CRITICAL AREAS REPORT & MITIGATION PLAN

Project:

Lewis River Site Plan
Woodland, WA

Applicant:

Luke Sasse
9321 NE 72nd Avenue, Bldg. C #7
Vancouver, WA 98665

Prepared By:

Ash ECO SOLUTIONS, LLC

January 5, 2023

The information in this report was compiled to meet the requirements of the City of Woodland Shoreline Master Program and Appendix B – Critical Areas Regulations. This report has been prepared under the supervision and direction of the undersigned, a qualified professional following Woodland SMP Section 2.

Andrea W. Aberle, Sr. Biologist
AshEco Solutions, LLC

Mackenzie Stamey, Biologist
AshEco Solutions, LLC

SITE INFORMATION:

Parcel No(s):	506520100, 506520500, 506520400, 506520300, 5065201, 50650, 506520200
Acreage:	31.58 (Total)
Local Jurisdiction:	City of Woodland, Washington
Section/Township/Range:	S47, T5N, R1E, W.M.
Site Address:	1940 Lewis River Road, Woodland, WA
Legal Landowner:	Triangle Holdings, LLC *(Per Current GIS Parcel Info)*

TABLE OF CONTENTS

TABLES

FIGURE SET

APPENDICES

INTRODUCTION

Project Description

AshEco Solutions, LLC (AES) was contracted by Luke Sasse to assess the critical areas present within the City of Woodland (City) subject property and develop a restoration plan to offset proposed project impacts. This Critical Areas Report and Mitigation Plan follows the City of Woodland Municipal Code (WMC) 15.08 Critical Areas Regulation and the City of Woodland Shoreline Master Program. The applicant proposes to construct a multi-family residential development within the High Density Residential (HDR) zone. The development will include two phases and provide 252 apartment units within 9 buildings as well as an office/club house and associated parking and landscaping areas within the northern limits of the subject site. The proposal also includes the construction of a new recreational pedestrian trail system providing public shoreline access for the City of Woodland and a large shoreline and floodplain restoration area.

Project Location and Background Information

The Lewis River Site Plan subject property consists of six parcels under the jurisdiction of the City of Woodland, addressed as 1940 Lewis River Road, Woodland, Washington. The City has assigned parcel numbers 506520100, 506520500, 506520400, 506520300, 5065201, and 50650 to the subject property. A city owned lot (parcel number 506520200, 6.19 acres) is present south of the subject property, see Figure 9. The total acreage of the subject property is 31.58 acres. The multi-family residential apartment project is located within the northern limits of the overall subject property and directly south of Lewis River Road and directly north of the Lewis River, a Type S Water and Shoreline of the State. East and west of the site are urban residential lots and two churches.

EXISTING CONDITIONS

The northern section of the project site has been in agricultural use since at least the 1950s. The area has been maintained in grass and hay. The southern section of the subject site is dominated in mature black cottonwood trees, mixed native shrubs, and invasive shrubs and herbs. No structures are present on the site. A dirt and gravel road is present crossing the property which provides unauthorized public access to the Lewis River. Additionally, a city stormwater easement 30 feet wide crosses the subject property north to south in the westernmost subject parcel, a 75-foot natural gas line easement crosses diagonally over the two easternmost subject parcels, and a City utility and access easement crosses all four central parcels. The southcentral parcel within the project areas is owned by the City of Woodland, no structures or site access are currently within the parcel. The subject site is highly constrained due to easements, the Lewis River floodway and 100-Year floodplain, riparian habitat areas, shorelines, and wetland buffers. AES visited the subject site on May 25, 2022 to assess the critical areas onsite.

The City of Woodland and its surroundings are currently in a housing crisis, there is a severe lack of affordable housing in the area. The city has had negative apartment growth within the last twenty years. There are few places within city limits that can accommodate large housing complexes and most sites are highly constrained by geography and critical areas. The proposed project will greatly benefit the City of Woodland providing 252 new residential units, a new recreational pedestrian trail system providing public access to the Lewis River shoreline, while restoring a degraded shoreline habitat area within the city.

CRITICAL AREAS MAP RESEARCH

Topography

The site drops south from Lewis River Road forming a slightly undulating terrace within the northern section of the parcel. The site drops down again and continues undulating until the OHWM and wetland along the banks of the Lewis River. Topography maps show that the site drops approximately twenty-two feet in elevation from Lewis River Road to the OHWM, Figure 2.

Soil Survey

Soils within the study area are mapped as non-hydric Newberg fine sandy loam, 0 to 3 percent slopes (141) and Pilchuck loamy fine sand, 0 to 8 percent slopes (160), and hydric Riverwash (172) by the NRCS USDA Soil Conservation Service, Soil Survey of Cowlitz County (2006), Washington, Figure 3.

Newberg fine sandy loam, 0 to 3 percent slopes (141) is found on floodplains in the region with a mixed alluvium parent material . The soil is very deep and well drained with moderately rapid permeability. The available water capacity is moderate, runoff is slow and there is a slight hazard of water erosion. A typical profile is 0 to 10 inches—very dark greyish brown fine sandy loam, 10 to 28 inches— brown and very dark greyish brown fine sandy loam and very fine sandy loam, 28 to 60 inches—dark brown loamy fine sand. The principal vegetation found on these soils include Douglas-fir, red alder, bigleaf maple, black cottonwood, western redcedar, Oregon ash, trailing blackberry, western bracken fern, vine maple, cascara, and willows. The #141 soil type is not listed on the Washington State Hydric Soils List for Cowlitz County (NRCS 2022).

Pilchuck loamy fine sand, 0 to 8 percent slopes (160) is found on floodplains in the region with alluvium parent material . The soil is very deep and somewhat excessively drained with rapid permeability. The available water capacity is low, runoff is slow and there is a slight hazard of water erosion. A typical profile is 0 to 8 inches—very dark greyish brown loamy fine sandy, 8 to 12 inches— dark greyish brown loamy fine sand, 12-36 inches – dark brown fine sand, and 36 to 60 inches—very dark greyish brown gravelly sand. The principal vegetation found on these soils include Douglas-fir, red alder, bigleaf maple, black cottonwood, western redcedar, salmonberry, western swordfern, western bracken fern, vine maple, and snowberry. The #160 soil type is not listed on the Washington State Hydric Soils List for Cowlitz County (NRCS 2022).

Riverwash (172) is found on active river bottoms in the region with alluvium parent material. The soil is very deep and somewhat poorly drained to somewhat excessively drained with rapid or very rapid permeability. The available water capacity is low to high, runoff is slow and there is a severe hazard of water erosion. A typical profile is 0 to 6inches—gravelly sand, 6 to 60 inches—stratified gravelly sand to extremely gravelly-course sand. The #172 soil type is listed on the Washington State Hydric Soils List for Cowlitz County (NRCS 2022).

Mapped hydric soils do not necessarily mean that the area is a wetland; hydrology and wetland vegetation must be present to classify an area as a wetland. The same is true for soils that are not mapped as hydric. Wetlands can be found in areas without mapped hydric soils. The onsite wetland was identified within areas of the hydric mapped soil type #172.

Wetlands

A wetland is mapped directly offsite and south of the parcel by the Cowlitz County EPIC Maps software and by the National Wetland Inventory (NWI). NWI maps Palustrine Scrub-Shrub Seasonally Flooded

(PSSC) and Riverine Upper Perennial Unconsolidated Shore Seasonally Flooded (R3USC) wetlands in this location, Figure 4. Site reconnaissance by AshEco Solutions (AES) identified one riverine wetland associated with the floodplain of the Lewis River within the same general location as mapped. The wetland boundary is located off site and south of the proposed project.

Riparian Habitat
Cowlitz County EPIC Maps, City of Woodland, and the Washington State Department of Natural Resources (DNR) show the Lewis River (Type S Water) south of the subject property, Figure 5. The OHWM of the Lewis River was delineated by AES.

An un-named stream (Type F) is mapped crossing the northeastern part of the subject site. AES did not identify waters on or adjacent to the subject site in addition to the Lewis River. WDFW Salmonscape also does not map the Type F water, Figure 7. It is assumed that this water was mapped in error by DNR has not been updated. The Type F water as mapped by DNR is depicted initiating north of the subject property within a high-density residential neighborhood located north of Lewis River Road. There is no indication that there is a channel located within this area and AES considers it highly unlikely that it is present. Therefore, it is assumed that the Type F water was mapped in error. The Type S Water (Lewis River) present near the subject property is considered a Shoreline of the State and therefore governed also by the City of Woodland Shoreline Master Plan, the Washington State Department of Ecology, and the Washington Department of Fish and Wildlife. See Shoreline and Shoreline Designation under the Methodology section of this report.

WDFW Priority Habitat
The Washington Department of Fish and Wildlife (WDFW) maps "Freshwater Forested/Shrub Wetland" and "Riverine" habitats within or adjacent to the subject parcels in the same general locations as the Lewis River and the onsite wetlands. Big brown bat (*Eptesicus fuscus*) was also mapped as with potential presence within the general area though no priority species of bats were identified onsite.

Floodplain
FIRM Panel 53015C0996G of the FEMA maps a Floodway and 100-Year Floodplain associated with the Lewis River across the project site. The outer limits of the floodway or Flood Hazard Zone (FLHZ) as mapped by FEMA is depicted on Figure 6. The Floodway encompasses the southern half of the subject site while the 100-Year Floodplain encompasses the entirety of the project site, continuing off site to the north and beyond Lewis River Highway.

METHODOLOGY

Wetlands
The study area was evaluated for the presence of wetlands using the Routine Determination Method per the U.S. Army Corps of Engineers' (USACE's) *Wetland Delineation Manual* (1987), the *Washington State Wetlands Identification and Delineation Manual* (1997), and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region, Version 2.0* (USACE 2010). The Routine Determination Method examines three parameters to determine if wetlands exist in a given area: vegetation, hydrology, and soils. The presence of hydrology is critical in identifying wetlands; however, since hydrologic conditions can change periodically (hourly, daily, or seasonally), it is necessary to determine if hydrophytic vegetation and hydric soils are also present. By definition, wetlands are those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation

typically adapted for life in saturated soil conditions. Wetlands are regulated as "Waters of the United States" by the USACE, "Waters of the State" by Washington State Department of Ecology (ECY), and locally by WMC section 15.08.350 Wetlands. One riverine wetland was identified onsite north of the Lewis River. See Appendix B for formal test plot data collected onsite by AES.

Riparian Habitat
The methodology used for determining the location of the OHWM of the Lewis River followed the Washington State Department of Ecology's (ECY) Determining the OHWM on Streams in Washington State (2010).

Floodplain
Floodplain is generally defied as the 100-year floodplain, referring to the land area susceptible to inundation with a one percent (1%) chance of being equaled or exceeded in any given year. The limit of this area shall be based upon flood hazard maps. The area must remain relatively free from obstruction so that the 100-year flood can be conveyed downstream. The 100-Year Floodplain encompasses the entire site and the floodway encompasses the southern half the project site, Figures 6 and 9. The project has been designed to meet the "Floodplain Management" regulations – Chapter 14.40 of Woodland Municipal Code and 14.40.050, as the residential project will be located outside the floodway, and the lowest proposed residential floor will be elevated one foot above the base flood elevation. The proposed cut and fill will not result in an increase of the flood level during the occurrence of the base flood discharge.

Shorelines
The City of Woodland Shoreline Master Program (SMP) defines shorelines as *"extending landward for two hundred (200) feet in all directions as measured on a horizontal plane from the ordinary high water mark; floodways, and contiguous floodplain areas landward two hundred (200) feet from such floodways; and all wetlands and river deltas associated with the streams, lakes and tidal waters that are subject to the provisions of the Shoreline Management Act (RCW 90.58.030); the same to be designated as to location by Ecology."*

Therefore, the shoreline designation encompasses the entire subject site as 200-feet landward of the mapped floodway extends beyond the northern property boundary and beyond Lewis River Road, Figures 8 and 9.

Shoreline Designation Area
The City of Woodland SMP Shoreline Environmental Designation Map maps the shoreline designation area for the subject property as both "Residential" and "Urban Conservancy" with the site located along the "W-10" reach of the Lewis River, Figure 8.

The City of Woodland SMP Table B-4, Reach-Based Riparian Habitat Areas (RHA) for Shoreline Waters, further defines the specific shoreline designation area for the subject property "W-10" as Parallel: Urban Conservancy Between Floodway Boundary and OHWM/High Intensity/Residential. The jurisdictional RHA width listed for the W-10 shoreline designation area "extends from the OHWM to 10 feet landward of the FEMA Floodway, or 75 feet, whichever is greater." The floodway and the 10-foot landward offset, or the regulated RHA boundary, is depicted on Figure 9.

DOCUMENTED VEGETATION

Native and non-invasive vegetation within forested and wetland areas onsite:

Oregon ash (*Fraxinus latifolia* FACW), black cottonwood (*Populus trichocarpa* FAC), Oregon white oak saplings (*Quercus garryana* FACU), beaked hazelnut (*Corylus cornuta* FACU), red-osier dogwood (*Cornus sericea* FACW), Pacific ninebark (*Physocarpus capitatus* FACW), Nootka rose (*Rosa nutkana* FAC), Douglas spiraea (*Spiraea douglasii* FACW), Sitka willow (*Salix sitchensis* FACW), Pacific willow (*Salix lasiandra* FACW), Pacific crabapple (*Malus fusca* FACW), swamp gooseberry (*Ribes lacustre* FAC), tall Oregon grape (*Mahonia aquifolium* FACU), Douglas hawthorne (*Crataegus douglasii* FAC), Indian plum (*Oemleria cerasiformis* FACU), cascara (*Frangula purshiana* FAC), snowberry (*Symphoricarpos albus* FACU), manroot (*Marah oreganus* NI), piggyback plant (*Tolmiea menziesii* FAC), birdsfoot trefoil (*Lotus corniculatus* FAC), garden vetch (*Vicia sativa* UPL), black medick (*Medicago lupulina* FACU), sheep sorrel (*Rumex acetosella* FACU), sweet vernal grass (*Anthoxanthum odoratum* FACU), orchard grass (*Dactylis glomerata* FACU), brome grass (Bromus sp. FACU), scouringrush horsetail (*Equisetum hyemale* FACW), lanceleaf plantain (*Plantago lanceolata* FACU), centaury (*Centaurium erythraea* FAC), lady fern (*Athyrium filix-femina* FAC), colonial bentgrass (*Agrostis capillaris* FAC), tall fescue (*Schedonorus arundinaceus* FAC), cleavers (*Galium aparine* FACU), hedgenettle (*Stachys mexicana* FACW), dames rocket (*Hesperis matronalis* FACU), and slough sedge (*Carex obnupta* OBL).

Invasive species:
English hawthorne (*Crataegus monogyna* FAC), Scotch broom (*Cytisus scoparius* FACU), Himalayan blackberry (*Rubus armeniacus* FAC), common periwinkle (*Vinca minor* NI), Japanese knotweed (*Polygonum cuspidatum* FACU), common St. Johnswort (*Hypericum perforatum* FACU), English ivy (*Hedera helix* FACU), old man's beard (*Clematis vitalba* FAC), yellow archangel (*Lamium galeobdolon,* FACU), hairy cats ear (*Hypochaeris radicata* FACU), Canada thistle (*Cirsium arvense* FACU), reed canarygrass (*Phalaris arundinacea* FACW), and bird vetch (*Vicia cracca* NI).

The indicator categories following the common and scientific name of each vegetation species indicate the likelihood of the species to be found in wetlands. Listed from most-likely to least-likely to be found in wetlands, the indicator categories are:

- **OBL (obligate wetland) –** Occur almost always under natural conditions in wetlands.
- **FACW (facultative wetland) –** Usually occur in wetlands but occasionally found in non-wetlands.
- **FAC (facultative) –** Equally likely to occur in wetlands or non-wetlands.
- **FACU (facultative upland) –** Usually occur in non-wetlands but occasionally found in wetlands.
- **UPL (obligate upland) –** Occur almost always under natural conditions in non-wetlands.
- **NI (no indicator) –** Insufficient data to assign to an indicator category.

CRITICAL AREA CONCLUSIONS

Wetlands

One Category II wetland with habitat score of 8 was delineated just south of the subject site. AES rated the wetland using the Washington State Department of Ecology Wetland Rating Form (2014), Appendix B. The onsite wetland has multiple hydrogeomorphic (HGM) characteristics slope, depressional, and riverine, and was rated as a riverine wetland. The wetland has forested, scrub-shrub, and emergent dominated sections and is located along the northern bank of the Lewis River. The wetland is shares hydrology with the Lewis River and is within 200 ft of the OHWM, making it an associated shoreline wetland.

Following Appendix B - Section 5.5 of the City of Woodland SMP, wetland buffer widths are established by comparing the wetland rating category, the habitat score, and the intensity of land uses proposed on

development sites. The proposal includes cut, fill, grading, and constructing a multi-family apartment complex, which meets the High Land Use Intensity definition following Section 2 of the City of Woodland SMP. The proposal also includes the addition of dedicated shoreline access with proposed construction of a pervious pedestrian trail, picnic tables and viewing benches (considered low land intensity uses). The wetland buffer required to protect habitat functions for Category II Wetlands with a habitat score of 8 and a proposed high land use intensity is 300 feet, 225 feet for moderate land use intensities, and 150 feet for low land use intensities, Figures 9 and 10. The proposed project will have buffer impacts to the outer portion of the onsite wetland. However, no significant vegetation removal is proposed within this area and the outer buffer area will ultimately be restored with implementation of the proposed mitigation plan.

Riparian Habitat

The Lewis River flows south of the subject property and is considered a Type S Water. Type S Waters are afforded a Riparian Habitat Area that extends from the OHWM to 10 feet landward of the FEMA Floodway, or 75 feet, whichever is greater by the City of Woodland SMP Table B-4. In this case, the Floodway is greater, Figure 9. The project will have unavoidable temporary impacts to the riparian habitat buffer due to the cut and fill requirements of the project. However, the proposed apartment complex has been located within the flat upland pasture terrace directly adjacent to Lewis River Road and outside of the regulated RHA to avoid permanent impacts to the onsite RHA and significant shoreline habitat.

