



BEND, OR
2777 NW Lolo Drive, Suite 150
Bend, OR 97703
(541) 317-8429
www.aks-eng.com

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

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

VANCOUVER, WA
9600 NE 126th Avenue, Suite 2520
Vancouver, WA 98682
(360) 882-0419

Date: 5/23/2023
To: City of Gresham Planning Staff
From: Stacey Reed, PWS, Senior Wetland Scientist
Project Name: Veranda at Pleasant Valley Master Plan and Subdivision
AKS Job No.: 9804
Project Site: 7928 SE 190th Drive, Gresham, Multnomah County
Subject: [City of Gresham File Number SD/MIS 20-260000343 \(MPLAN 21-00652\)](#)
[ESRA-PV Mitigation Plan Technical Memorandum](#)

This memorandum has been prepared to provide technical documentation of how the project complies with the objectives outlined under Section 4.1430 of Pleasant Valley Environmentally Sensitive Areas (ESRA-PV) under the City's Development Code.

- *The project will protect and restore streams and riparian areas for their ecological functions and as an open-space amenity for the community.* This project will result in a total of ±12.82 acres of enhanced and protected ESRA-PV. The project exceeds the City's mitigation enhancement requirements. Enhancing activities includes removal of non-native invasive vegetation, followed by dense native tree and shrub plantings that will directly improve water quality functions in Kelley Creek. The ESRA-PV mitigation enhancement areas and Kelley Creek will be set aside and protected in open space tracts for the community to enjoy into perpetuity. The applicant updated the project layout to reduce tree removal and minimize ESRA-PV impacts as much as possible, which resulted in a reduction in the number of lots over previous submittals. The layout was revised to avoid exterior tree removal within the southeast corner.
- *Protect floodplains and wetlands and restore them for improved hydrology, flood protection, and habitat functions.* The project avoids impacts within Kelley Creek and its associated floodplain, maintaining flood and hydrologic functions. These resources will be protected in open space tracts. Approximately 9,200 native trees and over 10,000 native shrubs will be planted on-site within ESRA-PV to improve water temperature within Kelley Creek (by providing shade) during warmer months. Further, the native plantings will increase habitat functions within the Kelley Creek floodplain and wildlife corridor. The applicant will also install songbird nest boxes within ESRA-PV mitigation areas to promote native wildlife diversity.
- *Protect upland habitats and enhance connections between upland and riparian habitats and between Pleasant Valley habitats and nearby habitats of Powell and Clatsop Buttes.* The project will protect a minimum 100-foot-wide corridor along Kelley Creek. The existing condition of the on-site corridor is mainly dominated by invasive Himalayan blackberry, lacking a closed tree canopy necessary to provide shade to Kelley Creek. The enhancement activities associated with this project will improve the quality of habitat connection. This project will maintain the Kelley Creek wildlife riparian corridor and its connection to the Powell Butte habitats and will significantly enhance this wildlife corridor.

- *Maintain and enhance water quality and control erosion and sedimentation through the revegetation of disturbed sites by placing limits on construction, impervious surfaces, and pollutant discharges.* The project will maintain subsurface water movement, while protecting stream habitat. Stormwater from impervious surfaces will be collected, treated, and detained within stormwater facilities designed to meet the City of Gresham’s current stormwater management requirements, Oregon Department of Environmental Quality (DEQ) 401 Post-Construction water quality treatment standards, and NOAA Fisheries Standard Local Operating Procedures for Endangered Species (SLOPES) stormwater management requirements to ensure the project will not have an adverse effect on ESA-listed fish or their habitat. The outer edges of the stormwater facility on the Panza property will be densely planted with native woody vegetation to assist with water cooling within Kelley Creek.
- *Conserve scenic, recreational, and educational values of significant natural resources.* The Kelley Creek corridor will be preserved. Soft-surface trails along the outer perimeter of SW 44th Street will provide scenic and recreational public value. A soft-surface trail connection will be provided to connect to existing public trails on the northern side of Kelley Creek. Over 12 acres of ESRA-PV and Kelley Creek will be set aside in open space tracts for long-term protection.

Within the project area, Kelley Creek is not mapped by the Oregon Department of Fish and Wildlife (ODFW) as an Essential Salmonid Habitat (ESH) stream, nor is the reach located on the subdivision site mapped as having documented occurrences of Endangered Species Act (ESA)-listed salmon species (per ODFW’s online database; DSL, 2022). According to ODFW’s Fish Habitat Distribution and Barriers mapping (Figure 1), there is a non-passable barrier (concrete dam) to ESA-listed migratory fish (winter steelhead) located over ¼-mile downstream of the project site at 18124 SE Richey Road (ODFW, 2023). According to the National Marine Fisheries Service (NMFS) (Figure 2), ESA critical habitat for the Lower Columbia steelhead is mapped within Kelley Creek starting downstream of the subdivision site, downstream of SE 190th Drive (MFS, 2022). The project will not have an adverse impact on ESA-listed fish species or critical habitat. Through rigorous stormwater quality and quantity management requirements in accordance with NMFS Standard Local Operating Procedures for Endangered Species (SLOPES V) stormwater management standards and the City of Gresham stormwater management manual, the project will provide increased value to ESA-listed steelhead habitat (Stelle, 2014).

As documented by DSL’s Manual for Oregon Rapid Wetland Assessment Protocol V3.2 (ORWAP, a federal- and state-recognized protocol for assessing wetland functions; Adamus, 2020), wetlands on the site provide *lower* functional rating for water cooling compared with other wetlands cataloged in the state (see *DSL Concurred Wetlands* section below for details). Therefore, wetlands do not provide an *improvement* for 303(d) temperature attenuation within Kelley Creek during the warmer summer months. There are existing large in-channel ponds downstream of the project site (and downstream of the fish barrier dam) that have a significant negative effect on water temperature within the Johnson Creek watershed (Handaly, 2022). These features are documented in Gresham and Fairview’s National Pollutant Discharge Elimination System (NPDES) Annual Report 2022 Permit Year 27, November 2022 as features that contribute the most heat loading, affecting water temperatures necessary for an ESA species habitat in the Johnson Creek watershed. The Veranda Subdivision project will not influence the volume of flow within Kelley Creek. Groundwater will continue to reach Kelley Creek.

The project, if approved, will provide over 12 acres of enhanced and protected riparian habitat, which will provide a direct ecological improvement to water-quality cooling functions. Currently, the on-site riparian corridor is generally dominated by invasive Himalayan blackberry, lacking a contiguous closed tree canopy. Open water within on-site portions of Kelley Creek is visible on Google Earth aerial photographs, illustrating the need for enhanced riparian conditions. The on-site enhancement efforts proposed for this project will decrease direct sunlight to Kelley Creek.

This submittal includes ±8.26 acres of voluntary additional enhancement activities to provide an improvement to temperature within Kelley Creek during the warm summer months. All enhancement efforts will consist of removal of non-native invasive vegetation followed by densely planting areas immediately adjacent to Kelley Creek and the riparian corridor to establish a native closed canopy corridor adjacent to Kelley Creek. As documented in the City's November 2022 MS4 Discharge Permit 2022 Annual Report (Handaly, 2022), this additional voluntary enhancement will provide a direct water cooling shade benefit to Kelley Creek.

We request the City condition the unavoidable encroachment within wetlands concurred by Oregon Department of State Lands (DSL) to be permitted and mitigated in accordance with Oregon Administrative Rule (OAR) 141-085-0680 *Compensatory Mitigation Applicability and Principal Objective* standards. Per OAR 141-085-0690(1), off-site mitigation must be located within the 4th field Hydrologic Unit Code (HUC) of the impact site *or* within an approved service area of an approved mitigation bank. Mitigation bank services areas are approved through interagency coordination consisting of both state and federal agencies, including DSL, US Army Corps of Engineers (USACE), ODFW, US Fish and Wildlife Services (USFWS), and National Marine Fisheries Service (NMFS). Wetland mitigation for this project will consist of wetland restoration and/or creation within the Kelley Creek and Johnson Creek watersheds (as much as appropriate and available land) and will be designed to replace all functions lost at the impact site. Not only will the wetland mitigation be designed to replace functions lost, but mitigation sites generally provide improved functions over the impacted wetlands.

Wetland determination soil data collected at the site by AKS during February, March, and May 2023 site visits did not document a fragipan within 18-inches from the surface on the subdivision site. Due to vertical gradients, currently the majority of shallow subsurface groundwater generally travels from the subdivision site northwesterly, exiting the site through the roadside ditch along SE 190th Drive and releasing into Kelley Creek downstream of the project site, on the Panza property (Tax Lot 400 of Multnomah County Assessor's Map 1S3E20C). The preliminary stormwater management prescribed for the project will maintain the general groundwater flow patterns. A bypass line along the southern site boundary is planned to convey upslope seasonal shallow surface discharge to the existing outfall on the western side of SE 190th Drive. Vegetated stormwater planter boxes/swales are planned adjacent to streets within the subdivision. The open-bottom stormwater planter boxes function like rain gardens, capturing runoff and filtering sediment and pollutants prior to release back into the groundwater table. Seasonal shallow subsurface drainage will be managed during construction. Post-construction stormwater runoff will route into the stormwater facility located on the Panza property.

