MTB Surface Elevation: <u>80 Feet</u>
--	--	--	--	--	--	---









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TEST PIT LOG

Project: 9th Street West Linn, Oregon	Project No. 19-5350	Exploration No. TP-3
--	---------------------	-----------------------------

Depth (ft)	Sample Type	tons/sq.ft.	Moisture Content (%)	Water Bearing Zone	Material Description
1		3.0			Stiff, organic SILT (OL), brown, grass roots wood debris, moist [Topsoil Horizon]
2		3.5			
3		4.5			Stiff to very stiff, SILT (ML), light brown, moderately plastic, homogenous, sparse tree roots to 3 feet, moist [Willamette Formation]
4		4.5			
5					
6					
7					
8				▽	Stiff, SILT (ML) with fine-grained sand to sandy SILT (SM), tan with gray and orange mottling, moist to approximately 8 feet than very moist to wet [Willamette Formation]
9					
10					
11					
12					Test Pit terminated at 11 feet.
13					Groundwater seepage encountered in excavation at 8 feet.
14					




LEGEND  Bag Sample  Split-Spoon  Shelby Tube Sample  Seepage  Static Water Table  Water Bearing Zone						Date Drilled: 11.13.2019 Logged By: MTB Surface Elevation: <u>80 Feet</u>
---	--	--	--	--	--	---









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TEST PIT LOG

Project: 9th Street West Linn, Oregon	Project No. 19-5350	Exploration No. TP-4
--	---------------------	-----------------------------

Depth (ft)	Sample Type	tons/sq.ft.	Moisture Content (%)	Water Bearing Zone	Material Description
1		1.0			Soft, organic SILT (OL), brown, grass roots, moist to very moist [Topsoil Horizon]
2		1.0			Soft to very stiff CLAY (CL), reddish brown, black staining, heavily weathered BASALT fragments, moist to wet [Undocumented Fill]
3		4.5			
4		1.0			
5					
6					Medium stiff to stiff, SILT (ML) with sand, blue-gray, slightly plastic, homogenous, very moist to wet [Willamette Formation]
7					
8					
9					Test Pit terminated at 9 feet.
10					Groundwater seepage encountered in excavation at 2, 4 and 7 feet.
11					
12					
13					
14					

LEGEND  Bag Sample  Split-Spoon  Shelby Tube Sample  Seepage  Static Water Table  Water Bearing Zone						Date Drilled: 11.13.2019 Logged By: MTB Surface Elevation: <u>72 Feet</u>
--	--	--	--	--	--	---

GeoPacific Engineering, Inc.

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Portland, Oregon 97224

Tel (503) 598-8445
Fax (503) 941-9281

Portable Dynamic Cone Penetrometer (PDCP) / California Bearing Ratio (CBR) Correlation

Project: 9th Street West Linn **Date:** 11.20.2019 **Existing A/C Thickness:** 0 Inches **Test:** PDCP-1
Project No. 19-5350 **Engineer:** MTB **Existing Base Aggregate Thickness:** 0 Inches
Location: SW Shoulder of 9th Street at N Property Corner **Subgrade:** Fill **Notes:** Location on Figures 2
Portable Dynamic Cone: KSE DCP K-100 Model, ASTM D6951, 17.6 lbs Hammer

Length of Shaft	Ref Height at Start	Depth Below Ground at Start
in	in	in
38.75	3.6	2.6

Blows	Ref Height (in)	Depth Below Ground (in)	Depth Below Ground (ft)	Depth Below Ground (mm)	Inches/Blow	mm/Blow	CBR	Correlated PSI
5	10.9	9.9	0.8	251.5	1.5	37.1	5.1	4193
5	13.4	12.4	1.0	315.0	0.5	12.7	16.9	6368
5	21	20.0	1.7	508.0	1.5	38.6	4.9	4127
5	26.7	25.7	2.1	652.8	1.1	29.0	6.7	4617
5	29.5	28.5	2.4	723.9	0.6	14.2	14.9	6092
5	32.9	31.9	2.7	810.3	0.7	17.3	12.0	5648
5	35.9	34.9	2.9	886.5	0.6	15.2	13.8	5931
Average						23.44	8.5	
Average Soil Resilient Modulus per ODOT Pavement Design Guide							5014	

Portable Dynamic Cone Penetrometer (PDCP) / California Bearing Ratio (CBR) Correlation

Project: 9th Street West Linn **Date:** 11.20.2019 **Existing A/C Thickness:** 0 Inches **Test:** PDCP-2
Project No. 19-5350 **Engineer:** MTB **Existing Base Aggregate Thickness:** 0 Inches
Location: SW Shoulder of 9th Street at S Property Corner **Subgrade:** Fill **Notes:** Location on Figures 2
Portable Dynamic Cone: KSE DCP K-100 Model, ASTM D6951, 17.6 lbs Hammer

