

May 3, 2018

Mr. Peter Spir, Assoc. Planner
City of West Linn
PO Box 29
West Linn, OR 97068

Rick Givens
Planning Consultant
18680 Sunblaze Dr.
Oregon City, Oregon 97045

RE: Ferndell Estates (SUB-18-01, WRG-18-02)

Dear Peter:

We are submitting additional information in response to the incompleteness letter of March 14, 2018 for Ferndell Estates. The staff comments in that letter have been addressed as follows:

1. Erosion control plans are now provided on the revised Grading Plan.
2. After discussion with Assistant City Engineer Erich Lais regarding the location of the storm drainage treatment facility on Tax Lot 1000, which is owned by Mr. Varitz but is not a part of this subdivision, it has been agreed that the applicant will grant an easement for the drainage treatment facility and for access to that facility by the City for maintenance purposes. See easement note on Tentative Plan.
3. Street trees are now shown on the revised Tentative Plan.
4. A copy of the deed to the subdivision tract with legal description is attached.
5. A re-division plan for TL 1000 is now shown on the Tentative Plan.
6. A geologic report has been prepared for the site and is being submitted with this letter.
7. A full storm report has been prepared for this application and is being submitted with this letter.
8. The requirement of the TSP Table 17 and Figure 12 for pedestrian/bike connection from Old River Rd. to Robin View Ct. will be met in part by the sidewalk and low volume local street being developed with the approval of this application. The connection will be completed when TL 1000 is developed in the future.

Discussion with Erich Lais indicates that the proposed location of the hammerhead turn-around is acceptable to Public Works as long as the Fire Department is satisfied with this location. It is our understanding that TVF&R has approved this design.


Tax Lots 1000 and 500 are not a part of this subdivision application. As shown on the future development plan shown on the Tentative Plan, the alley-level street connection to Robin View will be completed when Tax Lot 1000 is re-developed in the future.

9. The Street Plan shows the curb returns at the entrance to the subdivision from Old River Road. Details of the pavement transition will be provided with the final engineering for the project. Per discussions with Erich Lais, the plans for the future connection to Robin View Drive/Court will be deferred until Tax Lot 1000 is re-developed.

10. The applicant proposes to change the street name from Riverside Court, which is the current address for the property, to Ferndell Drive. Riverside Court is not a platted street but, rather, an informal name for the 50' access strip of the subject property. The final plat for the proposed subdivision will establish Ferndell Drive as the name of the new street.
11. The applicant acknowledges that the correct standard for the response to Chapter 92(A)(1) is 6' sidewalks and 6' planter strips.
12. The Utility Plan now is noted to show the replacement of the existing 2" water line in Robin View Ct. from the new street's terminus to Robin View Drive.
13. A report has been prepared by Schott & Associates to address the Habitat Conservation Area designation on the eastern portion of the subject property and Tax Lot 1000. That report verifies that there are no water resources present on either property that would warrant the HCA designation. It is requested the Planning Director accept this map correction.
14. Street light locations are now noted on the Utility Plan.
15. Please refer to the Schott & Associates report regarding re-designation of the HCA.
16. As discussed in the Schott & Associates report, there are no HCA resources present on the subject property.
17. We request that the HCA map be re-designated to remove the HCA designation from the subject property and TL 1000 per the Schott & Associates recommendation.
18. The Schott & Associates report demonstrates that the HCA should be removed from the subject property so there is no need to address 28.070L.
19. The trench from the storm water treatment facility is minor in nature, consisting of simply cutting a shallow "V" to channel the water to the Willamette River. Chapter 2 defines "development" as, "Any manmade change defined as the construction of buildings or other structures, mining, dredging, paving, filling, grading or site clearing, and grubbing in amounts greater than 10 cubic yards on any lot, parcel, or lot of record. Within the flood management area, this term shall also include storage of equipment or materials." The proposed grading will not disturb more than 10 cubic yards of material and does not involve the storage of equipment or materials on the property. For this reason, a Flood Management Area permit is not required.

We believe that we have provided information to address all of the items listed in the letter of incompleteness and it is our hope that you will now deem the application complete. If you do need anything further, please let me know.

Sincerely yours,

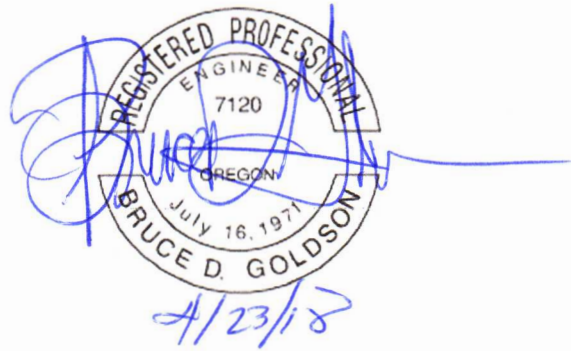


Rick Givens

Cc: Bill Varitz, Greg Sams

Ferndell Estates SUBDIVISION
Preliminary
STORM DRAINAGE REPORT
April 2018

PREPARED BY:
BRUCE D GOLDSON, PE
THETA ENGINEERING



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Preliminary Storm drainage report for Ferndell Estates

Site Conditions:

This parcel is a rectangular tract made up of two parcels (3300 & 3350 Riverside Ct.) and containing approximately 3.1 acres. Riverside Ct. is a private drive that is connected to Old River Road, A public street. Easterly 17828 Robin View Court has direct access to the Willamette River. There are two residential dwellings and several out building on site. The property is generally wooded and slopes towards The Willamette River with an overall average slope of 7% with local areas in the 15% range. With development ten (1) lots are proposed with a public street ending with a partial blub that would be extended to Robin View Ct. with future development.

Regulatory

2.0013 Minimum Design Criteria

A. Storm Detention Facilities

2. Storms to be evaluated shall include the 2, 5, 10, 25 and 100-year events. Allowable post development discharge rates for the 2, 5, 10, and 25-year events shall be that of the pre-development rate. An outfall structure such as a "V-Notch" weir or single or multiple orifice structure shall be designed to control the release rate for the above events. No flow control orifice smaller than 1 in. shall be allowed. If the maximum release cannot be met with all the site drainage controlled by a single 1 in. orifice, the allowable release rate provided by a 1 in. orifice will be considered adequate as approved by the City Engineer.

Hydrologic Soils Group:

The Oregon Soil Survey was used to determine the soil type and Hydrologic Soil Group.

Map unit Symbol	Map unit name
19	Cloquanta Silt
91B	Woodburn Silt

DRAINAGE STRATEGY

Since the property is in close proximity to the Willamette River and has direct access to the water no detention is proposed. A water quality facility is proposed using the criteria of the City of Portland.

Presumptive Approach Calculator

Hierarch Category 3, Drainage way, stream (Willamette River)

Rectangular basin with 3:1 side slopes

Results: see printout

Design Parameters

The design storm is a 24 hour standard SCS Type 1A

- 2-year.....2.5 inches
- 10-year.....3.45 inches
- 25-year.....3.9 inches
- 100-year.....4.5 inches

Recommendations & Conclusion

With proximity to the Willamette River detention would have no measurable effect on the flood flow of the river. A water quality pond on 17828 Robin View Court will provide the necessary cleaning of the storm water prior to discharge into the river. This facility will be located above the 100-year floor plain of the River



Presumptive Approach Calculator ver. 1.2

Catchment ID: **A**

Run Time 4/24/2018 9:13:56 AM

Project Name: Ferdell estates

Catchment ID: A

Date: 4 24 2018

Instructions:

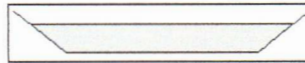
1. Identify which Stormwater Hierarchy Category the facility.
2. Select Facility Type.
3. Identify facility shape of surface facility to more accurately estimate surface volume, except for Swales and sloped planters that use the PAC Sloped Facility Worksheet to enter data.
4. Select type of facility configuration.
5. Complete data entry for all highlighted cells.

Catchment facility will meet Hierarchy Category: **3**

Goal Summary:

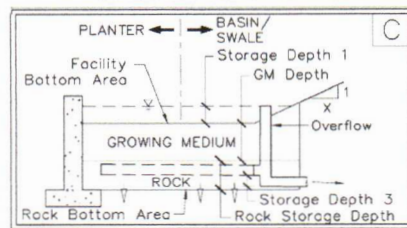
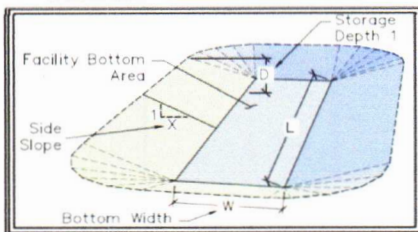
Hierarchy Category	SWMM Requirement	RESULTS box below needs to display...	
		Pollution Reduction as a	10-yr (aka disposal) as a
3	Off-site flow to drainageway, river, or storm-only pipe system.	PASS	N/A

Facility Type = **basin**



Facility Shape: **Rectangle/Square**

Facility Configuration: **C**



Calculation Guide
Max. Rock Stor.
Bottom Area
600 SF

DATA FOR ABOVE GRADE STORAGE COMPONENT

Facility Bottom Area = **144** sf
 Bottom Width = **6.0** ft
 Facility Side Slope = **3** to 1
 Storage Depth 1 = **24** in
 Growing Medium Depth = **18** in
 Freeboard Depth = **12** in

BELOW GRADE STORAGE

Rock Storage Bottom Area = **200** sf
 Rock Storage Depth = **12** in
 Rock Void Ratio = **0.3**
 Storage Depth 3 = **6** in

Surface Capacity at Depth 1 = **744** cf
 Infiltration Area at 75% Depth1 = **486** SF
 GM Design Infiltration Rate = **2.00** in/hr
 Infiltration Capacity = **0.023** cfs

Rock Storage Capacity = **30** cf
 Native Design Infiltration Rate = **0.50** in/hr
 Infiltration Capacity = **0.002** cfs

RESULTS		Overflow Volume	
Pollution Reduction	PASS	0 CF	96% Surf. Cap. Used
			100% Rock Cap. Used
Output File			
	2-yr	5-yr	10-yr
Peak cfs	0.509	0.622	0.734
			25-yr
			0.846

FACILITY FACTS	
Total Facility Area Including Freeboard =	1,008 SF
Sizing Ratio (Total Facility Area / Catchment Area) =	0.023



Presumptive Approach Calculator ver. 1.2

Catchment Data

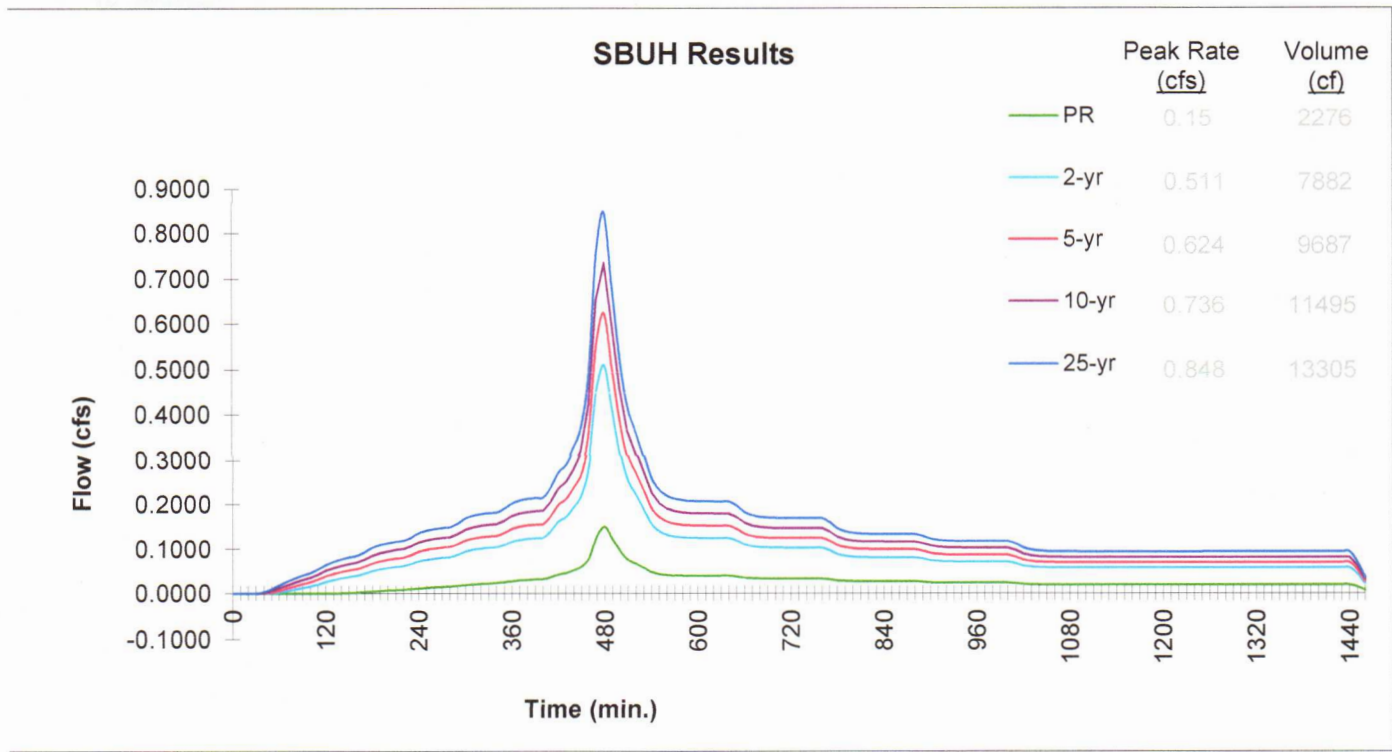
Project Name: **Ferdell estates**
 Project Address: **West Linn**
Oregon
 Designer: **Goldson**
 Company: **Theta**

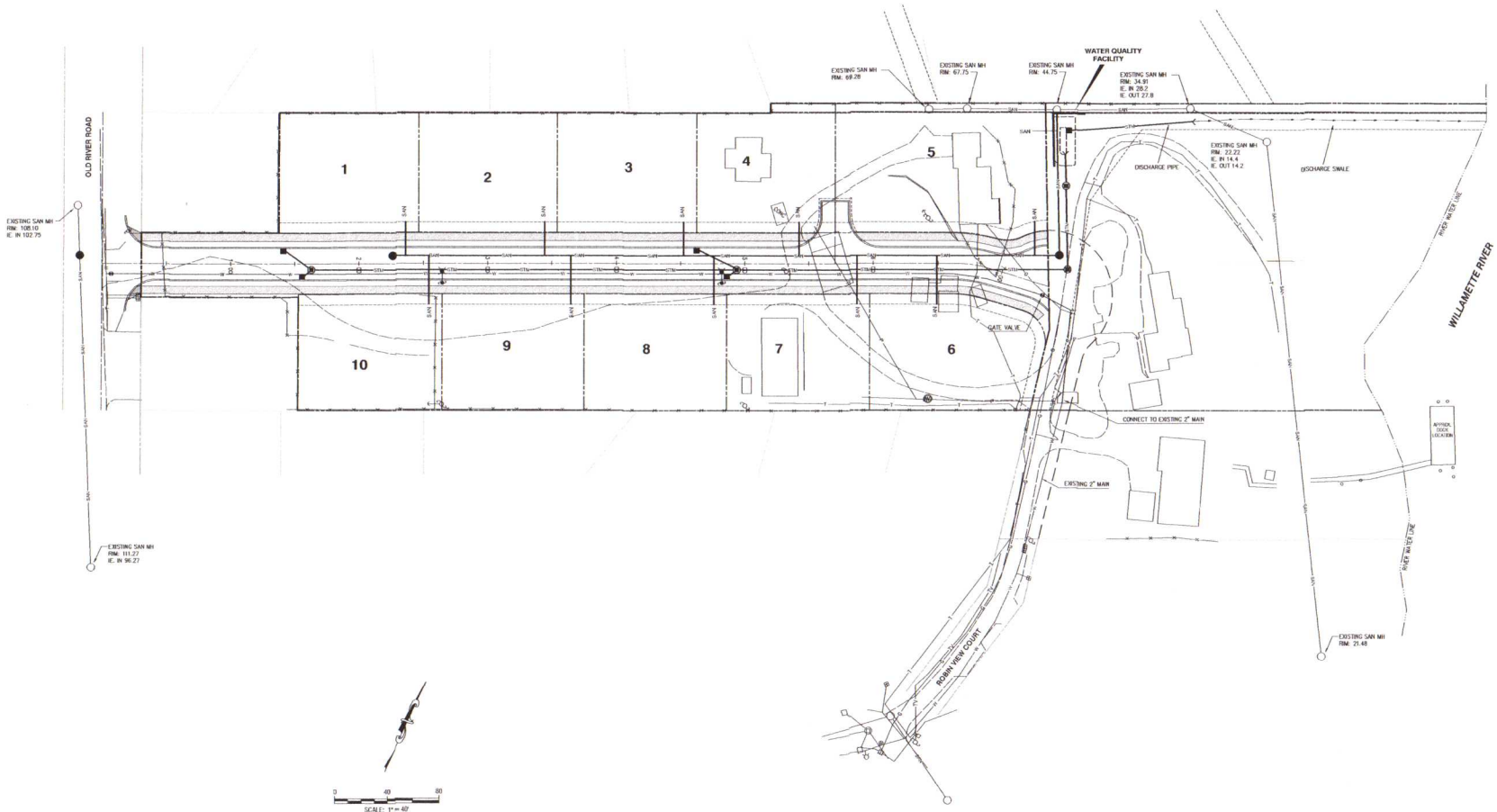
Catchment ID: **A**
 Date: **4 24 2018**
 Permit Number: **x**

Run Time 4/24/2018 9:13:56 AM

Drainage Catchment Information	
Catchment ID	A
Catchment Area	
Impervious Area	43,560 SF
Impervious Area	1.00 ac
Impervious Area Curve Number, CN_{imp}	98
Time of Concentration, T_c , minutes	15 min.
Site Soils & Infiltration Testing Data	
Infiltration Testing Procedure:	Open Pit Falling Head
Native Soil Field Tested Infiltration Rate (I_{test}):	1 in/hr
Bottom of Facility Meets Required Separation From High Groundwater Per BES SWMM Section 1.4:	Yes
Correction Factor Component	
CF_{test} (ranges from 1 to 3)	2
Design Infiltration Rates	
I_{dsgn} for Native (I_{test} / CF_{test}):	0.50 in/hr
I_{dsgn} for Imported Growing Medium:	2.00 in/hr