The following sections summarize how impacts within ESRA-PV will be mitigated in accordance with the Gresham Development Code, documentation how wetlands do not provide water cooling improvement to Kelley Creek and therefore should not be subject to Section 4.1400 of GDC, how wetland impacts will be mitigated in accordance with current federal and state mitigation standards (which require a minimum

1:1 impact-to-replacement-area ratio), and how the project will provide a net ecological lift on summer water temperatures in Kelley Creek over current site conditions.

Mapped ESRA-PV

According to the City mapping, Kelley Creek, the associated floodplain, and riparian areas are mapped as Environmentally Sensitive Resource Areas (ESRA) on the City's 2019 Pleasant Valley Land Use District ESRA-PV Map. The City's ESRA-PV subdistrict map also includes a locally significant forested area extending in the southeast corner of the site.

In addition to the above locally significant resources, the on-site portion of a drainage flowing northerly along the eastern site boundary was delineated by AKS during a March 23, 2023, site visit. This drainage meets the City's definition of a locally significant protected resource. According to Section 4.1439.B of GDC, a 50-foot disturbance setback from the edge of the delineated top-of-stream bank within ESRA-PV is required. A 50-foot setback was applied adjacent to the on-site portion of the eastern drainage. Portions of the on-site drainage and disturbance setback outside of the right-of-way will be protected in Tract D. The extent of ESRA on the subdivision site is shown on attached Figure 3.

DSL Concurred Wetlands

A wetland delineation was conducted on the project site in 2019 by Schott & Associates, LLC (Schott). Their study determined five palustrine emergent wetlands (referred to as Wetlands 1–5) totaling ±5.52 acres were present on the site. The 2019 delineation was concurred with by DSL under DSL File WD2019-0500. Wetlands delineated on the project site are regulated by DSL.

Wetlands delineated by Schott on the project site were not mapped as locally significant on the City's Pleasant Valley Plan District ESRA map. According to Section 4.1432.B of GDC, wetlands identified on a site that are not mapped and meet the State of Oregon's definition of a locally significant wetland shall also be subject to the standards of the ESRA-PV sub-district. Oregon's mandatory local significance criteria is outlined under Oregon Administrative Rule (OAR) 141-086-0350(2). According to the 1996 Oregon Freshwater Wetland Assessment Methodology (OFWAM), the protocol for assessing wetland conditions and functions under Goal 5 planning, Wetlands 1, 2, and 5 do not provide an *intact* water quality habitat, an *intact* hydrologic control functions, or *diverse* wildlife habitat (Attachment A).

According to OAR 141-086-0350(2)(b), if the wetland is located within one-fourth mile to a 303(d) listed waterbody and the wetland's water quality function is described as *intact* or *impacted* or *degraded*, the local government may determine that a wetland is not locally significant if the wetland does not provide water quality improvement for the specified parameter. The 2018/2020 Oregon DEQ Integrated Report for Clean Water Act 303(d) listing included the Upper Johnson Creek Assessment Unit (which includes Kelley Creek) as a Category 5 303(d) watershed for having impaired year-round temperature and temperature for spawning (DEQ, 2022).

According to AKS's analysis using ORWAP Version 3.2, Wetlands 1, 2, and 5 (wetlands that require impact for this project) scored *lower* to provide functional opportunity for water-cooling ecosystem support to Kelley Creek (Attachment B; complete excel spreadsheets available upon request). Per the DSL ORWAP manual, the water-cooling function is defined as "effectiveness of a wetland for maintain[ing] or reducing summertime water temperature, and in some cases, for moderating winter water temperature." Under Section 2.2 of the *Oregon Rapid Wetland Assessment Protocol User's Manual*, it is possible that different

users reviewing the same wetland can interpret some of the indicator questions differently. AKS' interpretation is based using specific site characteristics observed during December 2022, February 2023, March 2023, and May 2023 site visits (Adamus, 2020). Per the ORWAP user's manual, ORWAP results may not be accurately determinable during a single site visit, particularly if that site visit occurs outside of the early growing season. The manual acknowledges the accuracy of results are greater if wetland characteristics are assessed over multiple site visits. Therefore, the AKS ORWAP assessments provide a more accurate assessment of wetland functions over Pacific Habitat Service's (PHS) one day ORWAP assessment included in the City's March 22, 2023 Local Significance of Wetlands memorandum. Their notes indicate they conducted a site visit on February 2, 2023, which was conducted outside of the growing season.

As indicated in the ORWAP manual (page 18), the water cooling functional score is assessed by strong evidence of groundwater input, extent of surface water shaded by woody vegetation during the summer, and duration and depth of surface water. According to the University of Oregon's Oregon Explorer online mapping, there's no documented evidence of springs providing groundwater discharge from the project site (OSU, 2021). Only Wetland 1 has a seasonal surface water connection to Kelley Creek through a roadside ditch adjacent to SE 190th Drive. The discharge from Wetland 1 is temporary, with surface water discharging from the wetland for no more than two consecutive weeks, on average, during the early growing season. According to WETS historic data over the past 30 years documented at the Portland-Troutdale Airport National Weather Service station, the average growing season (50% probability for temperatures reaching 28 degrees and higher) is between February 17 and December 10 (NRCS, 2023). There is no evidence to support surface water discharges from Wetland 1 during the warm weather period (May through October), when temperatures within Kelley Creek require cooling benefit.

There is no objective evidence to support subsurface discharge from wetlands outside the wet season (i.e., during the warm weather period). Wetlands are not dominated by a vegetation species that require a sustained (year-round) hydrology source to survive (i.e. obligate wetland [OBL] or facultative wetland [FACW] vegetation) which would imply sustained surface hydrology is not present during the majority of the growing season. There is no documented evidence that wetlands provide groundwater discharges via the roadside ditch into Kelley Creek outside of the cool, wet season.

Vegetation within wetlands on the site do not provide shade. They are dominated mostly by non-native graminoids lacking woody vegetation. The graminoid cover is not dense, allowing for exposed bare ground during the summer months. Wetland 1, on average, only has surface water covering more than 100 square feet for less than four weeks during the early portion of the growing season, which, according to Appendix C of the ORWAP manual (narrative descriptions of the ORWAP scoring models), limits the opportunity for water cooling to benefit Kelley Creek. Wetlands 2 and 5 lack surface ponding all year during normal rainfall periods. Based on these site specific characteristics, wetlands on the project site do not contribute meaningful water cooling (temperature) improvement to Kelley Creek.

As discussed in the DSL Wetland Mitigation Section below, the applicant will mitigate wetland impacts within the Kelley Creek and Johnson Creek watersheds as much as attainable and appropriate land is available in accordance with state and federal mitigation requirements. Wetland mitigation will meet requirements outlined within OAR 141-085-0690(1). Oregon removal-fill guidelines require the replacement of lost functions through a detailed and thorough analysis and approved mitigation plan. The applicant will coordinate all mitigation efforts with DSL and the City prior to impacting wetlands on the

site to ensure that all wetland functions lost by the project will be replaced in the watershed, as much as possible. DSL will require monitoring, maintenance, and protection of the wetland mitigation areas with a deed restriction for protection into perpetuity. The applicant will secure any required City of Gresham Natural Resource Overlay (NRO) permits for wetland mitigation activities within a mapped Resource Area (RA) or Potential Resource Area (PRA).

ESRA-PV Project Impacts

The project requires unavoidable encroachment into ESRA-PV for the following Uses Allowed Under Prescribed Conditions (4.1437):

- Public Roads (4.1437.E)
- Public Trails and Pedestrian Bridge Crossing (4.1437.D)
- Removal of Existing Structures/ESRA-PV Restoration (4.1436)
- Stormwater Facility (4.1441.B)

The ESRA-PV impacts for the project are shown on Natural Resources Site Plan Figures 4 and 5.

Public Roads: The project requires unavoidable encroachment into the outermost edges of the ESRA-PV in the northern portion of the site for portions of SW 45th Street and SW 44th Street. Encroachment for the public roads meets the allowed use requirements listed under Section 4.1442 of GDC. The applicant revised the SW 45th Street and SE 190th Drive intersection alignment to minimize tree removal, including avoidance of larger-diameter fir trees and to minimize ESRA-PV impacts. This realignment resulted in the loss of residential lots. The applicant also revised the layout to avoid impacts to the drainage and 50-foot disturbance setback along the eastern site boundary. Required permits will be obtained from the USACE and DSL for wetland impacts associated with public roads.

Public Trails/Pedestrian Bridge Crossing: The project requires a soft-surface trail connection to the existing Kelley Creek Trail located to the north of the site. The soft-surface trail exceeds 20 percent grade within ESRA-PV and is therefore not considered exempt (Section 4.1436). The trail is required for connection to the existing Kelley Creek Trail located to the north of the site. The trail alignment was designed to avoid tree removal and cross Kelley Creek at the narrowest location. This trail system is mapped on the City's 2009 Gresham Parks and Recreation, Trails, and Natural Areas Master Plan. Encroachment within ESRA-PV for the trail will be compensated for on-site in accordance with Section 4.1445. A pedestrian bridge will span Kelley Creek and the floodplain to avoid impact to hydrologic characteristics.