Length of Shaft	Ref Height at Start	Depth Below Ground at Start
in	in	in
38.75	3	2

Blows	Ref Height (in)	Depth Below Ground (in)	Depth Below Ground (ft)	Depth Below Ground (mm)	Inches/Blow	mm/Blow	CBR	Correlated PSI
5	9.8	8.8	0.7	223.5	1.4	34.5	5.5	4310
5	12.7	11.7	1.0	297.2	0.6	14.7	14.4	6010
5	14.2	13.2	1.1	335.3	0.3	7.6	30.0	7772
5	16.6	15.6	1.3	396.2	0.5	12.2	17.7	6470
5	22.8	21.8	1.8	553.7	1.2	31.5	6.1	4468
5	25.6	24.6	2.1	624.8	0.6	14.2	14.9	6092
5	28	27.0	2.3	685.8	0.5	12.2	17.7	6470
5	32.8	31.8	2.7	807.7	1.0	24.4	8.2	4937
5	34.4	33.4	2.8	848.4	0.3	8.1	27.9	7578
Average						17.72	11.7	
Average Soil Resilient Modulus per ODOT Pavement Design Guide							5592	



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PHOTOGRAPHIC LOG



Overhead of the Property



Real-World Geotechnical Solutions
Investigation • Design • Construction Support



Proximity to Willamette River



Test Pits TP-2 & TP-3



Test Pit TP-1 Undocumented Fill



Test Pit TP-1



Test Pit TP-2 Undocumented Fill



Test Pit TP-3



Test Pit TP-4



Test Pit TP-4

APPENDIX 7-1
OPERATIONS AND MAINTENANCE

After Recording, Please Return to:
 City of West Linn Engineering Div.
 22500 Salamo Road, Box 800
 West Linn, OR 97068

Maintenance Agreement
Recording Authorized by West Linn Municipal Code Section 4.070(a)

X

This agreement is entered into between the City of West Linn, an Oregon municipal corporation ("City"), and _____ ("Property Owner"), Owner is the owner of the real property, located at: _____ (the "Property"), which is legally described as:

West Linn Municipal Code Section 4.070(3) requires the property owner to provide and maintain the following on-site private stormwater detention and/ or treatment facilities, detention tanks and related stormwater quality/quantity facilities. The Maintenance Agreement affects the whole property. The rain garden/stormwater quality facility may not be modified or moved without approval from the City of West Linn.

Required Site Plan (Insert here or attach separate sheet)
 Site Plan Attached

Please complete this table

Facility Type	Size (sf)	Access Drive or Drainage Type	Impervious Area Treated (sf)	Existing Wetland to the south
Lined Swale	672		3,030	

To comply with the code, Owner, on behalf of Owner and all future owners of the Property, agrees to maintain the storm water detention/treatment facilities for and on the Property as provided in this agreement. Owner is responsible for all maintenance obligations and for meeting all standards and criteria imposed in this agreement. The City has no obligation to maintain the facilities but does have the right to inspect the facilities as provided in this agreement.

- Owner shall maintain the facilities such that all discharges meet State, Federal and Local water quality codes and regulations.
- Owner shall inspect all facilities twice a year, once in late summer, prior to the rainy season, and once in the winter months. The inspection shall insure that all structures are in good condition and functioning properly.
- Maintenance for the following types of facilities shall at a minimum include:

for pollution control manholes: removal and disposal of all accumulated sediment, oils and greases, twice a year, in an approved manner.

for water quality/ detention ponds: removal of all debris and rubbish that may interfere with the proper function of all outlet and inlet structures, prior to the rainy season. Removal and proper disposal of accumulated sediment from bottom of the pond once sediment reaches a level rendering the facility as not properly functioning. No herbicide, pesticide or algae control applications shall be used within the riparian areas or in the water of the facility without prior approval from City engineer.

for water quality swales: removal of all debris and rubbish that may interfere with the proper function of all outlet and inlet structures prior to the rainy season. Removal and proper disposal of accumulated sediment from bottom of the swale once sediment reaches a level rendering the facility as not properly functioning. No herbicide, pesticide or algae control applications shall be used within the riparian areas or in the water of the facility without approval from City engineer. The swale bottom shall not be mowed shorter than 6-12 inches.

for stormwater filtration type facilities: maintenance at a minimum shall provide for the following services:

- a) Inspections to test/evaluate the filter media for hazardous constituents.
- b) Evaluate the condition of mechanical filter components.
- c) Remove and replace exhausted filtration media and remove accumulated sediment and oils/greases from vault as necessary.