Execute SBUH





PRELIMINARY UTILITY PLAN

Ferndell Estates

SHEET:
2/3

2018-250

DESIGNED: BDG			
DRAWN: BUS			
SCALE: 1" = 40'			
DATE: June, 2017			
FILE: Ferndell Estates	DATE	NO.	REVISION

Theta, llc
 ENGINEERING - SURVEYING - PLANNING
 PO Box 1345 503.481.4822
 Lake Oswego, Oregon 97035 email: thetaeng@comcast.net

Map Unit Legend



Legend

Clackamas County Area, Oregon (OR610)

Clackamas County Area, Oregon
(OR610)



Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
19	Cloquato silt loam	0.4	8.6%
91B	Woodburn silt loam, 3 to 8 percent slopes	4.3	91.4%
Totals for Area of Interest		4.7	100.0%

GEOTECHNICAL REPORT

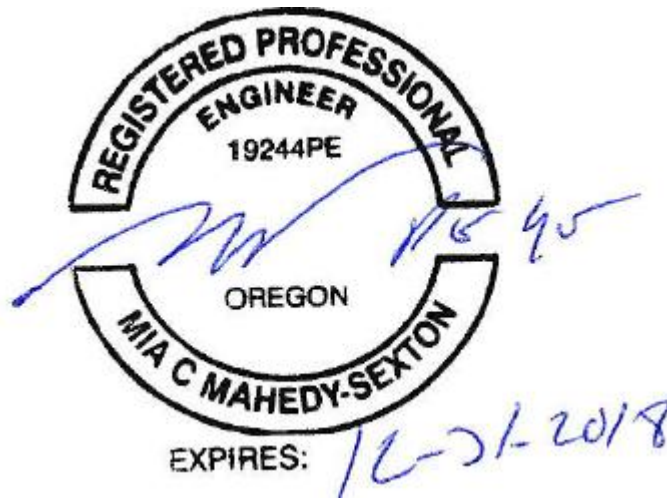
Ferndall Estates

West Linn, Oregon

For

Bill Varitz and Greg Sams

4 April 2018



3915 SW Plum Street
Portland, OR 97219
503-816-3689
mia@rapidsolutions.com

INTRODUCTION

Rapid Soil Solutions (RSS) has prepared this geotechnical report, as requested, for the proposed 10 lot subdivision of the Clackamas County parcel assigned the state tax lot identification numbers of 21E14AD00990 and 21E14AD01001. The site is situated in the Robinwood neighborhood of the City of West Linn, Oregon. It is situated on the eastern side of Old River Road between Cherokee Court (200 ft southeast) and River Woods Place (600 feet northwest). The site is situated on slopes between Old River Road and the Willamette River. The main body of the site extends from roughly 100' northeast of Old River Drive to about 300' southwest of the Willamette River. A 50' wide and 108' long strip of land containing Riverside Court connects the main body of the subject site with Old River Drive. This private roadway is boarded on either side by single family dwellings assigned the street addressed of 18602 and 18650 Old River Drive. The site currently contains one single family dwelling assigned the street address of 3350 Riverside Court and a vacant lot assigned the street address of 3300 Riverside Court (West Linn, OR 97068).

The site is located roughly 0.4 miles northeast of Willamette Drive, 0.4 miles southwest of SE River Road, 0.2 miles south of Hog Island, 1 miles southwest of OR-99E, 1.3 miles south of the Oswego Creek confluence with the Willamette River and is 2.8 miles northwest of I-205 at exit 8 (OR-43) in West Linn. The land surrounding the subject site was divided by a survey 1922 called the 'Holly Acres' subdivision, a now vacated plat. The site occupies portions of lots 11A, 12, 26, 27 and 28 of this subdivision. The site can be found in the Southeast Quarter of the Northeast Quarter of Section 14, Township 2-South, Range 1-East (W.M.) in Clackamas County and can be distinguished by the tax lot numbers 1001 and 990. The latitude and longitude of the subject site are 45.397024 and -122.639937 (45°23'49.3"N, 122°38'23.8"W). The site can be found in the southeastern quarter of the Lake Oswego, OR 7.5-minute quadrangle (NE ¼ of the Oregon City 15' Quadrangle).

SITE CONDITIONS

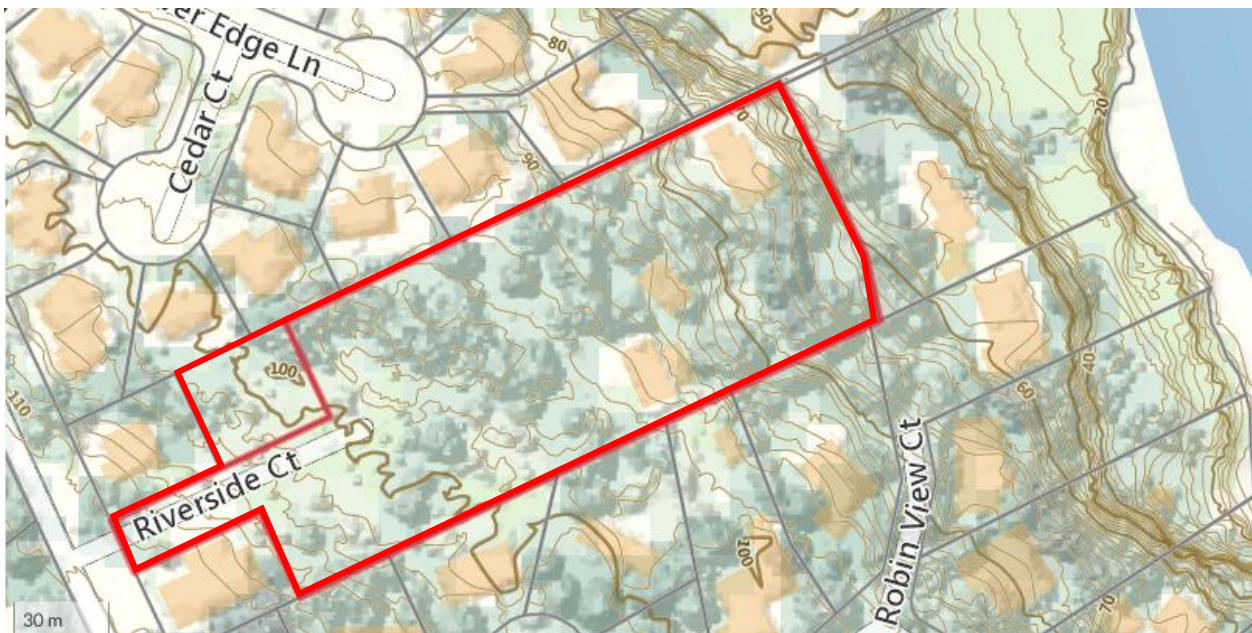
Surface Conditions

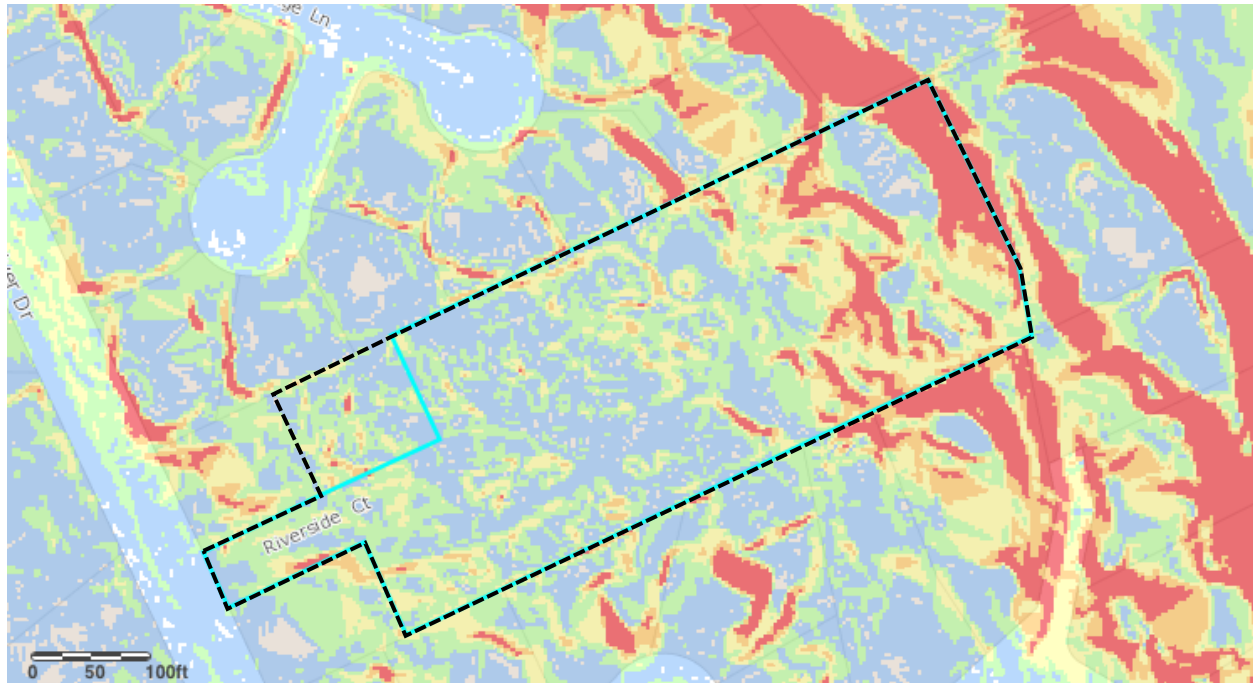
The property is in the residential neighborhood of Robinwood. It is surrounded on all sides by single-family dwellings on parcels ranging from 1.45 acres to 0.20 acres in size. The surrounding dwellings are up to 64 years old, with construction dates generally clumped between 1954-1957 and 1989-1992, with a couple structures built in 1967 and 1980. The site and surrounding parcels are zoned as part of a single family residential detached dwelling district (R10) with a minimum lot size of 10,000 square feet. It is in a 'low density' designation in the West Linn, Oregon comprehensive plan. The site is located within an area of land annexed by West Linn in 1967.

The subject site is primarily forested, containing a thick canopy and moderately thin understory typical of the local region. The site is accessed by the private road Riverside Court, which is gated roughly 50 feet northeast of Old River Road. This paved private drive is used to access the existing single-family dwelling assigned the street address of 3350 Riverside Court. The site currently contains 8 structures including the dwelling, a cabin, a shop, sheds and other outbuildings. A 1974 survey of the subject site and the parcel adjacent to the east (17828 Robin View Court) indicates the presence of three structures on the subject site when the survey was conducted. These structures correspond with the location of the existing house, outbuilding in proposed lot 4 and the cluster of structures in proposed lot 6. This survey also indicates that the

driveways running through the subject site have not been changed dramatically since 1974. Historic aerial imagery dating back to 1994 was referenced as part of this investigation. The imagery does not indicate the occurrence of major changes at the site in the past 24 years.

The slopes on site descend generally towards the Willamette River, flowing north-northwest roughly 300 feet beyond the eastern edge of the subject parcel. A 5-ft slope map derived from LIDAR of the Portland, OR and surrounding area indicates that the subject site includes slopes modeled as falling within the categories of less than 5% (blue), 5-10% (green), 10-15% (yellow), 15-20% (orange) and greater than 20% (red) with the areas of steep slopes generally located in the eastern end of the subject site. The area surrounding the existing residence is relatively level, which appears to be the result of historical grading. The low slope area in proposed lot 4, proposed lot 6 and proposed lot 7 appears to also have been artificially leveled for the structures they are underlying. This historic grading has created slightly steeper slopes adjacent to the artificially low slope areas. 2' contours of the topography at the subject site available from Metro Map and 1' contours presented in the preliminary grading plan, indicate that there is roughly a 50-foot elevation change from the southwestern edge of the site at Old River Drive and the northeastern edge of the subject site. The steepest section of the parcel is located directly down slope of the existing dwelling (proposed lot 5). Slope analysis presented by Richard E. Givens, Planning Consultant indicates that the slopes on the majority of the subject site (73.6%) are less than 10%. These slopes are found within proposed lots 1-3 and 4-6. The slope area across most of the eastern end of the subject site fall within a 10-25% slope category. The slopes of 25-35% are found adjacent to artificially leveled areas in the eastern end of the subject site. The steepest section is modeled as containing slopes of greater than 35% and are found in the northern/northeastern corner of the parcel directly down slope of the existing dwelling. RSS understands that proposed grading for the site will cut into the steeper slope areas in the eastern end of the subject site, up to 9', to create a less severe roadway descent.





Geology

Current geologic literature^{1,2,3,4,5,6,7,8,9,10,11,12} classifies the slopes underlying the subject site as draped in a thick layer of Missoula Flood deposits. The deposits on site are further classified as

¹ <http://www.oregongeology.org/sub/ogdc/index.htm>

² Ma, L., Madin, I.P., Duplantis, S., and Williams, K.J., 2012, *Lidar-based surficial geologic map and database of the greater Portland, Oregon, area, Clackamas, Columbia, Marion, Multnomah, Washington, and Yamhill Counties, Oregon, and Clark County, Washington*: Oregon Department of Geology and Mineral Industries, Open-File Report O-2012-02, scale 1:8,000.

³ Burns, W.J., Mickelson, K.A., Jones, C.B., Pickner, S.G., Hughes, K.L.B., and Sleeter, Rachel, 2013, *Landslide hazard and risk study of northwestern Clackamas County, Oregon*: Oregon Department of Geology and Mineral Industries, Open-File Report O-2013-08, scale 1:8,000.

⁴ Burns, W.J. and Duplantis, S., 2010, *Landslide inventory maps for the Lake Oswego quadrangle, Clackamas, Multnomah, and Washington Counties, Oregon*: Oregon Department of Geology and Mineral Industries, Interpretive Map Series IMS-32, scale 1:8,000.

⁵ Beeson, M.H., Tolan, T.L., and Madin, I.P., 1989, *Geologic map of the Lake Oswego quadrangle, Clackamas, Multnomah, and Washington counties, Oregon*: Oregon Department of Geology and Mineral Industries, Geological Map Series 59, scale 1:24,000.

⁶ Schlicker, H.G., and Finlayson, C.T., 1979, *Geology and geologic hazards of northwest Clackamas County*: Oregon Department of Geology and Mineral Industries, Bulletin 99, scale 1:24,000.

⁷ Hart, D.H., and Newcomb, R.C., 1965, *Geology and ground water of the Tualatin Valley, Oregon*: U.S. Geological Survey, Water-Supply Paper 1697, scale 1:48,000.

⁸ Trimble, D.E., 1957, *Geology of the Portland quadrangle, Oregon-Washington*: U.S. Geological Survey, Geologic Quadrangle Map GQ-104, scale 1:62,500.

⁹ Trimble, D.E., 1963, *Geology of Portland, Oregon and adjacent areas*: U.S. Geological Survey, Bulletin 1119, scale 1:62,500.

¹⁰ Burns, Scott, Growney, Larry, Brodersen, B., Yeats, R.S., and Popowski, T.A., 1997, *Map showing faults, bedrock geology, and sediment thickness of the western half of the Oregon City 1:100,000 quadrangle, Washington*,

part of the fine-grained facies (sand and silt) of the Missoula Floods deposits found across the Portland Basin. At the subject site the unit is overlaying flows of the Columbia River Basalt Group, specifically the Basalt of Sand Hollow formation (Frenchman Springs Member, Wanapum Basalt).

Geologic History

The subject site is generally situated within the forearc basin of the Cascadia subduction system between the Cascade Range (volcanic arc) and the Coastal Range (accretionary/subduction complex). The site is part of the Tualatin Basin, one of several topographic and structural depressions that collectively constitute the Puget-Willamette forearc trough. This topographic and structural basin generally has low topographic relief. The basin formed due to tectonic compressional stress that both initiated the basin's formation and produced prolonged the enlargement of the basin. As the Tualatin Basin continued to subside during the late Miocene and Pliocene, it filled with continental fluvial and lacustrine sediments deposited by ancestral versions of modern rivers. This resulted in a thick accumulation of material preserving a complex record of deposition and erosion (aggradation and incision). The subject site is situated in an up-warped area between basins and contains basaltic bedrock below the blanket of catastrophic flood deposits.

Much of the local bedrock is comprised of the flows of the Columbia River Basalt Group. This thick accumulation of flood basalts was produced by dozens of fissure eruptions in eastern Oregon and Washington in the Middle Miocene. The volcanic eruptions are among the largest observed anywhere on earth. The floods of hot, fluid lava flowed across much of the eastern half of both Oregon and Washington, eventually reaching the Pacific Ocean. Some flows extended as far as 400 miles from their vents with individual flows covering as much as 10,000 square miles. In the Portland area, these dark grey to black basalts can be divided into 8-10 distinct Columbia River Basalt flow types, comprised of as many as two dozen individual flows. The physical properties of these flows are very similar, often making it difficult to distinguish between individual flows. They have built up as much as 10,000 feet of lava in eastern Washington, and 850 feet in the Portland area.

At the end of the last glacial maximum, an ice dam in western Montana began to melt. The periodic failure of the ice dam retaining Glacial Lake Missoula resulted in dozens of gigantic floods that stretched from their origin in Montana generally following the Columbia River and eventually reaching the Pacific Ocean. The hydraulically restrictive Oregon Coast Range caused the sediment filled waters to temporarily pond across much of the Willamette forearc trough including the Portland, Tualatin and Willamette basins. The floodwaters, which reached an elevation of 400 feet above sea level, soured many areas down to bedrock and buried others beneath thick layers of gravel, sand and silt that can be divided into a fine-grained and course-

Multnomah, and Marion Counties: Oregon Department of Geology and Mineral Industries, Interpretive Map Series 4, scale 1:100,000.

¹¹ Madin, I.P., 2004, *Geologic mapping and database for the Portland area fault studies: Final report, Clackamas, Multnomah, and Washington Counties, Oregon:* Oregon Department of Geology and Mineral Industries, Open-File Report O-04-02, scale 1:100,000.