Voluntary Removal of Existing Structures: An old home, shop, barn, and gravel driveway are located within ESRA-PV adjacent to Kelley Creek. According to a review of historic aerials, these structures have been present as early as 1939. Historic land use on the site consisted of an agricultural dairy farm, undergoing years of agricultural manipulation. This project will remove these structures from within the riparian area and restore these currently degraded areas with native trees and shrubs, providing a net functional water quality benefit to Kelley Creek. We request the City allow the removal of the structures and impervious surfaces and restoration within ESRA-PV be considered an allowed use outright exempt per Section 4.1436.A.

Stormwater Facility: Post-construction stormwater for the site will be routed to a new stormwater facility on the "Panza property." The stormwater facility will be located adjacent to an existing stormwater facility with ESRA-PV above Kelley Creek. The stormwater facility will not require fill or excavation below the

ordinary high water (OHW) of Kelley Creek or within the floodplain. The applicant will secure a DSL-approved wetland delineation concurrence for the Panza property to confirm the outfall will not be located within wetlands or below OHW of Kelley Creek. The stormwater facility and outfall will be designed to avoid removal of native trees as much as possible. Due to topographic constraints, there was no opportunity to locate the facility outside of ESRA-PV, as ESRA is mapped throughout the majority of the Panza property. The facility was sized to meet City of Gresham, DEQ 401 Water Quality Standards, and NOAA SLOPES V water quality treatment and detention standards. Enhancement of remaining on-site ESRA-PV on the Panza property at a 2:1 enhancement-to-impact-area ratio will compensate for the encroachment into terrestrial ESRA-PV habitat for the stormwater facility.

ESRA-PV Mitigation Plan

Mitigation for the allowed ESRA-PV impacts will be mitigated on-site in accordance with requirements listed under Section 4.1445 of GDC. Mitigation will consist of enhancement at a 2:1 area ratio within remaining on-site ESRA-PV per Section 4.1445.B of GDC. Enhancement mitigation is proposed in accordance with Option 2 of Section 4.1445.F and consists of the improvement to existing on-site ecological functions that have *low* function due to historic land uses. The location of the mitigation enhancement areas is shown on attached Figures 4 and 5, in areas closest to Kelley Creek. Mitigation for encroachment for the off-site stormwater facility will occur on the impact site. Mitigation for the encroachment of the subdivision will occur on the subdivision site. Proposed enhancement will provide a significant improvement to the existing ecological functions associated with Kelley Creek, including providing a direct improvement to water-cooling functions in Kelley Creek. As documented in the City's November 2022 Stormwater Program Annual Report, the City promotes efforts to increase shade along streams to help reduce stream temperatures during the summer months (Handaly, 2022).

Mitigation Planting Area Baseline Conditions

The existing condition of the riparian enhancement mitigation area can be considered *low-functioning* habitat quality per the definition of *ecological functions* under Section 3.0130 of GDC. The understory is mostly dominated by Himalayan blackberry (considered invasive by City of Gresham) and non-native grasses such as creeping wild rye (*Elymus repens*; FAC), tall false rye grass (FAC), bentgrass (*Agrostis* species; assumed FAC), common velvetgrass (*Holcus lanatus*; FAC), and large sweet vernal grass (*Anthoxanthum odoratum*; FACU). The riparian enhancement area generally lacks a continuous tree canopy cover required to provide water cooling to Kelley Creek, which will improve the water quality standards. Wetland enhancement areas lack woody vegetation.

According to a review of USACE historic aerial images, trees within the on-site riparian area were removed as early as 1939, reportedly associated with a former dairy farm operated by the Bliss family. The invasive vegetation aerial cover in the enhancement areas was recorded ranging from 75 to 90 percent, which supports the *low-functioning* ESRA-PV habitat in the enhancement areas.

Mitigation Goals and Objectives

Ecological functions and values will be enhanced through the removal of all invasive vegetation species in accordance with Section 4.1445.D of GDC, followed by densely planting native woody species at the City's required rates to improve ecological functions for upland wildlife habitat and water quality benefit to Kelley Creek in accordance with the definition of *Enhancement* per Section 3.0130 of GDC.

Enhancement Mitigation Planting Plan

The Veranda at Pleasant Valley ESRA-PV Planting Specifications Tables (Attachment C) includes plant quantities and species for the enhancement mitigation area in compliance with standards prescribed under Mitigation Option 2 of Section 4.1445.F.1.b, calculated at a rate of 820 trees and shrubs per acre based on the size of mitigation area required. The size of the plantings will be at least 12 inches in height and range from live cuttings to bare root stock to container, depending on availability from local nurseries and planting season per requirements outlined under Section 4.1445.F.2.b of GDC. In accordance with Section 4.1445.F.3.b, plants will not be planted in a linear fashion nor within the dripline of existing trees and planted at average intervals of 7 feet on-center. Shrubs may be clustered in single-species groups of no more than four plants, with clusters planted on average between 8 and 10 feet on-center per Section 4.1445.F.3.b. Shrubs will consist of more than two different species, and no more than half of the trees will be of the same genus per Section 4.1445.F.4.

The recommended plant species were selected from Table 4.1445(B) of Section 4.1445.F.5 of GDC and informed by existing native plant communities on-site and adjacent to the site. The enhancement planting areas are located mostly within Powell Natural Resources Conservation Service (NRCS) mapped soil units. Therefore, recommended plant communities consisting of plants within the *Moist Riparian* vegetation community per Table 4.1445(B) of GDC. Bare ground will be planted or seeded with native grasses and herbs. All plant species recommended are listed on the City of Gresham's Native Plant List and on Gresham Native Plant Guide Table 4.1445(B).

Mitigation Performance Standards

Under Mitigation Option 2 of Section 4.1445.G.1.b, there will be survival of a minimum of 500 trees and 650 shrubs per mitigation acre remaining alive on the fifth anniversary of the date that the mitigation planting was completed.

Mitigation Monitoring and Maintenance

Monitoring reports will be submitted annually to the City of Gresham for a minimum of five years, documenting the survival of the trees and shrubs planted in the mitigation enhancement area per Section 4.1445.G of GDC. Permanent photo point locations will be established, and photographs will be taken at these locations to document the Year 1 through Year 5 site conditions per Section 4.1445.G of GDC. Maintenance needs informed by the annual site visits will be performed in accordance with the requirements and recommendations listed in Sections 4.1445.H through 4.1445.J of GDC to meet the mitigation performance standards and improve the ecological functions of the ESRA-PV.

Financial Guarantee

The City will require a financial guarantee (in the form of an instrument approved by the City) prior to impacts within the ESRA-PV. The financial guarantee shall be in the amount adequate to cover the cost of performing the mitigation, which shall be released at the end of the five-year monitoring period, provided the trees and shrubs planted meet the performance standards.

Long-Term Stewardship and Protection

The ESRA-PV mitigation enhancement areas and all remaining undisturbed ESRA-PV will be preserved in separate tracts with a deed restriction. The mitigation tracts will be owned and maintained by a homeowners' association (HOA) or other similar entity. An easement allowing access to the mitigation site for monitoring and maintenance will be provided.

DSL Wetland Mitigation

Wetland impacts required for the project will be mitigated in accordance with state and federal regulations, which require mitigation that compensates for functions lost at the impact. Upon approval of this land use application, and prior to any impacts to on-site wetlands, the applicant will submit a joint removal-fill permit application (JPA) to DSL and USACE. The permit application will include a wetland mitigation plan that meets state and federal standards as well as functional replacement area requirements. The permit application and wetland mitigation plan will be provided to the City for review.

There are no practical opportunities to avoid the wetland. Wetland and associated disturbance setback encroachments are necessary to provide access at the SW 45th Street intersection due to sight distance requirements listed in the traffic study. Grading necessary to construct a well-connected, safe transportation network that meets City requirements will require encroachment within a majority of wetlands on the site. Any remaining non-impacted wetlands would be small and fragmented. Wetland conditions would not likely sustain post-construction if avoided.

Voluntary Water Quality Improvement Enhancement

To ensure water cooling benefit is provided to Kelley Creek as a result of the development, the applicant has agreed to conduct +/-8.26 acres of additional voluntary enhancement within remaining on-site ESRA-PV. The voluntary enhancement will adhere to the same vegetative mitigation standards outlined in the ESRA-PV Mitigation Plan Section above, consisting of removal of non-native invasive vegetation followed by densely planting native trees and shrubs, protection within a tract, and monitoring and maintenance to ensure enhancement success. The recommended planting plan is included in Attachment C. Portions of the enhancement areas closest to Kelley Creek (+/-1.55 acres) will be conducted using native species listed under the *Floodplain and Wetlands* vegetation community on Table 4.1445(B) within Wapato NRCS soil unit.