for detention tanks: removal and proper disposal of all sediment accumulated over 4 inches in depth and any miscellaneous debris which is likely to interfere with the proper functioning of the facility.

for manufactured or engineered facilities: maintenance shall at a minimum comply with all maintenance recommended by a manufacturer of such product or component.

for rain gardens: maintenance at a minimum shall provide for the following services:

- a) Mulching: Mulch prevents erosion, controls weeds, replenishes the organic material in the soil, and improves filtration.
 - b) Watering: For the first 2-3 years most plants need deep infrequent water during the dry season to establish a healthy root system.
 - c) Fertilizing: To protect water quality; do not apply fertilizers to your rain garden.
 - d) Weeding: Weed early to avoid more weeds later.
 - e) Pruning: Some pruning may be necessary to keep water inlets and outlets clear.
 - f) Exposed soil and erosion: Sediment flowing into the rain garden can clog the soil mix and slow drainage. Sediment carried out of the rain garden can harm streams and wetlands. Maintain a healthy cover of plants and decorative rock to prevent soil erosion.
- Maintenance activities shall not negatively impact downstream water quality conditions (e.g. turbidity, oily discharge, etc.), flushing of systems is prohibited.

- Written documentation of all inspections and maintenance activities shall be submitted to the City on an annual basis no later than the 1st of October. The documentation shall at a minimum include:
 - date and time of inspections and maintenance activities
 - name of person(s) conducting the inspections and maintenance activities
 - written narrative of observations and actions taken during inspections and maintenance activities.
 - Identify the disposal location of any sediment, oils and/or greases collected from the facilities.
 - Written statement of assurance that facilities are in properly functioning order with signature of authenticity.
- Maintenance, inspection and monitoring shall be completed at the sole expense of the facility owner, its successors and assigns.
- Owner grants the City the right to access and inspect the storm treatment facilities, detention tanks and all related stormwater facilities.

This Agreement is intended to bind the Owner and all future owners of the Property. Owner and the City agree that the Agreement shall be recorded in the County records for the Property and that the recording serves as notice to all future owners of the obligations imposed by this Agreement. This Agreement contains the entire understanding between the undersigned parties and may not be amended except by subsequent agreement and signature of both parties. Failure to meet all terms of this agreement constitutes violation of West Linn Municipal Code section 4.070.

THE CITY OF WEST LINN
An Oregon Municipal Corporation

“Owner”

By:
Its: City Engineer

Dated : _____

By:
Its:

Dated : _____

STATE OF OREGON)
)ss.
COUNTY OF CLACKAMAS)

The foregoing instrument was acknowledged before me this _____ day of _____, by _____, City Engineer for the City of West Linn, a Municipal Corporation, on behalf of the corporation.

Notary Public for Oregon
My Commission Expires: _____

STATE OF OREGON)
)ss.
COUNTY OF CLACKAMAS)

The foregoing instrument was acknowledged before me this ____ day of _____, _____, by _____ of _____.

Notary Public for Oregon
My Commission Expires: _____

After Recording, Please Return to:
 City of West Linn Engineering Div.
 22500 Salamo Road, Box 800
 West Linn, OR 97068

Maintenance Agreement
Recording Authorized by West Linn Municipal Code Section 4.070(a)

X

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West Linn Municipal Code Section 4.070(3) requires the property owner to provide and maintain the following on-site private stormwater detention and/ or treatment facilities, detention tanks and related stormwater quality/quantity facilities. The Maintenance Agreement affects the whole property. The rain garden/stormwater quality facility may not be modified or moved without approval from the City of West Linn.

Required Site Plan (Insert here or attach separate sheet)
 Site Plan Attached

Please complete this table

<i>Facility Type</i>	<i>Size (sf)</i>	<i>Impervious Roof and Driveway and Range from:</i>	<i>Impervious Area Treated (sf)</i>	<i>Discharge to the south</i>
Lined Planter	205		3,298	Existing Wetland

To comply with the code, Owner, on behalf of Owner and all future owners of the Property, agrees to maintain the storm water detention/treatment facilities for and on the Property as provided in this agreement. Owner is responsible for all maintenance obligations and for meeting all standards and criteria imposed in this agreement. The City has no obligation to maintain the facilities but does have the right to inspect the facilities as provided in this agreement.

- Owner shall maintain the facilities such that all discharges meet State, Federal and Local water quality codes and regulations.
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 - written narrative of observations and actions taken during inspections and maintenance activities.
 - Identify the disposal location of any sediment, oils and/or greases collected from the facilities.
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THE CITY OF WEST LINN
An Oregon Municipal Corporation

“Owner”

By:
Its: City Engineer

Dated : _____

By:
Its:

Dated : _____

STATE OF OREGON)
)ss.
COUNTY OF CLACKAMAS)

The foregoing instrument was acknowledged before me this _____ day of _____, by _____, City Engineer for the City of West Linn, a Municipal Corporation, on behalf of the corporation.