Shoreline Designation Area

The local shoreline designation area is defined within the project site as lands extending landward for 200 feet in all directions as measured on a horizontal plane from the OHWM, or the mapped floodway (SMP). The City of Woodland SMP designates the shoreline associated with Lewis River within the subject site area as Reach W-10. Reach 10 has parallel environmental designations. Within the subject site the Shoreline is designated as Urban Conservancy between the OHWM and the Floodway boundary, followed by Residential from the Floodway boundary landward to the extent of the 100-Year Floodplain, Figure 6. This shoreline designation area is mapped by the Official Shoreline Environmental Designation (SED) Map of City of Woodland. The proposed project will have unavoidable impacts within the Residential designation of the jurisdictional shoreline areas, see the Proposed Site Plan, Figure 6.

The purpose of the “Urban Conservancy” shoreline designation is to protect and restore ecological functions of open space, floodplain, and other sensitive lands where they exist in urban and developed settings, while allowing a variety of compatible uses. Activities permitted in these areas are intended to have minimal adverse impacts upon the shoreline. Urban Conservancy is assigned to shoreline areas appropriate and planned for development that are compatible with maintaining or restoring ecological functions.

The purpose of the “Residential” shoreline designation is to accommodate residential development and appurtenant structures that are consistent with this Program. The Residential SED is assigned to shoreline areas if they are predominantly single-family or multi-family residential development or are planned and platted for residential development.

Multi-family residential construction is permitted within the Residential SED if the project demonstrates that it meets the general SMP criteria applicable to the project site as well as that specific to the designation area criteria. Multi-family residential construction is prohibited within the Urban Conservancy SED. Specific criteria for multi-family uses within the Residential shoreline designation areas includes a 10-foot additional setback from the boundary of the RHA, a requirement for providing public access to

the shoreline and a building height of 35 feet (Section 5.3.2, Table 7-1, Shoreline Use, Modification, and Development Standards). The project has been designed to meet the building height requirements with the proposed average height of the gabled roof to be 35 feet or less.

The project proposes a dedicated pedestrian trail that can be utilized by the proposed apartment residents as well as the general public, with the addition of designated parking spaces added for the trail use within the southeast corner of the apartment parking lot. The project will provide public access, viewing and enjoyment of the shoreline by providing a pervious wood-chip trail approximately 0.55 miles long pedestrian trail areas along the Lewis River shoreline to both fill a need for the existing community as well as the residents of the apartments, meeting both the Residential and Urban Conservancy designation area criteria as defined by the SMP.

The multi-family construction project has been designed to meet the building setback and RHA setback requirement, and has been located outside of the floodway, but the required cut and associated grading required to construct the project above the 100-Year floodplain will have unavoidable impacts within the onsite shoreline habitat. A floodplain mitigation and shoreline restoration plan has been designed to offset the critical area impacts proposed onsite. The proposal will additionally provide public access and public enjoyment of the Lewis River shoreline. This will prevent public trespass that has historically occurred across the site and adjacent properties. The public has created multiple pedestrian and vehicular access paths, deposited debris and generally disturbed the shoreline habitat.

Floodplain

Floodplain is generally defied as the 100-year Floodplain, referring to the land area susceptible to inundation with a one percent (1%) chance of being equaled or exceeded in any given year. The limit of this area shall be based upon flood hazard maps. The area must remain relatively free from obstruction so that the 100-year flood can be conveyed downstream. The entire subject parcel lies within the designated floodplain and the southern half of the project site is within the designated floodway, Figures 6 and 9.

Table 1. Critical Areas Summary.

Critical Area	Designation Area/Setback	Buffer Width
Type S Water (Lewis River)	Shoreline Jurisdiction offset 200-feet from the OHWM and/or "contiguous floodplain areas landward two hundred (200) feet from such floodway" and 10-foot building setback from the edge of the RHA	RHA extends 10-feet landward of the FEMA Floodway
Category II Wetland Habitat Score: 8	N/A	300-foot High Land Use Intensity Buffer 225-foot Moderate LUI Buffer 150-foot Low LUI Buffer
Floodway / 100-Year Floodplain	N/A	N/A

PROPOSED PROJECT

The applicant proposes to construct a multi-family residential development within the High Density Residential (HDR) zone. The development will include two phases and provide 252 apartment units within 9 buildings as well as an office/club house and associated parking and landscaping areas within the northern limits of the subject site. The proposal also includes a recreational pedestrian trail system to allow public access and public enjoyment of the Lewis River shoreline and a large shoreline and floodplain restoration area. The project has been designed following City of Woodland Municipal Code (CMC) Section 15.08 Critical Areas Regulation and the City of Woodland Shoreline Master Program. The site is undeveloped with no structures or formal site access is present. With the full site encumbered by the 100-Year floodplain and critical areas, impacts are unavoidable. The permanent and temporary impacts proposed within the project site have been minimized to the greatest extent practicable and the restoration proposed will allow for no net loss of habitat functions for the onsite critical area habitat.

Avoidance and Minimization

The onsite shoreline habitat associated with the Lewis River overlaps with the onsite floodplain (and floodway), wetland buffer and riparian habitat area (RHA). These critical area constraints when compounded with the numerous easements the cross the subject parcels highly constrain the buildable land onsite. There is a severe need for housing within the City of Woodland and within the region. There are limited sites within the city limits where new housing can be constructed, and many are constrained with critical areas or geographic limitations. The proposed project is in one of the last remaining areas that has the capacity for a large apartment complex which is also zoned for medium density, doesn't require the elimination or demolition of existing housing, has the necessary utilities in place, and has the opportunity to create public shoreline access and protected public greenspace near the Lewis River. Due to geographic and critical area constraints within the overall 31.58-acre project area, impacts are unavoidable, and restoration and mitigation will be required.

The proposed construction has been designed to avoid direct impacts to the onsite wetland and will be landward of the OHWM. The permanent impacts from the apartment complex and parking area have been located outside of the riparian and wetland buffers, the floodway, and has been designed outside of all shoreline setbacks. The impacts from the cut and fill will be temporary and will be restored in place, creating more flood storage and creating more varied and diverse native shoreline habitat. Impacts to the onsite Type S riparian and wetland buffers, and the onsite floodplain were avoided and minimized to the greatest extent practicable.

The upland terrace closest to Lewis River Road and outside of the standard critical area buffers is the most realistic building location available onsite. The building area is currently an open grass field, requiring no significant vegetation removal to construct the apartment complex. Due to the floodplain that encompasses the project site, fill is needed to raise the project site 12-inches above the base flood elevation onsite. The large amount of fill needed will be sourced from the subject site. The proposed stormwater pond and the fill cut required onsite will temporarily impact the onsite shoreline habitat and vegetation.

The proposed recreational pedestrian trail system has avoided permanent impacts to the riparian buffer and shoreline. A pervious wood-chip trail will be installed from the southeast corner of the apartment complex parking lot and extend south to the City of Woodland property where it will loop around the perimeter providing recreation and viewing opportunities of the Lewis River shoreline. The trail has been designed to avoid impacting mature vegetation within the city's ownership and utilizes existing trails onsite to the full extent possible.

Considering the large setbacks, buffer constraints, floodway and as well as minimization used, the proposed building site is in the most realistic location and will impact the least functioning habitat, see Figures 9 and 10. The project avoids impacts to the highest functioning shoreline habitat present onsite. The highest functioning habitat includes the wetland and wetland buffer, inner riparian RHA (225' from OHWM) and the forested area located outside of the wetland buffer within the City's parcel. The project has been designed to minimize impacts to the onsite critical areas by locating the permanent project impacts outside of these areas to the fullest extent possible. The bulk of the project construction and excavation will occur within areas dominated by pasture grasses. The project site has also had historic site disturbance including installation of the underground stormwater pipe within the western portion of the property, installation of the underground natural gas utility in the eastern portion of the property, and the general public trespass and disturbance from driving and trail making.

The project has been designed to offset the floodplain fill proposed by the project by excavating a cut within the onsite floodway over the same volume as that filled. This will allow for a net balance result between the cut and fill volume within the onsite floodplain, thereby fully mitigating for the proposed floodplain impacts due to the proposed fill.

The project proposes shoreline restoration in the form of habitat restoration and enhancement to offset the temporary impacts proposed due to vegetation removal over the cut area required by the project. There will be no net loss of critical areas or functions with implementation of the following restoration plan.

CRITICAL AREA IMPACTS

The shoreline habitat is generally overlapped by the floodplain, floodway, riparian RHA and wetland buffer habitat. For the purposes of this plan, all of the onsite critical area habitat will be referred to as "shoreline habitat." With the cut and fill required for the project consisting of a very large volume, the onsite shoreline habitat will be impacted to achieve the cut and fill goals and engineering/design requirements for the project. The impacted critical areas are the floodplain (fill) and the shoreline habitat (vegetation disturbance).

The shoreline habitat impacts are considered to be short-term as the onsite habitat to be impacted will be restored within 20-years' time by following the proposed "shoreline restoration" outlined by this plan. Floodplain impacts will result due to the large quantity of fill material required to construct the project above the base flood elevation.

Floodplain Impacts

The floodplain impact proposed by the project is due to the need to fill within the floodplain to allow for the residential project site to be elevated above the floodplain. This fill is a requirement to allow for the safe construction of the residential buildings and the fill volume can be offset onsite by the associated cut area, or the site of the onsite fill source. To provide the necessary fill volume required to bring the project site above the floodplain, the applicant proposes to cut approximately 150,000 cubic yards of material from the onsite floodplain (floodway) and shoreline habitat. This proposal will allow for the project to meet the construction requirements for the project site located within the floodplain and allow the project to provide a net balance of cut and fill within the floodplain.

The entire subject parcel lies within the designated floodplain and the southern half of the project site is within the designated Floodway, Figures 6 and 9. As such, floodplain and floodplain impacts are unavoidable for reasonable use of the parcel. The existing elevation of the project area ranges between 20 to 30 feet, and the base flood elevation onsite is mapped at approximately 37 feet. Therefore, the project will require a very large quantity of fill material to bring the proposed project site 12-inches above the floodplain to meet the design standards outlined by Floodplain Management" regulations – Chapter 14.40 of Woodland Municipal Code and 14.40.050.

By sourcing the fill material from onsite, the project can thereby create 150,000 cubic yards of additional flood storage for the Lewis River onsite. The onsite fill sourcing will also allow the project to ensure the net balance result between the cut and fill volume within the floodplain, as it is not realistic or cost effective to acquire the full 150,000 cubic yards if delivered by dump truck (which equates to 15,000 10-yard dump truck loads). Additionally, the traffic and emissions required for this effort would be much greater overall than sourcing from the site itself.

Shoreline Habitat Impacts

The existing shoreline habitat consists of degraded pasture with some scrub-shrub and forested patches of vegetation. The bulk of the subject property will be impacted by the required grade and fill activities. The existing vegetation present within the shoreline habitat and project area to be impacted by the project has been quantified and is presented on Figure 11 – Vegetation Impacts. The vegetation impacts proposed are considered temporary as the restoration plan will offset and mitigate for the temporary impact of vegetation onsite.

The herbaceous dominated shoreline habitat present within the project limits (construction and cut areas) has been quantified to be 639,234 square feet as depicted on Figure 11 – Vegetation Impacts. The impacts to this herbaceous habitat will be offset onsite within the proposed herbaceous and scrub-shrub restoration area.

The scrub-shrub habitat present within the project limits has been quantified to be 215,665 square feet as depicted on Figure 11. There is also a high dominance of invasive species intertwined within this habitat including Scotch broom, Himalayan blackberry, English ivy, Hawthorn, Japanese knotweed, and clematis. Vegetation Plot data was collected onsite to record the existing native and non-native/invasive species, Appendix B. The proposed excavation will effectively irradicate the existing invasive and non-native species present within the onsite shoreline and the temporary impacts due to the removal of this scrub-shrub/invasive habitat will be offset onsite within the proposed scrub-shrub restoration area.

The forested habitat present within the project limits has been quantified (129,175 square feet) as depicted on Figure 11. English ivy and wisteria were observed growing up the trunks of multiple trees within this area. The forested tree cover is dominated by black cottonwood with some Oregon ash also present. There will be some temporal loss due to the removal of the forested canopy, but this can be replaced (within twenty years' time) with more vigorous and a greater variety of native conifer and deciduous tree species.

The construction of the recreational pedestrian trail system providing public shoreline access may have some temporary impacts due to potential minor grading required to level the proposed trail pathway. The trail itself will consist of wood-chips thereby maintaining the impervious nature of the trail footprint and avoiding permanent impacts to the shoreline. The trail will utilize existing trails to the full extent possible and avoid impacting mature vegetation. Any exposed soils due to required grading for the trail are to be

re-seeded with native seed mix, thereby offsetting the temporary impact of the herbaceous vegetation present. These temporary impacts are required to allow for the proposed dedicated trail limits, public enjoyment of the shoreline and prevent the historic public trespass of the shoreline habitat that has occurred onsite.

RESTORATION AND MITIGATION PLAN

The mitigation proposed will offset the onsite critical area impacts for no net loss of functions or area. The proposal includes floodplain mitigation for no net loss of floodplain storage volume and shoreline restoration in the form of onsite restoration and habitat enhancement.

The City of Woodland SMP includes the document "Cowlitz County Shoreline Restoration Plan for Shorelines in Cowlitz County and the Cities of Castle Rock, Kalama, Kelso, and Woodland" (2015). This restoration plan guidance document includes a "Map of Potential Restoration Project Sites" within its Appendix A. This map calls the subject property out under the "Woodland Assessment Unit" and labeled it #130 on the map. The recommended habitat-related restoration measures for the subject site were to "maintain and restore riparian vegetation within the designated floodway." By implementing the proposed shoreline restoration plan outlined below, the project intends to bring the previously identified need for onsite restoration full circle.

Floodplain Mitigation

To mitigate for the unavoidable impacts to the onsite floodplain, mitigation for no net increase in flood levels during the occurrence of the base flood discharge is proposed within the onsite floodplain. A 1:1 offset to the floodplain fill is proposed, or 150,000 cubic yards. This will allow for the project to meet the construction requirements for the residential project site located within the floodplain and allow the project to provide a net balance of cut and fill within the floodplain.

Shoreline Restoration

The herbaceous shoreline habitat impacts of 639,234 square feet will be offset within the proposed herbaceous and scrub-shrub restoration area onsite. The shoreline restoration area will provide a total of 443,667 square feet of shoreline habitat dominated by native herbaceous species and enhanced with clusters of scrub-shrub vegetation and woody habitat features. The open field present onsite today does not provide shelter or forage opportunities for wildlife. The minimal functions provided by the existing field dominated in herbaceous vegetation will be offset by the restoration area consisting of a mixed mosaic of open herbaceous meadow areas, clusters of native scrub-shrub vegetation and woody habitat features. This mixed mosaic will provide a higher functioning habitat to the wildlife than that currently present onsite. See Figures 13 and 14 for representative cross-sections of the restoration area. The restoration ratio provided for the herbaceous shoreline habitat is 0.70:1, as depicted on Figure 12 – Restoration Plan.

The scrub-shrub shoreline habitat impacts of (222,086 square feet) will be offset within the proposed scrub-shrub restoration area onsite. The shoreline restoration area will provide a total of 443,667 square feet of shoreline habitat that is dominated by native scrub-shrub species and enhanced with woody habitat features. The restoration ratio provided for the scrub-shrub shoreline habitat is 2:1, as depicted on Figure 12 – Restoration Plan. The scrub-shrub habitat present onsite today is dominated by invasive species and provides minimal habitat functions. Large areas of the site are dominated in monotypic Scotch broom or Himalayan blackberry shrub cover. The restoration area will provide a mixed mosaic of scrub-shrub habitat and also have associated herbaceous and forested areas and woody habitat elements

providing an overall higher functioning and diverse habitat over that provided by the scrub-shrub habitat present onsite today. See Figures 13 and 14 for representative cross-sections of the restoration area. The side slopes associated with the perimeter of the cut area have been designed to keep a 4:1 slope, allowing for shrub and herbaceous enhancement which will help to stabilize the slope over time. Native shrub species naturally occurring and recorded onsite will be called for by the planting plan to ensure that the habitat is consistent with its surroundings and the native Lewis River shoreline.

The forested habitat impacts of (129,175 square feet) will be offset within the proposed forested restoration areas onsite. The shoreline restoration area will provide a total of 189,230 square feet of shoreline habitat dominated in native forested cover. The restoration ratio provided for the forested shoreline habitat is 1.46:1, as depicted on Figure 12 – Restoration Plan. The forested areas will be located along the western and eastern portions of the property providing a faux perimeter buffer to the overall restoration area over time. Tree species will also be located within an upland hummock created within the central portion of the restoration area. Topsoil from the project site will be retained and deposited within the cut area to create this upland hummock approximately four feet in height to further enhance and uplift and diversify the overall habitat function provided by the restoration area. See Figures 13 and 14 for representative cross-sections of the restoration area. These soils are anticipated to include native subsurface soils as documented by the Geotech report that consist of dark topsoil underlain by an upper unit of medium brown, very moist, medium still to-loose, slightly clayey, fine sandy silt to silty fine sand. These three forested areas (combined with the retention of the forested area to the south on the city's parcel) along with the proposed scrub-shrub and herbaceous meadow areas will provide a highly functioning and diverse forested habitat corridor where none is currently present within the onsite shoreline habitat.

A mix of tree stock sizes will also be utilized in an effort to replace the temporal loss of the forested canopy in the near future. The woody materials removed from the shoreline habitat will be retained onsite and re-purposed within the restoration area to ensure that a mix of functional habitat elements are present and offset the temporary disturbance of these elements during construction activities. The woody habitat elements will be retained and temporarily stored within the available open areas of the City's parcel to minimize the disturbance to wildlife potentially utilizing them for food or shelter.

The recreational pedestrian trail system proposed within onsite and the adjacent city parcel has been designed to retain the forested canopy present and avoid and minimize impacts to the existing native vegetation present. Three picnic tables are proposed centrally within the trail system, with this location chosen due to the open nature of this area of the shoreline. The two viewing benches proposed near the southern limits of the city parcel and proposed trail system will also be located within areas currently void of vegetation. The retention of the trees over this 6.19 acre parcel will help to provide refuge and habitat for wildlife until the restoration area becomes established. The trees will also provide shade to the adjacent restoration area until the forested cover becomes established and act as a seed source for the into the future which will help to ensure the success of the forested restoration area onsite.