List of Figures:

- Figure 1 Oregon Fish Habitat Distribution and Barriers
- Figure 2 NMFS ESA Critical Habitat Mapper
- Figure 3 Natural Resources Existing Conditions
- Figure 4 Natural Resource Site Plan Subdivision Site and Mitigation Plan
- Figure 5 Natural Resource Panza Property Site Plan and Mitigation Plan
- Figure 6. Natural Resource Site Plan and Mitigation Plan

List of Attachments:

- Attachment A OFWAM Score Sheets
- Attachment B ORWAP Wetlands 1, 2, and 5 Score Summary Sheets (Excel data sheets available upon request)
- Attachment C Veranda at Pleasant Valley ESRA-PV Enhancement Planting Specifications Tables



Literature Cited and Referenced

- Adamus, Paul, and Kathy Verble. 2020. *Manual for the Oregon Rapid Wetland Assessment Protocol (ORWAP), Version 3.2*. Salem (OR): Oregon Department of State Lands.
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Oregon Fish Habitat Distribution & Barriers Figure 1



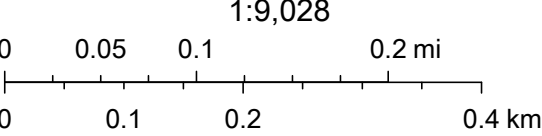
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Fish Passage Barriers by Type

- Culvert
- ◻ Dam
- ⊕ Tide gate
- ◇ Bridge
- ▬ Ford - road stream crossing
- ▲ Weir / sill

- Other (Ford, Weir, Debris Jam, Unknown)
- ◻ Unknown
- Cascades / gradient / velocity
- Natural waterfalls
- Winter Steelhead
- Historical
- Migration

- Rearing
- Spawning
- Unknown
- Coho
- Historical
- Migration
- Rearing
- ODFW Fish Biologist Districts



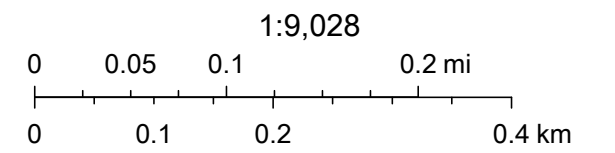
State of Oregon, State of Oregon GEO, Esri, HERE, Garmin, iPC, ODFW, ODFW and multiple contributing state and federal agencies, ODFW, numerous state and federal natural resource agencies including tribes have contributed to the development of these data,

NMFS ESA Critical Habitat Mapper Figure 2

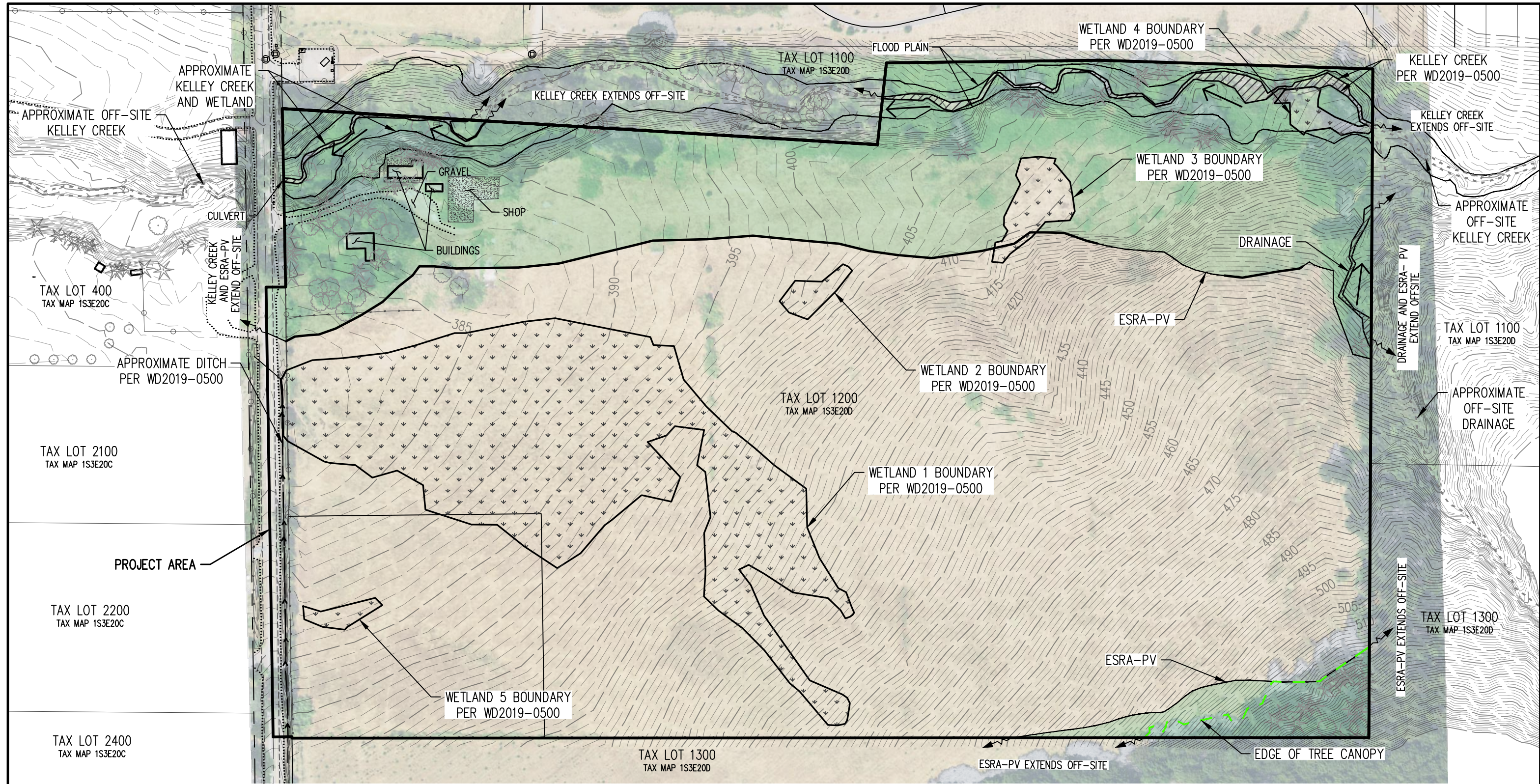


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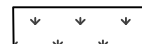


— All_critical_habitat_line_20220404



NOAA National Marine Fisheries Service, Maxar



LEGEND (COLOR COPY):

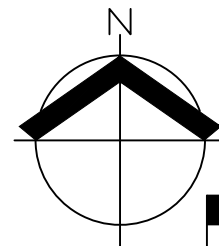
-  ON-SITE PEM/SLOPE WETLAND AREA: 240,252 SF± (5.52 ACRES)
- WETLAND 1 AREA: 216,297 SF± (4.97 ACRES)
- WETLAND 2 AREA: 4,343 SF± (0.10 ACRES)
- WETLAND 3 AREA: 11,354 SF± (0.26 ACRES)
- WETLAND 4 AREA: 5,035 SF± (0.12 ACRES)
- WETLAND 5 AREA: 3,223 SF± (0.07 ACRES)
-  ON-SITE KELLEY CREEK: 8,712 SF± (0.20 ACRES)
- ON-SITE DRAINAGE: 1,688 SF± (0.04 ACRES)
-  TOTAL ON-SITE ENVIRONMENTALLY SENSITIVE RESOURCE AREA PLEASANT VALLEY DISTRICT (ESRA-PV): 467,898 SF± (10.74 ACRES)

OHWM OF DRAINAGE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON DECEMBER 10, 2022 AND LOCATED USING A TRIMBLE GEO 7X HANDHELD GPS RECEIVER WITH SUB-METER ACCURACY. KELLEY CREEK OHWM AND WETLAND BOUNDARIES SHOWN WERE DELINEATED BY SCHOTT & ASSOCIATES PER DSL FILE NUMBER WD2019-0500.

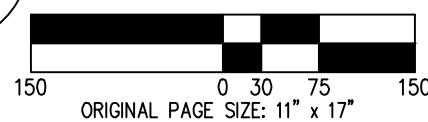
1-FOOT INTERVAL GROUND CONTOURS AND ALL DATA SHOWN ARE PER A SURVEY CONDUCTED BY ALL COUNTY SURVEYORS & PLANNERS, INC.