¹² Phillips, W.M., 1987, *Geologic map of the Vancouver quadrangle, Washington:* Washington Division of Geology and Earth Resources, Open File Report 87-10, scale 1:100,000.

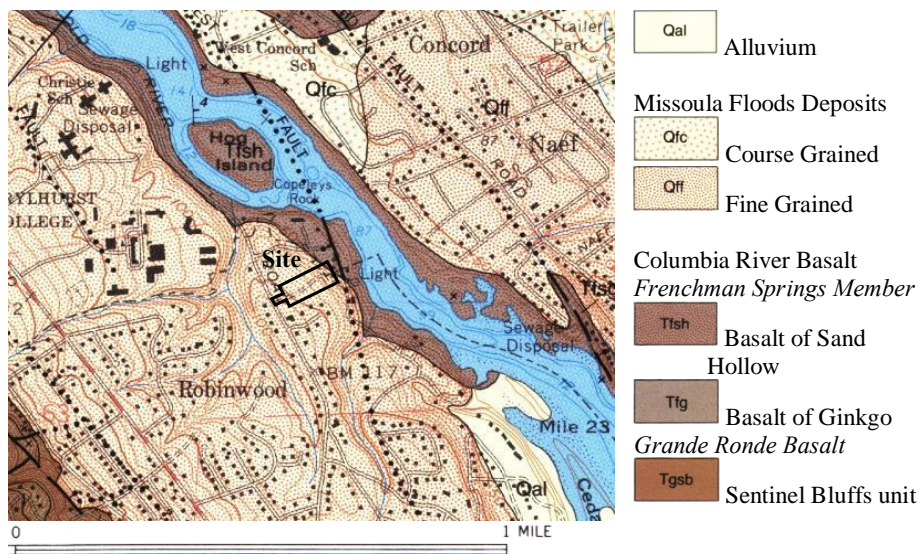
grained units. Dramatic scour features and giant bars can be seen within the Portland Basin, and demonstrate the great influence the floodwaters had on shaping the Quaternary geomorphology of the region. The sediments are generally comprised of unconsolidated silt, sand, and gravels, and were emplaced between about 21,000 to 12,000 years ago.

Site Geology

The sediments brought into the local lowlands by the Missoula Floods were deposited when the waters slowed down, blanketing older fluvial and igneous deposits with swaths of rhythmic sedimentary beds. Various studies have divided the Missoula Floods deposits into distinct facies defined by grain size. Around the subject site the sedimentary deposits are described as falling within the sand and silt facies. The flood deposits within the Tualatin Valley are predominantly slack water silts that cover the valley floor up to 35 meters thick and can be found on slopes up to an elevation of 100 to 115 meters.

The fine-grained deposits of the Missoula Floods are described as an unconsolidated light-brown to light-gray silt, clay and fine to medium sand. The sediments are deposited in a series of distinct layers, a few inches to a few feet thick, each of which represents a single flood. The finer sediments are predominantly quartz and feldspar and also contain white mica. The coarser sediments can be comprised of Columbia River Basalt fragments. Poorly defined beds of 1- to 3-foot thickness are observed in outcrops, and complex layering has been recorded in boreholes. These deposited have been interested as slack-water sediments settling form the slowing floodwaters. In some areas of this unit, it can include sediments compositionally similar to loess. Soil development commonly introduces significant clay and iron oxides into the upper 6-10 feet of the deposit.

The lower contact of the Missoula Floods deposits is at or just beyond the eastern edge of the subject site. Some workers have indicated that a strip of course grained deposits separate the fine-grained deposits from bedrock. Other workers have indicated that the fine-grained deposits sit directly upon the basaltic flows of the Columbia River basalt group. Basaltic bedrock may be found relatively shallow in some areas at the eastern end of the subject site.



Field Exploration

A total of five (5) hand augur were excavated in the future new lots. The locations of the borings are shown on figure 3 in the appendix. A GIT, geologist in training observed the drilled and logged the subsurface materials. The soil logs were compiled by a geotechnical engineer. The logs were created using the Unified Soil Classification and Visual Manual Procedure (ASTM-D 2488). The soil conditions were very stiff to stiff SILT to a depth of 8feet. Groundwater was not encountered. Moisture contents varied from 27.4%-33.8%. The soil is moisture sensitive and plastic. This project should only be excavated in the dry weather.

Soils

The USDA National Resource Conservation Service Web Soil Survey¹³ classifies the soils on site are primarily mapped as Woodburn silt loam (308% slopes). The soils in the northeastern corner of the subject site are classified as containing Cloquato silt loam.

Woodburn silt loam forms on terraces from stratified glaciolacustrine deposits (such as the Missoula Floods deposits). They are classified as moderately well drained with a water table often found at depths of 25 to 32 inches. The typical profile is comprised of silt loam (H1: 0"-16", H3: 38"-60") and silty clay loam (H2: 16"-38").

Cloquato silt loam forms on flood plains from mixed alluvium. It is classified as well drained with a water table generally found at depths greater than 80 inches. The typical profile of this soil type is comprised of silt loam (H1: 0"-15", H2: 15"-42") and sandy loam (H3: 42"-60").

The USDA suitability and limitations ratings for the site indicates that new development may be limited by a shallow saturation zone and slightly negatively impacted by a slight to moderate shrink-swell potential. Additionally noted is a low strength rating (as inferred from the AASHTO group index number) which could negatively impact local roads and streets.

Excavations

Excavations can be accomplished with conventional excavating equipment. All excavations for footings and subgrades in the fine-grained silt should be performed by an excavator or backhoe equipped with a smooth-faced bucket (no teeth) and a bucket with teeth.

Because of safety considerations and the nature of temporary excavations, the Contractor should be made responsible for maintaining safe temporary cut slopes and supports for utility trenches, etc. We recommend that the Contractor incorporate all pertinent safety codes during construction, including the latest OSHA revised excavation requirements, and based on soil conditions and groundwater evidenced in cuts made during construction.

Structural Fills

Depending upon finished building pad elevations, structural fills may be required to raise the site grades. Additionally, fill may be required for the backfilling of the proposed new foundation walls. Native or imported material may be used for fill, provided the soil is free of organics, cobbles larger than 6 inches in maximum diameter, or other deleterious matter; is of low plasticity; and, is at the proper water content. Fills should be placed on level benches in thin lifts

¹³ <http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>

and compacted to a dry density of at least 92% of its Maximum Dry Density (MDD) as determined by the Modified Proctor Test (ASTM D-1557), if using rock and 95% of Standard proctor test (ASTM D-698) if using soil.

For any over-excavation completed in the area of footings or slabs, the backfill material shall consist of free-draining, well-graded, crushed aggregate base with a maximum particle size of ¾ inch. The rock shall not contain more than 5% fines (material passing the No. 200 sieve, as tested by ASTM D-1140). The rock shall be compacted to a dry density of at least 92% of its MDD.

Foundation Design

Footing excavations should be evaluated by the Engineer to confirm suitable bearing conditions. In order to reduce disturbance to the SILT, recommend all excavations for footings be accomplished with an excavator or backhoe equipped with a smooth-faced bucket and a bucket with teeth. The new footings should be designed for a maximum allowable bearing pressure of 2,000 pounds per square foot (psf) as per scribed in 2012 IBC code book under section 1804.2 Table 2 Allowable Foundation and Lateral Pressures. When sizing footings for seismic considerations, the allowable bearing pressure may be increased by 1/3. Lateral pressures may be resisted by friction between the bases of the footings and the underlying ground surface.

Engineering values summary

Bearing capacity	2,000psf
Friction angle	35
Active pressure	40pcf
Passive pressure	300pcf

Settlement

Based on our knowledge of the project scope, and for footings designed as described in the preceding paragraphs, maximum settlement should not exceed 1 inch. Differential settlement should be on the order of 50 to 75% of the maximum settlement over 50 feet. Our settlement estimate assumes that no disturbance to the foundation soils would be permitted during excavation and construction, and that footings are prepared as described in the preceding paragraphs.

Seismic Design Criteria

The seismic design criteria for this project found herein is based on the IBC2012/2015 A summary of IBC seismic design criterion is below it is generated from the USGS web site for earthquake hazards using a lat of 45.397024 and a Long of -122.639937

	Short Period	1 Second
Maximum Credible Earthquake Spectral Acceleration	Ss = 0.970	S1 = 0.415
Adjusted Spectral Acceleration	Sms = 1.079	Sm1 = 0.658
Design Spectral Response Acceleration Perimeters	Sds = 0.719	Sd1= 0.438

Geohazard Review

The Oregon HazVu: Statewide Geohazard Viewer¹⁴, City of West Linn interactive map¹⁵ Metromap¹⁶ and Portland Maps¹⁷ were reviewed on 27 March 2018 to investigate mapped geological hazards. This review indicates the parcel is situated outside the 100-year floodplain as mapped by FEMA. The expected earthquake-shaking hazard is classified as ‘severe’ with a mapped liquefaction hazard classification of ‘moderate’ to ‘high’. The nearest fault mapped as active by DOGAMI is a NW-SE oriented fault situated about 0.7 miles southwest of the subject site. Additional mapping indicates the presence of faults cutting across the slopes closer to the subject site, but DOGAMI does not classify these faults as active. IMS-15¹⁸ rates the site vicinity as having a peak horizontal acceleration of 0.7 to 0.8g for a magnitude 6.8 Portland Hills Fault earthquake. This falls on the Modified Mercalli Intensity scale in the categories of ‘violent shaking’. Violent shaking can result in considerable damage in specially designed structures; well-designed frame structures may be thrown out of plumb and it will produce great damage in substantial buildings, with partial collapse. The DOGAMI SLIDO¹⁹ interactive map and IMS-32 indicate that numerous small slides are located along the hillside to the northwest and southeast of the subject site, but that no slides are located on or directly adjacent to the subject site. The Landslide Hazard classification presented by DOGAMI indicates that the majority of the site has a low to moderate slide hazard (landsliding unlikely to landslide possible) with a small portion of the slopes along the northeastern edge of the site containing a ‘high’ landslide hazard (landsliding likely) due to the severity of the slope. The 2013 Landslide Susceptibility Maps (OFR-2013-08) indicates that the shallow-landslide susceptibility classification for the site is low in areas with low slopes but increases to high in the steeply sloping sections of the parcel. Open File Report 2013-08 also indicates a low susceptibility to deep-seated landslides across the entirety of the subject site.

Drainage

The proposed storm water pond is probably going in the best location possible if they want to do a single facility. The proposed pond is situated on a relatively flat area that appears to will have little grading surrounding it. The slope below the pond is roughly 8-9% for about 50-60 feet beyond the proposed down slope edge of the storm water facility as it will drain down to the Willamette River. The slopes in the pond area don’t show any active movement beyond some soil creep, which is the slow movement of soil down a steep slope. The roof runoff will be hard piped to the pond area.

The Contractor should be made responsible for temporary drainage of surface water and groundwater as necessary to prevent standing water and/or erosion at the working surface. The ground surface around the structure should be sloped to create a minimum gradient of 2% away

¹⁴ <http://www.oregongeology.org/hazvu/>

¹⁵ http://maps.westlinnoregon.gov/mox6/public.cfm?action=mox6_view_interface

¹⁶ <http://gis.oregonmetro.gov/metromap/>

¹⁷ <http://www.portlandmaps.com/>

¹⁸ Wong, I., Silva, W., Bott, J., Wright, D., Thomas, P., Gregor, N., Li, S., Mabey, M., Sojourner, A., and Wang, Y., (2000), *Earthquake scenario ground shaking map for the Portland, Oregon, metropolitan area: Portland Hills Fault M 6.8 earthquake, Peak horizontal acceleration (g) at the ground surface*: DOGAMI, IMS-15. Scale 1:62,500

¹⁹ <http://www.oregongeology.org/slido/index.html>

from the building foundations for a distance of at least 5 feet. Surface water should be directed away from all buildings into drainage swales or into a storm drainage system. “Trapped” planting areas should not be created next to any buildings without providing means for drainage.

Limitations

This report has been prepared for the exclusive use of the addressee, and their architects and engineers for aiding in the design and construction of the proposed development. It is the addressee's responsibility to provide this report to the appropriate design professionals, building officials and contractors to ensure correct implementation of the recommendations.

The opinions, comments and conclusions presented in this report were based upon information derived from our literature review, field investigation and laboratory testing. Conditions between, or beyond, my exploratory test pits may vary from those encountered. Unanticipated soil conditions and seasonal soil moisture variations are commonly encountered and cannot be fully determined by merely taking soil samples. Such variations may result in changes to our recommendations and may require that additional expenditures be made to attain a properly constructed project. Therefore, some contingency fund is recommended to accommodate such potential extra costs.

Appendix

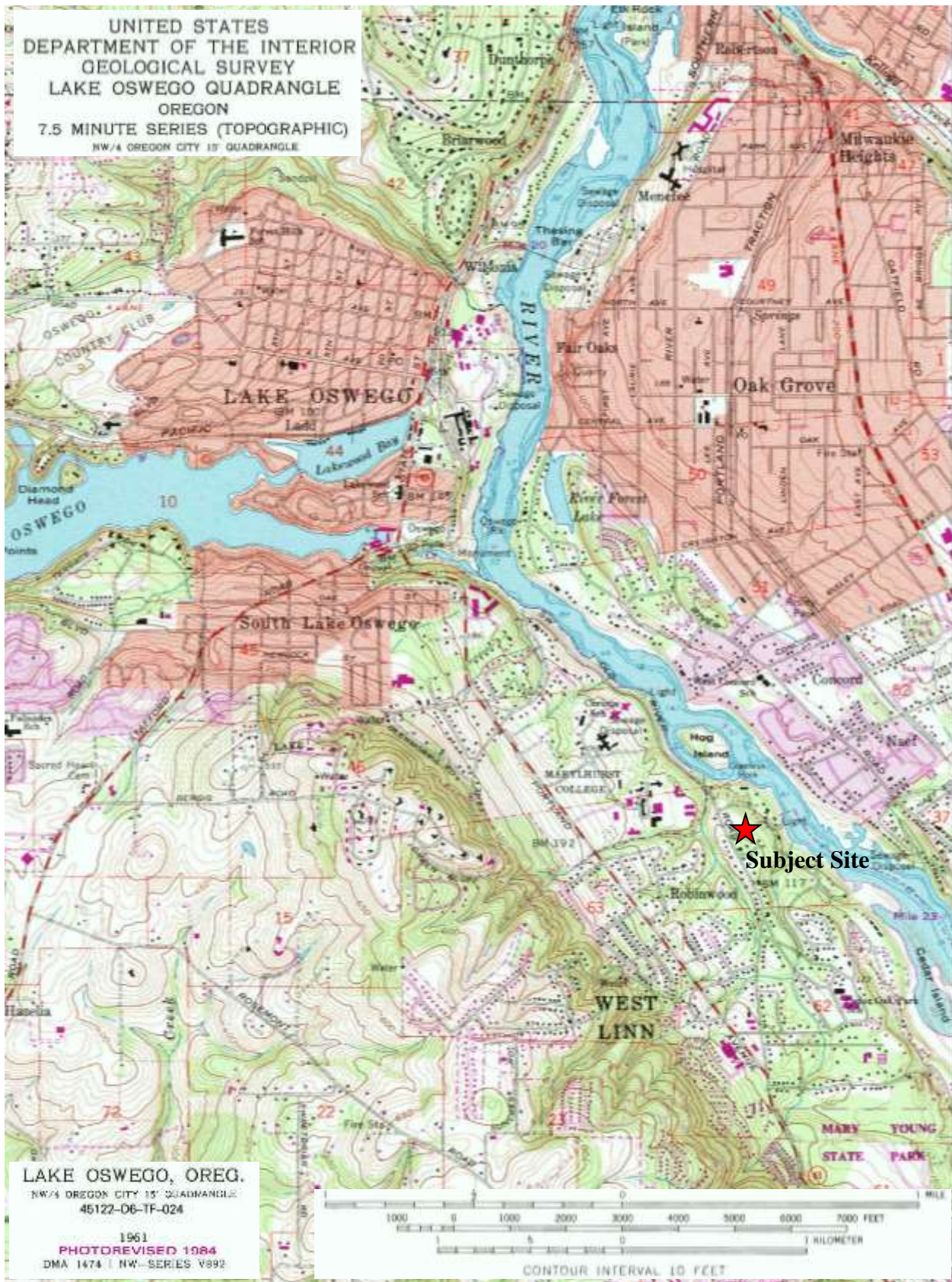


Figure 1: Subject site location in the SE quarter of the Lake Oswego Topographic Quadrangle