Notary Public for Oregon
My Commission Expires: _____

STATE OF OREGON)
)ss.
COUNTY OF CLACKAMAS)

The foregoing instrument was acknowledged before me this ____ day of _____, by _____ of _____.

Notary Public for Oregon
My Commission Expires: _____

Exhibit J: Certified Engineer Letter



April 16, 2020

Darren Wyss
Associate Planner
City of West Linn
22500 Salamo Road
West Linn, OR 97068

RE: WAP-20-01/WRG-20-01/MIS-20-01/LLA-20-01 Floodplain Carrying Capacity

Darren

This letter is intended to provide preliminary certification that the conceptual improvements associated with the above-mentioned application will maintain flood storage and conveyance capacity and not increase design flood elevations.

The subject site consists of Tax Lots 800, 802, and 803, Clackamas County Assessor's Map 3 1E 2AC, located approximately 500 feet north of the intersection of Volpp Street and 9th Street in West Linn. The site topography generally slopes toward the wetland in the central area of the site with slopes varying from 0% to ±25%. The floodplain boundary was determined per FEMA Flood Insurance Rate Map 41005C0259D with a base flood elevation of 75.1 feet (NAVD88), and portions of the property below the base flood elevation are in zone AE. The floodplain boundary running through the northern portion of the site was located based on a topographic survey performed by AKS Engineering & Forestry May 16-17, 2017.

Based on a preliminary cut/fill analysis, the conceptual site improvements will achieve a balanced cut/fill condition within the floodplain. Any new fills associated with on-site improvements that fall within the floodplain will be offset by cuts located on the south side of Tax Lot 803.

During the building permit application process, the new home's crawlspace will be designed per all applicable FEMA and City of West Linn requirements for improvements within the floodplain. A final cut/fill analysis will be performed at this time to verify that improvements within the floodplain will result in a net cut/fill balance.

Please let me know if you have any questions.

Sincerely,

AKS ENGINEERING & FORESTRY, LLC

Jonathon Morse, PE
12965 SW Herman Road, Suite 100
Tualatin, OR 97062
503-563-6151 | jonm@aks-eng.com



RENEWAL DATE: 12/31/20

Exhibit K: Copy of Recorded Easement 2019-6706

31

Clackamas County Official Records
Sherry Hall, County Clerk

2019-006706



\$128.00

02206751201900067060080085

02/07/2019 02:37:48 PM

D-E Cnt=1 Stn=2 COUNTER3
\$40.00 \$16.00 \$62.00 \$10.00

After Recording
Please Return To:
Thomas and Heather Farwell
1220 Ninth St.
West Linn, Oregon 97968

PRIVATE ACCESS AND UTILITY EASEMENT

RECITALS

A. Parties (collectively referred to as the parties)

- (1) Persse means: Andrew Persse and Kami Persse.
- (2) Malibar means: Malibar Group LLC, Retirement Plan FBO: Roy Marvin

B. Properties (collectively referred to as the properties)

- (i) Persse parcel means: Document No. 2018-075762
Clackamas County, State of Oregon
- (ii) Malibar parcel means: Document No. 2017-055155,
Excepting therefrom Parcel 1 and 2 of PP
Plat 2018-⁰⁰⁷₉, Clackamas County, State of Oregon.

C. Easement means: a non-exclusive easement for access and utilities, over and across the following described property benefiting the Malibar Parcel and burdening the Persse Parcel:

The easement area is described in EXHIBIT A and shown on EXHIBIT B

D. Purpose The parties intend, by this agreement, to establish an easement for access and utilities. This easement shall benefit the Malibar Parcel and burden the Persse Parcel.

AGREEMENTS

1. **Consideration.** The consideration for this agreement is non-monetary.
2. **Grant of Easement.** Persse grants to Malibar a non-exclusive easement for access and utilities over the Easement.
3. **Maintenance:**
 - a.) Malibar shall be responsible for the maintenance in the Easement Area.
 - b.) Malibar shall have the right to perform maintenance for the Easement over the following described exhibit A:
4. **Additional Provisions:**
 - a.) Malibar agrees to save and hold Persse harmless from all claims of third parties arising from Malibar's use of the rights herein granted.
5. **Future owners.** This agreement shall run with, benefit and burden the properties and shall benefit and bind the parties and their respective successors in interest.
6. **Attorney Fees.** In the event of action, arbitration, litigation, or appeal to enforce any provision of this agreement, the prevailing party shall be entitled to reasonable attorney fees and court costs.