*EDGE OF TREE CANOPY DIGITIZED USING GOOGLE EARTH IMAGERY (JULY 2022)

AERIAL DERIVED FROM GIS DATABASE (2018)



SCALE: 1" = 150 FEET



DATE: 04/10/2023

NATURAL RESOURCES EXISTING CONDITIONS

VERANDA AT PLEASANT VALLEY NATURAL RESOURCE ASSESSMENT

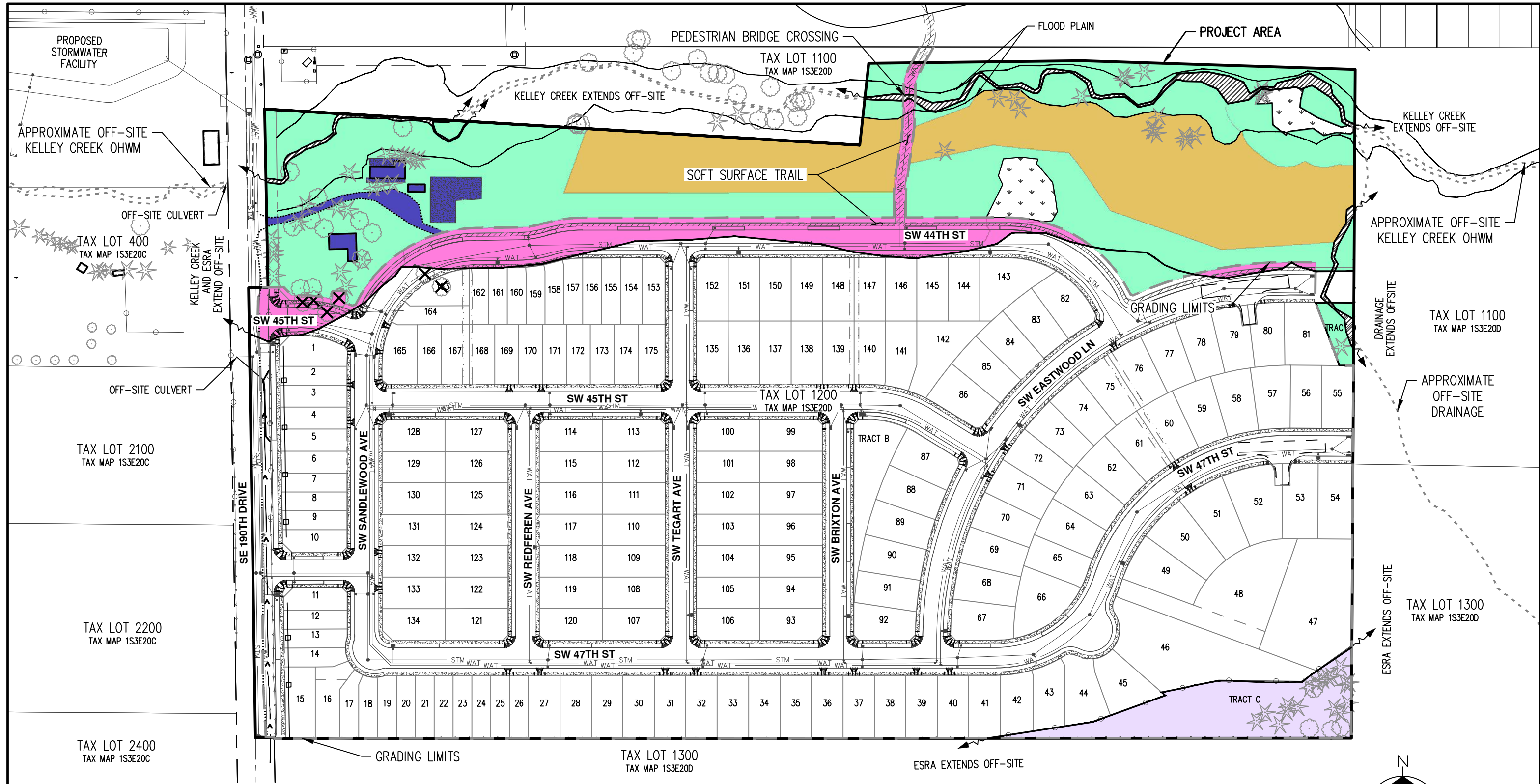
AKS ENGINEERING & FORESTRY, LLC
 12965 SW HERMAN RD, STE 100
 TUALATIN, OR 97062
 503.563.6151 WWW.AKS-ENG.COM



FIGURE

3

DRWN: RAS
 CHKD: SKT
 AKS JOB:
9804

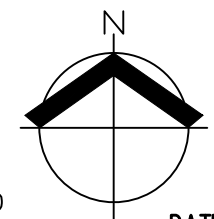
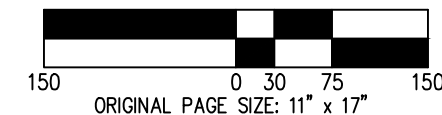


LEGEND (COLOR COPY):

- ESRA-PV RIPARIAN BUFFER IMPACT AREA: 67,021 SF± (1.54 ACRES)
- ESRA-PV RIPARIAN BUFFER ENHANCEMENT MITIGATION AREA TO (2:1 RATIO): 134,042 SF± (3.08 ACRES)
- ESRA-PV EXISTING STRUCTURES AND IMPERVIOUS AREA TO BE RESTORED AND PLANTED WITH NATIVE VEGETATION: 13,018 SF± (0.30 ACRES)
- ESRA-PV RIPARIAN BUFFER TO REMAIN: 35,789 SF± (0.82 ACRES)
- VOLUNTARY WATER QUALITY ENHANCEMENT AREA: 221,447 SF± (5.08 ACRES)

OHWM OF DRAINAGE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON DECEMBER 10, 2022 AND LOCATED USING A TRIMBLE GEO 7X HANDHELD GPS RECEIVER WITH SUB-METER ACCURACY KELLEY CREEK OHWM AND WETLAND BOUNDARIES SHOWN WERE DELINEATED BY SCHOTT & ASSOCIATES PER DSL FILE NUMBER WD2019-0500.

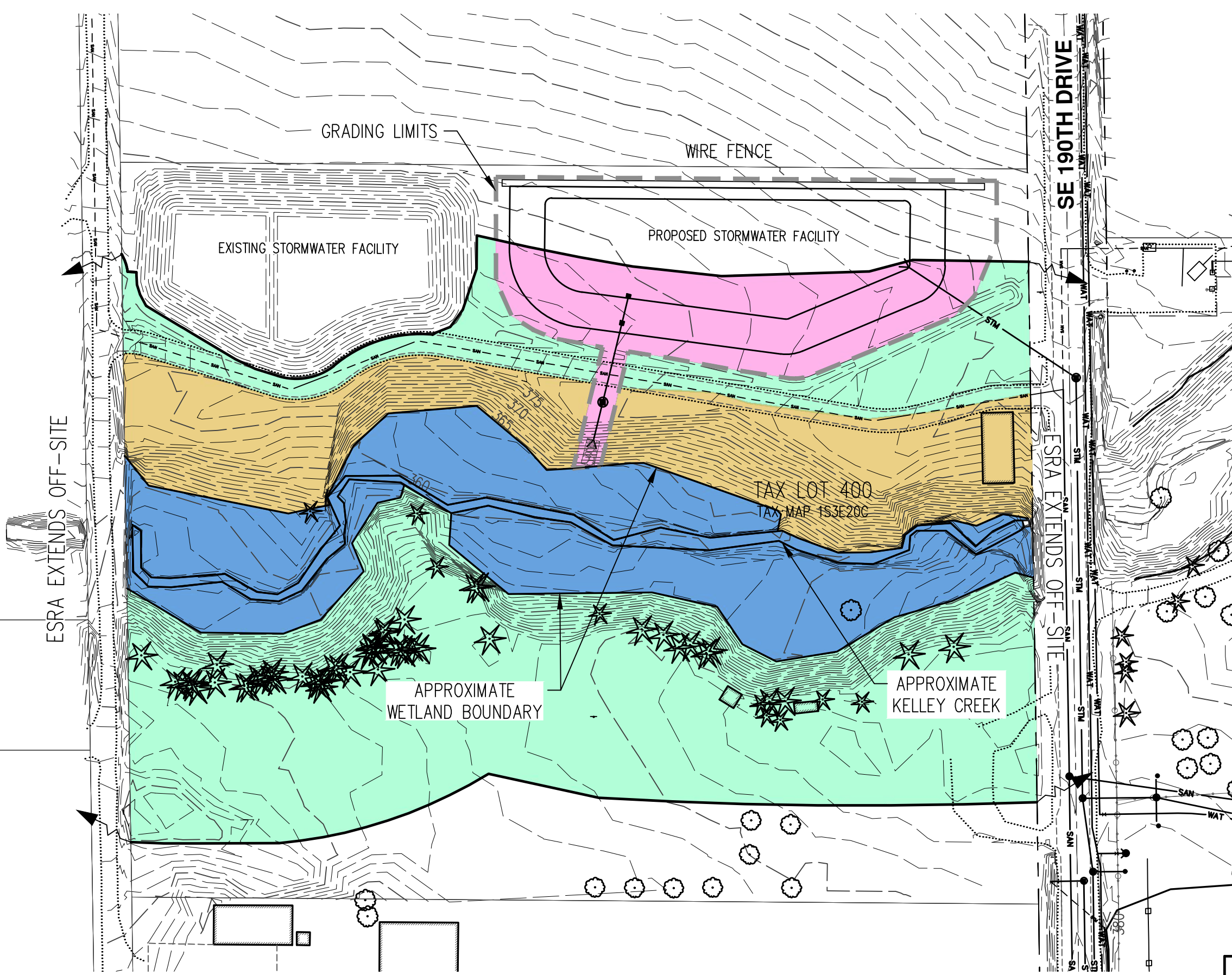
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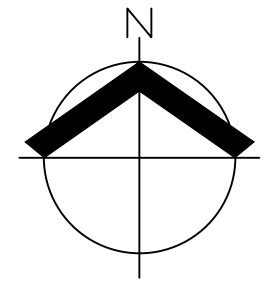
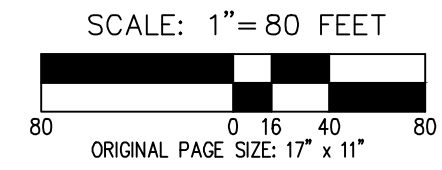
DATE: 05/16/2023