2 1 E 14AD
WEST LINN

S.E.1/4 N.E.1/4 SEC.14 T.2S. R.1E. W.M.
CLACKAMAS COUNTY

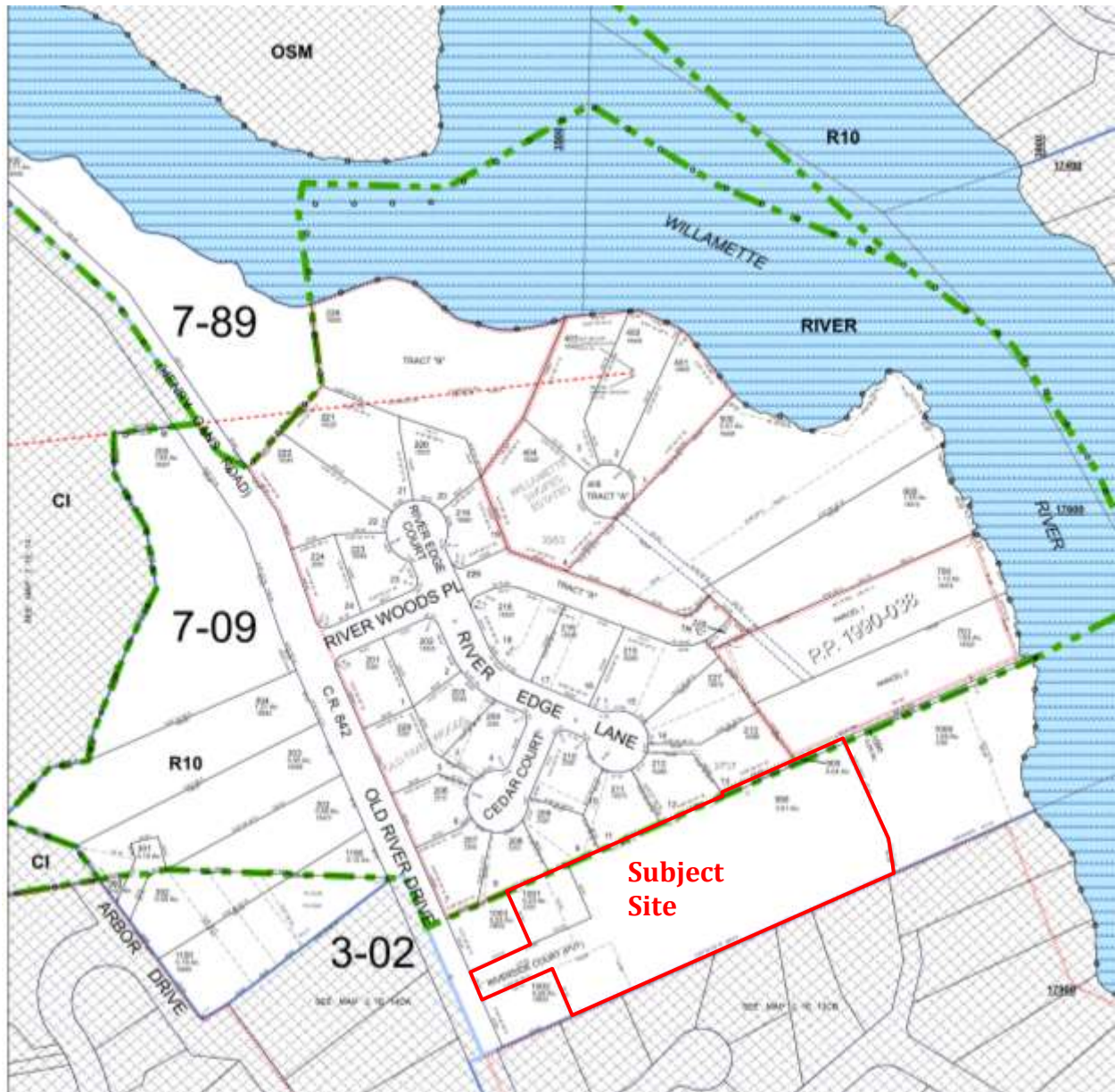


Figure 2: Subject site location on the Clackamas County Assessor's Map

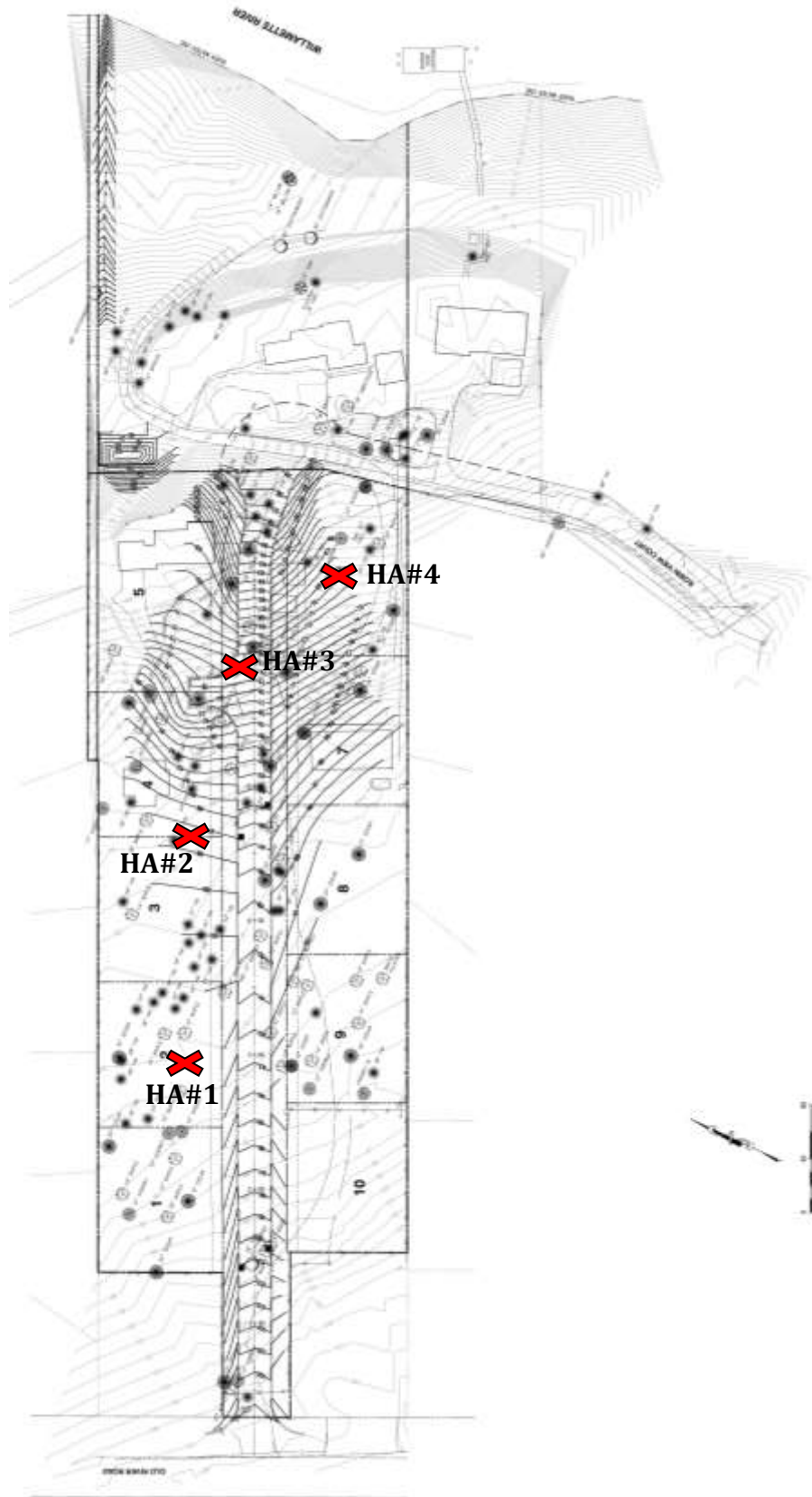


Figure 3: Approximate boring locations on tentative grading plan

Moisture

	Sample number	HA#1	HA#2	HA#3	HA#4
1	Date and time in oven	3/29/18 5:30 PM	3/29/18 5:30 PM	3/29/18 5:30 PM	3/29/18 5:30 PM
2	Date and time out of oven	3/30/18 8:00 AM	3/30/18 8:00 AM	3/30/18 8:00 AM	3/30/18 8:00 AM
3	Depth (ft)	2	4	8	4
4	Tare No.	6	7	8	9
5	Tare Mass	232	230	232	230
6	Tare plus sample moist	1108	1105	903	1045
7	Tare plus sample dry	914	917	744	839
8	Mass of water (g)	194	188	159	206
9	Mass of soil (g)	682	687	512	609
10	Water Content (%)	28.45	27.37	31.05	33.83

Atterberg Limit Test

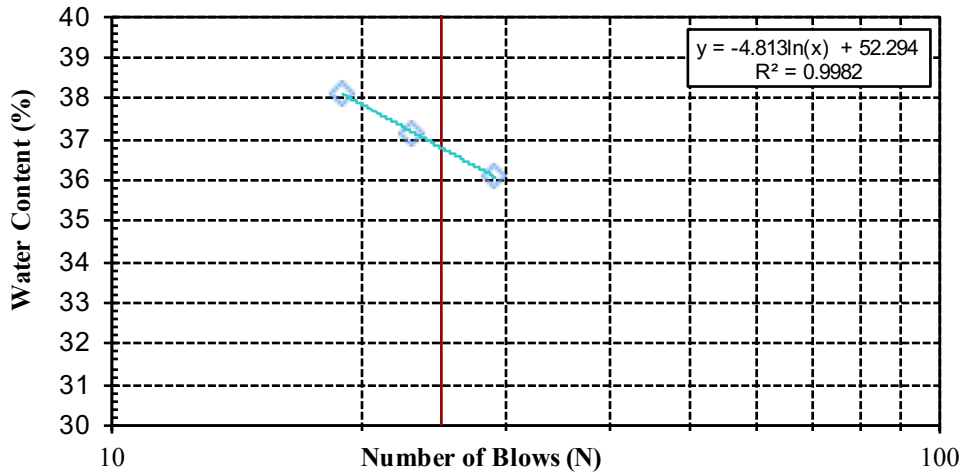
Sample Number: HA#1

Depth: 2'

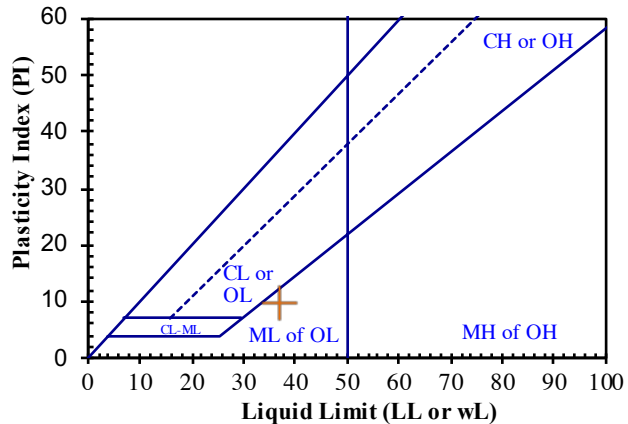
Liquid Limit

Plastic Limit

		1	2	3	1	2
1	Tare No.	D#2.1	D#2.2	D#2.3	R#2.1	R#2.2
2	Tare Mass (g)	39.83	39.64	39.42	39.87	38.97
3	Tare Plus Wet Soil (g)	73.98	70.28	69.44	52.24	52.27
4	Tare Plus Dry Soil (g)	64.92	61.98	61.15	49.64	49.39
5	Mass of Water (g)	9.06	8.3	8.29	2.6	2.88
6	Mass of Soil (g)	25.09	22.34	21.73	9.77	10.42
7	Water Content (g)	36.11	37.15	38.15	26.61	27.64
8	No. Blows	29	23	19		



Liquid Limit (%) 36.80
 Plastic Limit (%) 27.13
 Plasticity Index (%) 9.68
 USCS Classification ML



Project Name: Ferdell Estates

Sample Date 3/29/18

Atterberg Limit Test

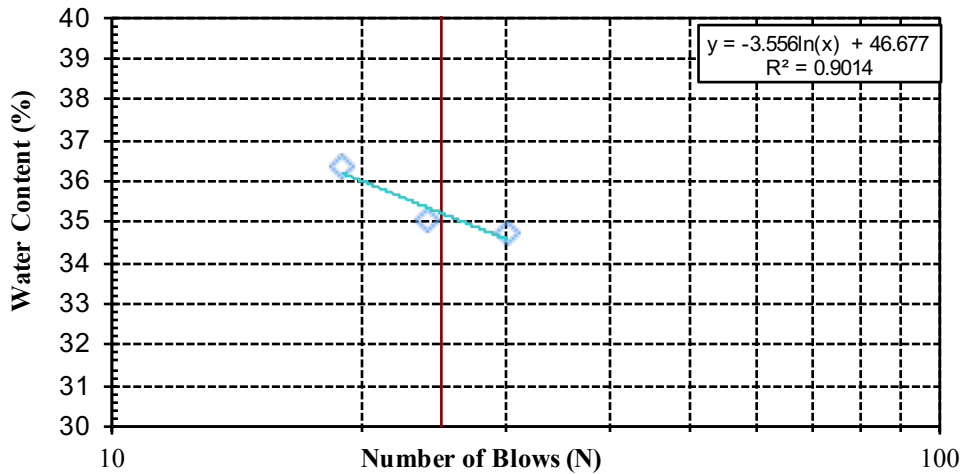
Sample Number: HA#3

Depth: 8'

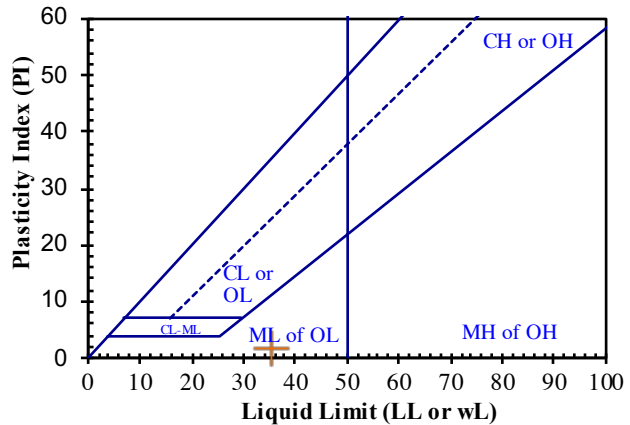
Liquid Limit

Plastic Limit

		1	2	3	1	2
1	Tare No.	D#4.1	D#4.2	D#4.3	R#3.1	R#3.2
2	Tare Mass (g)	39.96	40.48	40	39.27	42.34
3	Tare Plus Wet Soil (g)	74.13	83.39	77.28	49.17	54.49
4	Tare Plus Dry Soil (g)	65.32	72.25	67.34	46.7	51.39
5	Mass of Water (g)	8.81	11.14	9.94	2.47	3.1
6	Mass of Soil (g)	25.36	31.77	27.34	7.43	9.05
7	Water Content (g)	34.74	35.06	36.36	33.24	34.25
8	No. Blows	30	24	19		



Liquid Limit (%) **35.23**
 Plastic Limit (%) **33.75**
 Plasticity Index (%) **1.48**



Grain Size Analysis

Dry Sieve Method

HA#3

Total Sample Weight (g): 203.65

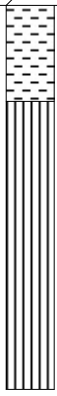
Sieve #	Weight (g)	% Retained
>1/4"	0.00	0.00
1/4" to #40	7.34	3.60
#40 to #200	123.06	60.43
< #200	73.25	35.97
> #200	130.40	64.03

USCS Classification

SM

HA#1

Surface Elevation:
Boring Date: 3/29/18
Boring Location: Lake Oswego, OR
Drilling Method: Hand Augur

Depth	Remarks	Moisture (%)	Dry Density	Blow Counts	Sample Type	Water Table				
0										
						<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: center;">OL</td> <td>Damp, medium rich brown, fine grained, medium stiff, organic SILT</td> </tr> <tr> <td style="text-align: center;">ML</td> <td>Damp-dry, medium tan brown, fine grained, stiff, SILT</td> </tr> </table>	OL	Damp, medium rich brown, fine grained, medium stiff, organic SILT	ML	Damp-dry, medium tan brown, fine grained, stiff, SILT
OL	Damp, medium rich brown, fine grained, medium stiff, organic SILT									
ML	Damp-dry, medium tan brown, fine grained, stiff, SILT									
1										
2	PI= 10, LL=37	28.5				Boring completed at depth of 2ft				
3										
4										
5										
6										
7										

LOG OF BORING

HA#2

SuperLog CivilTech Software, USA www.civiltech.com File: C:\User\strache\Documents\In Progress Files\Ferdell Estates Subdivision\Ferdell Estates Subdivision HA#1.log Date: 4/2/2018

Surface Elevation:
Boring Date: 3/29/18
Boring Location: Lake Owego, OR
Drilling Method: Hand Auger

Depth	Remarks	Moisture (%)	Dry Density	Blow Counts	Sample Type	Water Table
0					TP	Damp-dry, rich brown, silty organic Top Soil
					ML-CL	Damp-dry, medium brown with a slight grey hue, medium stiff, clayey SILT
1					ML	Damp-dry, tan brown, fine grained, stiff, clayey SILT to SILT
2					ML-CL	Damp, grey tan, fine grained with small hard angular gravels, stiff, clayey SILT with trace small gravels
3					ML	Dry to damp-dry, tan brown with rust- and grey-mottling, fine grained, stiff, SILT. Redoximorphic coloration.
4	27.4				ML	Dry to damp-dry, medium light brown, fine grained, stiff to medium stiff, SILT.
5						
6						
7						

GWT not encountered

Boring completed at depth of 4 ft

LOG OF BORING

HA#3

Surface Elevation:
Boring Date: 3/29/18
Boring Location: Lake Owego, OR
Drilling Method: Hand Auger

Date: 4/2/2018
 File: C:\Users\strache\Documents\In Progress Files\Ferdell Estates Subdivision\Ferdell Estates Subdivision HA#1.log
 SuperLog CivilTech Software, USA www.civiltech.com

Depth	Remarks	Moisture (%)	Dry Density	Blow Counts	Sample Type	Water Table
0						
						TP Damp-dry to dry, medium rich brown, organic, Top Soil with abundant roots and english ivy vines
						ML Dry, medium brown, fine grained, stiff, SILT
2						
						ML Damp-dry, medium brown with subtle red and grey mottling, fine grained, stiff, SILT
4						
						ML Dry, medium tan brown, fine grained, stiff, SILT
6						
						ML Dry, medium tan brown, fine grained, very stiff, SILT
8	PI= 1, LL=35, 60% sand, 36% silt	31.1				SM Dry, medium tan brown, course grained, medium dense, silty SAND
10						
12						
14						

LOG OF BORING

Boring completed at depth of 8ft

HA#4

Date: 4/2/2018
File: C:\Users\strache\Documents\In Progress Files\Ferdell Estates Subdivision\Ferdell Estates Subdivision HA#1.log
SuperLog CivilTech Software, USA www.civiltech.com

Surface Elevation:
Boring Date: 3/29/18
Boring Location: Lake Owego, OR
Drilling Method: Hand Auger

Depth	Remarks	Moisture (%)	Dry Density	Blow Counts	Sample Type	Water Table
0					TP	Damp-dry, rich brown, silty organic Top Soil
0 - 2.5					ML-CL	Damp to moist, medium brown, fine grained, stiff, SILT to clayey SILT. Gradually increasing moisture with depth
2.5 - 4.0					ML-CL	Dry, medium brown, fine grained, very stiff, clayey SILT. Difficult to advance hand auger
4.0	34					Boring completed at depth of 4ft
5						
6						
7						

LOG OF BORING

WR

AFTER RECORDING
RETURN TO:
William R. Varitz and
Marjory G. Varitz, Trustees
17828 Robin View Court
West Linn, OR 97068

GRANTOR INFORMATION:
William R. Varitz and
Marjory G. Varitz, Trustees
17828 Robin View Court
West Linn, OR 97068

GRANTEE INFORMATION:
William R. Varitz and
Marjory G. Varitz, Trustees
17828 Robin View Court
West Linn, OR 97068

SEND TAX STATEMENTS TO:
William R. Varitz and
Marjory G. Varitz, Trustees
17828 Robin View Court
West Linn, OR 97068

Clackamas County Official Records
Sherry Hall, County Clerk

2015-003558



\$78.00

01821525201500035580060065

01/23/2015 10:54:01 AM

D-D Cnt=1 Stn=6 KARLYN
\$30.00 \$10.00 \$16.00 \$22.00

QUITCLAIM DEED

William R. Varitz, Trustee of the William R. Varitz Revocable Trust dated May 10, 1988 and Marjory G. Varitz, Trustee of the Marjory G. Varitz Revocable Trust dated May 10, 1988, GRANTORS, for the consideration hereinafter stated, does hereby remise, release and forever quitclaim an undivided one-half interest to William R. Varitz, Trustee of the William R. Varitz Revocable Trust dated May 10, 1988, and an undivided one-half interest to Marjory G. Varitz, Trustee of the Marjory G. Varitz Revocable Trust dated May 10, 1988, GRANTEES, and unto grantees' heirs, successors and assigns, all of the grantors' right, title and interest in that certain real property, with the tenements, hereditaments and appurtenances thereunto belonging or in any way appertaining, situated in Clackamas County, Oregon, to wit:

Land described in Exhibit "A", Tract 1; Exhibit "A", Tract 2; and Exhibit "A", Exchange Area.