Additionally, the proposed shoreline restoration area will have protections placed on it in the form of perimeter boundary signage, invasive species management, monitoring activities and establishment of a conservation covenant. The perimeter boundary signage will notify and educate the public ("Protected Critical Area to be Maintained in a Natural State"). This signage combined with the annual maintenance and monitoring and conservation covenant will help to ensure the shoreline restoration area remains and is successful into the future. These protective elements will also prevent the historic trespass and impact of the onsite shoreline habitat from occurring in the future. The designation of the future City park will

further help to minimize the degradation of the onsite shoreline habitat while providing dedicated public access, pedestrian trail and viewing enjoyment within designated areas. The pedestrian trail design includes a dedicated wood chip walking path approximately 2,876 linear feet in length or approximately 0.55 miles long. The trail will therefore offer a round trip pedestrian trail of over one-mile in distance.

Table 2. Impacts & Restoration/Mitigation Summary.

Critical Area	Impact (Area)	Restoration/Mitigation (Area)
Shoreline Habitat		
Shoreline (RHA/Wetland Buffer)	*Temporary Impacts:* Vegetation Impacts Herbaceous = 653,320 sf. Scrub-shrub = 219,665 sf. Forested = 129,175 sf.	*Shoreline Restoration:* Herbaceous Restoration @ 0.70:1 ratio (443,667 sf.) Scrub-shrub Restoration @ 2:1 ratio (443,667 sf.) Forested Restoration @ 1.46:1 ratio (189,230 sf.)
Floodplain		
Floodplain	100-year Floodplain Fill (150,000 cubic yards)	*Floodplain Mitigation:* Creation of Floodplain Storage w/in Floodway @ 1:1 ratio to fill (150,000 cubic yards)

PLANTING PLAN

Site Preparation

1. Stake or flag the on-site mitigation area boundaries and install tree protection fencing.
2. Mow grasses and herbaceous vegetation present within mitigation areas prior to planting.
3. Mechanically control invasive species prior to native plant enhancement as necessary. No herbicide is to be used within shoreline jurisdiction per SMP Chapter 6.7 Water Quality and Quantity.
4. For control of English ivy (and wisteria) the runners found at/around base of native tree trunks are to be cut, bagged, and disposed of at an approved offsite location as the stem and root fragments can re-sprout. Wearing of gloves is recommended to protect hands from the ivy's irritating sap.

   <u>Additional English Ivy Control Methods (as Required):</u>

- Plants can successfully be pulled from moist soils by hand in fall (or spring).
- Ivy stems or roots left in the soil (after initial control efforts) may re-sprout, so continual removal of sprouts may be needed.
- Ivy climbing trees can be cut from waist to chest height, pulling the lower part of the stems away from the base of the tree (to kill the upper portions of the vine). The leaves remaining in the tree on the cut stems will slowly die and fall off.

Plant Materials

The plants specified for the on-site restoration and mitigation areas are native species designed to diversify the existing plant community, provide an increase in woody structure and wildlife habitat on a short- and long-term basis, thereby increasing the habitat functions for the riparian habitat. The specified

shrubs will grow quickly forming an intertwining shrub layer forming a native understory to complement the native tree canopy proposed within the restoration/mitigation area.

Container Stock
Plants will be purchased from a native-plant nursery and meet size outlined by planting plan.

Bareroot/Cutting Species

1. Plants will be purchased from a native plant nursery and meet size outlined by planting plan.
2. Bareroot sock will be kept cool and moist prior to being planted.
3. Bareroot stock will have well-developed roots and sturdy stems with a good root-to-shoot ratio.
4. No damaged or desiccated roots or diseased plants will be used.
5. Cutting stock is to remain damp and either partially submerged within water or wrapped inside a damp plastic bag to help retain moisture.
6. Unplanted bareroot stock will be stored properly at end of planting day(s) to prevent desiccation.

Native Seed Mix
The native seed mixes specified in this plan were chosen as they are well suited for reclaiming disturbed upland and riparian plant communities and includes a mix of native grasses and forbs that provide stabilization and color. The mixes are both excellent for restoration areas as it is drought tolerant and/or saturation, provide quick cover and deep roots for soil stabilization and effective erosion control, and attracts pollinators for excellent wildlife habitat, Table 3.

Planting Methods
Plant in winter through early spring (February-April) at specified spacing following the planting plan.

Container/bareroot stock

1. Dig hole using a tree shovel/auger or comparable tool 16-inches wide and 4-inches deeper than the root system, scarify sides of hole to 4 inches. Remove plant from container and loosen roots with hand or score vertically on sides and bottom with knife. Set plant upright and plumb in hole so the crown is just above the finish grade. Ensure that roots are extended down entirely and do not bend upward.
2. Replace loose soil around plant and firmly compact the soil around the plant to eliminate air spaces. Do not use frozen soil for backfilling.
3. Firmly compact the soil around the planted species to eliminate air spaces.
4. Install woody mulch around the base of planted species to insulate plantings, maintain moisture content of soil and reduce invasive plant competition (when deemed necessary).
5. Irrigate according to performance standards for the first three summers after planting or as site and weather conditions warrant.

Planting Specifications
Planting will begin in Winter of 2023 or Winter/Spring of 2024 while onsite soils are saturated (and stock is dormant). The following tables summarize the native plant selection, spacing, size, and quantity for the on-site mitigation area:

Table 3. Planting Plan Details.

Common Name	*Scientific Name (Facultative Class)*	*Stock*	*Spacing*	*Quantity*
Forested Shoreline Restoration (189,230 sf)				
Western red cedar	*Thuja plicata, FAC*	1-gallon or 24-36" bareroot	12 ft.	200
Western red cedar	*Thuja plicata, FAC*	5-gallon	12 ft.	100
Western hemlock	*Tsuga heterophylla, FACU*	1-gallon or 24-36" bareroot	12 ft.	200
Western hemlock	*Tsuga heterophylla, FACU*	5-gallon	12 ft.	100
Black cottonwood	*Populus trichocarpa,* FAC	1-gallon or 24-36" bareroot	12 ft.	200
Dougals-fir	*Pseudotsuga menziesii, FACU*	5-gallon	12 ft.	100
Bitter cherry	*Prunus emarginata, FACU*	1-gallon or 24-36" bareroot	12 ft.	100
			Trees Total =	**1,000**
Vine maple	*Acer circinatum, FAC*	1-gallon or 24-36" bareroot	6 ft.	500
Oregon grape	*Mahonia aquifolium, FACU*	1-gallon or 24-36" bareroot	6 ft.	500
Common snowberry	*Symphoricarpos albus, FACU*	1-gallon or 24-36" bareroot	6 ft.	500
Douglas hawthorn	*Crataegus douglasii, FAC*	1-gallon or 24-36" bareroot	6 ft.	500
			Shrubs Total =	**2,000**
Scrub-shrub Shoreline Restoration (443,667 sf)				
Black cottonwood	*Populus trichocarpa,* FAC	1-gallon or 24-36" bareroot	3-6 ft. on center/clusters	100
Oregon ash	*Fraxinus latifolia, FACW*	1-gallon or 24-36" bareroot	3-6 ft. on center/clusters	100
Pacific crabapple	*Malus fusca, FACW*	1-gallon or 24-36" bareroot	3-6 ft. on center/clusters	100
			Trees Total =	300
Sitka willow	*Salix sitchensis, FACW*	4-6' cutting	2-4 ft. on center/clusters	800
Pacific willow	*Salix lasiandra, FACW*	4-6' cutting	2-4 ft. on center/clusters	800
Red-osier dogwood	*Cornus sericea, FACW*	1-gallon or 24-36" bareroot	2-4 ft. on center/clusters	800
Pacific ninebark	*Physocarpus capitatus, FACW*	1-gallon or 24-36" bareroot	3-6 ft. on center/clusters	400
Douglas spiraea	*Spiraea douglasii FACW*	1-gallon or 24-36" bareroot	3-6 ft. on center/clusters	400
Salmonberry	*Rubus spectabilis, FAC*	1-gallon or 24-36" bareroot	3-6 ft. on center/clusters	400
Swamp rose	*Rosa pisocarpa FAC*	1-gallon or 24-36" bareroot	3-6 ft. on center/clusters	400
			Shrubs Total =	**4,300**

Native Seed Mix Specifications
Herbaceous Restoration (443,667 sf)
"Native Wetland Grass Mix #10" or "Bio Swale Mix #8" (*or similar*) (Recommended Seeding Rate: 1 lb. per 1,000 square feet, or as directed by supplier) Note: The above seed mixes can be sourced from River Refuge Seed Company, LLC.
Temporary Impact Areas
Recommended for Re-vegetating Exposed Soils Adjacent to Pedestrian Trail within City of Woodland Parcel (*As Required*) "Native Upland Grass Mix #9" (*or similar*) 40% Elymus glaucus (Blue wildrye) 25% Bromus carinatus (California brome) 10% Hordeum brachyantherum (Meadow barley) 10% Festuca romeri (Roemer's fescue) 10% Deschampsia elongate (Slender hairgrass) 5% Agrostis exerata (Spike bentgrass) (Recommended Seeding Rate: 25 lbs. per acre, or as directed by supplier) Note: The "Native Upland Grass Mix" can be sourced from River Refuge Seed Company, LLC.

Maintenance Plan

Maintenance at the on-site restoration area is a ten-year period and will involve removing persisting invasive plant species in addition to watering and re-installing failed native species as necessary. The maintenance will include the following activities when necessary:

1. Remove and control non-native/noxious vegetation around all newly installed plants. During years 1 through 3 invasive species will be removed and suppressed as often as necessary to meet a performance standard of no greater than 20 percent cover by invasive species, measured by monitoring plots, and less than 10 percent cover by Year 7.
2. Irrigate planted species as necessary during the dry season, approximately July 1 through October 15. Irrigation is recommended to occur on a two-week cycle (minimum) during the dry season for the first three years. Water will be provided by a temporary above-ground irrigation system or a water truck.
3. Replace dead or failed plants as described for the original installation to meet the minimum annual performance standard of 100% survival in the first year, 90% survival in the second year. For Years 3 – 10 the percent cover of the woody vegetation will be monitored and is to ultimately achieve 50 percent cover by Year 10, or prior to sign off.

Monitoring Plan

The restoration site will be monitored for a 10-year period following project construction; monitoring will take place in years 1, 2, 3, 5, 7 and 10. Monitoring reports will be submitted to City of Woodland by the end of each monitored year. The goal of monitoring is to determine if the previously stated performance standards are being met. The mitigation area will be monitored once during the growing season, preferably during the same two-week period each year to better compare the data.

During the first annual monitoring and maintenance event, two representative photo plots will be selected in the restoration areas permanently marked with metal posts. Monitoring photo plot locations will be placed on an as-built drawing and included in the annual monitoring reports.

Vegetation
Vegetative monitoring will document the woody scrub-shrub canopy developing within the mitigation area. The following information will be included at each sample plot:

- Percent cover and frequency of herbaceous species
- Percent cover and frequency of sapling/shrub species
- Species composition of herbs, shrubs, and trees, including non-native/noxious, invasive species
- Photo documentation of vegetative changes over time

Monitoring Report Contents
The annual monitoring reports will contain at least the following:

- Location map and as-built drawing.
- Photographs from permanent photo points (x2 for each defined vegetation polygon minimum).
- Historic description of project, including dates of plant installation, current year of monitoring, and restatement of restoration goals.
- Documentation of plant survival, cover, and overall development of the plant community.
- Assessment of non-native, invasive plant species and recommendations for management.
- Summary of maintenance and contingency measures proposed for the next season and completed for the past season.

Contingency Plan
If the performance standards are not met by the tenth year following project completion, or at an earlier time if specified above, a contingency plan will be developed and implemented. All contingency actions will be undertaken only after consulting and gaining approval from the City of Woodland. The applicant will be required to complete a contingency plan that describes (1) the causes of failure, (2) proposed corrective actions, (3) a schedule for completing corrective actions, and (4) whether additional maintenance and monitoring are necessary.

Site Protection
The on-site restoration/mitigation area will be owned and managed by the applicant or assignee. AshEco Solutions, LLC or similar entity will be responsible for supervising the maintenance and conducting the monitoring of the on-site mitigation area for the 10-year period at expense of the applicant. The applicant will establish and record a permanent and irrevocable conservation covenant on the mitigation property.

MITIGATION/RESTORATION GOALS, OBJECTIVES AND PERFORMANCE STANDARDS

Objective 1: Mitigate the fill within the onsite floodplain by excavation within the onsite floodway to provide no net loss of floodplain storage onsite.
Performance Standard 1a. Document the cubic yards of fill material deposited within the onsite floodplain for the project (estimated to be 150,000 cubic yards).
Performance Standard 1b. Document the excavation within the onsite floodway to provide a 1:1 offset of the floodplain fill deposited within the onsite floodplain for the project.
Performance Standard 1c. Stabilize the floodplain excavation area with native seed-mix immediately upon completion of onsite grading activities and follow BMPS of the approved erosion control and prevention plan.

Objective 2: Restore forested vegetation cover over 189,230 square feet of the onsite shoreline habitat.
Performance Standard 2a. Document the installation of native plant species vegetation over 189,230 square feet of the onsite shoreline habitat as depicted by Figure 12 and as specified by Table 3. Submit As-built documenting planting locations, plant species, and plant quantities.
Performance Standard 2b. In Year 1, planted species are to achieve 100 percent (100%) survival one year after the site is planted. The survival rate is to be determined by comparison of baseline vegetation data and the data collected during production of the As-built Map. (If dead plants are replaced in Year 1 to achieve the 100 percent survival rate, this performance standard will be met).
Performance Standard 2c. In Year 5, restoration plant communities will achieve the densities listed in Table 5.
Performance Standard 2d. In Year 7, the restoration plant community will achieve 30-percent (30%) aerial cover of woody species. (If plants are added, that achieve this cover requirement, this performance standard will be met).
Performance Standard 2e. In All Years, non-native/invasive plant species will not exceed 20-percent (20%) aerial cover across the onsite mitigation area.

Objective 3: Restore scrub-shrub and herbaceous vegetation cover over 443,667 square feet of the onsite shoreline habitat.
Performance Standard 3a. Document the installation of native shrub plant species in clusters surrounded by herbaceous vegetation cover over 443,667 square feet of the onsite shoreline habitat as depicted by Figure 12 and as specified by Table 3. Submit As-built documenting planting locations, plant species, and plant quantities.
Performance Standard 3b. In Year 1, planted species are to achieve 100 percent (100%) survival one year after the site is planted. The survival rate is to be determined by comparison of baseline vegetation data and the data collected during production of the As-built Map. (If dead plants are replaced in Year 1 to achieve the 100 percent survival rate, this performance standard will be met).
Performance Standard 3c. Document the native re-seeding of any exposed soils disturbed in association of the pedestrian trail construction post project completion within shorelines. Submit As-built documenting the required re-seeding locations, native seed mix used and quantity.
Performance Standard 3d. In Year 1, re-seeded areas are to achieve 100 percent (100%) survival one year after the site is planted. The survival rate is to be determined by comparison of baseline vegetation data and the data collected during production of the As-built Map. (If re-seeding is required in Year 1 to achieve the 100 percent survival rate, this performance standard will be met).
Performance Standard 3e. In Year 5, restoration plant communities will achieve the densities listed in Table 5.
Performance Standard 3f. In Year 7, the restoration plant community will achieve 30-percent (30%) aerial cover of woody species. (If plants are added, that achieve this cover requirement, this performance standard will be met).
Performance Standard 3g. In All Years, non-native/invasive plant species will not exceed 20-percent (20%) aerial cover across the onsite mitigation area.

Objective 4: Re-seed with native cover any temporary exposed soils (adjacent to the pedestrian trail).
Performance Standard 4a. Document the native re-seeding of any exposed soils disturbed in association of the pedestrian trail construction post project completion within shorelines. Submit As-built documenting the required re-seeding locations, native seed mix used and quantity.
Performance Standard 4b. In Year 1, re-seeded areas are to achieve 100 percent (100%) survival one year after the site is planted. The survival rate is to be determined by comparison of baseline vegetation data

and the data collected during production of the As-built Map. (If re-seeding is required in Year 1 to achieve the 100 percent survival rate, this performance standard will be met).

Objective 5: Provide long-term protection for the onsite critical areas and mitigation areas.
Performance Standard 5a. Record a conservation covenant with Clark County. This performance standard will be met when the Year 1 monitoring report is submitted that includes a copy of the conservation covenant.
Performance Standard 5b. Post permanent boundary signage every 100 feet along the outer edge of the onsite mitigation boundaries *or as otherwise determined by City of Woodland*. Signs are to read (or similar as approved by permit):

"Critical Areas and Buffer – Please Retain in a Natural State"

Signage will remain in legible condition; if they are missing or illegible, they will be replaced. This performance standard will be met when signs are reported to be in place in the final monitoring report.

The following table summarizes vegetative performance standards for each of the monitoring years:

Table 4. Performance Standards by Monitoring Year.

Habitat Type	*Performance Standards by Year*				
	Year 1	Year 2	Year 3	Year 5	Years 7 - 10
Forested/Shrub Restoration Areas					
Planted Vegetation Survival	100%	90%	--	--	--
Woody Species Aerial Cover	---	---	20%	30%	50%
Invasive Plant Species					
Invasive/ Non-native plant species	*< 20%*				< 10% for Years 2-10

CONCLUSIONS

The mitigation and restoration proposed will adequately offset the critical area impacts to allow for the construction of the apartment complex, installation of a pedestrian trail and replacement of the floodplain storage with no net loss of critical area functions and values. With issuance of the approved critical areas permits, the proposed shoreline and floodplain habitat enhancement activities will be implemented, and a conservation covenant recorded to protect the onsite critical areas under the applicant's ownership in perpetuity.

DISCLAIMER

This report documents the investigation, best professional judgment, and conclusions of the investigator. It is correct and complete to the best of our knowledge. It should be considered a preliminary mitigation and restoration plan and used at your own risk until it has been reviewed and approved in writing by the local agency with jurisdiction over the site. AES personnel base the above listed conclusions on standard scientific methodology and best professional judgment.