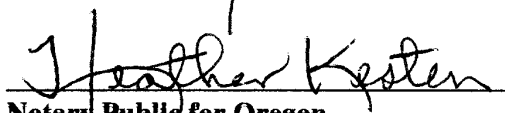
Dated this 1st day of February 2019.

GRANTOR:


 Andrew Persse

STATE OF OREGON, County of Clackamas) ss.

The foregoing instrument was acknowledged before me this 1st day of February, 2019 by Andrew Persse.


 Notary Public for Oregon
 My Commission Expires 10-19-20



GRANTOR:

Kami Persse
Kami Persse

STATE OF OREGON, County of Clackamas ss.

The foregoing instrument was acknowledged before me this 1st day of February, 2019 by Kami Persse.

Heather Kesten
Notary Public for Oregon
My Commission Expires 10-19-20





AKS ENGINEERING & FORESTRY, LLC
12965 SW Herman Road, Suite 100, Tualatin, OR 97062
P: (503) 563-6151 F: (503) 563-6152

AKS Job #5926

OFFICES IN: TUALATIN, OR - VANCOUVER, WA - SALEM-KEIZER, OR

EXHIBIT A

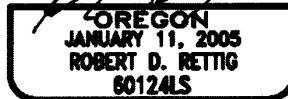
Easement Description

A portion of vacated right-of-way, located in the Northeast One-Quarter of Section 2, Township 3 South, Range 1 East, Willamette Meridian, City of West Linn, Clackamas County, Oregon, and being more particularly described as follows:

Beginning at the southeasterly corner of Lot D, Tract 21 of the plat "Willamette & Tualatin Tracts", Plat No. 198, Clackamas County Plat Records, also being the intersection of the northerly right-of-way line of vacated 3rd Avenue (20.00 feet from centerline) and the westerly right-of-way line of 9th Street (20.00 feet from centerline); thence along said westerly right-of-way line, South 22°19'40" East 20.00 feet to the centerline of said vacated 3rd Avenue; thence along said centerline, South 67°37'35" West 254.41 feet; thence leaving said centerline, North 22°19'40" West 20.00 feet to the northerly right-of-way line of said vacated 3rd Avenue (20.00 feet from centerline); thence along said northerly right-of-way line, North 67°37'35" East 254.41 feet to the Point of Beginning.

The above described tract of land contains 5,088 square feet, more or less.