The true and actual consideration paid for this transfer, stated in terms of dollars, is \$NIL. This transfer is being made for estate planning purposes.

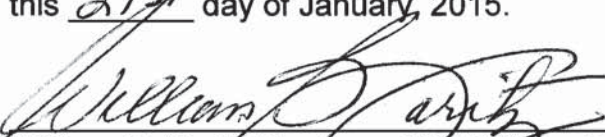
TO HAVE AND TO HOLD the same unto the said GRANTEES and GRANTEES' heirs, successors and assigns forever.

And grantor hereby covenants to and with GRANTEE and GRANTEES' heirs, successors and assigns, that GRANTORS are lawfully seized in fee simple of the above granted premises, free from all encumbrances except those of record or those of an obvious nature, and that GRANTORS will warrant and forever defend the premises and every part and parcel thereof against the lawful claims and demands of all persons whomsoever, except those claiming under the above described encumbrances.

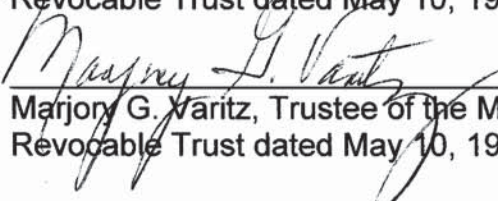
BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, AND SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009. THIS INSTRUMENT 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, AND SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

In construing this deed and where the context so requires, the singular includes the plural and all grammatical changes shall be implied to make the provisions hereof apply equally to corporations and to individuals.

IN WITNESS WHEREOF, the GRANTORS have executed this instrument this 21st day of January, 2015.



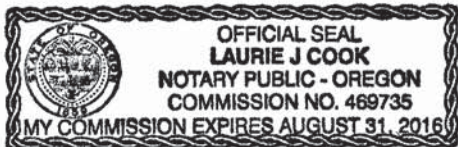
William R. Varitz, Trustee of the William R. Varitz
Revocable Trust dated May 10, 1988



Marjory G. Varitz, Trustee of the Marjory G. Varitz
Revocable Trust dated May 10, 1988

STATE OF OREGON)
) ss.
County of Clackamas)

This instrument was acknowledged before me on January 21, 2015, by William R. Varitz, Trustee of the William R. Varitz Revocable Trust dated May 10, 1988, and Marjory G. Varitz, Trustee of the Marjory G. Varitz Revocable Trust dated May 10, 1988.



Laurie J Cook
Notary Public for Oregon
My Commission Expires: 8-31-2016



CENTERLINE CONCEPTS
LAND SURVEYING, INC.

729 Molalla Avenue, Ste. 1 and 2, Oregon City, OR 97045
P. 503-650-0188 F. 503-650-0189

Exhibit "A"
Tract 1
Legal Description

That tract of land described in Document No. 89-25912 and a portion of that tract of land described in Document No. 88-37558, Clackamas County Deed Records, located in the Northwest 1/4 of Section 13 and the Northeast 1/4 of Section 14, Township 2 South, Range 1 East of the Willamette Meridian, City of West Linn, County of Clackamas, State of Oregon, being more particularly described as follows:

COMMENCING at the Southwest corner of the Plat of "Old River Woods", Clackamas County Plat Records; thence N65°06'09"E, 107.56 feet to Northwest corner of that Tract of land described in Document No. 89-25912, Clackamas County Deed Records, and the **TRUE POINT OF BEGINNING** of the Tract to be described; thence along the North line of said Document No. 89-25912 Tract and continuing along the North line of that Tract of land described in Document No. 88-37558, Clackamas County Deed Records, N65°06'09"E, 381.28 feet to an angle point in said line; thence N24°16'23"W, 7.50 feet to an angle point in said North line; thence continuing along the North line of said Document No. 88-37558 Tract, N65°08'36"E, 213.79 feet to a point; thence leaving said North line, S25°57'06"E, 175.40 feet to a point; thence S11°17'16"E, 64.38 feet to the South line of said Document No. 88-37558 Tract; thence along the South line of said Document No. 88-37558 Tract, S65°05'00"W, 568.75 feet to the Southeast corner of that Tract of land described in Document No. 2007-078320, Clackamas County Deed Records; thence along the East line of said Document No. 2007-078320 Tract, N24°38'14"W, 87.60 feet to the Northeast corner of said Document No. 2007-078320 Tract; thence along the North line of said Document No. 2007-078320 Tract, S65°02'44"W, 123.10 feet to the East Right of Way line of Old River Road, being 30.00 feet East of centerline when measured at right angles; thence Easterly of, parallel with and 30.00 feet distant of said centerline, N24°38'54"W, 50.24 feet to the Southwest corner of that Tract of land described in Document No. 2005-112515, Clackamas County Deed Records; thence along the South line of said Document No. 2005-112515 Tract, N65°06'39"E, 107.57 feet to the Southwest corner of said Document No. 89-25912 Tract; thence along the West line of said Document No. 89-25912 Tract, N24°39'58"W, 93.03 feet to the **POINT OF BEGINNING**.

Contains 3.28 Acres

Subject to Easements of Record.

SIGNATURE: 7-19-2017

**REGISTERED
PROFESSIONAL
LAND SURVEYOR**

**OREGON
NOVEMBER 30, 2007
JAMES BURTON BROWN
60379**

VALID THROUGH DECEMBER 31, 2015



CENTERLINE CONCEPTS
LAND SURVEYING, INC.

729 Molalla Avenue, Ste. 1 and 2, Oregon City, OR 97045
P. 503-650-0188 F. 503-650-0189

Exhibit "A"
Tract 2
Legal Description

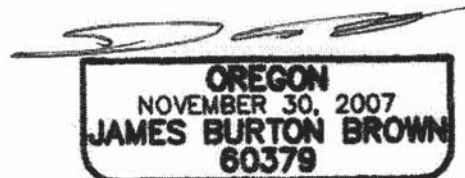
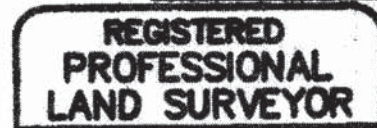
A portion of that tract of land described in Document No. 88-37558, Clackamas County Deed Records, located in the Northwest 1/4 of Section 13 and the Northeast 1/4 of Section 14, Township 2 South, Range 1 East of the Willamette Meridian, City of West Linn, County of Clackamas, State of Oregon, being more particularly described as follows:

COMMENCING at the Southwest corner of the Plat of "Old River Woods", Clackamas County Plat Records; thence N65°06'09"E, 488.84 feet; thence N24°16'23"W, 7.50 feet; thence N65°08'36"E, 213.79 feet to the **TRUE POINT OF BEGINNING** of the Tract to be described; thence leaving the North line of that Tract of land described in Document No. 88-37558, Clackamas County Deed Records, S25°57'06"E, 175.40 feet to a point; thence S11°17'16"E, 64.38 feet to the South line of said Document No. 88-37558 Tract; thence along the South line of said Document No. 88-37558 Tract, N65°05'00"E, 273.15 feet more or less to the Willamette River; thence Northerly along the Willamette River 250.63 feet more or less to the North line of said Document No. 88-37558 Tract; thence along the north line of said Document No. 88-37558 Tract, S65°08'36"W, 340.93 feet more or less to the **POINT OF BEGINNING**.

Contains 1.60 Acres more or less.

Subject to Easements of Record.

SIGNED ON: 2-14-2015



VALID THROUGH DECEMBER 31, 2015

5



CENTERLINE CONCEPTS
LAND SURVEYING, INC.

729 Molalla Avenue, Ste. 1 and 2, Oregon City, OR 97045
P. 503-650-0188 F. 503-650-0189

Exhibit "A"
Exchange Area (Doc. 88-37558 to Tract 1)
Legal Description

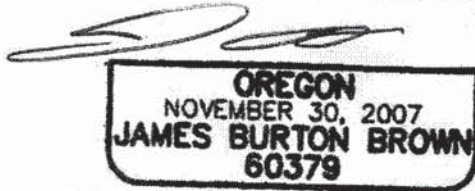
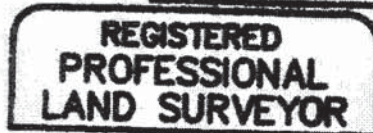
A portion of that tract of land described in Document No. 88-37558, Clackamas County Deed Records, located in the Northwest 1/4 of Section 13 and the Northeast 1/4 of Section 14, Township 2 South, Range 1 East of the Willamette Meridian, City of West Linn, County of Clackamas, State of Oregon, being more particularly described as follows:

COMMENCING at the Southwest corner of the Plat of "Old River Woods", Clackamas County Plat Records; thence N65°06'09"E, 215.04 feet to Northeast corner of that Tract of land described in Document No. 89-25912, Clackamas County Deed Records and the **TRUE POINT OF BEGINNING** of the Tract to be described; thence along the North line of that Tract of land described in Document No. 88-37558, Clackamas County Deed Records, N65°06'09"E, 273.80 feet to an angle point in said line; thence N24°16'23"W, 7.50 feet to an angle point in said North line; thence continuing along the North line of said Document No. 88-37558 Tract, N65°08'36"E, 213.79 feet to a point; thence leaving said North line, S25°57'06"E, 175.40 feet to a point; thence S11°17'16"E, 64.38 feet to the South line of said Document No. 88-37558 Tract; thence along the South line of said Document No. 88-37558 Tract, S65°05'00"W, 568.75 feet to the Southeast corner of that Tract of land described in Document No. 2007-078320, Clackamas County Deed Records; thence along the East line of said Document No. 2007-078320 Tract, N24°38'14"W, 87.60 feet to the Northeast corner of said Document No. 2007-078320 Tract; thence along the North line of said Document No. 2007-078320 Tract, S65°02'44"W, 123.10 feet to the East Right of Way line of Old River Road, being 30.00 feet East of centerline when measured at right angles; thence Easterly of, parallel with and 30.00 feet distant of said centerline, N24°38'54"W, 50.24 feet to the Southwest corner of that Tract of land described in Document No. 2005-112515, Clackamas County Deed Records; thence along the South line of said Document No. 2005-112515 Tract and continuing along the South line of said Document No. 89-25912 Tract, N65°06'39"E, 215.03 feet to the Southeast corner of said Document No. 89-25912 Tract; thence along the East line of said Document No. 89-25912 Tract, N24°39'18"W, 93.04 feet to the **POINT OF BEGINNING**.

Contains 3.05 Acres

Subject to Easements of Record.

SIGNED ON: 7-14-2014



VALID THROUGH DECEMBER 31, 2015

6

15-

Until a change is requested,
all tax statements shall be
sent to:

After recording, send to:

Mr. and Mrs. William R. Varitz
c/o Door Distributors of Oregon
330 S.E. Division Place
Portland, OR 97202

Mr. and Mrs. William R. Varitz
c/o Door Distributors of Oregon
333 S.E. Division Place
Portland, OR 97202

BARGAIN AND SALE DEED

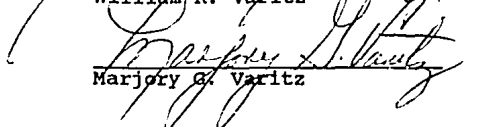
William R. Varitz and Marjory G. Varitz, Grantors,
convey an undivided equal interest to William R. Varitz, Trustee,
under the William R. Varitz Revocable Trust dated May 10, 1988 and
to Marjory G. Varitz, Trustee, under the Marjory G. Varitz
Revocable Trust dated May 10, 1988, Grantees, as tenants-in-
common, in the real property described on Exhibit A and made a
part hereof by this reference.

The true and actual consideration for this transfer
consists of or includes other property or other value given or
promised.

THIS INSTRUMENT WILL 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 APPROVED USES.

DATED this 30th day of August, 1988.

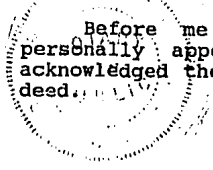

William R. Varitz


Marjory G. Varitz

STATE OF OREGON

County of MULTNOMAH

) ss.



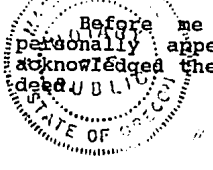
Before me on this 30TH day of AUGUST, 1988, personally appeared the above named William R. Varitz and acknowledged the foregoing instrument to be his voluntary act and deed.

Margie Thomas
Notary Public for Oregon
My commission expires: 8.24.91

STATE OF OREGON

County of MULTNOMAH

) ss.



Before me on this 30TH day of AUGUST, 1988, personally appeared the above named Marjory G. Varitz and acknowledged the foregoing instrument to be her voluntary act and deed.

Margie Thomas
Notary Public for Oregon
My commission expires: 8-24-91

DHF\03601000.D05

PAGE 2 - BARGAIN AND SALE DEED

2

EXHIBIT A

Parcel I: A tract of land situated in the west one-half of Section 13, Township 2 South, Range 1 East, and the East one-half of Section 14, Township 2 South, Range 1 East, of the W.M., in the County of Clackamas and State of Oregon, described as follows:

Beginning at a two inch iron pipe at the most northerly corner and initial point of survey of Holly Acres as platted and recorded in Book 16, page 3, which plat is now vacated, which point is 490.70 feet South and 562.80 feet East of the northeast corner of the Gabriel Walling D. L. C. in Sections 13 and 14, Township 2 South, Range 1 East, W.M., and running thence South 85° 05' West, following the northerly line of a tract described to the most northerly corner of a tract described in Deed to Harold L. Scofield and wife, recorded July 14, 1977, Fee No. 77 27522; thence South 24° 40' 35" East, along the northeasterly line of said Scofield tract to the most easterly corner thereof; thence South 65° 05' West, along the southeasterly line of said Scofield tract, 215.06 feet to the easterly right of way line of Gans Road; thence southeasterly along said easterly right of way line, 50 feet to the most westerly corner of a tract described in Deed to Harold L. Scofield and Edith L. Scofield, recorded November 22, 1977, Fee No. 77 47795; thence North 65° 05' East, along the northwesterly line of said Scofield tract, 228.5 feet to the most northerly corner thereof; thence South 24° 40' 35" East, along the northeasterly line of said Scofield tract, 87 feet, more or less, to the southeasterly line of a tract described in Deed to Norman A. Hayes and wife, recorded April 7, 1947, in Book 388, page 260, Deed Records; thence North 65° 05' East, along said southeasterly line to the most easterly corner thereof; thence North 23° 10' West, 230.55 feet to the point of beginning.

ALSO beginning at the most northerly corner of the above described tract; thence North 65° 05' East to the Willamette River; thence southerly up said river to a point North 65° 05' East, from the southeast corner of the above described tract; thence South 65° 05' West, to the east line of the above described tract; thence North 23° 10' West, 230.55 feet to the point of beginning.