REFERENCES

City of Woodland Municipal Code. June 2021 (Amended). Section 15.08 Critical Areas Regulation

City of Woodland Shoreline Master Program. June 2021 (Amended).

Cowlitz County Geographic Information Systems. Available at: http://cowlitz.maps.arcgis.com/apps/webappviewer/index.html [Accessed September 2022].

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. Online edition. Vicksburg, MS: U.S. Army Engineer Waterways Experiment Station.

Olson, P. & Stockdale, E. 2010. Washington State Department of Ecology: Determining the Ordinary High Water Mark on Streams in Washington State. Second Review Draft. Ecology Publication #08-06-001.

U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS). 2006. Soil Survey of Cowlitz County Area. Online document. Available at: http://websoilsurvey.nrcs.usda.gov/app/. [Accessed September 2022]

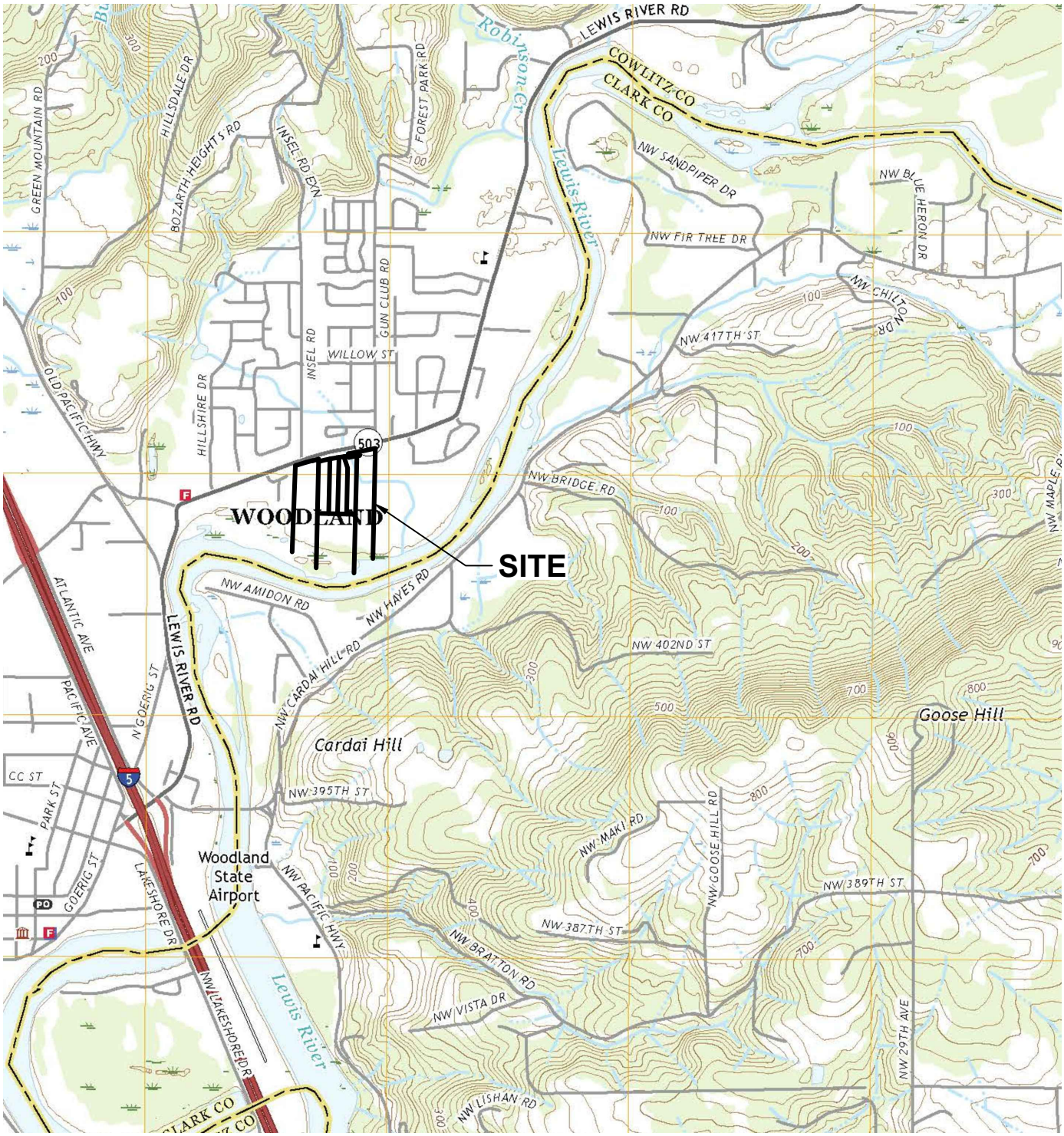
U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS). 2022. Washington State Hydric Soils List. Available at: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. [Accessed September 2022].

U. S. Fish & Wildlife Service. 2022. National Wetlands Inventory. Online document. Available at: http:www.wetlandsfws.er.usgs.gov/NWI/index.html. [Accessed September 2022].

Washington Department of Fish and Wildlife. PHS on the Web - WDFW. Available at: https://geodataservices.wdfw.wa.gov/hp/phs/. [Accessed September 2022].

Wakeley, J.S.; R.W. Lichvar; and C.V. Noble, eds. U.S. Army Corps of Engineers. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0), ERDC/EL TR-10-3. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

Washington State Department of Ecology (WDOE). 1997. Washington State Wetlands Identification and Delineation Manual. Publication #96-94. Olympia, Washington.

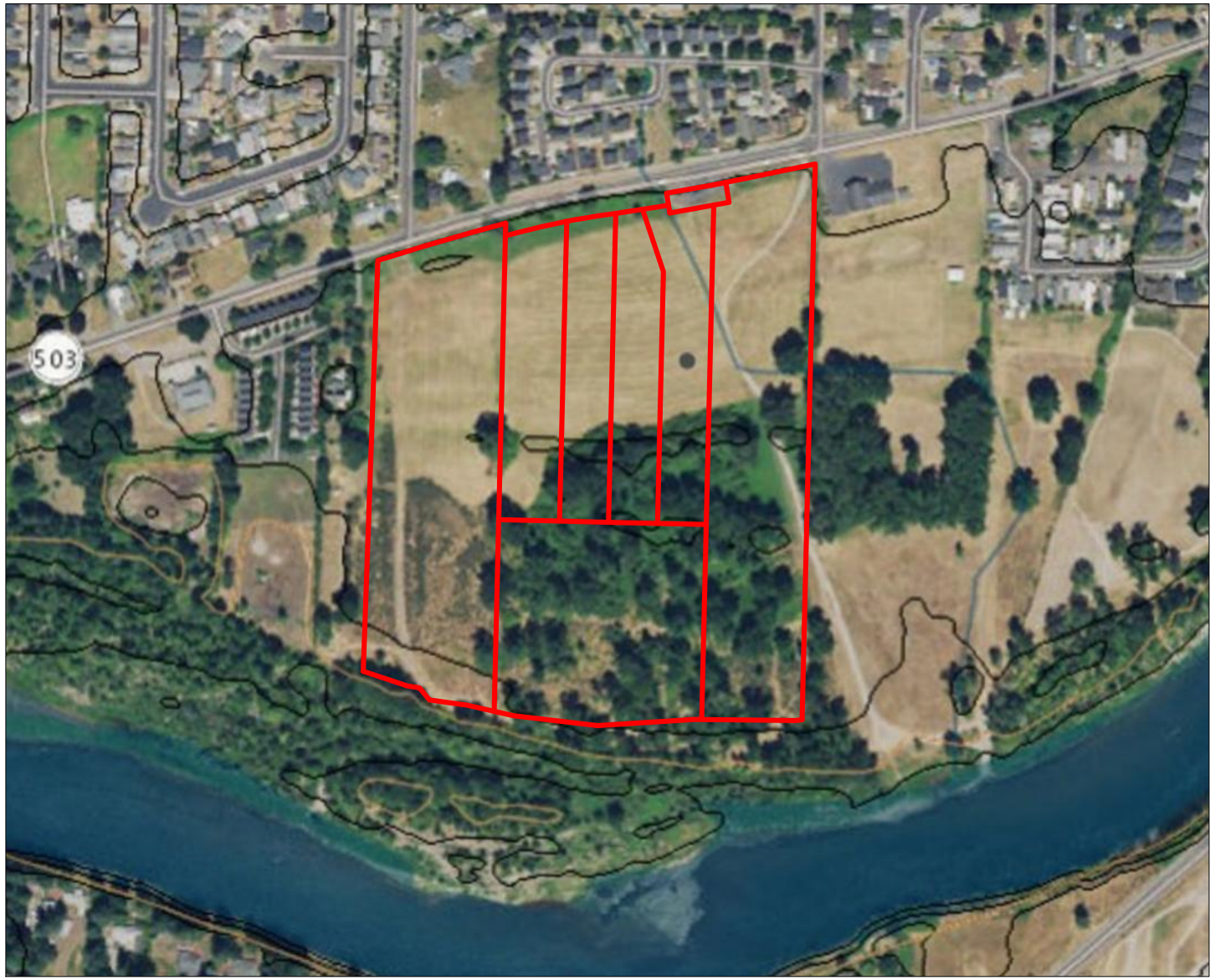


NOTE(S):
USGS, WOODLAND QUADRANGLE
WASHINGTON
7.5 MINUTE SERIES (TOPOGRAPHIC)

Ash ECO SOLUTIONS, LLC

PURPOSE: XX Line 1 Line 2 **DATUM:** NAVD 88 **ADJACENT PROPERTY OWNERS:** Adj 1 Adj 2	VICINITY MAP **APPLICANT:** Luke Sassa - Timberland Inc. **PROJECT NAME:** Woodland Figure Request **PARCELS #:** 506520100, 506520500, 506520400, 506520300, 506520200, 5065201, 50650 **SITE ADDRESS:** 1940 Lewis River Rd.	**PROPOSED:** XX Add 2 **IN:** Woodland **NEAR:** XX **COUNTY:** Cowlitz **STATE:** WA **FIGURE:** 1 **DATE:** 8-26-22

I:\Autocad Files\AshECO Autocad\Timberland\pdf\2022.47_BM-082622.dwg



N

0 400 800

SCALE IN FEET
SCALE IS APPROXIMATE

Ash ECO SOLUTIONS, LLC	**PURPOSE:** XX Line 1 Line 2 **DATUM:** NAVD 88 **ADJACENT PROPERTY OWNERS:** Adj 1 Adj 2	AERIAL PHOTO & TOPO MAP **APPLICANT:** Luke Sassa - Timberland Inc. **PROJECT NAME:** Woodland Figure Request **PARCELS #:** 506520100, 506520500, 506520400, 506520300, 506520200, 5065201, 50650 **SITE ADDRESS:** 1940 Lewis River Rd.	**PROPOSED:** XX Add 2 **IN:** Woodland **NEAR:** XX **COUNTY:** Cowlitz **STATE:** WA **FIGURE:** 2 **DATE:** 12-16-22

I:\Autocad Files\AshECO Autocad\Timberland\2022.47_BM-082622.dwg

141 - Newberg fine sand loam, 0-3% slopes

160 - Pilchuck loamy fine sand, 0-8% slopes

172 - Riverwash

263 - Water

N

0 300 600

SCALE IN FEET
SCALE IS APPROXIMATE

I:\Autocad Files\AshECO Autocad\Timberland\2022.47_BM-082622.dwg

Ash ECO SOLUTIONS, LLC	**PURPOSE:** XX Line 1 Line 2 **DATUM:** NAVD 88 **ADJACENT PROPERTY OWNERS:** Adj 1 Adj 2	SOIL SURVEY MAP **APPLICANT:** Luke Sassa - Timberland Inc. **PROJECT NAME:** Woodland Figure Request **PARCELS #:** 506520100, 506520500, 506520400, 506520300, 506520200, 5065201, 50650 **SITE ADDRESS:** 1940 Lewis River Rd.	**PROPOSED:** XX Add 2 **IN:** Woodland **NEAR:** XX **COUNTY:** Cowlitz **STATE:** WA **FIGURE:** 3 **DATE:** 12-16-22

N

0 400 800

SCALE IN FEET
SCALE IS APPROXIMATE

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

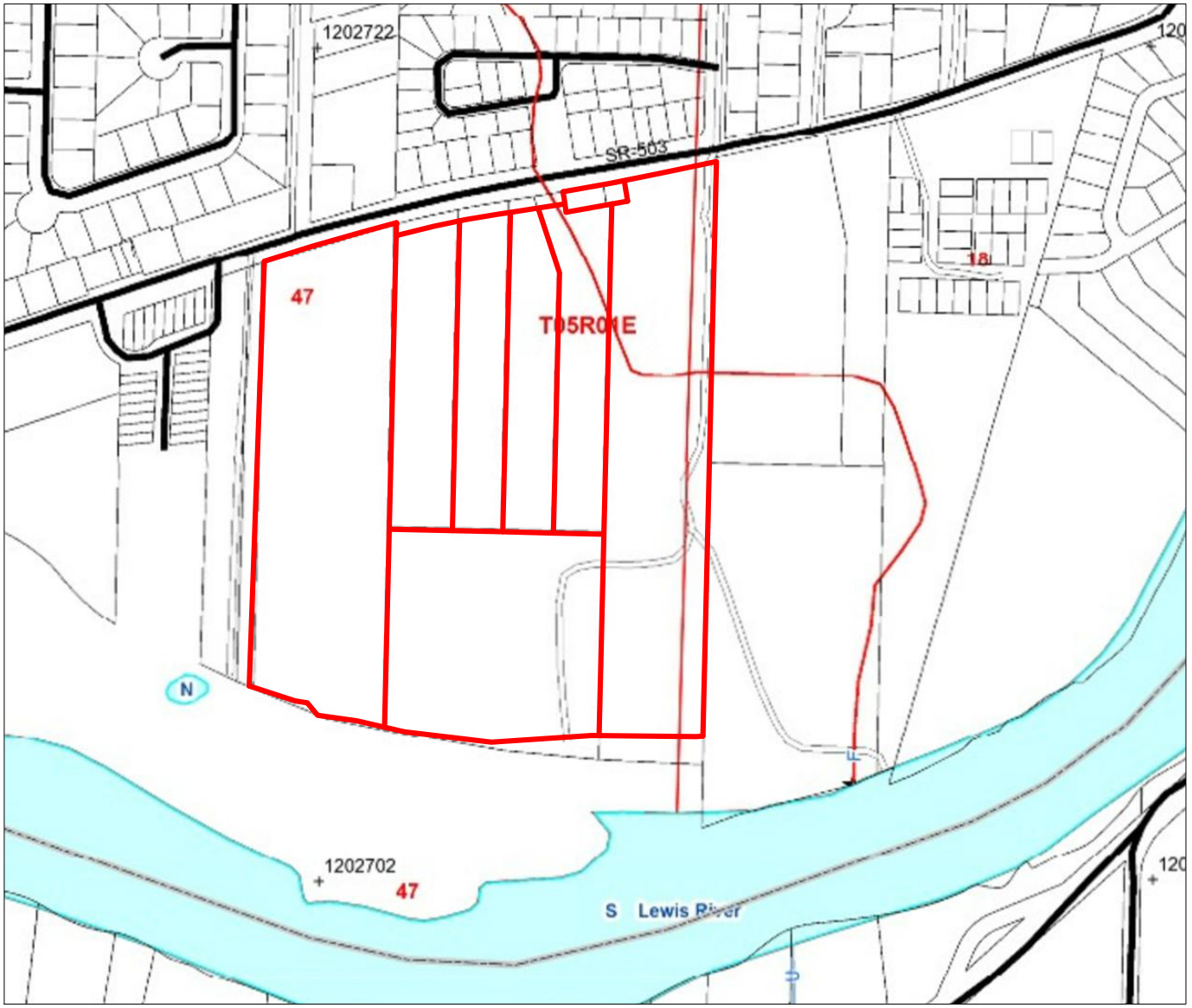
Ash ECO SOLUTIONS, LLC

PURPOSE: XX
Line 1
Line 2
DATUM: NAVD 88
ADJACENT PROPERTY OWNERS:
Adj 1
Adj 2

NATIONAL WETLANDS INVENTORY MAP
APPLICANT: Luke Sassa - Timberland Inc.
PROJECT NAME: Woodland Figure Request
PARCELS #: 506520100, 506520500, 506520400, 506520300, 506520200, 5065201, 50650
SITE ADDRESS: 1940 Lewis River Rd.