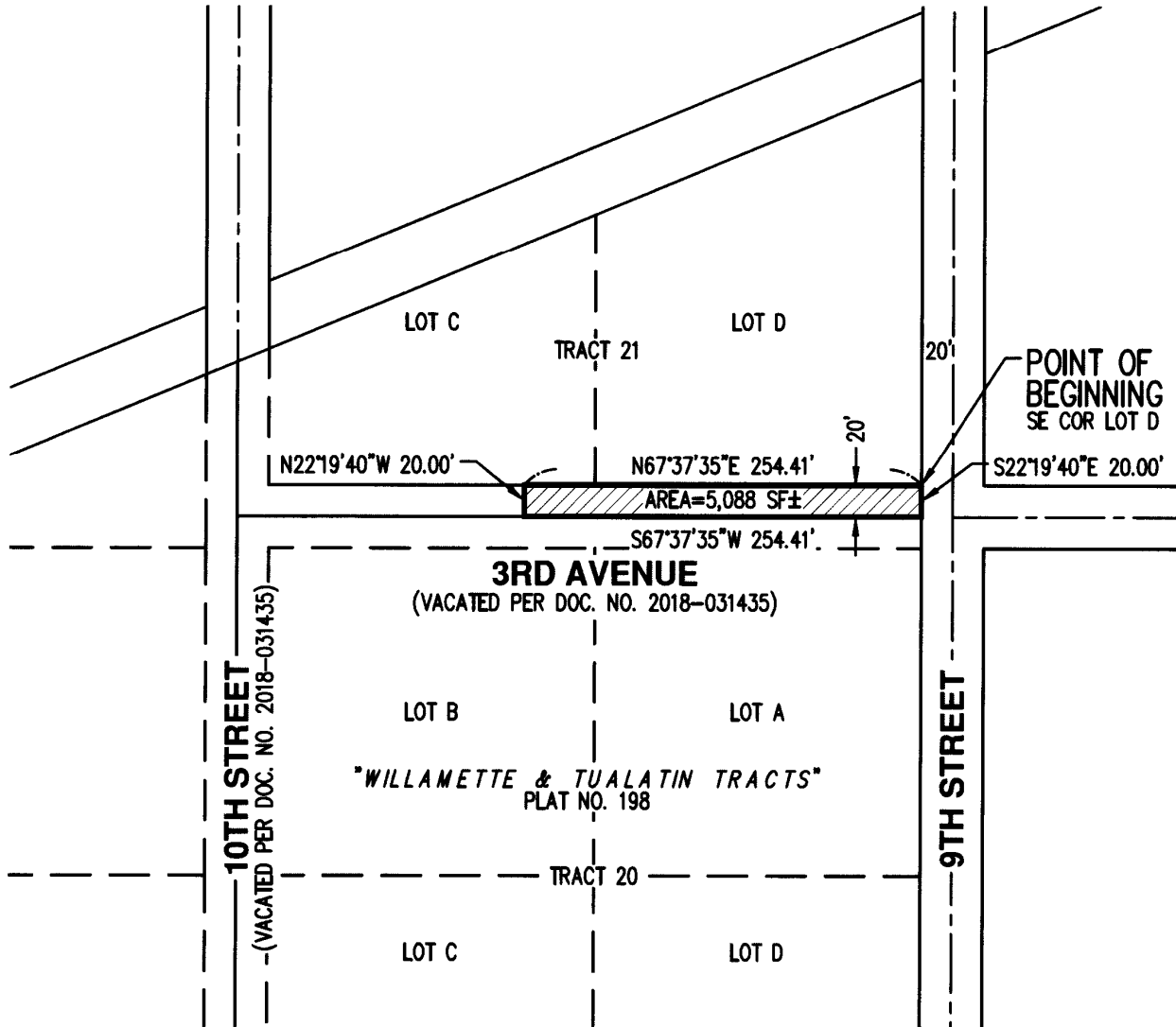
11/9/2018



RENEWS: 12/31/18

EXHIBIT B

A PORTION OF VACATED RIGHT-OF-WAY,
 LOCATED IN THE NORTHEAST 1/4 OF SECTION 2,
 TOWNSHIP 3 SOUTH, RANGE 1 EAST, WILLAMETTE MERIDIAN,
 CITY OF WEST LINN, CLACKAMAS COUNTY, OREGON



11/9/2018

**REGISTERED
 PROFESSIONAL
 LAND SURVEYOR**

Robert D. Rettig

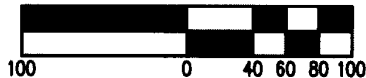
OREGON
 JANUARY 11, 2005
 ROBERT D. RETTIG
 60124LS

RENEWS: 12/31/20

PREPARED FOR

ENCORE HOMES LLC
 7989 SE TOWHEE COURT
 MILWAUKIE, OR 97267

SCALE: 1" = 100 FEET



EASEMENT MAP

AKS ENGINEERING & FORESTRY, LLC
 12965 SW HERMAN RD, STE 100
 TUALATIN, OR 97062
 P: 503.563.6151 F: 503.563.6152 aks-eng.com



**EXHIBIT
 B**

DRWN: WCB
 CHKD: RDR

AKS JOB:
 5926

Attached for Legibility Purposes

After Recording
Please Return To:
Thomas and Heather Farwell
1220 Ninth St.
West Linn, Oregon 97968

PRIVATE ACCESS AND UTILITY EASEMENT

RECITALS

A. Parties (collectively referred to as the parties)

- (1) Persse means: Andrew Persse and Kami Persse.
- (2) Malibar means: Malibar Group LLC, Retirement Plan FBO: Roy Marvin

B. Properties (collectively referred to as the properties)

- (i) Persse parcel means: Document No. 2018-075762
Clackamas County, State of Oregon
- (ii) Malibar parcel means: Document No. 2017-055155,
Excepting therefrom Parcel 1 and 2 of PP
Plat 2018- _____, Clackamas County, State of Oregon.

C. Easement means: a non-exclusive easement for access and utilities, over and across the following described property benefiting the Malibar Parcel and burdening the Persse Parcel:

The easement area is described in EXHIBIT A and shown on EXHIBIT B

D. Purpose The parties intend, by this agreement, to establish an easement for access and utilities. This easement shall benefit the Malibar Parcel and burden the Persse Parcel.

AGREEMENTS

f

1. **Consideration.** The consideration for this agreement is non-monetary.
2. **Grant of Easement.** Persse grants to Malibar a non-exclusive easement for access and utilities over the Easement.
3. **Maintenance:**
 - a.) Malibar shall be responsible for the maintenance in the Easement Area.
 - b.) Malibar shall have the right to perform maintenance for the Easement over the following described exhibit A:
4. **Additional Provisions:**
 - a.) Malibar agrees to save and hold Persse harmless from all claims of third parties arising from Malibar's use of the rights herein granted.
5. **Future owners.** This agreement shall run with, benefit and burden the properties and shall benefit and bind the parties and their respective successors in interest.
6. **Attorney Fees.** In the event of action, arbitration, litigation, or appeal to enforce any provision of this agreement, the prevailing party shall be entitled to reasonable attorney fees and court costs.