PARCEL III

A strip of land lying in Section 13, Township 2 south, Range 1 East, of the W. M., described as follows:

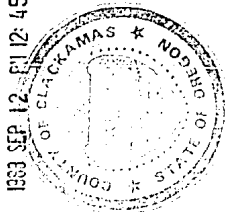
All that portion lying southerly of a line drawn 7 1/2 feet southerly from and parallel to the northwesterly line of the following described tract of land:

Beginning at an iron pipe on the east line of Section 14, Township 2 South, Range 1 East, of the W. M., which pipe is 18 chains South (measured along the section line) from the northeast corner of Section 14; running thence South 81° 55' West, 616 feet to an iron pipe on the easterly line of the County Road; thence South 35° 20' East along the easterly line of the County Road, a distance of 172 feet to an old iron pipe at an angle point in the easterly line of said road; thence continuing along said easterly line of the County Road, South 20° 10' East, 193 feet to an iron pipe at an angle point in the easterly line of said road; thence continuing along said easterly line of the County Road, 317 feet to an iron pipe at the southerly corner of the tract conveyed to Mary S. Young by instrument recorded in Book 178 at page 302, Deed Records; thence North 65° 06' East along the southeasterly line of said Mary S. Young tract, 489.55 feet, to the true point of beginning of the tract of land herein described; thence North 65° 06' East along the south line of said Mary S. Young tract, 526.69 feet, more or less, to the low water line on the left bank of the Willamette River; thence Northwesterly along said low water line to a point which is 15 feet easterly of and parallel to the southeasterly line of said Mary S. Young tract; thence South 65° 06' West, on a line 15 feet northerly of and parallel to the southeasterly line of said Mary S. Young tract, 526.69 feet, more or less, to a point north 24° 34' West from the true point of beginning; thence South 24° 34' East 15 feet to the true point of beginning. -----

3

STATE OF OREGON)
County of Clackamas) ss
I, John F. Kauffman, County Clerk, for the County of Clackamas, do hereby certify that the instrument of writing was received for recording in the records of said County at

1983 SEP 12 PM 12:45



Witness my hand and seal this day
John F. Kauffman
John F. KAUFFMAN
County Clerk
Recording Certificate
C-104 (Rev. 12-78) 88 37558

EXHIBIT A

Parcel I: A tract of land situated in the west one-half of Section 13, Township 1 South, Range 1 East, and the East one-half of Section 14, Township 2 South, Range 1 East, of a W.M., in the County of Clackamas and State of Oregon, described as follows:

Beginning at a two inch iron pipe at the most northerly corner and initial point of survey of Holly area as platted and recorded in Book 16, page 3, which plat is now vacated, which point is 490.70 feet South and 382.80 feet East of the northeast corner of the Gabriel Walling D. L. C. in Sections 13 and 14, Township 1 South, Range 1 East, W.M., and running thence South 45° 05' West, following the Northerly line of vacated Holly Acres to the most northerly corner of a tract described in Deed to Harold L. Scofield and wife, recorded July 14, 1977, Fee No. 77 27522; thence South 24° 40' 35" East, along the northeasterly line of said Scofield tract to the most easterly corner thereof; thence South 65° 05' West, along the southeasterly line of said Scofield tract, 213.06 feet to the easterly right of way line of Gans Road; thence southeasterly along said easterly right of way line, 30 feet to the most westerly corner of a tract described in Deed to Harold L. Scofield and Edith L. Scofield, recorded November 21, 1977, Fee No. 77 47793; thence North 65° 05' East, along the northwesterly line of said Scofield tract, 228.5 feet to the most northerly corner thereof; thence South 24° 40' 35" East, along the northeasterly line of said Scofield tract, 87 feet, more or less, to the southeasterly line of a tract described in Deed to Norman A. Hayes and wife, recorded April 7, 1947, in Book 388, page 230, Deed Records; thence North 65° 05' East, along said southeasterly line to the most easterly corner thereof; thence North 23° 10' West, 230.35 feet to the point of beginning.

Also beginning at the most northerly corner of the above described tract; thence North 45° 05' East to the Willamette River; thence southerly up said river to a point North 65° 05' East, from the southeast corner of the above described tract; thence South 65° 05' West, to the east line of the above described tract; thence North 23° 10' West, 230.35 feet to the point of beginning.

PARCEL III
A strip of land lying in Section 13, Township 1 South, Range 1 East, of the W. M., described as follows:

All that portion lying southerly of a line drawn 7 1/2 feet southerly from and parallel to the northwesterly line of the following described tract of land:

Beginning at an iron pipe on the east line of Section 14, Township 2 South, Range 1 East, of the W. M., which pipe is 46 chains South (measured along the section line) from the northeast corner of Section 14; running thence South 81° 35' West, 616 feet to an iron pipe on the easterly line of the County Road; thence South 25° 20' East along the easterly line of the County Road, a distance of 172 feet to an old iron pipe at an angle point in the easterly line of said road; thence continuing along said easterly line of the County Road, South 20° 10' East, 183 feet to an iron pipe at an angle point in the easterly line of said road; thence continuing along said easterly line of the County Road, 317 feet to an iron pipe at the southerly corner of the tract conveyed to Mary S. Young by instrument recorded in Book 178 at page 302, Deed Records; thence North 45° 05' West along the southeasterly line of said Mary S. Young tract, 489.56 feet, to the true point of beginning of the tract of land herein described; thence North 45° 05' East along the south line of said Mary S. Young tract, 528.69 feet, more or less, to the low water line on the left bank of the Willamette River; thence Northwesterly along said low water line to a point which is 15 feet easterly of and parallel to the southeasterly line of said Mary S. Young tract; thence South 65° 05' West, on a line 15 feet Northwesterly of and parallel to the southeasterly line of said Mary S. Young tract, 528.69 feet, more or less, to a point North 24° 36' West from the true point of beginning; thence South 24° 36' East 15 feet to the true point of beginning. -----

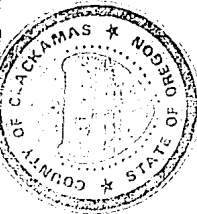
3

ILLEGIBLE WHEN RECORDED

STATE OF OREGON
County of Clackamas

I, John F. Kauffman, County Clerk for the County of Clackamas, hereby certify that the instrument of writing was received for recording in the records of said county at

1988 SEP 12 PM 12:45



Witness my hand and seal this day

John F. Kauffman
JOHN F. KAUFFMAN
County Clerk

Recording Certificate
CCP-RA (REV. 12-86)

88 37558

**NATURAL RESOURCE ASSESSMENT
Within
Habitat Conservation Area**

FOR

Ferndell Estates

Prepared for:
**Bill Varitz
17828 Robin View Ct
West Linn, OR 97068**

Prepared by:
Schott and Associates

April 2018
Project #: 2588

INTRODUCTION

Site Location

Schott and Associates was contracted to conduct a wetland delineation and natural resource assessment on the subject property located east of Old River Road in West Linn, Clackamas County, Oregon. The property consists of 3 main tax lots (T2S R1E Sec.14AD 990, 1000, 1001) with two narrow strips attached to the north that are considered tax lots as well (T2S R1E Sec.14AD TL#900 and 1090).

Site Description

The rectangular shaped subject property is situated east of Old River Road and west of the Willamette River. The property is bordered by residential housing to the north, south and west. The Willamette River binds the property to the east. The subject property is mainly gently east sloping, but toward the eastern portion sloping is steeper and terraced.

The properties are entered by Riverside Court directing east off of Old River Road in between two tax lots at the west border of tax lots 990 and 1001 . Riverside Court is a private drive turning into a long driveway leading to a house and associated outbuildings at the east end of tax lot 990. The main driveway then winds south and east to tax lot 1000 with an associated house and attached garage.

Tax lot 1001 of 0.23 AC, tax lot 990 of 3.01 AC and the associated tax lot strip 900 of 0.04 AC are the most western tax lots. These tax lots are located just east of Old River Road and entered by Riverside Court which turns into a long private driveway. All of tax lot 1001 and tax lot 900 and the western portion of tax lot 990 are forested on both sides of the long driveway. Vegetation consisted of an overstory of Douglas fir (*Pseudotsuga menziesii*) and big leaf maple (*Acer macrophyllum*) and some ornamental tree varieties. The understory consisted of English ivy (*Hedera helix*) with some snowberry (*Symphoricarpos albus*) and sword fern (*Polystichum munitum*) mixed in. North or south of the driveway, in the forested area, is one large shop and a smaller storage shed prior to the house located at the east end of tax lot 990. The house is mainly surrounded by a maintained lawn and ornamental landscaping. The driveway then loops north and south around the house entering onto the most eastern tax lot 1000.

Tax lots 1000 and 1090 are fully developed. The driveway ends at a large house with an attached garage. The house is surrounded by a manicured lawn and ornamental landscape. East of the house is a stone retaining wall and a lower terraced area that is entirely lawn bordering the Willamette River to the east.

Project Objectives

The applicant proposes a 10 lot residential subdivision entirely within tax lots 900, 990 and 1001. Tax lots 1000 and 1090 will not be part of the present development proposal. Main access will be from Riverside Ct, entered from Old River Road to the west and through the middle of the development. As shown on the HCA Map, the subject property contains Habitat Conservation Areas (HCAs). The east end of the proposed roadway and the east end of proposed lots 5 and 6 are mapped within medium HCA. This report will provide HCA map verification and a description of site findings.

METHODS

A wetland and natural resource assessment were conducted on April 12, 2018. As per 28.030, 28.070 Habitat Conservation Area boundaries were determined and documented in this report.

Prior to visiting, site information was gathered, including recent and historical aerial photographs provided by Google Earth, the soil survey (NRCS web soil survey), the Local Wetland Inventory (LWI), the National Wetland Inventory (NWI), the Water Resource Area (WRA) map and the Habitat Conservation Area (HCA) map. The USGB topography map was also reviewed prior to the site visit.

The wetland delineation field work was conducted using the *1987 Manual and Regional Supplement to the Corps of Engineers Delineation Manual: Western Mountains, Valleys and Coast Region* to determine presence or absence of State of Oregon wetland boundaries and the Federal jurisdictional wetlands.

SENSITIVE AREA CONDITIONS

Waterway

There were no waterways onsite. The Willamette River bordered tax lot 1000 to the east and defines the property boundary. The waterway is not within the defined project area boundary.

Wetland

Based on soil, vegetation and hydrology data taken in the field no wetlands were found on the subject property. Sample plots were placed where geomorphic location or vegetation indicated the possibility of wetlands. Three sample plots were dug within the lowest lying areas located in the most eastern location of tax lot 1000 on a lower terrace bordering the Willamette River. The sample plots were all located within a mowed area of facultative grasses. Soils were mainly sand with a matrix color mix of 10YR 3/2, 3/3 and 4/4. No redoximorphic features were present and soils were dry. No hydrology indicators were present. No wetlands were present within the subject property.

The LWI, as well as the NWI and the WRA map, documented the Willamette River bordering the subject property to the east. The maps did not document any wetlands or waterways within the subject property. Onsite findings resulted in the same information.

The Web Soil Survey for Clackamas County mapped Cloquato silt loam and Woodburn silt loam 3 to 8% slopes within the subject property. Neither is considered a hydric soil.

HCA

28.070 PLANNING DIRECTOR VERIFICATION OF METRO HABITAT PROTECTION MAP BOUNDARIES

A. The HCA Map is the basis for identifying and designating the habitat conservation areas in the City. A copy of the latest, updated HCA Map is on file at the City and is adopted by reference for use with this chapter.

It is inevitable, given the large area that Metro's HCA Map covers, that there may be some errors. In cases where, for example, three properties share the same contours and the same natural features but the map shows the middle lot with an HCA designation on it, it is reasonable to question the accuracy of that HCA designation. Using tree overstory as the sole basis for HCA designation will also allow a change in designation since trees are already protected in the municipal code and Chapters 55 and 85 CDC.

B. The Planning Director shall verify the appropriate HCA or non-HCA designation by site visits or consultations with Metro or by other means. Determination is based on

whether the Metro criteria are met or whether the Metro designation was based solely on tree overstory in which case a redesignation is appropriate. In cases where the determination is that the map is incorrect, the Planning Director will make a written finding of this as well as the site conditions that led to that conclusion.

C. Class B public notice, per Chapter 99 CDC, shall be required prior to issuance of the redesignation decision if it involves redesignation of the HCA boundary to allow the construction of, or addition to, a house.

D. This determination and findings shall become part of the City record and part of the record for any associated land use application. The Planning Director shall also include in the record the revised map boundary. The Planning Director's determination and map revisions shall also be sent to Metro so that their map may be corrected as necessary.

E. The Planning Director determination is appealable to the City Council per Chapter 99 CDC.

F. Lands that are designated as an HCA only due to a forested overstory are exempt under CDC 28.040, Exemptions, since trees are already protected in the municipal code and Chapters 55 and 85 CDC. Similar exemptions apply to lands that exhibit no constraints. (Ord. 1576, 2008; Ord. 1604 §§ 25 – 28, 2011)

HCA Map description

Most of tax lot 1000 and 1090 are mapped HCA. The eastern 2/3rds of tax lots 1000 and 1090 are mapped High HCA. The western 1/3 is mainly mapped Medium HCA. The east edge of tax lots 900 and 990 are mapped Medium HCA. The remaining area of these tax lots, as well as tax lot 1001, is mapped Habitat and Impact Areas not designated as HCAs. No development is proposed in tax lots 1000 and 1090 where the majority of the HCA is mapped. A 10 lot subdivision is proposed within tax lots 900, 990 and 1001. Only the very eastern property boundary of tax lots 900 and 990 are mapped Medium HCA, covering 5,155sf of area.

HCA on site findings

The site was visited and information documented in April of 2018. Tax lots 1000 and 1090 are located the furthest east within the subject property. They are bordered by the Willamette River to the east, therefore, within the City of West Linn Willamette Greenway Area. A majority of tax lots 1000 and 1090 are mapped High HCA and Medium HCA.

HCA mapping also covers a small area (5,155sf) within tax lots 900 and 990 at their eastern property line. Upon site investigation we have determined that there was a mapping error and there are no actual Habitat Conservation Areas within the subject property.

Tax lot 1000 and 1090 do border the Willamette River along the east property line, but the vegetation consists of a vast mowed lawn area vegetated with non-native grasses. The lawn area bordering the river is the lowest lying area within the subject property. From the river the lawn area varies in width to the west, from 50 to a 100' as the property angles at the eastern property line. Three sample plots were dug within the lowest lying areas and soils consisted of sand with a mixed matrix of 10YR3/3, 3/2 and 4/4. There were no redoximorphic features present. There were no hydrology indicators observed. It was determined that no wetlands were in the lowest area of the property where they would most likely be found.

At the west end of the lawn area is a stone retaining wall and a steep bank dominated by English ivy and a few scattered Douglas fir trees. At the top of the steep bank the property flattens out. This is where the house is located. The house is surrounded by a manicured lawn and ornamental plantings. In front of the house, to the west, is a long driveway directing north and south. The driveway is bordered to the west by another retained sloped bank dominated by ivy. There are a few Douglas fir and big leaf maples in the overstory and a few scattered snowberry and sword fern mixed in with the ivy on the slope. The driveway circles a second house

on tax lot 990, located above the slope, in a north and south direction. The driveways meet west of the second house and then direct west to Old River Road. The second house, located on tax lot 990 was surrounded by ornamental landscape as well. HCA mapping basically stops east of the house on tax lot 990 except at the southeast corner of the lot where it extends a little further west past the house.

Upon site observation and site information gathered prior to the site visit, we contend that there was a mapping error and there is no actual HCA within any of the tax lots on the subject property. What was observed was vast lawns, retaining walls, ivy dominated slopes, buildings with non-native landscapes and asphalt or gravel driveways. Per Google Earth aerial photos, the subject property has been like this since at least 1994 and has remained the same to date.

Impacts to Wetlands/Waters

There are no wetlands or waterways onsite, therefore no impacts. The Willamette River borders tax lot 1000 to the east. There is no proposed development for tax lot 1000.

Impacts to the mapped HCA

Development is proposed on tax lots 900, 990 and 1001. Medium HCA is mapped at the east boundary of tax lots 900 and 990. Proposed lot 5 will impact 725sf and lot 6 will impact 3,750sf of mapped Medium HCA. The proposed roadway ends at the east property line of tax lot 990, impacting 680sf of mapped Medium HCA. Total impact is 5,155sf of mapped Medium HCA.

Onsite investigation determined that there is no HCA on the property and most of the mapped HCA on tax lot 900 and 990 is within a steep ivy covered, rock retained slope or on a hardscape driveway. The homes on tax lot 990 and 1000 were built in 1994. Per Google Earth the property has been developed since at least 1994 and remains the same to date.

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.

An HCA map with a development overlay is attached. As described above onsite conditions and review of historical aerials indicate a mapping error and no actual HCA was found to be onsite.

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.*

The attached development plan demonstrates that a majority of the proposed development is within “Habitat and Impact Areas Not Designated as HCAs”. A minimal amount of the proposed development is within mapped Medium HCA area. We believe the mapping is in error and there were no HCAs on the subject property.

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.)*

Most of the development is within non HCAs, and the minimal amount within mapped HCA is believed to be a mapping error.

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.*

This condition shall be met.

B. Partitions, subdivisions and incentives.

1. *When dividing a property into lots or parcels, an applicant shall verify the boundaries of the HCA on the property.*

See attached HCA map with development overlay. This map is provided for reference as the site visit has verified no actual HCA onsite.

2. *Applicant shall partition or subdivide the site so that all lots or parcels have a buildable site or envelope available for home construction located on non-HCA land or areas designated “Habitat and Impact Areas Not Designated as HCAs” per the HCA Map.*

A majority of the lots are proposed in non HCAs and all lots have a buildable site envelope located outside the mapped HCA. As identified onsite and described in this report no actual HCA was found onsite.

3. *Development of HCA-dominated lands shall be undertaken as a last resort. A planned unit development (PUD) of Chapter 24 CDC may be required.*

A minimal amount of Mapped HCA would be impacted, but we believe the HCA map is in error as described above and there is no HCA on the subject property.

4. *Incentives are available to encourage provision of public access to, and/or along, the river. By these means, planned unit developments shall be able to satisfy the shared outdoor recreation area requirements of CDC 55.100(F). Specifically, for every square foot of riverfront path, the applicant will receive credit for two square feet in calculating the required shared outdoor recreation area square footage. Applicants shall also be eligible for a density bonus under CDC 24.150(B). To be eligible to receive either of these incentives, applicants shall:*

a. Provide a minimum 20-foot-wide all-weather public access path along the project's entire river frontage (reduced dimensions would only be permitted in response to physical site constraints such as rock outcroppings, significant trees, etc.); and

b. Provide a minimum 10-foot-wide all-weather public access path from an existing public right-of-way to that riverfront path or connect the riverfront path to an existing riverfront path on an adjoining property that accesses a public right-of-way;

c. Fencing may be required near steep dropoffs or grade changes.

No development is proposed near the river as the tax lot bordering the river is not part of the proposed development plan. (tax lot 1000)

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 provision of CDS 32.070 and 32.080. (Ord. 1576, 2008)

There is a total proposed impact of 5,155sf within the mapped medium HCA.

Per above described documentation we believe the HCA map is in error and there is no HCA on the subject property, therefore, no mitigation is proposed.

Conclusion

Tax lots 900, 990, 1000, 1001 and 1090 were walked to verify HCA mapping accuracy. Tax lots 1000 and 1090 border the Willamette River and are almost entirely mapped HCA. Tax lot 1001 is mapped as non HCA. Tax lots 900 and 990 are HCA mapped at their eastern property boundary. A 10 lot development plan has been proposed within tax lots 900, 990 and 100, impacting 5,155sf of mapped Medium HCA. Upon walking the site and conducting a natural resource assessment, we believe the HCA mapping is in error and there is no HCA within any of the tax lots on the subject property. This may be verified by the Planning Director per 28.070. No HCA impacts are proposed and no mitigation should be required.