PROPOSED: XX
Add 2
IN: Woodland
NEAR: XX
COUNTY: Cowlitz **STATE:** WA
FIGURE: 4
DATE: 12-16-22

I:\Autocad Files\AshECO Autocad\Timberland\2022.47_BM-082622.dwg



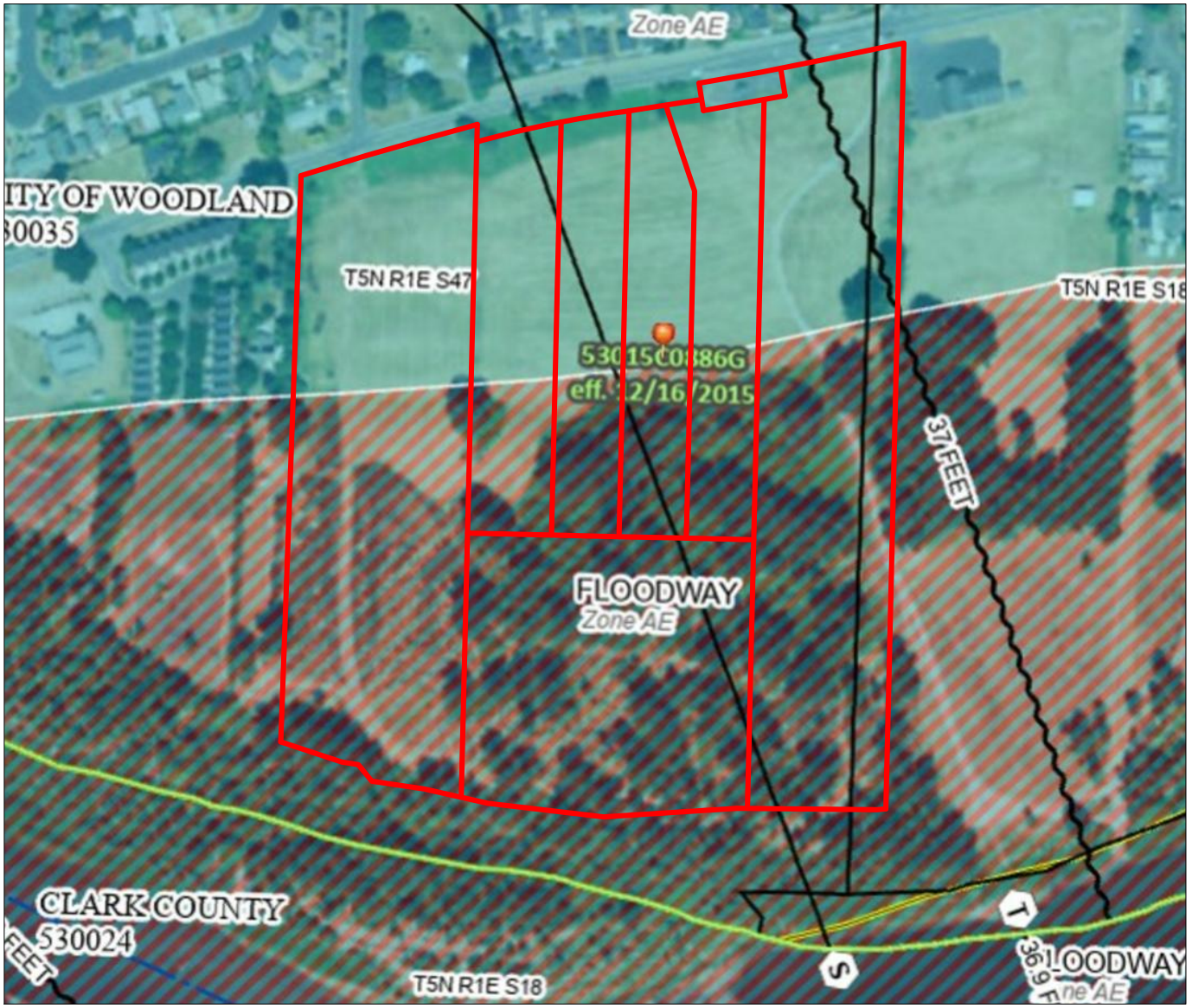
N

0 400 800

SCALE IN FEET
SCALE IS APPROXIMATE

PURPOSE: XX Line 1 Line 2 **DATUM:** NAVD 88 **ADJACENT PROPERTY OWNERS:** Adj 1 Adj 2	DNR FPARS MAP **APPLICANT:** Luke Sassa - Timberland Inc. **PROJECT NAME:** Woodland Figure Request **PARCELS #:** 506520100, 506520500, 506520400, 506520300, 506520200, 5065201, 50650 **SITE ADDRESS:** 1940 Lewis River Rd.	**PROPOSED:** XX Add 2 **IN:** Woodland **NEAR:** XX **COUNTY:** Cowlitz **STATE:** WA **FIGURE:** 5 **DATE:** 12-16-22

I:\Autocad Files\AshECO Autocad\Timberland\2022.47_BM-082622.dwg



N

0 300 600

SCALE IN FEET
SCALE IS APPROXIMATE

I:\Autocad Files\AshECO Autocad\Timberland\2022.47_BM-082622.dwg

AshECO SOLUTIONS, LLC	**PURPOSE:** XX Line 1 Line 2 **DATUM:** NAVD 88 **ADJACENT PROPERTY OWNERS:** Adj 1 Adj 2	FEMA FLOODWAY MAP **APPLICANT:** Luke Sassa - Timberland Inc. **PROJECT NAME:** Woodland Figure Request **PARCELS #:** 506520100, 506520500, 506520400, 506520300, 506520200, 5065201, 50650 **SITE ADDRESS:** 1940 Lewis River Rd.	**PROPOSED:** XX Add 2 **IN:** Woodland **NEAR:** XX **COUNTY:** Cowlitz **STATE:** WA **FIGURE:** 6 **DATE:** 12-16-22

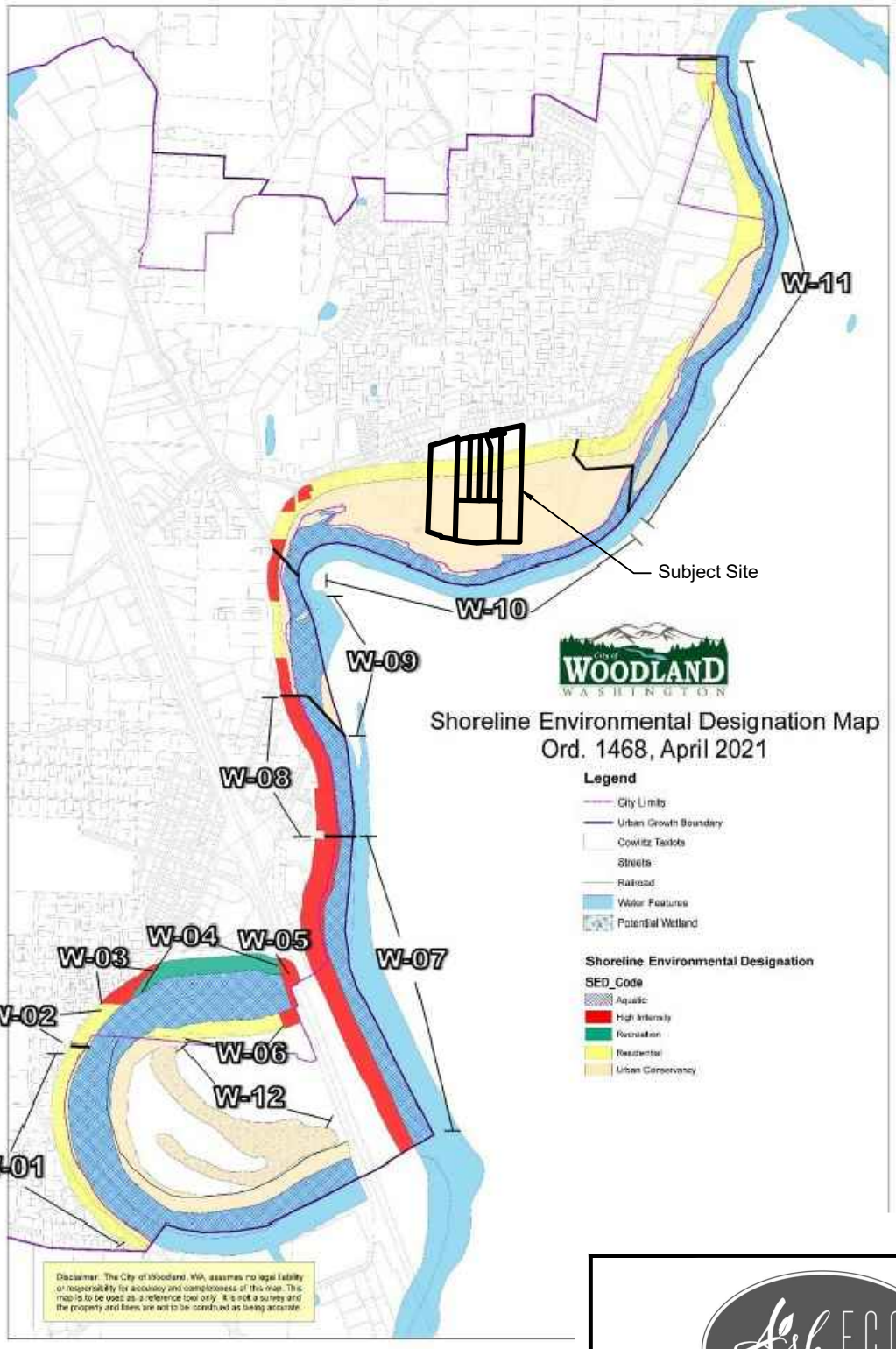
N

0 500 1000

SCALE IN FEET
SCALE IS APPROXIMATE

	PURPOSE: XX Line 1 Line 2 **DATUM:** NAVD 88 **ADJACENT PROPERTY OWNERS:** Adj 1 Adj 2	WDFW SALMONSCAPE MAP **APPLICANT:** Luke Sassa - Timberland Inc. **PROJECT NAME:** Woodland Figure Request **PARCELS #:** 506520100, 506520500, 506520400, 506520300, 506520200, 5065201, 50650 **SITE ADDRESS:** 1940 Lewis River Rd.	**PROPOSED:** XX Add 2 **IN:** Woodland **NEAR:** XX **COUNTY:** Cowlitz **STATE:** WA **FIGURE:** 7 **DATE:** 12-16-22

I:\Autocad Files\AshECO Autocad\Timberland\2022.47_BM-082622.dwg



Ash ECO SOLUTIONS, LLC

PURPOSE: XX Line 1 Line 2 **DATUM:** NAVD 88 **ADJACENT PROPERTY OWNERS:** Adj 1 Adj 2	SMP SHORELINE DESIGNATION MAP **APPLICANT:** Luke Sassa - Timberland Inc. **PROJECT NAME:** Woodland Figure Request **PARCELS #:** 506520100, 506520500, 506520400, 506520300, 506520200, 5065201, 50650 **SITE ADDRESS:** 1940 Lewis River Rd.	**PROPOSED:** XX Add 2 **IN:** Woodland **NEAR:** XX **COUNTY:** Cowlitz **STATE:** WA **FIGURE:** 8 **DATE:** 12-13-22

I:\Autocad Files\AshECO Autocad\Timberland\2022.47_BM-082622.dwg

N

0 200 400

SCALE IN FEET
1" = 200'

Lewis River Rd

TL50654

TL50650

TL5065201

TL506520300

TL506520400

TL506520500

TL506520100

TL506520200

Stormwater Pipe/
30' Easement

Riparian Habitat Area

100 Yr Floodplain
Ele. 37'

30'

VP1

VP2

VP3

VP4

VP5

VP6

VP7

VP8

VP9

300'

225'

150'

Approx. OHWM of Lewis River
and Associated Wetland Boundary

City Stormwater Outfall

TP-1

TP-2

TP-3

TP-4

Existing Dirt Trails

Existing Dirt Road
(Unauthorized River Acess)

Category II Riverine Wetland
Habitat Score = 8
High LUI Buffer = 300'
Mod LUI Buffer = 225'
Low LUI Buffer = 150'

Lewis River

LEGEND:

- Site Boundary
- Wetland Boundary
- Wetland Buffer
- TL50650 Tax Lot
- Dirt Trail
- TP-1 Test Plot Locations
- Vegetation Plot Locations

EXISTING CONDITIONS

APPLICANT: Luke Sassa - Timberland Inc.
PROJECT NAME: Woodland Figure Request
PARCELS #: 506520100, 506520500, 506520400, 506520300, 506520200, 5065201, 50650
SITE ADDRESS: 1940 Lewis River Rd.

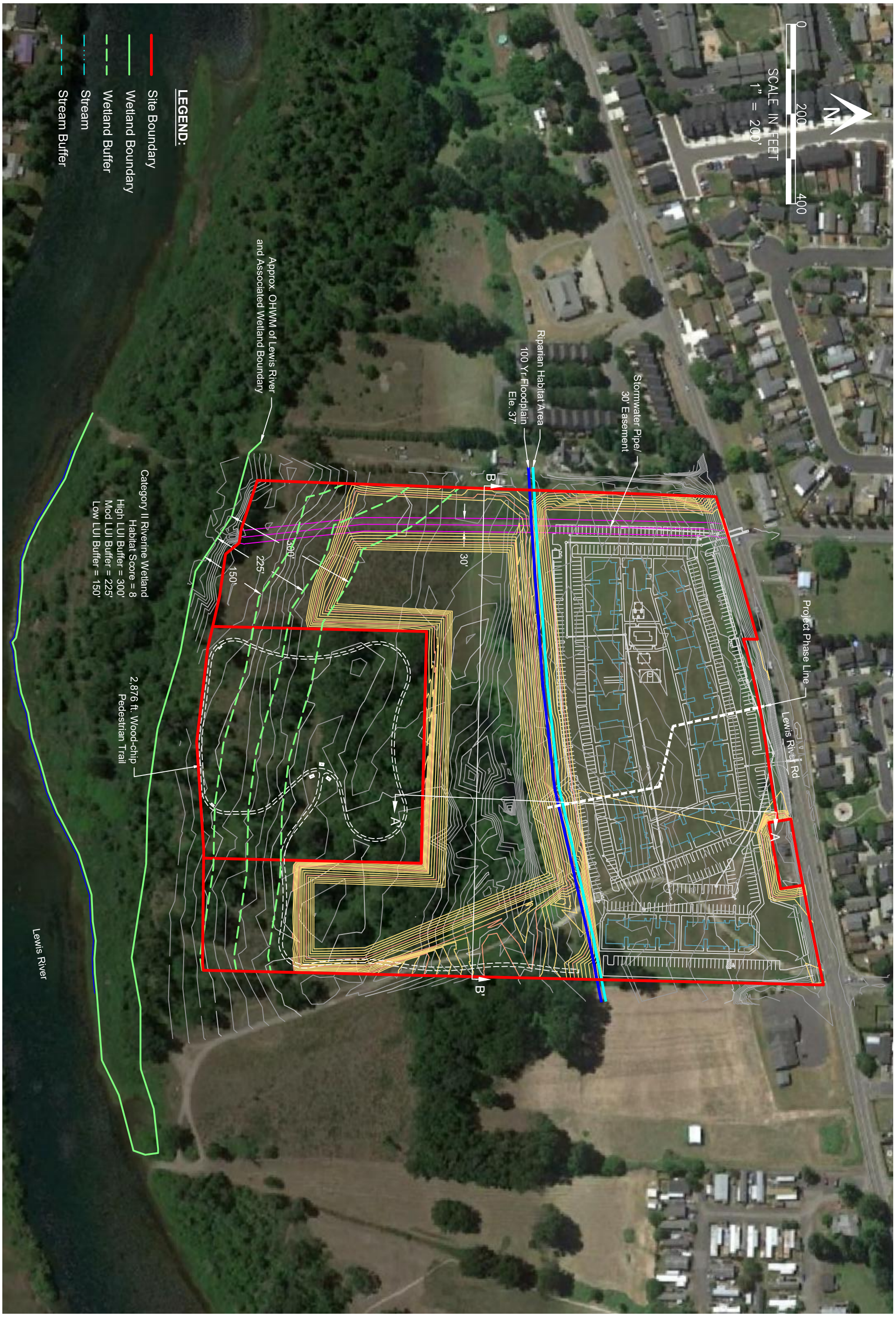
PROPOSED: XX
Add 2
IN: Woodland
NEAR: XX
COUNTY: Cowlitz **STATE:** WA
FIGURE: 9
DATE: 12-20-22

PURPOSE: XX
Line 1
Line 2
DATUM: NAVD 88
ADJACENT PROPERTY OWNERS:
Adj 1
Adj 2

ASH ECO SOLUTIONS, LLC

I:\Autocad Files\AshECO Autocad\Timberland\2022.47_BM-122022.dwg

I:\Autocad Files\AshECO Autocad\Timberland\2022.47_BM-123022.dwg

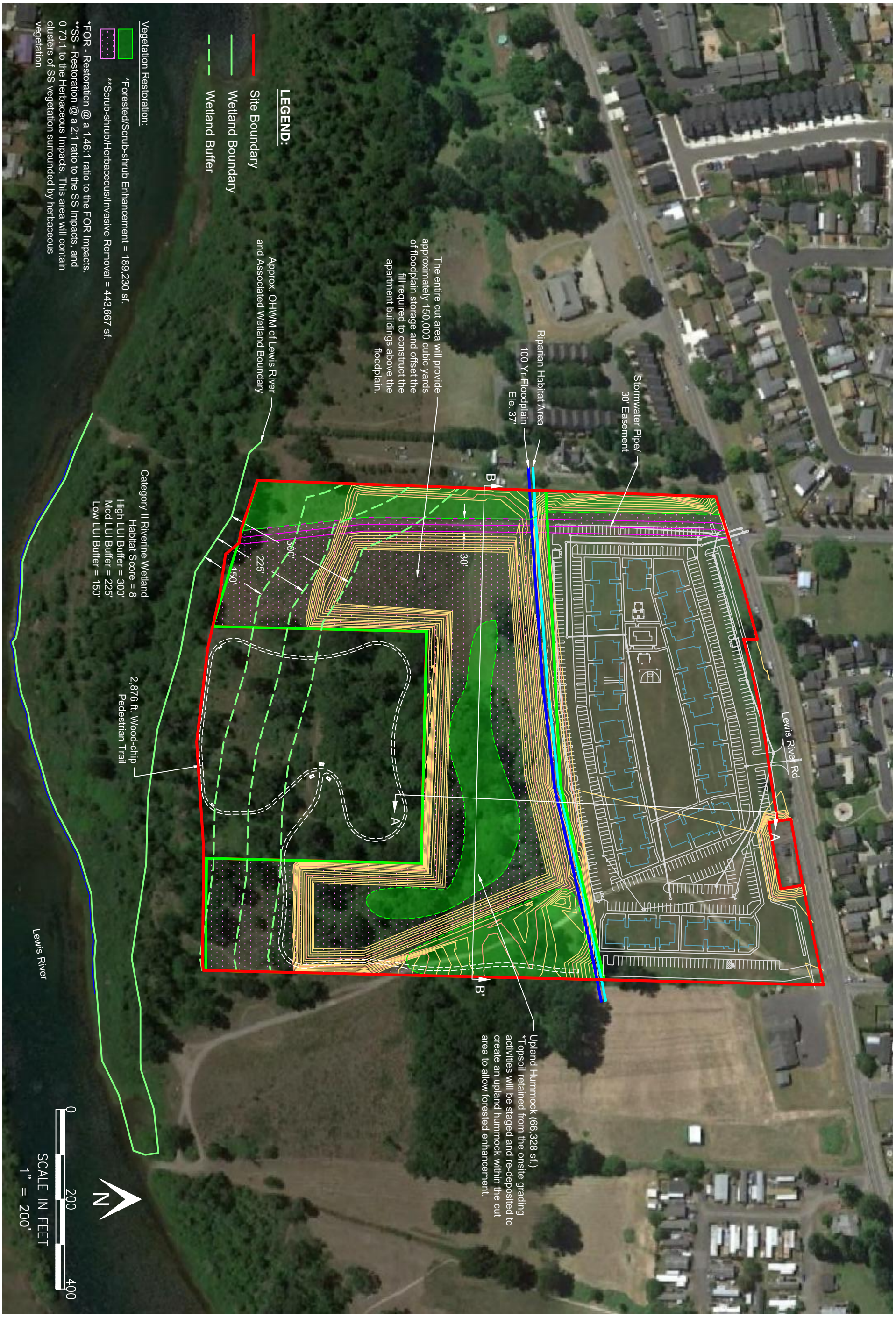


AshECO SOLUTIONS, LLC	**PURPOSE:** XX Line 1 Line 2 **DATUM:** NAVD 88 **ADJACENT PROPERTY OWNERS:** Adj 1 Adj 2	PROPOSED SITE PLAN & PROJECT IMPACTS **APPLICANT:** Luke Sassa - Timberland Inc. **PROJECT NAME:** Woodland Figure Request **PARCELS #:** 506520100, 506520500, 506520400, 506520300, 506520200, 5065201, 50650 **SITE ADDRESS:** 1940 Lewis River Rd.	**PROPOSED:** XX Add 2 **IN:** Woodland **NEAR:** XX **COUNTY:** Cowlitz **STATE:** WA **FIGURE:** 10 **DATE:** 1-4-23