Dated this _____ day of _____ 2019.

GRANTOR:

Andrew Persse

STATE OF OREGON, County of _____) ss.

The foregoing instrument was acknowledged before me this _____ day of _____, 2019 by Andrew Persse.

Notary Public for Oregon
My Commission Expires _____

GRANTOR:

Kami Persse

STATE OF OREGON, County of _____) ss.

The foregoing instrument was acknowledged before me this _____ day of _____, 2019 by Kami Persse.

Notary Public for Oregon

My Commission Expires _____

8

Exhibit L: Fire Department Approval

From: [Arn, Jason S.](#)
To: [Alan Richards](#)
Cc: [Jon Morse](#)
Subject: RE: 1220 9th Street Access Drive
Date: Monday, November 16, 2020 10:37:31 AM
Attachments: [image001.jpg](#)
[5926_20201113_ACCESS_DRIVE.pdf](#)

EXTERNAL EMAIL: This email originated from outside of AKS Engineering & Forestry. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Alan,

Yes, the proposed site plan is acceptable to the Fire District with the installation of a voluntary fire sprinkler system due to the 220' foot driveway length.

Let me know if you have any questions or need further.

Best,

Jason Arn | Deputy Fire Marshal

Tualatin Valley Fire & Rescue

Direct: 503-259-1510

www.tvfr.com

From: Alan Richards <richardsa@aks-eng.com>
Sent: Friday, November 13, 2020 11:46 AM
To: Arn, Jason S. <Jason.Arn@tvfr.com>
Cc: Jon Morse <jonm@aks-eng.com>
Subject: 1220 9th Street Access Drive

*****The sender is from outside TVF&R – Do not click on links or attachments unless you are sure they are safe*****

Hi Jason,

I am working with Andreas on the project located at 1220 9th street in West Linn. We have heard back from the city regarding the 20' of clear space on the access drive for Tax Lot 800. They do not have a clear design standard and it was mentioned that they will sign off on the access way pending TVFR approval. As is stands now we are proposing a 12' paved access with a stormwater swale on the south side that will be offset 1' from the paved area. 6' of the swale is within the 20' of clear space area. I have attached an exhibit showing the access way and swale location. Will this be an acceptable layout to move forward with?

Thank you,

Alan Richards



AKS ENGINEERING & FORESTRY, LLC

12965 SW Herman Road, Suite 100 | Tualatin, OR 97062

P: 503.563.6151 Ext. 170 | F: 503.563.6152 | www.aks-eng.com | richardsa@aks-eng.com

Offices in: Bend, OR | Keizer, OR | Tualatin, OR | Vancouver, WA

NOTICE: This communication may contain privileged or other confidential information. If you have received it in error, please advise the sender by reply e-mail and immediately delete the message and any attachments without copying or disclosing the contents. AKS Engineering and Forestry shall not be liable for any changes made to the electronic data transferred. Distribution of electronic data to others is prohibited without the express written consent of AKS Engineering and Forestry.

Exhibit M: Pre-Construction Elevation Certificate

ELEVATION CERTIFICATE

Important: Follow the instructions on pages 1–9.

Copy all pages of this Elevation Certificate and all attachments for (1) community official, (2) insurance agent/company, and (3) building owner.

SECTION A – PROPERTY INFORMATION				FOR INSURANCE COMPANY USE	
A1. Building Owner's Name Malibar Group, LLC				Policy Number:	
A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. No Site Address				Company NAIC Number:	
City West Linn		State Oregon		ZIP Code 97068	
A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.) Tax Lot 800, Clackamas County Tax Map 3 1E 2AC					
A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.) <u>Residential</u>					
A5. Latitude/Longitude: Lat. <u>45.341974</u> Long. <u>-122.648248</u> Horizontal Datum: <input type="checkbox"/> NAD 1927 <input checked="" type="checkbox"/> NAD 1983					
A6. Attach at least 2 photographs of the building if the Certificate is being used to obtain flood insurance.					
A7. Building Diagram Number <u>8</u>					
A8. For a building with a crawlspace or enclosure(s):					
a) Square footage of crawlspace or enclosure(s) <u>1295.00</u> sq ft					
b) Number of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade <u>11</u>					
c) Total net area of flood openings in A8.b <u>1300.00</u> sq in					
d) Engineered flood openings? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					
A9. For a building with an attached garage:					
a) Square footage of attached garage <u>642</u> sq ft					
b) Number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade <u>0</u>					
c) Total net area of flood openings in A9.b <u>0.00</u> sq in					
d) Engineered flood openings? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
SECTION B – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION					
B1. NFIP Community Name & Community Number City of West Linn 410024			B2. County Name Clackamas County		B3. State Oregon
B4. Map/Panel Number 41005C0259	B5. Suffix D	B6. FIRM Index Date 01-18-2019	B7. FIRM Panel Effective/ Revised Date 06-17-2008	B8. Flood Zone(s) AE	B9. Base Flood Elevation(s) (Zone AO, use Base Flood Depth) 75.1
B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in Item B9: <input checked="" type="checkbox"/> FIS Profile <input type="checkbox"/> FIRM <input type="checkbox"/> Community Determined <input type="checkbox"/> Other/Source: _____					
B11. Indicate elevation datum used for BFE in Item B9: <input type="checkbox"/> NGVD 1929 <input checked="" type="checkbox"/> NAVD 1988 <input type="checkbox"/> Other/Source: _____					
B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Designation Date: _____ <input type="checkbox"/> CBRS <input type="checkbox"/> OPA					