NATURAL RESOURCES SITE PLAN AND MITIGATION PLAN	FIGURE 4
VERANDA AT PLEASANT VALLEY	
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM	
DRWN: RAS CHKD: SKT AKS JOB: 9804	9804

DWG: 9804 ESRA SITE PLAN-OFFSITE | FIGURE 5



- LEGEND (COLOR COPY):**
- APPROXIMATE ESRA-PV WETLAND AND KELLEY CREEK AREA TO REMAIN: 60,575 SF± (1.39 ACRES)
 - ESRA-PV RIPARIAN BUFFER IMPACT AREA: 25,648 SF± (0.59 ACRES)
 - ESRA-PV RIPARIAN ENHANCEMENT MITIGATION AREA (2:1 RATIO): 51,401 SF± (1.18 ACRES)
 - VOLUNTARY WATER QUALITY ENHANCEMENT AREA: 138,515 SF± (3.18 ACRES)



DATE: 04/18/2023

NATURAL RESOURCES PANZA PROPERTY SITE PLAN AND MITIGATION PLAN	FIGURE
VERANDA AT PLEASANT VALLEY	5
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM	DRWN: RAS CHKD: SKT AKS JOB: 9804





Attachment A: OFWAM Data Sheets



Wildlife habitat

Wetlands 1, 2, and 5

Wetlands provide habitat for many wildlife species. A single wetland often cannot satisfy all requirements for wildlife use, so its proximity to other bodies of water or upland areas is important. Buffers and corridors are also essential for this reason, and they reduce human disturbance as well. Many species also have special habitat requirements: Good water quality is necessary for amphibians and mammals; structural diversity is important for birds; and a combination of open water and grazing areas is important for waterfowl.

For this assessment, **urban wetlands are those within urban growth boundaries or urban or rural service areas.** Because of the impacts of human activities, urban wetlands may not satisfy as many habitat requirements as wetlands in undeveloped areas. This should not be interpreted to mean that urban wetlands have limited value for all wildlife. The importance of an urban wetland may be increased because of its location and surroundings.

Assessment questions

Question 1

How many Cowardin wetland classes are present?

Directions

See question 21 in the Wetland Characterization. Count only those Cowardin classes for which you answered “a,” “b” or “c.” For urban areas, also consider the mix of species (Question 22 in the Wetland Characterization.)

Rural areas:

- Three or four.
- Two.
- One.

Urban areas:

- Two or more.
- One class with more than five plant species.
- One class with five or fewer plant species.

Rationale

In Northwest wetlands, vegetation is the most important component of wildlife habitat. It is widely recognized that plant community diversity increases animal community diversity. The existence of two Cowardin classes adjacent to each other may also improve wildlife habitat value because some wetland wildlife species use the edge between plant communities. (“Edge” describes the border between vegetation types or between a vegetation type and open water.)

Structural diversity is also important. If several layers of vegetation are present, more diverse habitat types are provided. (Different birds nest in different layers.) In addition, the number of layers affects the amount of natural debris, which is necessary for amphibians and other wildlife.

Notes

Question 2

What is the dominant wetland vegetation cover type?

- a. Woody vegetation.
- b. Emergent vegetation and ponding, or open water only.
- c. Emergent vegetation or wet meadow.

Directions

See question 23 in the Wetland Characterization.

Rationale

Wooded and shrub wetlands provide habitat for the largest overall species assemblages. Emergent wetlands associated with open water are also an essential habitat for a large number of wetland species, particularly waterfowl, amphibians and wading birds. Emergent wetlands without open water provide habitat for wetland species to a lesser degree.

Question 3

What is the degree of Cowardin class interspersion for the wetland being observed?

- a. High.
- b. Moderate.
- c. Low.

Directions

See question 24 in the Wetland Characterization.

Rationale

Interspersion occurs when two or more wetland types or upland inclusions create a mosaic or pattern. In a wetland composed of approximately concentric bands of vegetation, such as cattails ringed by shrubs, interspersion is low. At the opposite extreme, small patches of shrubs scattered throughout an emergent marsh represent a high degree of interspersion.

When two or more vegetation types are highly interspersed, a great deal of edge is created. Edge is important because many wildlife species are edge dwellers. Generally, the greater the edge, the greater the diversity of wildlife.

Notes

Question 4

If the wetland contains unvegetated open water, how many acres of unvegetated open water are present?

Directions

See question 28 in the Wetland Characterization.

Rural areas:

- More than 3 acres .
- Between 0.5 and 3 acres.
- Less than 0.5 acres.

Urban areas:

- More than 1 acre.
- Between 0.5 and 1 acre.
- Less than 0.5 acres.

Rationale

Open water is essential to a number of wetland wildlife species, including waterfowl, wading birds, amphibians and some reptiles.

Question 5

How is the wetland connected to another body of water, such as a stream, lake or pond?

Directions

See question 18 in the Wetland Characterization.

- The wetland is connected by surface water to another body of water.
- No surface water connection exists to another body of water, but other bodies of water lie within 1 mile of the wetland.
- No surface-water connection exists to another body of water, and no other bodies of water lie within 1 mile of the wetland.

Rationale

Wetland wildlife species will often use surface water to travel between a wetland and deep water. Also, water must be available during critical phases for the wildlife that use it. Water available during the nesting season is more valuable to wildlife than water available only during the winter.

Notes

Wetland 1

Wetlands 2 and 5

Question 6 (for Western OR only)

How is the wetland connected to other wetlands?

Directions

See question 27 in the Wetland Characterization.

- a. Connected to other wetlands within a 3-mile radius by a perennial or intermittent stream, irrigation or drainage ditch, culvert, canal or lake.
- b. Not connected by surface waters, but other unconnected wetlands lie within a 3-mile radius.
- c. Not connected to other wetlands by surface waters, and no other unconnected wetlands lie within a 3-mile radius.

Rationale

Proximity to other wetlands increases a wetland's utility as habitat. Nearby wetlands sometimes contain features absent from the assessment wetland. For example, birds such as the great blue heron may roost near one wetland but travel to another to fish if the wetland where they roost doesn't have an ample supply of fish.

This criterion applies only in western Oregon. Because of the dry climate in eastern Oregon, isolated wetlands provide important habitat to both local and migratory species.

Question 7

What is the water quality condition of stream reaches in the watershed upstream of the wetland or adjacent to the wetland?

Directions

See questions 7 and 8 in the Wetland Characterization. If both "a" and "b" apply, choose "a."

- a. No upstream or adjacent reaches are listed as *water quality limited*, and all upstream or adjacent reaches are listed as *no problem* (or no data available) for nonpoint source pollutants.
- b. One or more upstream or adjacent reaches are listed in *moderate* water quality condition for nonpoint source pollutants.
- c. One or more upstream or adjacent reaches are listed as *water quality limited* or in *severe* water quality condition for nonpoint source pollutants.

Rationale

Poor water quality can harm many terrestrial and aquatic species. The character of a wetland ecosystem can change when exposed to nutrients and other chemicals beyond tolerable limits. Excess nutrients, for example, can cause oxygen deficiencies, which in turn can cause a change in the species composition of both plant and animal communities. Studies in Washington and elsewhere have indicated that amphibians are especially sensitive to water quality.

Question 8

What is the dominant existing land use within 500 feet of the wetland's edge?

- a. Exclusive Forest Use or Open Space.
- b. Agriculture.
- c. Developed uses.

Directions

See question 15 in the Wetland Characterization. If the responses you gave to question 15 in the Characterization indicate that two or more land-use categories are equally dominant, pick the one that will yield the lowest letter response for this question. (Example: In question 15 of the Wetland Characterization, you responded "b. Between 20% and 50%" to both *Exclusive Forest Use lands* and *developed uses*, and the remainder of your responses to question 15 were "a. Less than 20%." For this Wildlife Habitat question, you would respond "a. Exclusive Forest Use or Open Space.")

Rationale

Wildlife habitat generally deteriorates as land use changes from forested land to agricultural land to urban land. Certain game species, such as deer and some waterfowl, may benefit from land clearing. However, the majority of wildlife species are affected adversely when the land is developed because of fencing, lighting and loss of habitat.

Notes

Notes

Question 9a

For **rural areas**: What percentage of the wetland's edge is bordered by upland wildlife habitat that is at least 150 feet wide?

- a. Greater than 40%.
- b. Between 10% and 40%.
- c. Less than 10%.

Question 9b

For **urban areas**: What percent of the wetland's edge is bordered by a vegetative buffer at least 25 feet wide?

- a. Greater than 40%.
- b. Between 10 and 40%.
- c. Less than 10%.

Directions

For rural areas, see question 25 in the Wetland Characterization. For urban areas, see question 26 in the Wetland Characterization.