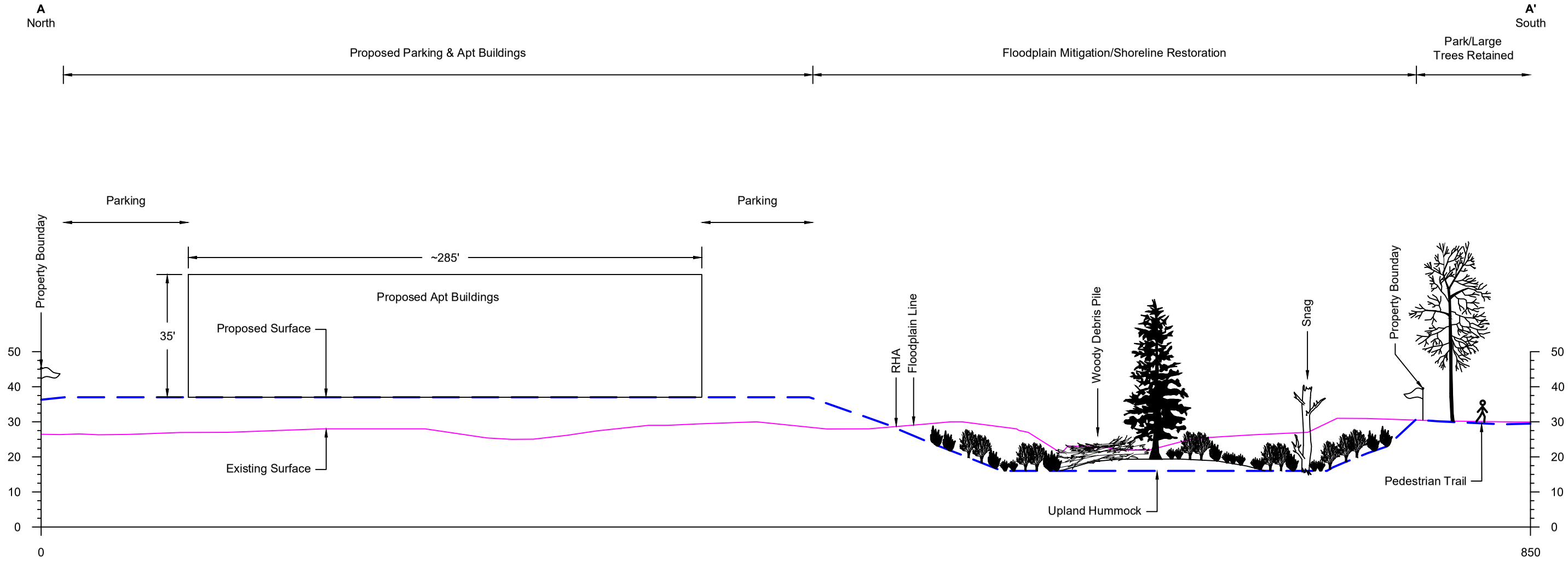
I:\Autocad Files\AshECO Autocad\Timberland\2022.47_BM-123022.dwg

AshECO SOLUTIONS, LLC	**PURPOSE:** XX Line 1 Line 2 **DATUM:** NAVD 88 **ADJACENT PROPERTY OWNERS:** Adj 1 Adj 2	VEGETATION IMPACTS **APPLICANT:** Luke Sassa - Timberland Inc. **PROJECT NAME:** Woodland Figure Request **PARCELS #:** 506520100, 506520500, 506520400, 506520300, 506520200, 5065201, 50650 **SITE ADDRESS:** 1940 Lewis River Rd.	**PROPOSED:** XX Add 2 **IN:** Woodland **NEAR:** XX **COUNTY:** Cowlitz **STATE:** WA **FIGURE:** 11 **DATE:** 1-4-23

I:\Autocad Files\AshECO Autocad\Timberland\2022.47_BM-123022.dwg



AshECO SOLUTIONS, LLC	**PURPOSE:** XX Line 1 Line 2 **DATUM:** NAVD 88 **ADJACENT PROPERTY OWNERS:** Adj 1 Adj 2	RESTORATION PLAN **APPLICANT:** Luke Sassa - Timberland Inc. **PROJECT NAME:** Woodland Figure Request **PARCELS #:** 506520100, 506520500, 506520400, 506520300, 506520200, 5065201, 50650 **SITE ADDRESS:** 1940 Lewis River Rd.	**PROPOSED:** XX Add 2 **IN:** Woodland **NEAR:** XX **COUNTY:** Cowlitz **STATE:** WA **FIGURE:** 12 **DATE:** 1-4-23



0 60 120

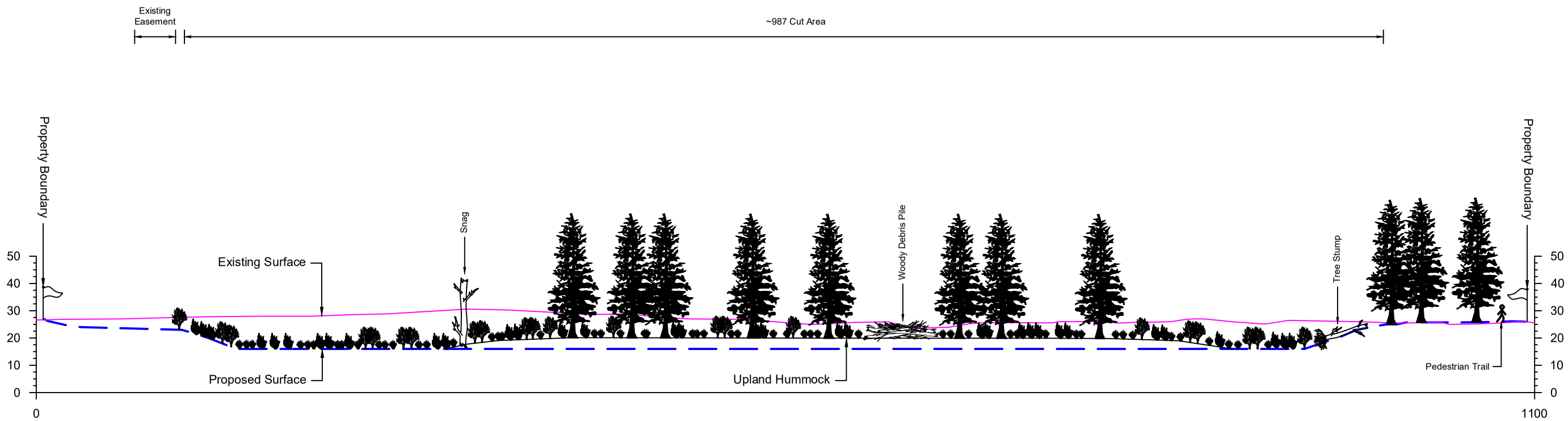
HORIZONTAL SCALE IN FEET
1" = 60'

	PURPOSE: XX Line 1 Line 2 **DATUM:** NAVD 88 **ADJACENT PROPERTY OWNERS:** Adj 1 Adj 2	CROSS SECTION A-A' **APPLICANT:** Luke Sassa - Timberland Inc. **PROJECT NAME:** Woodland Figure Request **PARCELS #:** 506520100, 506520500, 506520400, 506520300, 506520200, 5065201, 50650 **SITE ADDRESS:** 1940 Lewis River Rd.	**PROPOSED:** XX Add 2 **IN:** Woodland **NEAR:** XX **COUNTY:** Cowlitz **STATE:** WA **FIGURE:** 13 **DATE:** 1-4-23

I:\Autocad Files\AshECO Autocad\Timberland\2022.47_BM-123022.dwg

B
West

B'
East



0 80 160
HORIZONTAL SCALE IN FEET
1" = 80'

	PURPOSE: XX Line 1 Line 2 **DATUM:** NAVD 88 **ADJACENT PROPERTY OWNERS:** Adj 1 Adj 2	CROSS SECTION B-B' **APPLICANT:** Luke Sassa - Timberland Inc. **PROJECT NAME:** Woodland Figure Request **PARCELS #:** 506520100, 506520500, 506520400, 506520300, 506520200, 5065201, 50650 **SITE ADDRESS:** 1940 Lewis River Rd.	**PROPOSED:** XX Add 2 **IN:** Woodland **NEAR:** XX **COUNTY:** Cowlitz **STATE:** WA **FIGURE:** 14 **DATE:** 1-4-23

I:\Autocad Files\AshECO Autocad\Timberland\2022.47_BM-123022.dwg

Appendix A

Site Photos

Photo 1.
View north across northern field onsite. Single-family residences present north of Lewis River Road are visible in the distance. The open field represents the existing conditions over the bulk of the project site and proposed restoration area.

Photo 2.
View east across northern field and the northern limits of the existing treeline.

Photo 3.
View down one of the unauthorized access roads present onsite that has been historically used by the public to gain access to the site and Lewis River shoreline.

Photo 4.
Photo of the invasive Scotch broom present onsite within the sparse shrub layer. The taller tree in upper left of photo is being overcome by invasive English ivy. Both are common sights across the site.

Photo 5.
Photo of the invasive Scotch broom present onsite within more open western portion of the site.

Photo 6.
Photo of the dense invasive Scotch broom presence onsite along the stormwater outfall easement area. The existing access road to the outfall location is visible in the lower left of the photo.

View of the existing stormwater outfall onsite. The stormwater conveyed from the development north of Lewis River Rd.

Photo 7.
Representative photo of the Lewis River Type S Water present directly offsite to the south. A riverine wetland flanks the river. There is currently no dedicated public access present.

Photo 8.
Representative photo of invasive/non-native species present onsite; English ivy, Himalayan blackberry, and potato vine.

Photo 9.
Representative photo of invasive/non-native species present onsite; English ivy, English hawthorn.

Photo 10.
Representative photo of invasive/non-native species present onsite (English ivy). The ivy is overcoming many trees and shrubs onsite.

Photo 11.
Representative photo of invasive/non-native Old man's beard (Clematis vitalba) that is overcoming many trees and shrubs onsite.

Photo 12.
Representative photo of the fairly open and unstructured understory generally present over a large portion of the site. There is a lack of dense native shrubs and variety of coniferous and deciduous tree species with invasives filling in the open areas.

Appendix B

Test Plot Data Sheets & Vegetation Plot Data

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

Project/Site: Timberland - Lewis River City/County: Clark Sampling Date: 9/14/2022
Applicant/Owner: Luke Sasse - Timberalnd Inc. State: WA Sampling Point: TP-1
Investigator(s): Andrea Aberle Section, Township, Range: S47, T5N, R1E
Landform (hillslope, terrace, etc.): hillslope Local relief: Concave Slope (%): 0-8%
Subregion (LRR): LRR A Lat: 45.920273 Long: 122.730763 Datum: NAD 83
Soil Map Unit Name: 141, 160, 172 NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☒ No☐ (If no, explain Remarks.)
Are Vegetation ☐, Soil☐, or Hydrology☐ significantly disturbed? Are "Normal Circumstances" present? Yes☒ No☐
Are Vegetation ☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area**
Hydric Soils Present?	Yes ☒ No ☐	**within a Wetland?** **Yes☒ No☐**
Wetland Hydrology Present?	Yes ☒ No ☐	

Remarks: South of Flag OHWM #5

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.	%		
2.	%		
3.	%		
4.	%		
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Salix lasiandra*	40%	yes	FACW
2. *Cornus sericea*	15%	yes	FACW
3. *Spiraea douglasii*	10%	no	FACW
4. *Rosa nutkana*	10%	no	FAC
5.	%		
Total Cover:	75%		
Herb Stratum			
1. *Phalaris arundinacea*	60%	yes	FACW
2.	%		
3.	%		
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
Total Cover:	60%		
Woody Vine Stratum			
1.	%		
2.	%		
Total Cover:	%		

% Bare Ground in Herb Stratum ____ %

Dominance Test Worksheet

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet

Total % Cover of:	Multiply by:
OBL species	x 1=
FACW species	x 2=
FAC species	x 3=
FACU species	x 4=
UPL species	x 5=
Column Totals: (A)	(B)

Prevalence Index = B/A=

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Providing supporting data In Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes☒ No☐**

Remarks:

SOIL

Sampling Point: TP-1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 4/1	95%	7.5YR 4/6	5%	C	PL	L	
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosal
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Minerals (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (if present):

Type: _____

Depth (inches):_____

Hydric Soil Present? Yes☒ No☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9) (**except NW coast**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizoshperes along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☒ Water Stained Leaves
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D2)
- ☐ Frost-Heave Hummocks (D4)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (Inches): _____
Water Table Present?	Yes ☐	No ☒	Depth (Inches): _____
Saturation Present? (Includes capillary fringe)	Yes ☐	No ☒	Depth (Inches): _____

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

The three wetland criteria have been met.

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

Project/Site: Timberland - Lewis River City/County: Clark Sampling Date: 9/14/2022
Applicant/Owner: Luke Sasse - Timberalnd Inc. State: WA Sampling Point: TP-2
Investigator(s): Andrea Aberle Section, Township, Range: S47, T5N, R1E
Landform (hillslope, terrace, etc.): hillslope Local relief: Concave Slope (%): 0-8%
Subregion (LRR): LRR A Lat: 45.920273 Long: 122.730763 Datum: NAD 83
Soil Map Unit Name: 141, 160, 172 NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☒ No☐ (If no, explain Remarks.)
Are Vegetation ☐, Soil☐, or Hydrology☐ significantly disturbed? Are "Normal Circumstances" present? Yes☒ No☐
Are Vegetation ☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area**
Hydric Soils Present?	Yes ☐ No ☒	**within a Wetland?** **Yes☐ No☒**
Wetland Hydrology Present?	Yes ☐ No ☒	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.	%		
2.	%		
3.	%		
4.	%		
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Corylus cornuta*	15%	yes	FACU
2. *Cytisus scoparius*	15%	yes	FACU
3. *Populus trichocarpa (saplings)*	10%	yes	FAC
4. *Fraxinus latifolia (saplings)*	10%	yes	FACW
5.	%		
Total Cover:	50%		
Herb Stratum			
1. *Anthoxanthum odoratum*	15%	yes	FACU
2. *Agrostis capillaris*	10%	yes	FAC
3. *Holcus lanatus*	10%	yes	FAC
4. *Danthonia californica*	5%	yes	FAC
5. *Rumex acetosella*	5%	yes	FACU
6. *Vicia sativa*	5%	yes	UPL
7.	%		
8.	%		
Total Cover:	50%		
Woody Vine Stratum			
1. *Rubus armeniacus*	10%	yes	FAC
2.	%		
Total Cover:	10%		

% Bare Ground in Herb Stratum ____ %

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: **6** (A)

Total Number of Dominant Species Across All Strata: 11 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 55% (A/B)

Prevalence Index worksheet

Total % Cover of:	Multiply by:
OBL species	x 1=
FACW species	x 2=
FAC species	x 3=
FACU species	x 4=
UPL species	x 5=
Column Totals: (A)	(B)

Prevalence Index = B/A=

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Providing supporting data In Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes☒ No☐**

Remarks:

SOIL

Sampling Point: TP-2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 4/1	100%		%			Sand	Riverwash sand
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosal
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Minerals (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (if present):

Type: _____

Depth (inches):_____

Hydric Soil Present? Yes☐ No☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9) (**except NW coast**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizoshperes along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Stained Leaves
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D2)
- ☐ Frost-Heave Hummocks (D4)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (Inches): _____

Water Table Present? Yes ☐ No ☒ Depth (Inches): _____

Saturation Present? Yes ☐ No ☒ Depth (Inches): _____

(Includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

The three wetland criteria have NOT been met.