Appendices

A: Site Vicinity Map

B: Tax Map

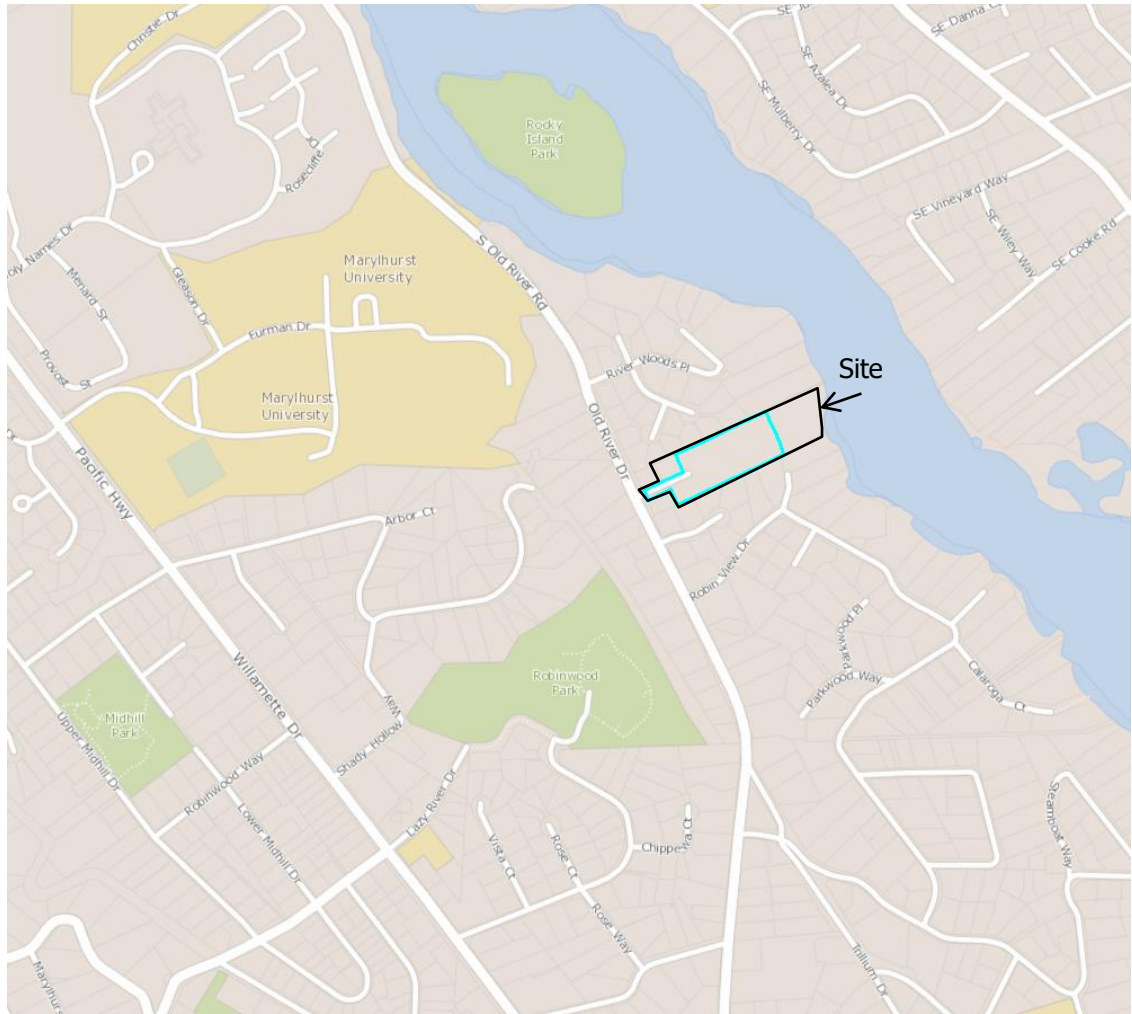
C: HCA Map

D: Aerial Photograph

E: Development Plan

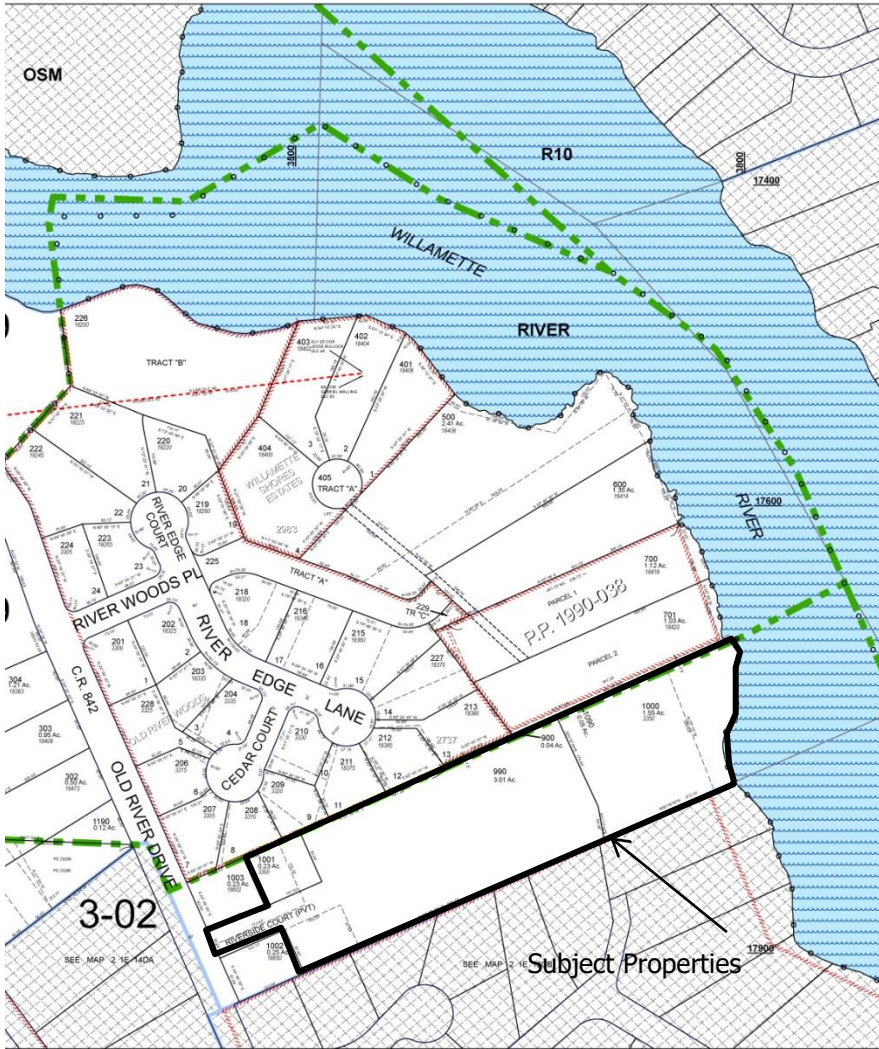
F: Development Plan Overlay on HCA Map with Photo Points

G: Ground Level Photographs



Appendix A: Site Vicinity Map
S&A 2588
Ferdell Estates

Schott & Associates
P.O. Box 589
Aurora, OR. 97002
503.678.6007



2 1 E 14AD
WEST LINN

S.E. 1/4 N.E. 1/4 SEC. 14 T.2S. R.1E. W.M.
CLACKAMAS COUNTY
1" = 100'

D. L. C.
GABRIEL WALLING NO. 63
JESSIE BULLOCK NO. 46

Cancelled Taxlots

100001
300
800
211
300
214
400
200

- Parcel Boundary
- Private Road ROW
- Historical Boundary
- Railroad Centerline
- TaxCodeLines
- Map Index
- WaterLines
- Land Use Zoning
- Plats
- Water
- Corner
- Section Corner
- 119th Line
- Govt Lot Line
- DLC Line
- Meander Line
- PLSS Section Line
- Historic Corridor 40'
- Historic Corridor 20'

THIS MAP IS FOR ASSESSMENT
PURPOSES ONLY

2 1 E 14AD
WEST LINN

2/11/2018

Appendix B: Tax Map (tax lots 900, 990, 1000, 1001, 1090)
S&A 2588
Ferdell Estates

Schott & Associates
P.O. Box 589
Aurora, OR. 97002
503.678.6007



Metro 2005 Habitat Conservation Areas (HCAs)

Conservation Area



Data Source: Metro Data Resource Center
Habitat Conservation Areas Map December 15, 2005
Urban Growth Management Functional Plan
Title 13, Nature in Neighborhoods
Adopted Sept. 29, 2005 (Metro Ordinance No. 05 -1077C)
Amended Dec. 8, 2005 (Metro Ordinance No. 05 -1097A)



Appendix D: Aerial Photograph
S&A 2588
Ferndell Estates

Schott & Associates
P.O. Box 589
Aurora, OR. 97002
503.678.6007

Density Calculations			
	Area (sq. ft.)	Allowable Density	Units @1 per 10,000 sq.ft.
Gross Site Area	142,933		
Land in a boundary street right-of-way, water course, or planned open space where density transfer is not requested:	0		
Area in street right-of-way:	34,373		
Net Site Area:	108,560		
Net Area within Type I or II slopes where Developed:	4,422	50%	.22
Area within Type I or II slopes where Density Will be Transferred:	0	75%	0
Area within Water Resource Area-all development transferred.	0	50%	0
Open Space (Type III and IV Lands)	0	100%	0
Net Type III & IV Land Developed:	104,138	100%	10.41
Base Density Allowed:			10.63
TOTAL ALLOWED DENSITY:			10 UNITS

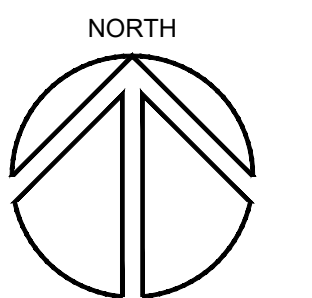
SIGNED ON: **2 FEB 18**

REGISTERED PROFESSIONAL LAND SURVEYOR

OREGON
JULY 13, 2004
TOBY G. BOLDEN
60377LS

RENEWS: DECEMBER 31, 2018

Design by: Richard E. Givens, Planning Consultant
Survey Work by: Centerline Concepts, Inc.



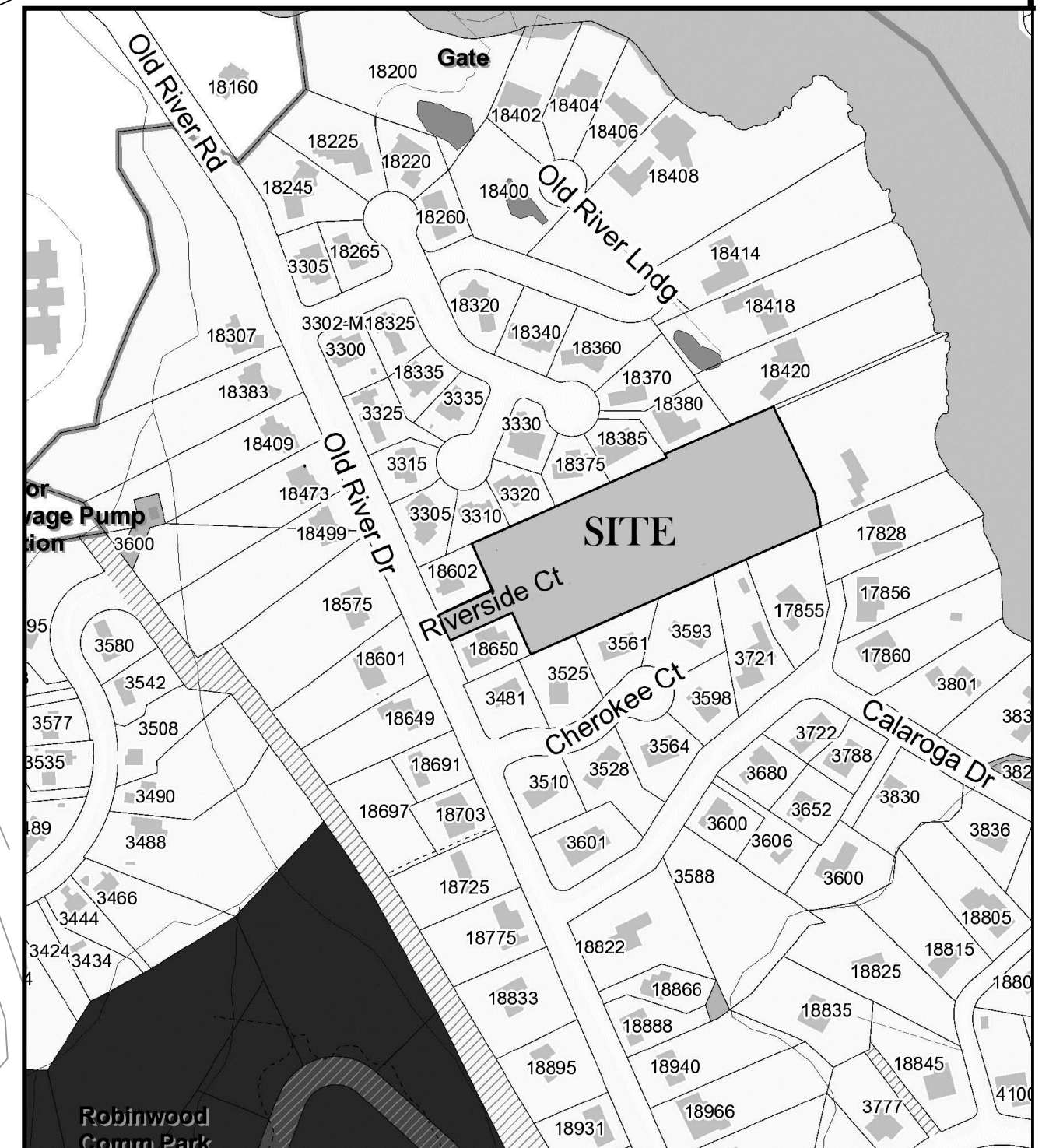
Applicant/Owner:
Bill Varitz
17828 Robin View Ct.
West Linn, OR 97068
PH: (503) 939-3803

Legal: 2-1E-14AD TL 900 & 990
Water: City of West Linn
Sewer: City of West Linn
Contours: Centerline Concepts, Inc.
Site Area: 3.28 Acres

Engineer:
Theta Engineering, Inc.
PO Box 1345
Lake Oswego, OR 97035
PH: (503) 481-8822

Surveyor:
Centerline Concepts, Inc.
700 Molalla Ave.
Oregon City, OR 97045
PH: (503) 650-0188

Zoning: R-10



Vicinity Map

DESIGNED: REG			
DRAWN: REG			
SCALE: 1" = 30'			
DATE: February 2018			
FILE: 13-VAR-100	DATE	NO.	REVISION

Richard E. Givens, Planning Consultant
18680 Sunblaze Dr.
Oregon City, OR 97045
PH: (503) 479-0097

APPLICANT: Greg Sams & Bill Varitz
18811 Trillium Drive
West Linn, OR 97068
PH: (503) 939-6015



DESIGNED: REG			PP= Photo Point
DRAWN: REG			
SCALE: 1" = 30'			
DATE: April 2018			
FILE: 16-VAR-100	DATE	NO.	REVISION

Richard E. Givens, Planning Consultant
 18680 Sunblaze Dr.
 Oregon City, OR 97045
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APPLICANT: Bill Varitz & Greg Sams
 18811 Trillium Drive
 West Linn, OR 97068
 PH: (503) 939-6015

Ferndell Estates
 HCA Analysis



Photo Point 1 facing south



Photo Point 1 facing east



Photo Point 1 facing north



Photo Point 1 facing west



Photo Point 2 facing south



Photo Point 2 facing east



Photo Point 2 facing north



Photo Point 2 facing west



Photo Point 3 facing



Photo Point 3 facing east



Photo Point 3 facing north



Photo Point 3 facing west



Photo Point 4 facing east



Photo Point 4 facing south



Photo Point 4 facing west



Photo Point 4 facing north



Photo Point 5 facing north



Photo Point 5 facing west



Photo Point 5 facing south



Photo Point 5 facing east

Density Calculations			
	Area (sq. ft.)	Allowable Density	Units @1 per 10,000 sq.ft.
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Base Density Allowed:			10.63
TOTAL ALLOWED DENSITY:			10 UNITS

SIGNED ON: **2 FEB 18**
REGISTERED PROFESSIONAL LAND SURVEYOR

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 RENEWS: DECEMBER 31, 2018
 Design by: Richard E. Givens, Planning Consultant
 Survey Work by: Centerline Concepts, Inc.