Rationale

A buffer zone, an uncut or undisturbed area of vegetation providing wildlife cover, increases a wetland's wildlife habitat potential. It provides habitat for both upland animals and wetland dependent species that require upland habitat for parts of their life cycle. A buffer zone also decreases the impacts of disturbance on the wetland. This is particularly important for nesting birds, which may be disturbed by people and household pets.

Well-vegetated buffer areas and corridors are particularly significant in urban areas because of their beneficial effect on water quality as well as their value for wildlife.

Wildlife habitat: assessment criteria

The wetland provides diverse wildlife habitat if:	At least four questions are answered "a," and no more than one is answered "c."
The wetland provides habitat for some wildlife species if:	Answers do not satisfy the above- or below-listed criteria.
The wetland's wildlife habitat function is lost or not present if:	All questions are answered "c."



Water quality (pollutant removal)

Sediment trapping

During periods of heavy rainfall, water runoff may cause erosion and increase solids suspended in receiving surface waters. The excess sediment entering water systems can damage aquatic ecosystems. For example, sediment accumulation in stream bottoms can smother spawning areas and kill aquatic insect larvae. It can also reduce the storage capacity of downstream water supply reservoirs.

Wetlands perform an important function by trapping sediment from waters that pass through them. As water flows through wetlands, it is slowed by vegetation, and sediment settles to the bottom before the water moves farther downstream. As much as 90% of the solids suspended in the water may be removed as the water moves through wetlands, resulting in cleaner water entering streams, rivers, lakes and estuaries.

Nutrient attenuation

Nitrogen and phosphorus are the two nutrients most often associated with water pollution. They are also main ingredients of fertilizers used on agricultural fields and lawns, and both are found in high concentrations in discharges from sewage treatment plants and livestock operations. Excessive amounts of nitrogen and phosphorus in lakes and slow-moving streams can cause algal blooms and subsequent oxygen deficiencies, which may kill fish and reduce water quality. The processes that occur as a result of excess nutrients are lumped together under the term "eutrophication." Within limits, wetlands can reduce nutrient levels so that the effects of eutrophication on downstream areas are prevented or reduced. This index considers only point and non-point pollutant sources that are due to land uses in the watershed.

Assessment questions

Question 1

What is the wetland's primary source of water?

Directions

See question 36 in the Wetland Characterization.

- a. Surface flow, including streams and ditches.
- b. Precipitation or sheet flow.**
- c. Groundwater, including seeps and springs.

Rationale

Wetlands bordering a perennial or intermittent stream or lake are areas into which floodwaters spread during periods of high runoff, enabling the wetlands to remove pollutants.

Notes

Question 2

Is there evidence of flooding or ponding during a portion of the growing season?

- a. Yes.
- b. Unable to determine or not applicable.
- c. No

Directions

See question 37 in the Wetland Characterization.

Rationale

Water level fluctuation in the wetland indicates the ability to retain water. Impounded or standing water acts as a sediment trap because it greatly slows the flow of the incoming water, allowing suspended solids to settle out. Additionally, the slower velocity increases the contact time of the water with vegetation, resulting in uptake of nutrients by the vegetation. These actions function to reduce pollutant loads.

Question 3

What is the degree of wetland vegetation cover?

- a. High (greater than 60%).
- b. Moderate (approximately 60%).
- c. Low (less than 60%)

Directions

See question 21 in the Wetland Characterization. Add the lower end of the ranges for forest, scrub-shrub and emergent vegetation to get the result. If the result is 60% or more, answer "high." If the result is 60%, answer "moderate." Answer "low" for other results.

Rationale

The more dense the vegetation, the greater the wetland's ability to take up nutrients. A dense stand of persistent emergent plants (such as cattail and rush) along with floating and submerged aquatics would tend to provide maximum nutrient uptake during the growing season. Wooded and scrub-shrub wetlands remove nutrients mainly through settling of suspended solids in runoff and flood waters.

Question 4

What is the wetland's area in acres?

Directions

See questions 17 and 27 in the Wetland Characterization.

- a. More than 5 acres.
- b. Between 0.5 acres and 5 acres; or wetland area is less than 0.5 acres, and the wetland is connected to other wetlands within a 3-mile radius by a perennial or intermittent stream, irrigation or drainage ditch, canal or lake.
- c. Less than 0.5 acres, and the wetland is not connected to other wetlands within a 3-mile radius by a perennial or intermittent stream, irrigation or drainage ditch, canal or lake.

Notes

Wetland 1

Wetlands 2 and 5

Rationale

The larger the wetland, the greater its capacity and ability to filter pollutants. Small wetlands connected by surface water act as a series of filters and thus function similarly to a larger wetland.

Question 5

What is the dominant, existing land use within 500 feet of the wetland's edge?

Directions

Refer to the directions for question 8 of the wildlife habitat assessment questions.

- a. Developed uses.
- b. Agriculture
- c. Exclusive Forest Use or Open Space.

Rationale

Urbanized areas have more impervious surface areas and concentrate pollution sources. Wetlands in urban areas are important for filtering the runoff water before it enters a stream.

Question 6

What is the water quality condition of stream reaches in the watershed upstream of the wetland or adjacent to the wetland?

Directions

See questions 7 and 8 in the Wetland Characterization. If both “a” and “b” apply, choose “a.”

- a. One or more upstream or adjacent reaches are listed as *water quality limited* or in *severe* water quality condition for nonpoint source pollutants.
- b. One or more upstream or adjacent reaches are listed in *moderate* water quality condition for nonpoint source pollutants.
- c. No upstream or adjacent reaches are listed as *water quality limited*, and all upstream or adjacent reaches are listed as *no problem* (or no data available) for nonpoint source pollutants.

Notes

Rationale

A watershed with upstream pollutant loading sources needs wetlands to reduce pollutant levels in water before it is delivered downstream.

Water quality: assessment criteria

A wetland’s water-quality function is intact if:

Question 1 is answered “a” or “b,” questions 2 and 3 are answered “a,” and any other question is answered “a” or “b.”

A wetland’s water-quality function is impacted or degraded if:

Answers do not satisfy the above- or below-listed criteria.

A wetland’s water-quality function is lost or not present if:

Four out of six questions are answered “c.”



Hydrologic control (flood control & water supply)

Wetlands function as natural water-storage areas during periods of high runoff and stream flooding.

At times they act as flood regulators by holding floodwater then slowly releasing it downstream. This temporary storage reduces the amount of water downstream during floods, thereby reducing peak flows. Through this flood storage mechanism, wetlands associated with tributaries of streams or rivers can prevent water from all tributaries reaching the stream or river at the same time (this is called desynchronization). Wetlands can also act as floodwater “brakes.” For example, water flowing through riverine wetlands during floods is slowed by trees, shrubs, reeds, rushes and other wetland vegetation. Wetlands acting as brakes can reduce flood peaks and thereby reduce flood damage, bank and bed erosion, and other adverse effects caused by fast moving water.

Wetlands also have long-term water holding abilities. Wetlands may store water for longer periods, sometimes for months. The slow draining of these wetlands to surface water or ground water as the water level in the wetland recedes may contribute to maintenance of baseflows in streams hydrologically connected to the wetland. The ability of this long-term water storage to maintain stream flows is called “flow conservation.”

Assessment questions

Question 1

Is all or part of the wetland located within the 100-year floodplain or within an enclosed basin? a. Yes.
b. No.

Directions

See question 19 in the Wetland Characterization.

Rationale

Wetlands located within a floodplain or enclosed basin have a greater opportunity to receive and store water from surface flows and to release it slowly downstream or into the groundwater.

Notes

Notes

Question 2

Is there evidence of flooding or ponding during a portion of the growing season?

- a. Yes.
- b. Unable to determine or not applicable.
- c. No.

Directions

See question 37 in the Wetland Characterization.

Rationale

Water marks are valid indicators of seasonal and episodic stage fluctuations in wetlands and, as such, are strong indicators of storage function.

Question 3

What is the wetland's area in acres?

- a. More than 5 acres.
- b. Between .5 acres and 5 acres.
- c. Less than .5 acres.

Directions

See question 17 in the Wetland Characterization.

Rationale

Generally, the larger the wetland, the greater its ability to store and attenuate flood flows.

Question 4

Is waterflow out of the wetland restricted (e.g., beaver dam, concrete structure, undersized culvert)?

- a. Yes, the outlet is restricted or the wetland has no outlet.
- b. Minor restrictions slow down the water (i.e., undersized culvert.)
- c. No, the outlet has unrestricted flow.

Directions

See question 38 in the Wetland Characterization.

Rationale

Wetlands with no outlets or with restricted or controlled outlets generally will store greater amounts of water than wetlands with unrestricted flow outlets. Also, the wetland can store water for slower release into the water system.

Wetland 1

Wetlands 2 and 5

Wetlands 2 and 5

Wetland 1

Question 5

What is the dominant wetland vegetation cover type?

- a. Woody vegetation.
- b. Emergent vegetation and ponding, or open water only.
- c. Emergent vegetation or wet meadow.

Directions

See question 23 in the Wetland Characterization.

Rationale

Densely vegetated wetlands with vegetation greater than 6 feet tall are better able to control flood flows than wetlands dominated by open water or low growing vegetation, which generally offers little resistance.