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

Project/Site: Timberland - Lewis River City/County: Clark Sampling Date: 9/14/2022
Applicant/Owner: Luke Sasse - Timberalnd Inc. State: WA Sampling Point: TP-3
Investigator(s): Andrea Aberle Section, Township, Range: S47, T5N, R1E
Landform (hillslope, terrace, etc.): hillslope Local relief: Concave Slope (%): 0-8%
Subregion (LRR): LRR A Lat: 45.920273 Long: 122.730763 Datum: NAD 83
Soil Map Unit Name: 141, 160, 172 NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☒ No☐ (If no, explain Remarks.)
Are Vegetation ☐, Soil☐, or Hydrology☐ significantly disturbed? Are "Normal Circumstances" present? Yes☒ No☐
Are Vegetation ☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area**
Hydric Soils Present?	Yes ☒ No ☐	**within a Wetland?** **Yes☒ No☐**
Wetland Hydrology Present?	Yes ☒ No ☐	

Remarks: Near Flag OHWM #13

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	30%	yes	FACW
2.	%		
3.	%		
4.	%		
Total Cover:	30%		
Sapling/Shrub Stratum			
1. *Cornus sericea*	25%	yes	FACW
2. *Spiraea douglasii*	10%	yes	FACW
3. *Symphoricarpos albus*	10%	yes	FACU
4.	%		
5.	%		
Total Cover:	45%		
Herb Stratum			
1. *Carex obnupta*	25%	yes	FACW
2. *Phalaris arundinacea*	20%	yes	FACW
3. *Rubus ursinus*	10%	yes	FACU
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
Total Cover:	55%		
Woody Vine Stratum			
1.	%		
2.	%		
Total Cover:	%		

% Bare Ground in Herb Stratum ____ %

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: **5** (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC 71% (A/B)

Prevalence Index worksheet

Total % Cover of:	Multiply by:
OBL species	x 1=
FACW species	x 2=
FAC species	x 3=
FACU species	x 4=
UPL species	x 5=
Column Totals: (A)	(B)

Prevalence Index = B/A=

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Providing supporting data In Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes☒ No☐**

Remarks:

SOIL

Sampling Point: TP-3

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 4/1	85%		%			L	Mixed Matrix
0-16	7.5YR 4/6	15%		%			L	Mixed Matrix
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosal
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Minerals (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (if present):

Type: _____

Depth (inches):_____

Hydric Soil Present? Yes☒ No☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9) (**except NW coast**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizoshperes along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☒ Water Stained Leaves
- ☒ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D2)
- ☐ Frost-Heave Hummocks (D4)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (Inches): _____
Water Table Present?	Yes ☐	No ☒	Depth (Inches): _____
Saturation Present? (Includes capillary fringe)	Yes ☒	No ☐	Depth (Inches): 0

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

The three wetland criteria have been met.

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

Project/Site: Timberland - Lewis River City/County: Clark Sampling Date: 9/14/2022
Applicant/Owner: Luke Sasse - Timberalnd Inc. State: WA Sampling Point: TP-4
Investigator(s): Andrea Aberle Section, Township, Range: S47, T5N, R1E
Landform (hillslope, terrace, etc.): hillslope Local relief: Concave Slope (%): 0-8%
Subregion (LRR): LRR A Lat: 45.920273 Long: 122.730763 Datum: NAD 83
Soil Map Unit Name: 141, 160, 172 NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☒ No☐ (If no, explain Remarks.)
Are Vegetation ☐, Soil☐, or Hydrology☐ significantly disturbed? Are "Normal Circumstances" present? Yes☒ No☐
Are Vegetation ☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐ No ☒	**Is the Sampled Area**
Hydric Soils Present?	Yes ☐ No ☒	**within a Wetland?** **Yes☐ No☒**
Wetland Hydrology Present?	Yes ☐ No ☒	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus trichocarpa*	30%	yes	FAC
2. *Fraxinus latifolia*	20%	yes	FACW
3.	%		
4.	%		
Total Cover:	50%		
Sapling/Shrub Stratum			
1. *Oemleria cerasiformis*	20%	yes	FACU
2. *Symphoricarpos albus*	20%	yes	FACU
3. *Mahonia aquifolium*	5%	yes	FACU
4.	%		
5.	%		
Total Cover:	45%		
Herb Stratum			
1. *Dactylis glomerata*	10%	yes	FACU
2. *Rubus ursinus*	10%	yes	FACU
3.	%		
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
Total Cover:	20%		
Woody Vine Stratum			
1. *Rubus armeniacus*	10%	yes	FAC
2.	%		
Total Cover:	10%		

% Bare Ground in Herb Stratum ____ %

Dominance Test Worksheet

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

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 37% (A/B)

Prevalence Index worksheet

Total % Cover of:		Multiply by:	
OBL species		x 1=	
FACW species	20	x 2=	40
FAC species	40	x 3=	120
FACU species	65	x 4=	260
UPL species		x 5=	
Column Totals:	125 (A)		420 (B)

Prevalence Index = B/A= 3.36

Hydrophytic Vegetation Indicators:

- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Providing supporting data In Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes☐ No☒**

Remarks:

SOIL

Sampling Point: TP-4

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/2	100%		%			L	Sandy
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosal
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Minerals (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (if present):

Type: _____

Depth (inches):_____

Hydric Soil Present? Yes☐ No☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9) (**except NW coast**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizoshperes along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Stained Leaves
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D2)
- ☐ Frost-Heave Hummocks (D4)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (Inches): _____

Water Table Present? Yes ☐ No ☒ Depth (Inches): _____

Saturation Present? Yes ☐ No ☒ Depth (Inches): _____

(Includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

The three wetland criteria have NOT been met.

Vegetation Plot Data - Lewis River Site

VP#1
^Mature Cottonwood x2
^Oregon ash saplings (2-4in)
*English hawthorn
Black (Douglas) hawthorn
Pacific ninebark
Snowberry
Velvetgrass
*Scotch broom!
Lanceleaf plantain
Orchard grass
Hairy cat's ear
Oatgrass
Sheep sorrel

VP#2 (Large opening in the canopy at least 100ft diameter – sparce tree and shrub vegetation)
^Sparce cottonwood trees
^Oregon ash saplings
*Scotch Broom!
Beaked hazelnut
Tall Oregon grape
Manroot
Indian plum
Trailing blackberry
*Himalayan blackberry
Sweet vernal grass
Velvet grass
Sheep sorrel
^Oregon white oak sapling
(no jurisdictionsl oak habitat will be impacted)

VP#3 (Includes 150ft towards the River)
*J. knotweed island
^Mature cottonwoods
^Oregon ash
Beaked hazelnut
Snowberry
*Himalayan blackberry
Black (Douglas) hawthorn
Pacific ninebark
*Reed canarygrass
Bentgrass
Old man's beard

VP#4 (Central open area along trail – Woodland property)
^B. cottonwood
*Scotch broom!
Black (Douglas) hawthorn
*Himalayan blackberry
Bracken fern
Bentgrass
Beaked hazelnut
Common St Johnswort
Perennial ryegrass
Trailing blackberry

VP#5
Tall Oregon grape
Trailing blackberry
Bracken fern
Pacific crabapple
Black (Douglas) hawthorn
Gooseberry

VP#6 (Along trail- Dense shrubs)
^B. cottonwoods
Pacific crabapple
*English holly
Tall Oregon grape
Beaked hazelnut
Indian plum
Snowberry
Black (Douglas) hawthorn
Swordfern
Trailing blackberry
*Himalayan blackberry
*English ivy (densely growing up large tree)

VP#7
*Scotch broom!
Sheep sorrel
Sweet vernal grass
Bentgrass
Oxeye daisy
Hairy cat's ear
Brackenfern
Rabbitfoot clover

VP#8 (Approximate open 100 ft radius)
*Scotch broom!
Sweet vernal grass
^B. cottonwood saplings
^O. ash saplings
Sheet sorrel
Trailing blackberry
Common St Johnswort

VP#9
*Himalayan blackberry!
Beaked hazelnut
Mature cottonwood
*Scotch broom
Manroot
Goldenrod

Vegetation	VP#1	VP#2 (Opening in the canopy ~100ft diameter – sparce veg)	VP#3 (~150ft towards River)	VP#4 (Opening along trail - Woodland property)	VP#5	VP#6 (Along trail – dense shrub)	VP#7	VP#8 (Canopy opening ~100ft diameter – sparce veg)	VP#9
^Black Cottonwood (*Populus trichocarpa)*									
*Scotch broom (*Cytisus scoparius)*									
*Himalayan blackberry (*Rubus armeniacus)*									
Beaked hazelnut (*Corylus cornuta)*									
Black (Douglas) hawthorn (*Crataegus douglasii)*									
Trailing blackberry (*Rubus ursinus)*									
^Oregon ash (*Fraxinus latifolia)*									
Sheep sorrel (*Rumex acetosella)*									
Snowberry (*Symphoricarpos albus)*									
Tall Oregon grape (*Mahonia aquifolium)*									
Bracken fern (*Pteridium aquilinum)*									
Bentgrass (*Agrostis capillaris)*									
Sweet vernalgrass (*Anthoxanthum odoratum)*									
Pacific crabapple (*Malus fusca)*									
Pacific ninebark (*Physocarpus capitatus)*									
Indian plum (*Oemleria cerasiformis)*									
Manroot (*Marah oreganus)*									
St Johnswort (*Hypericum perforatum)*									
Hairy cat's ear (*Hypochaeris radicata)*									
Velvet grass (*Holcus lanatus)*									
*English hawthorn (*Crataegus monogyna)*									
*English ivy (*Hedera helix*)									
^Oregon white oak (*Quercus garryana) -saplings*									
*English holly (*Ilex aquifolium)*									
Gooseberry (*Ribes lacustre)*									
*Japanese Knotweed (*Polygonum cuspidatum)*									
Swordfern (*Polystichum munitum)*									
Goldenrod (*Solidago canadensis)*									
Rabbitfoot clover (*Trifolium arvense)*									
Oxeye daisy (*Leucanthemum vulgare)*									
Perennial ryegrass (*Lolium perenne)*									
*Old man's beard (*Clematis vitalba)*									
*Reed canarygrass (*Phalaris arundinacea)*									
Oatgrass (*Danthonia californica)*									
Orchard grass (*Dactylis glomerata)*									
Lanceleaf plantain (*Plantago lanceolata)*									

(*) = Invasive. Noxious, or non-native species

(^) = Tree Species providing forested canopy

Appendix C

Wetland Rating Form and Figures
(Off site)

Wetland name or number _____

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A Date of site visit: 5/25/22

Rated by Mackenzie Stamey Trained by Ecology? ✓ Yes ___ No Date of training 10/20

HGM Class used for rating Riverine Wetland has multiple HGM classes? ✓ Y ____ N

NOTE: **Form is not complete without the figures requested** *(figures can be combined)*.

Source of base aerial photo/map Google Earth

OVERALL WETLAND CATEGORY II (based on functions ✓ or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

__✓__**Category II** – Total score = 20 - 22

_____**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H (M) L	H (M) L	(H) M L	
Landscape Potential	(H) M L	H (M) L	H (M) L	
Value	H M (L)	(H) M L	(H) M L	**TOTAL**
Score Based on Ratings	6	7	8	21

Score for each function based on three ratings *(order of ratings is not important)*

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	**I II**
Wetland of High Conservation Value	**I**
Bog	**I**
Mature Forest	**I**
Old Growth Forest	**I**
Coastal Lagoon	**I II**
Interdunal	**I II III IV**
None of the above	

Wetland name or number _____

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	WRF Fig 1
Hydroperiods	H 1.2	WRF Fig 2
Ponded depressions	R 1.1	WRF Fig 2
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	WRF Fig 1
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	WRF Fig 1
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	WRF Fig 2
Map of the contributing basin	R 2.2, R 2.3, R 5.2	WRF Fig 2
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	WRF Fig 3
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	WRF Fig 4
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	WRF Fig 4

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number _____

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

NO – go to 2 **YES** – the wetland class is **Tidal Fringe** – go to 1.1

1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

NO – Saltwater Tidal Fringe (Estuarine) **YES – Freshwater Tidal Fringe**
*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

NO – go to 3 **YES** – The wetland class is **Flats**
*If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
___At least 30% of the open water area is deeper than 6.6 ft (2 m).

NO – go to 4 **YES –** The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?
✓ The wetland is on a slope (*slope can be very gradual*),
___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
✓ The water leaves the wetland **without being impounded**.

NO – go to 5 **YES –** The wetland class is **Slope**

NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?
✓ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
✓ The overbank flooding occurs at least once every 2 years.

Wetland name or number _____

NO – go to 6 **YES** – The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

*If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.*

Wetland name or number _____

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

R 1.0. Does the site have the potential to improve water quality?	
R 1.1. Area of surface depressions within the Riverine wetland that can trap sediments during a flooding event: Depressions cover >$^3/_4$ area of wetland points = 8 Depressions cover > ½ area of wetland points = 4 Depressions present but cover < ½ area of wetland points = 2 No depressions present points = 0	2
R 1.2. Structure of plants in the wetland (areas with >90% cover at person height, **not** Cowardin classes) Trees or shrubs > $^2/_3$ area of the wetland points = 8 Trees or shrubs > $^1/_3$ area of the wetland points = 6 Herbaceous plants (> 6 in high) > $^2/_3$ area of the wetland points = 6 Herbaceous plants (> 6 in high) > $^1/_3$ area of the wetland points = 3 Trees, shrubs, and ungrazed herbaceous < $^1/_3$ area of the wetland points = 0	8
Total for R 1 Add the points in the boxes above	10

Rating of Site Potential If score is: ___**12-16 = H** ✓**6-11 = M** ___**0-5 = L** *Record the rating on the first page*

R 2.0. Does the landscape have the potential to support the water quality function of the site?	
R 2.1. Is the wetland within an incorporated city or within its UGA? Yes = 2 No = 0	2
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area? Yes = 1 No = 0	1
R 2.3. Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that have been clearcut within the last 5 years? Yes = 1 No = 0	1
R 2.4. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	0
R 2.5. Are there other sources of pollutants coming into the wetland that are not listed in questions R 2.1-R 2.4 Other sources watefowl, wildlife, fishermen/unauthorized boat launch Yes = 1 No = 0	1
Total for R 2 Add the points in the boxes above	5

Rating of Landscape Potential If score is: ✓**3-6 = H** ___**1 or 2 = M** ___**0 = L** *Record the rating on the first page*

R 3.0. Is the water quality improvement provided by the site valuable to society?	
R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributary that drains to one within 1 mi? Yes = 1 No = 0	0
R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens? Yes = 1 No = 0	0
R 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? (*answer YES if there is a TMDL for the drainage in which the unit is found*) Yes = 2 No = 0	0
Total for R 3 Add the points in the boxes above	

Rating of Value If score is: ___**2-4 = H** ___**1 = M** ✓**0 = L** *Record the rating on the first page*

Wetland name or number _____

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS

Hydrologic Functions - Indicators that site functions to reduce flooding and stream erosion

R 4.0. Does the site have the potential to reduce flooding and erosion?

R 4.1. Characteristics of the overbank storage the wetland provides: *Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of wetland)/(average width of stream between banks).* If the ratio is more than 20 — points = 9 If the ratio is 10-20 — points = 6 If the ratio is 5-<10 — 360 ft (wetland) / 298 ft (stream) = 1.21 — points = 4 If the ratio is 1-<5 — points = 2 If the ratio is < 1 — points = 1		2
R 4.2. Characteristics of plants that slow down water velocities during floods: *Treat large woody debris as forest or shrub. Choose the points appropriate for the best description (polygons need to have >90% cover at person height. These are NOT Cowardin classes).* Forest or shrub for > $^1/_3$ area OR emergent plants > $^2/_3$ area — points = 7 Forest or shrub for > $^1/_{10}$ area OR emergent plants > $^1/_3$ area — points = 4 Plants do not meet above criteria — points = 0		7
Total for R 4	Add the points in the boxes above	9

Rating of Site Potential If score is: ___**12-16 = H** ✓**6-11 = M** ___**0-5 = L** *Record the rating on the first page*

R 5.0. Does the landscape have the potential to support the hydrologic functions of the site?

R 5.1. Is the stream or river adjacent to the wetland downcut?	Yes = 0 No = 1	1
R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 1 No = 0	1
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	0
Total for R 5	Add the points in the boxes above	2

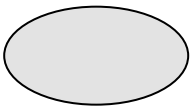
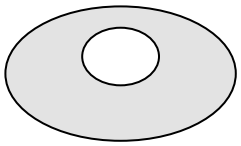
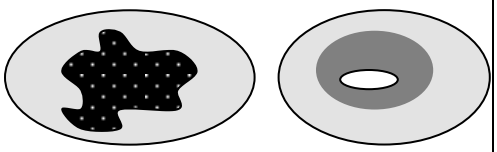
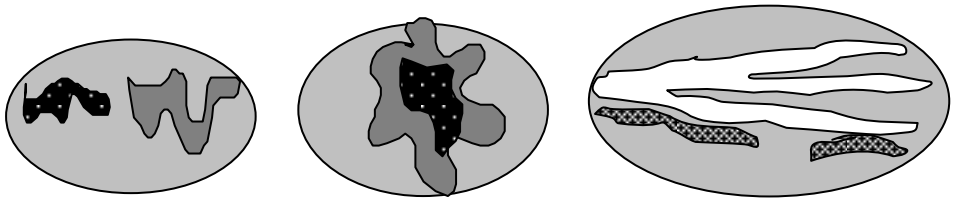
Rating of Landscape Potential If score is: ___**3 = H** ✓**1 or 2 = M** ___**0 = L** *Record the rating on the first page*

R 6.0. Are the hydrologic functions provided by the site valuable to society?