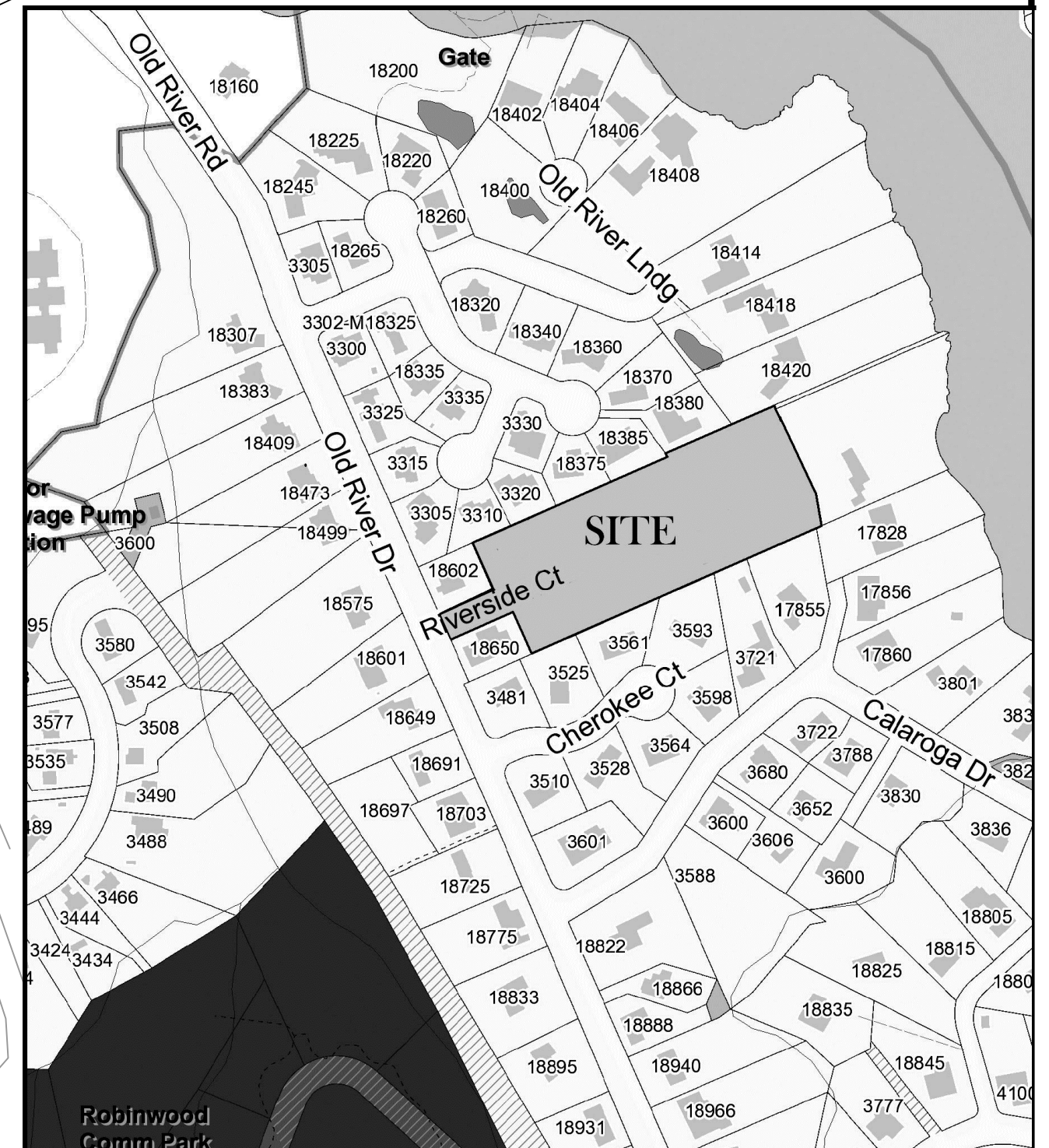
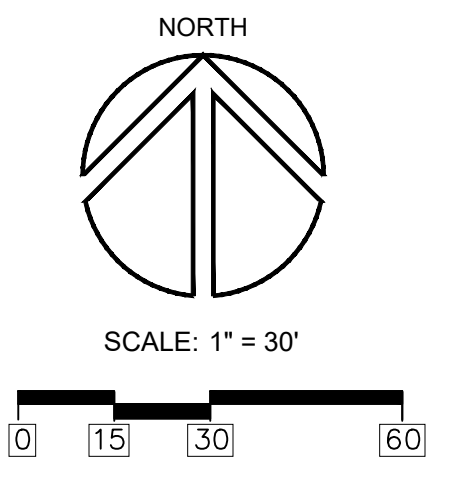
Applicant/Owner:
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 West Linn, OR 97068
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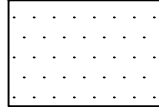
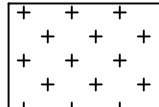
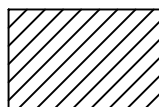
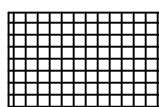
Zoning: R-10

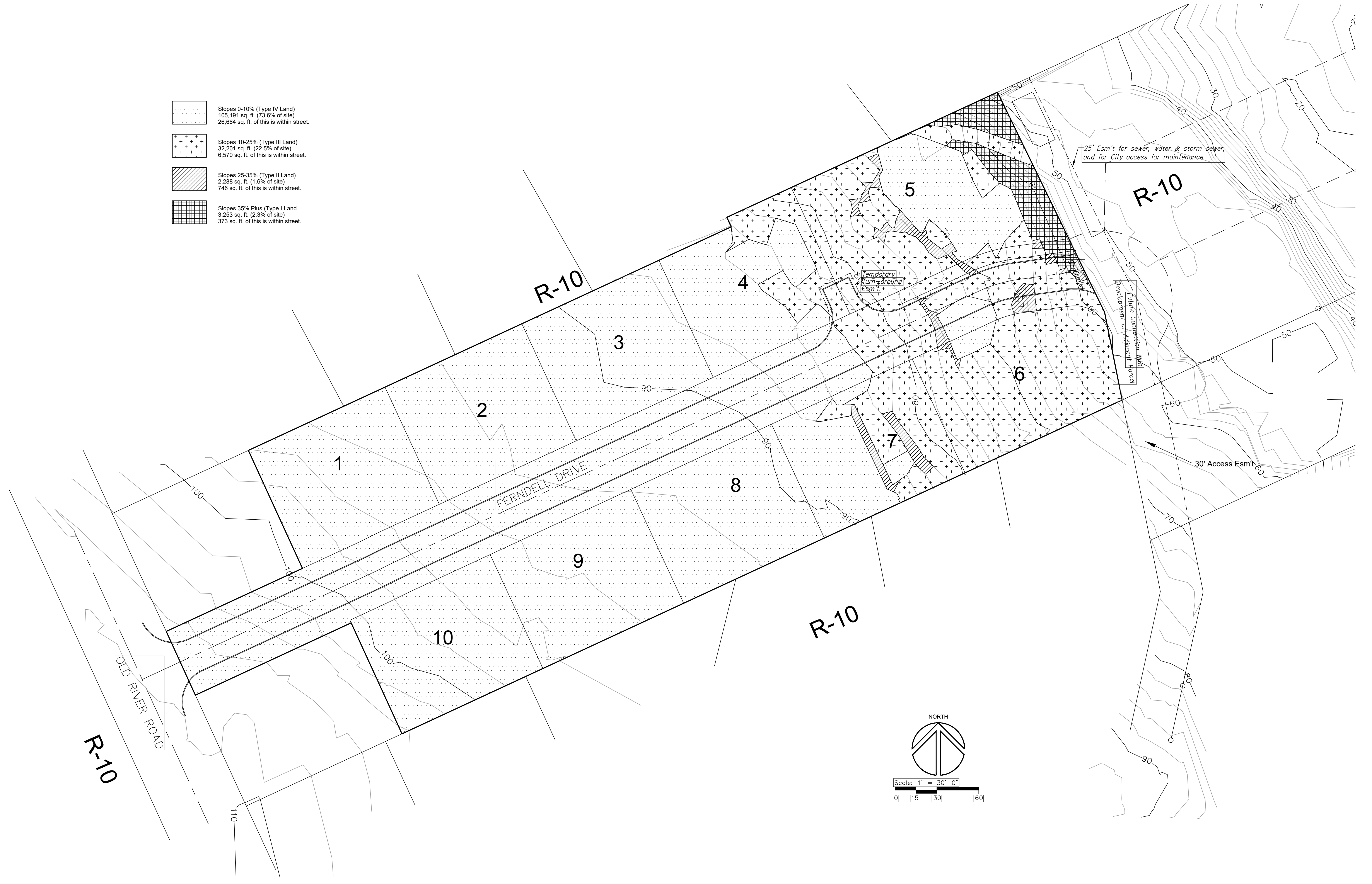


DESIGNED: REG	5-3-2018	1	Added street trees, re-development plan for TL 1000, access & utility esm't on TL 1000
DRAWN: REG			
SCALE: 1" = 30'			
DATE: February 2018			
FILE: 13-VAR-100	DATE	NO.	REVISION

Richard E. Givens, Planning Consultant
 18680 Sunblaze Dr.
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 PH: (503) 479-0097

APPLICANT: Greg Sams & Bill Varitz
 18811 Trillium Drive
 West Linn, OR 97068
 PH: (503) 939-6015

-  Slopes 0-10% (Type IV Land)
 105,191 sq. ft. (73.6% of site)
 26,684 sq. ft. of this is within street.
-  Slopes 10-25% (Type III Land)
 32,201 sq. ft. (22.5% of site)
 6,570 sq. ft. of this is within street.
-  Slopes 25-35% (Type II Land)
 2,288 sq. ft. (1.6% of site)
 746 sq. ft. of this is within street.
-  Slopes 35% Plus (Type I Land)
 3,253 sq. ft. (2.3% of site)
 373 sq. ft. of this is within street.



DESIGNED: REG			
DRAWN: REG			
SCALE: 1" = 30'			
DATE: February 2018			
FILE: 16-VAR-100	DATE	NO.	REVISION

Richard E. Givens, Planning Consultant
 18680 Sunblaze Dr.
 Oregon City, OR 97045
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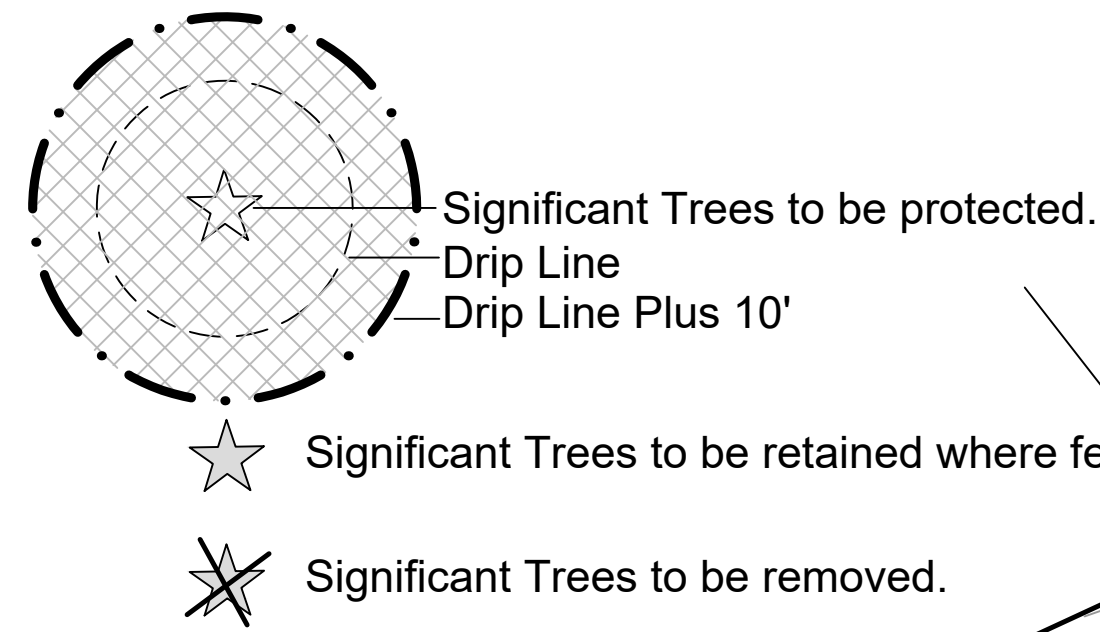
APPLICANT: Bill Varitz & Greg Sams
 18811 Trillium Drive
 West Linn, OR 97068
 PH: (503) 939-6015

Ferndell Estates Slope Analysis

Tag	Species	Diameter	Rating	Condition
1	Port Orford Cedar	13	2	added
2	Douglas Fir	34	1	co-dominant stem cut; decay present
3	big leaf maple	21	2	dead branches
4	western red cedar	18	2	viable
5	sweet cherry	16	2	ivy
6	big leaf maple	14	2	viable
7	big leaf maple	15	2	viable
8	western red cedar	33	2	co-dominant @ 35'
9	western red cedar	16	2	3' off-site; added
10	sweet cherry	13	2	added
11	sweet cherry	12	2	added
12	red alder	12	1	trunk decay; added
13	red alder	12	2	trunk swoop; added
14	big leaf maple	30	1	basal decay
15	western red cedar	14	2	
16	big leaf maple	16	2	
17	big leaf maple	12,13	2	co-dominant; added
18	western red cedar	25	2	co-dominant @ 25'
19	sweet cherry	14	2	added
20	big leaf maple	22	2	
21	sweet cherry	21	2	
22	big leaf maple	15	2	added
23	sweet cherry	12	2	ivy
24	sweet cherry	15	2	ivy
25	sweet cherry	15	2	added
26	sweet cherry	13	2	added
27	big leaf maple	17	2	added
28	western red cedar	36	2	2' off-site; added
29	sweet cherry	18	2	
30	grand fir	40	3	
31	western red cedar	22	2	
32	big leaf maple	17	2	
33	big leaf maple	12	2	added
34	big leaf maple	18	2	

35	big leaf maple	36	1	multiple stems; basal decay; past failures
36	Douglas Fir	39	2	very tall
37	red alder	14	1	trunk decay; added
38	big leaf maple	14	2	
39	sweet cherry	13	2	added
40	big leaf maple	17	2	co-dominant from base; added
41	big leaf maple	26	2	multiple stems; added
42	big leaf maple	22	2	multiple stems; added
43	big leaf maple	21	2	multiple stems; added
44	big leaf maple	25	2	multiple stems; added
45	big leaf maple	33	2	multiple stems; added
46	big leaf maple	44	1	multiple stems; added
47	big leaf maple	15	2	added
48	big leaf maple	13	2	added
49	sweet cherry	15	2	
50	big leaf maple	18	2	added
51	red alder	13	2	
52	big leaf maple	17	2	
53	sweet cherry	12	2	added
54	big leaf maple	18	1	basal decay
55	big leaf maple	27	2	added
56	big leaf maple	14	2	added
57	big leaf maple	16	2	added
58	Douglas Fir	26	2	very tall
59	Douglas Fir	40	2	very tall
60	Douglas Fir	49	2	very tall
61	Douglas Fir	33	2	very tall; shares stump with 162
62	western red cedar	21	2	shares stump with 161
63	big leaf maple	16	2	co-dominant from 1'; added
64	big leaf maple	13	2	
65	big leaf maple	15	2	
66	Douglas Fir	33	2	very tall
67	big leaf maple	17	2	added
68	big leaf maple	12	2	added
69	sweet cherry	12	2	added

70	Douglas Fir	19	2	poor trunk taper
71	Douglas Fir	30	2	
72	Douglas Fir	22	2	poor trunk taper
73	Douglas Fir	30	2	
74	Douglas Fir	26	2	
75	big leaf maple	13	2	added
76	Douglas Fir	17	2	
77	Douglas Fir	27	2	
78	big leaf maple	17	2	
79	big leaf maple	13	1	co-dominant stem is cut; basal decay
80	big leaf maple	20	2	
81	big leaf maple	26	2	co-dominant from 3'
82	Douglas Fir	34	2	
83	Douglas Fir	32	2	
84	Douglas Fir	27	2	
85	Douglas Fir	29	2	added
86	big leaf maple	17	2	
87	Douglas Fir	40	2	
88	big leaf maple	21	2	
89	big leaf maple	15	2	added
90	big leaf maple	13	2	added
91	sweet cherry	13	2	added
92	big leaf maple	12	2	added
93	big leaf maple	13	2	added
94	big leaf maple	20	2	
95	Douglas Fir	36	2	within 1' of out building
96	sweet cherry	20	2	
97	Douglas Fir	47	2	
98	sweet cherry	13	2	added
99	sweet cherry	13	2	added
100	Douglas Fir	40	2	
101	Douglas Fir	24	2	
102	western red cedar	30	2	
103	sweet cherry	15	2	trunk swoop; added
104	western red cedar	19	2	



105	sweet cherry	12	2	added
106	big leaf maple	18	1	trunk and basal decay; added
107	big leaf maple	12	2	added
108	western red cedar	26	2	<1' off-site; added
109	sweet cherry	13	2	added
110	big leaf maple	12	2	added
111	big leaf maple	21	1	multiple stems; added
112	big leaf maple	18	2	
113	Douglas Fir	39,33	2	co-dominant from base
114	western red cedar	29	2	trunk decay; co-dominant @ 20'
115	big leaf maple	20	2	
116	big leaf maple	15	2	added
117	Douglas Fir	31	2	
118	Douglas Fir	31	2	
119	western red cedar	26	2	
120	light pole	9	N/A	not a tree
121	red alder	19	2	
122	big leaf maple	16	2	
123	Douglas Fir	27	2	
124	Douglas Fir	30	2	
125	Douglas Fir	40	2	
126	sweet cherry	23	2	co-dominant; included bark
127	big leaf maple	12	2	added
128	big leaf maple	21	2	added
129	big leaf maple	15	2	
130	big leaf maple	19	2	
131	western red cedar	41	2	
132	sweet cherry	16,14	2	co-dominant from base
133	sweet cherry	16	2	added
134	western red cedar	30	2	
135	Scouler willow	14	2	added
136	big leaf maple	40	2	co-dominant @ 5'
137	red alder	12	2	added
138	Douglas Fir	40	2	
139	western red cedar	34	2	

140	chestnut	13	2	added
141	western red cedar	30	2	
142	big leaf maple	27	2	co-dominant @ 3'
143	Douglas Fir	45	2	
144	western red cedar	13	2	
145	sweet cherry	12	2	added
146	big leaf maple	16	2	
147	big leaf maple	17	2	
148	western red cedar	18	2	
149	big leaf maple	18	2	
150	big leaf maple	27	2	co-dominant @ 3'; added
151	big leaf maple	16	2	
152	incense cedar	18	2	multiple tops
153	western red cedar	32	2	
154	Douglas Fir	35	2	
155	Douglas Fir	50	2	
156	western red cedar	32	2	7' off-site
157	western red cedar	36	2	5' off-site
158	Douglas Fir	45	2	
159	big leaf maple	26	2	co-dominant @ 3'
160	Douglas Fir	59	1	P. schweinitzii root disease; co-dominant stems
161	western red cedar	14	2	hedgerow; added
162	western red cedar	13	2	hedgerow; added
163	western red cedar	12	2	hedgerow; added
164	western red cedar	19	2	hedgerow; added
165	western red cedar	12	2	hedgerow; added
166	sweet cherry	15	2	
167	Douglas Fir	27	2	
168	Pacific madrone	6	2	added
169	Douglas Fir	27	1	red-ring rot
170	Douglas Fir	23	2	
171	Douglas Fir	35	2	
172	big leaf maple	30	2	added
173	sweet cherry	13	2	added
174	big leaf maple	14,14	2	added

DESIGNED: REG			
DRAWN: REG			
SCALE: 1" = 30'			
DATE: February 2018			
FILE: 16-VAR-100	DATE	NO.	REVISION

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Ferndell Estates Tree Plan