ELEVATION CERTIFICATE

OMB No. 1660-0008
Expiration Date: November 30, 2022

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. No Site Address			Policy Number:
City West Linn	State Oregon	ZIP Code 97068	Company NAIC Number

SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: Construction Drawings* Building Under Construction* Finished Construction
 *A new Elevation Certificate will be required when construction of the building is complete.

C2. Elevations – Zones A1–A30, AE, AH, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO.
 Complete Items C2.a–h below according to the building diagram specified in Item A7. In Puerto Rico only, enter meters.

Benchmark Utilized: NGS NO. RD1501 Vertical Datum: NAVD 88

Indicate elevation datum used for the elevations in items a) through h) below.

NGVD 1929 NAVD 1988 Other/Source: _____

Datum used for building elevations must be the same as that used for the BFE.

Check the measurement used.

- | | | | |
|---|-------------|--|---------------------------------|
| a) Top of bottom floor (including basement, crawlspace, or enclosure floor) | <u>75.2</u> | <input type="checkbox"/> feet | <input type="checkbox"/> meters |
| b) Top of the next higher floor | <u>80.3</u> | <input checked="" type="checkbox"/> feet | <input type="checkbox"/> meters |
| c) Bottom of the lowest horizontal structural member (V Zones only) | <u>N/A</u> | <input type="checkbox"/> feet | <input type="checkbox"/> meters |
| d) Attached garage (top of slab) | <u>80.3</u> | <input type="checkbox"/> feet | <input type="checkbox"/> meters |
| e) Lowest elevation of machinery or equipment servicing the building
(Describe type of equipment and location in Comments) | <u>80.0</u> | <input type="checkbox"/> feet | <input type="checkbox"/> meters |
| f) Lowest adjacent (finished) grade next to building (LAG) | <u>75.2</u> | <input checked="" type="checkbox"/> feet | <input type="checkbox"/> meters |
| g) Highest adjacent (finished) grade next to building (HAG) | <u>80.3</u> | <input checked="" type="checkbox"/> feet | <input type="checkbox"/> meters |
| h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support | <u>N/A</u> | <input type="checkbox"/> feet | <input type="checkbox"/> meters |

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information. I certify that the information on this Certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

Were latitude and longitude in Section A provided by a licensed land surveyor? Yes No Check here if attachments.

Certifier's Name Benjamin Huff	License Number 84738PLS	<div style="border: 2px solid black; padding: 5px; margin-bottom: 10px;"> <p style="margin: 0;">REGISTERED PROFESSIONAL LAND SURVEYOR</p> </div> <p style="font-size: 1.2em; margin: 0;"><i>Benjamin R Huff</i></p> <div style="border: 2px solid black; padding: 5px; margin: 0;"> <p style="margin: 0; text-align: center;">OREGON MARCH 14, 2017 BENJAMIN R HUFF 84738PLS RENEWS: 6/30/21</p> </div>	
Title Land Surveyor			
Company Name AKS Engineering and Forestry			
Address 12965 SW Herman Road, Suite 100			
City Tualatin	State Oregon	ZIP Code 97062	
Signature <i>Benjamin R Huff</i>	Date 12-9-2020	Telephone (503) 563-6151	Ext. 212

Copy all pages of this Elevation Certificate and all attachments for (1) community official, (2) insurance agent/company, and (3) building owner.

Comments (including type of equipment and location, per C2(e), if applicable)
 *This is a Pre-Construction Elevation certificate for planning applications, and not to be used for insurance purposes. Values reported in this certificate are subject to change upon final engineering design.
 *This certificate assumes 9 standard vents will be installed, covering 100 square feet of net area each, and 2 engineered vents will be installed, covering 200 square feet of net area each, for a total of 1300 square feet of coverage area.