R 6.1. Distance to the nearest areas downstream that have flooding problems? *Choose the description that best fits the site*. The sub-basin immediately down-gradient of the wetland has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) — points = 2 Surface flooding problems are in a sub-basin farther down-gradient — points = 1 No flooding problems anywhere downstream — points = 0		2
R 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?	Yes = 2 No = 0	0
Total for R 6	Add the points in the boxes above	2

Rating of Value If score is: ✓**2-4 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

Wetland name or number _____

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat	
H 1.0. Does the site have the potential to provide habitat?	
H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ____Aquatic bed — 4 structures or more: points = 4 __✓__Emergent — 3 structures: points = 2 __✓__Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points = 1 __✓__Forested (areas where trees have > 30% cover) — 1 structure: points = 0 *If the unit has a Forested class, check if:* __✓__The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon	4
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*). ____Permanently flooded or inundated — 4 or more types present: points = 3 __✓__Seasonally flooded or inundated — 3 types present: points = 2 __✓__Occasionally flooded or inundated — 2 types present: points = 1 __✓__Saturated only — 1 type present: points = 0 __✓__Permanently flowing stream or river in, or adjacent to, the wetland ____Seasonally flowing stream in, or adjacent to, the wetland ____**Lake Fringe wetland** — **2 points** ____**Freshwater tidal wetland** — **2 points**	3
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species.* ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*** If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	2
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*  **None** = 0 points  **Low** = 1 point  **Moderate** = 2 points All three diagrams in this row are **HIGH** = 3points 	3

Wetland name or number _____

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* _✓_ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). _✓_ Standing snags (dbh > 4 in) within the wetland ____ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) _✓_ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* _✓_ At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ____ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	4
Total for H 1 Add the points in the boxes above	16

Rating of Site Potential If score is: _✓_ **15-18 = H** ___ **7-14 = M** ___ **0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 1.4 **+** [(% moderate and low intensity land uses)/2] 3.02 **=** 4.42 % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 21.5 **+** [(% moderate and low intensity land uses)/2] 15.8 **=** 37.3 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	0
Total for H 2 Add the points in the boxes above	1

Rating of Landscape Potential If score is: ___ **4-6 = H** _✓_ **1-3 = M** ___ **< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 _✓_ It has 3 or more priority habitats within 100 m (see next page) — It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) — It is mapped as a location for an individual WDFW priority species — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0	2

Rating of Value If score is: _✓_ **2 = H** ___ **1 = M** ___ **0 = L** *Record the rating on the first page*

Wetland name or number _____

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

✓ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

✓ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

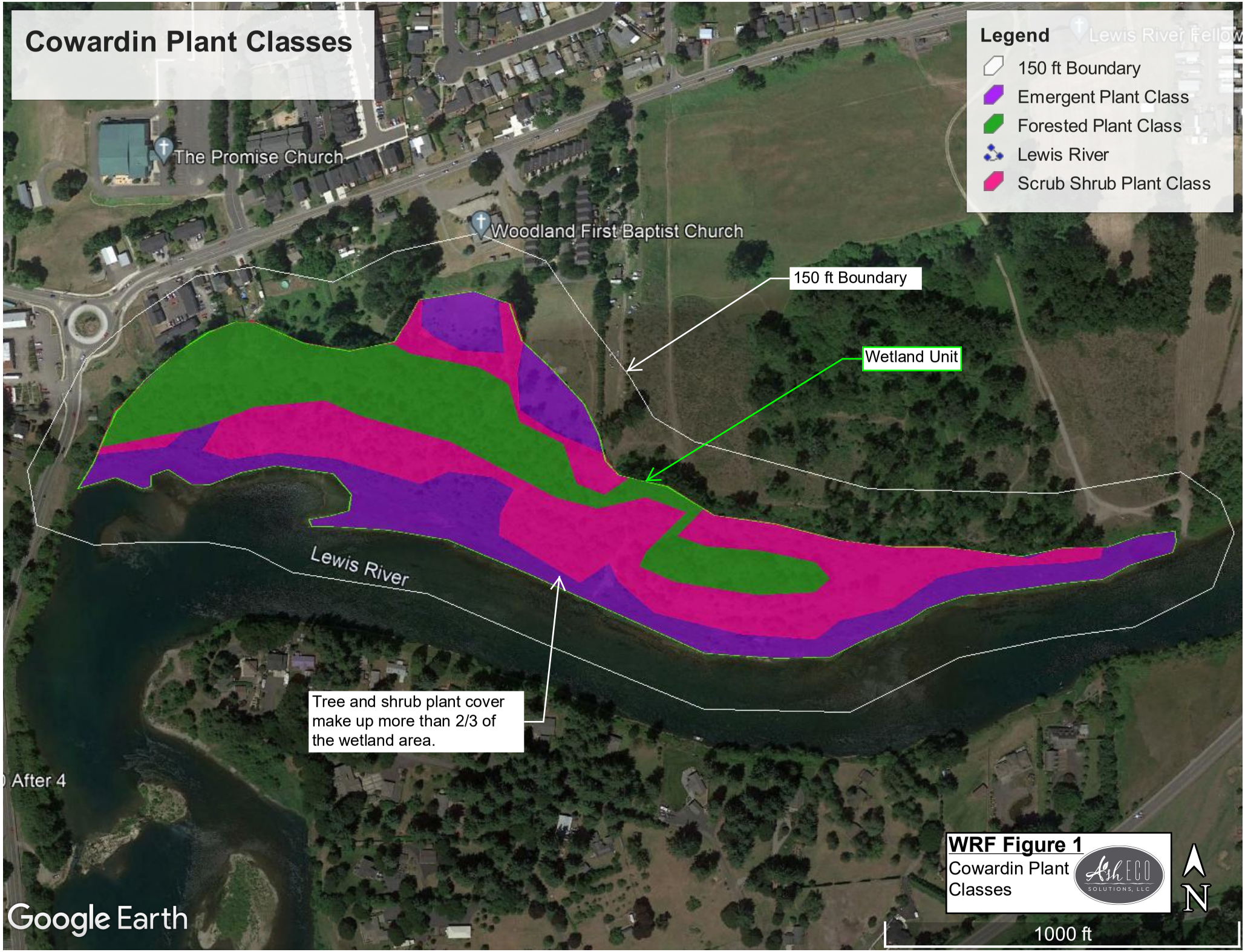
— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

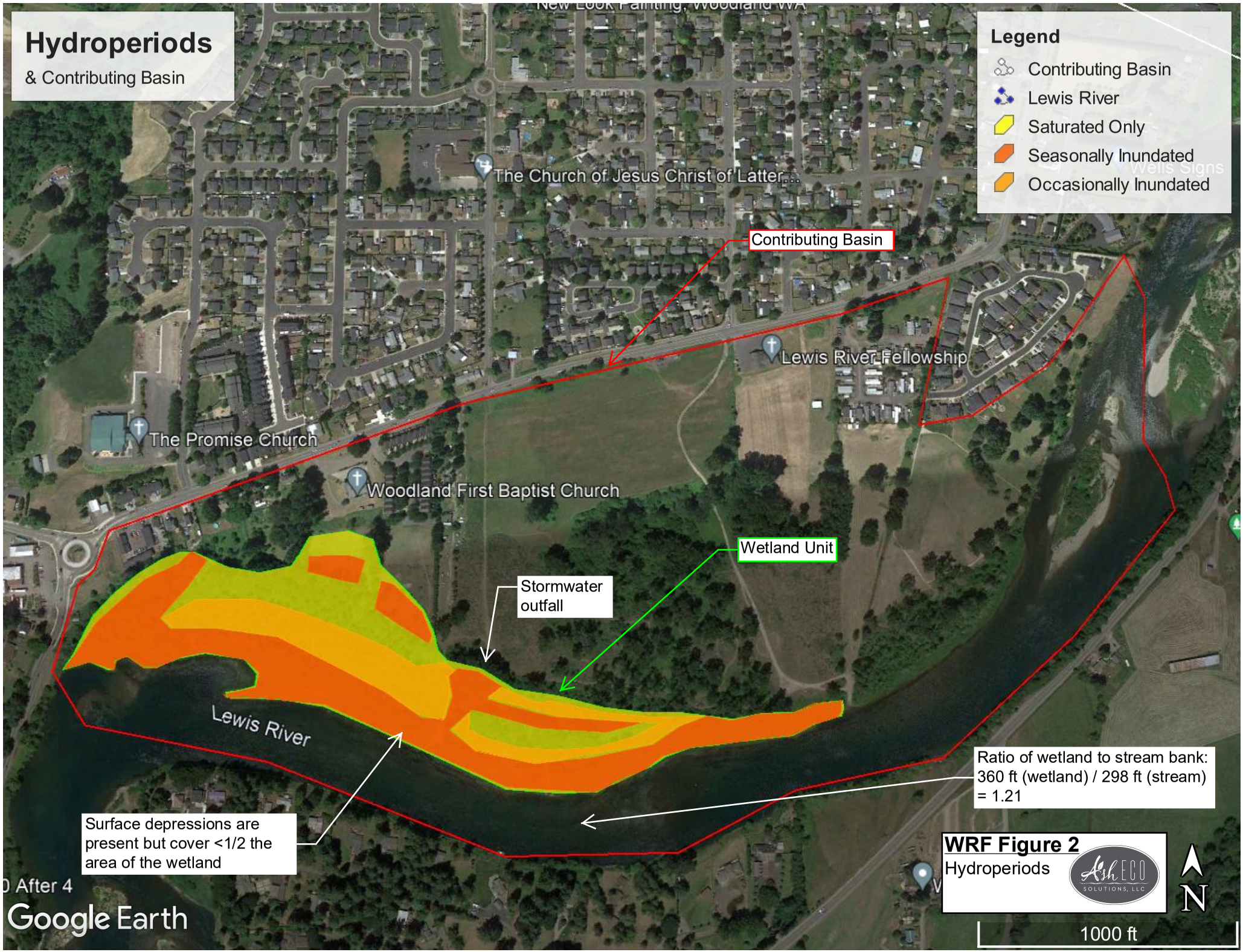
— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

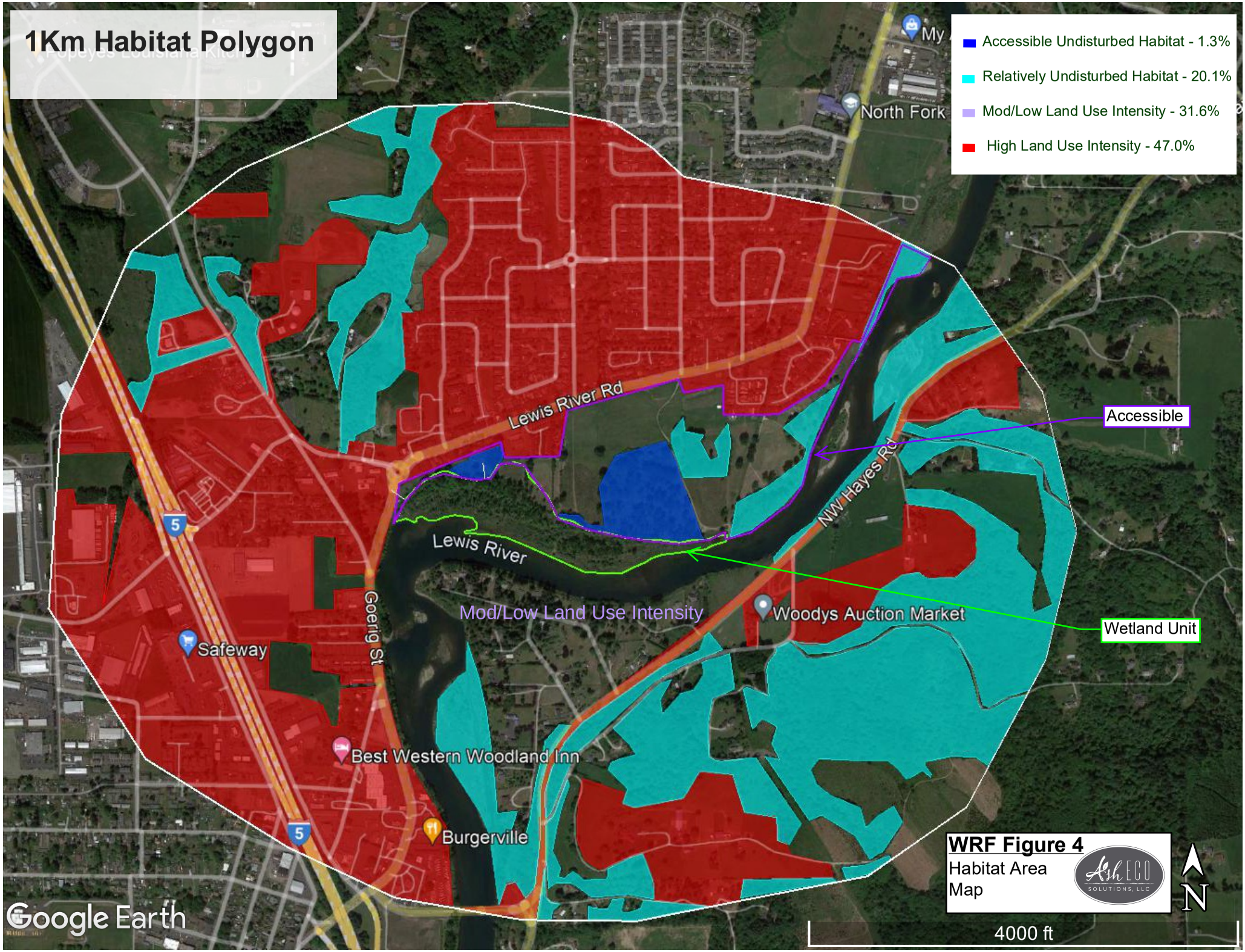
— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

✓ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

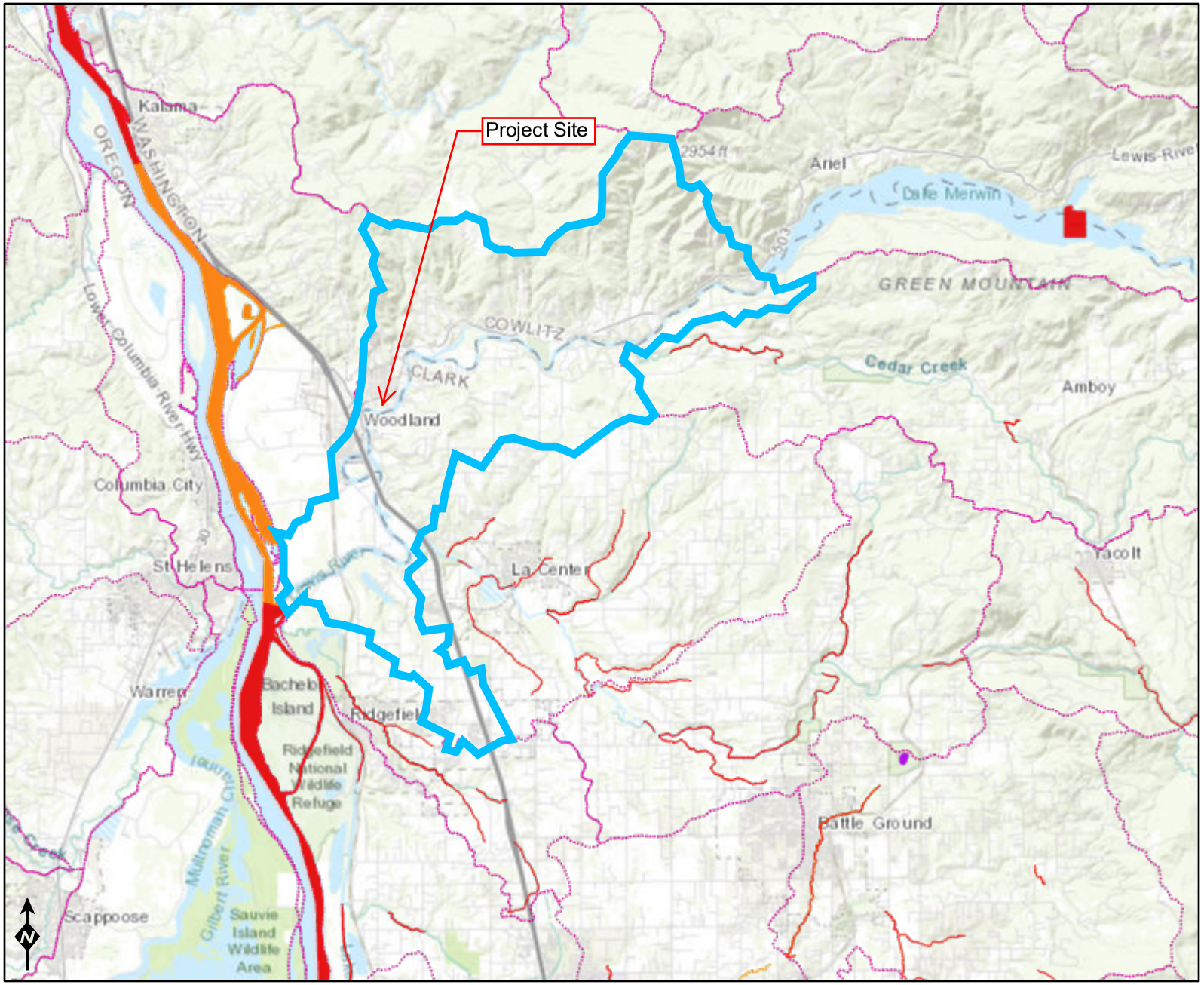

Cowardin Plant Classes
Legend
150 ft Boundary
Emergent Plant Class
Forested Plant Class
Lewis River
Scrub Shrub Plant Class
The Promise Church
Woodland First Baptist Church
150 ft Boundary
Wetland Unit
Lewis River
Tree and shrub plant cover make up more than 2/3 of the wetland area.
WRF Figure 1
Cowardin Plant Classes
Ash ECO SOLUTIONS, LLC
N
1000 ft
Google Earth


Hydroperiods
& Contributing Basin
Legend
Contributing Basin
Lewis River
Saturated Only
Seasonally Inundated
Occasionally Inundated
The Church of Jesus Christ of Latter...
Contributing Basin
Lewis River Fellowship
The Promise Church
Woodland First Baptist Church
Wetland Unit
Stormwater outfall
Lewis River
Ratio of wetland to stream bank: 360 ft (wetland) / 298 ft (stream) = 1.21
Surface depressions are present but cover <1/2 the area of the wetland
WRF Figure 2
Hydroperiods
N
1000 ft
Google Earth


1Km Habitat Polygon
Accessible Undisturbed Habitat - 1.3%
Relatively Undisturbed Habitat - 20.1%
Mod/Low Land Use Intensity - 31.6%
High Land Use Intensity - 47.0%
North Fork
Lewis River Rd
Accessible
NW Hayes Rd
Lewis River
Goerig St
Mod/Low Land Use Intensity
Woodys Auction Market
Wetland Unit
Safeway
Best Western Woodland Inn
Burgerville
5
5
Google Earth
WRF Figure 4
Habitat Area
Map
Ash ECO SOLUTIONS, LLC
N
4000 ft

August 24, 2022

303(d) Map



Assessed Water/Sediment

Water
- Category 5 - 303d
- Category 4C
- Category 4B
- Category 4A
- Category 2
- Category 1

Sediment
- Category 5 - 303d
- Category 4C
- Category 4B
- Category 4A
- Category 2
- Category 1

Subbasins (12 digit HUCs)
- HUC boundary

Miles
0 2 4 8

Esri, NASA, NGA, USGS
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri

WRF Figure 4
303(d) & TMDL

Ash ECO SOLUTIONS, LLC

DEPARTMENT OF ECOLOGY
State of Washington