Question 6

What is the dominant existing land use, within 500 feet of the wetland on the downstream or down-slope edge of the wetland?

- a. Developed uses.
- b. Agriculture.
- c. Exclusive Forest Use and Open Space.

Directions

See question 16 in the Wetland Characterization.

Rationale

If the wetland is upstream from developed areas, its ability to control floods becomes more important.

Question 7

What is the dominant land use in the watershed upstream from the assessment area?

- a. Urban or urbanizing.
- b. Agriculture.
- c. Forested or natural area.

Directions

See question 6 in the Wetland Characterization.

Rationale

Runoff volume is directly related to the level of development in the watershed: The more development, the more runoff. The opportunity for the wetland to provide flood control and flow conservation to a community is greater where runoff is greater.

Notes

Notes

Hydrologic control: assessment criteria

A wetland's hydrologic control function is intact if:

Four or more questions are answered "a."

A wetland's hydrologic control function is impacted or degraded if:

Answers do not satisfy the above- or below-listed criteria.

Wetland 1

A wetland's hydrologic control function is lost or not present if:

Four or more questions are answered "c."

Wetlands 2 and 5



Attachment B: ORWAP Score Summary Sheets

ORWAP V.3.2 Site Name:	Veranda Pleasant Valley- Wetland 1
Investigator Name:	Stacey Reed, PWS
Date of Field Assessment:	12/2/2022, 2/16/2023, 3/10/2023, 5/11/2023
<i>Scores will appear below after data are entered in worksheets OF, F, T, and S. See Manual for definitions and descriptions of how scores were computed and ratings assigned.</i>	

<i>Normalized Scores & Ratings for this Assessment Area (AA):</i>								
Specific Functions or Values:	Function Score	Function Rating	Rating Break Proximity	Values Score	Values Rating	Rating Break Proximity	Function Score (raw)	Values Score (raw)
Water Storage & Delay (WS)	5.64	Moderate		0.00	Lower		5.64	0.00
Sediment Retention & Stabilization (SR)	3.30	Lower	LM	4.18	Moderate		3.61	3.18
Phosphorus Retention (PR)	3.41	Moderate	LM	1.73	Lower		3.67	1.44
Nitrate Removal & Retention (NR)	3.72	Lower	LM	1.38	Lower		4.93	1.44
Anadromous Fish Habitat (FA)	7.67	Higher	MH	10.00	Higher		6.73	10.00
Resident Fish Habitat (FR)	0.00	Lower		0.00	Lower		0.00	0.00
Amphibian & Reptile Habitat (AM)	4.87	Moderate		6.67	Moderate	MH	4.41	6.67
Waterbird Nesting Habitat (WBN)	0.00	Lower		0.00	Lower		0.00	0.00
Waterbird Feeding Habitat (WBF)	0.00	Lower		0.00	Lower		0.00	0.00
Aquatic Invertebrate Habitat (INV)	2.18	Lower		1.91	Lower		4.26	2.44
Songbird, Raptor, Mammal Habitat (SBM)	2.49	Lower		4.67	Moderate		4.45	4.67
Water Cooling (WC)	2.22	Lower	LM	3.64	Moderate		1.94	3.47
Native Plant Diversity (PD)	0.00	Lower		0.00	Lower		0.00	0.00
Pollinator Habitat (POL)	4.33	Moderate		3.61	Moderate		3.78	2.92
Organic Nutrient Export (OE)	5.86	Moderate					5.19	
Carbon Sequestration (CS)	1.62	Lower					2.29	
Public Use & Recognition (PU)				2.22	Lower			3.00

Other Attributes:	Score	Rating	Rating Break Proximity		
Wetland Sensitivity (SEN)	1.96	Lower	LM		4.26
Wetland Ecological Condition (EC)	1.28	Lower			3.08
Wetland Stressors (STR)	7.83	Higher			7.20

GROUPS	Selected Function	Function Rating	Rating Break Proximity	Values Rating	Rating Break Proximity
Hydrologic Function (WS)	Water Storage & Delay (WS)	Moderate		Lower	
Water Quality Support (SR, PR, or NR)	Phosphorus Retention (PR)	Moderate	LM	Lower	
Fish Habitat (FA or FR)	Anadromous Fish Habitat (FA)	Higher	MH	Higher	
Aquatic Habitat (AM, WBF, or WBN)	Amphibian & Reptile Habitat (AM)	Moderate		Moderate	MH
Ecosystem Support (WC, INV, PD, POL, SBM, or OE)	Pollinator Habitat (POL)	Moderate		Moderate	

NOTE: A score of 0 does not always mean the function or value is absent from the wetland. It usually means that this wetland has equal or less capacity than the lowest-scoring one, for that function or value, from among the 200 calibration wetlands that were assessed previously by Oregon Department of State Lands.

ORWAP V.3.2 Site Name:	Veranda Pleasant Valley- Wetland 2
Investigator Name:	Stacey Reed, PWS
Date of Field Assessment:	12/2/2022, 2/16/2023, 3/10/2023, 5/11/2023
<i>Scores will appear below after data are entered in worksheets OF, F, T, and S. See Manual for definitions and descriptions of how scores were computed and ratings assigned.</i>	

<i>Normalized Scores & Ratings for this Assessment Area (AA):</i>								
Specific Functions or Values:	Function Score	Function Rating	Rating Break Proximity	Values Score	Values Rating	Rating Break Proximity	Function Score (raw)	Values Score (raw)
Water Storage & Delay (WS)	10.00	Higher		0.00	Lower		10.00	0.00
Sediment Retention & Stabilization (SR)	3.27	Lower	LM	4.89	Moderate		3.58	3.72
Phosphorus Retention (PR)	10.00	Higher		2.46	Lower		10.00	2.05
Nitrate Removal & Retention (NR)	10.00	Higher		1.99	Lower		10.00	2.05
Anadromous Fish Habitat (FA)	0.00	Lower		0.00	Lower		0.00	0.00
Resident Fish Habitat (FR)	0.00	Lower		0.00	Lower		0.00	0.00
Amphibian & Reptile Habitat (AM)	5.21	Moderate		6.67	Moderate	MH	4.73	6.67
Waterbird Nesting Habitat (WBN)	6.23	Moderate		4.22	Moderate		5.17	4.22
Waterbird Feeding Habitat (WBF)	5.27	Moderate	MH	5.83	Moderate		4.75	5.83
Aquatic Invertebrate Habitat (INV)	3.27	Lower		2.94	Lower	LM	4.93	3.41
Songbird, Raptor, Mammal Habitat (SBM)	3.72	Lower	LM	4.00	Moderate		5.36	4.00
Water Cooling (WC)	2.22	Lower	LM	0.00	Lower		1.94	0.00
Native Plant Diversity (PD)	0.00	Lower		0.00	Lower		0.00	0.00
Pollinator Habitat (POL)	4.27	Moderate		4.12	Moderate		3.73	3.33
Organic Nutrient Export (OE)	0.00	Lower					0.00	
Carbon Sequestration (CS)	2.82	Lower					3.12	
Public Use & Recognition (PU)				3.41	Lower	LM		4.02

Other Attributes:	Score	Rating	Rating Break Proximity		
Wetland Sensitivity (SEN)	2.89	Moderate			4.86
Wetland Ecological Condition (EC)	1.28	Lower			3.08
Wetland Stressors (STR)	5.43	Moderate	MH		5.00

GROUPS	Selected Function	Function Rating	Rating Break Proximity	Values Rating	Rating Break Proximity
Hydrologic Function (WS)	Water Storage & Delay (WS)	Higher		Lower	
Water Quality Support (SR, PR, or NR)	Phosphorus Retention (PR)	Higher		Lower	
Fish Habitat (FA or FR)	Anadromous Fish Habitat (FA)	Lower		Lower	
Aquatic Habitat (AM, WBF, or WBN)	Amphibian & Reptile Habitat (AM)	Moderate		Moderate	MH
Ecosystem Support (WC, INV, PD, POL, SBM, or OE)	Pollinator Habitat (POL)	Moderate		Moderate	

NOTE: A score of 0 does not always mean the function or value is absent from the wetland. It usually means that this wetland has equal or less capacity than the lowest-scoring one, for that function or value, from among the 200 calibration wetlands that were assessed previously by Oregon Department of State Lands.

ORWAP V.3.2 Site Name:	Veranda Pleasant Valley- Wetland 5
Investigator Name:	Stacey Reed, PWS
Date of Field Assessment:	12/2/2022, 2/16/2023, 3/10/2023, 5/11/2023
<i>Scores will appear below after data are entered in worksheets OF, F, T, and S. See Manual for definitions and descriptions of how scores were computed and ratings assigned.</i>	

<i>Normalized Scores & Ratings for this Assessment Area (AA):</i>								
Specific Functions or Values:	Function Score	Function Rating	Rating Break Proximity	Values Score	Values Rating	Rating Break Proximity	Function Score (raw)	Values Score (raw)
Water Storage & Delay (WS)	10.00	Higher		0.00	Lower		10.00	0.00
Sediment Retention & Stabilization (SR)	2.83	Lower		4.60	Moderate		3.16	3.51
Phosphorus Retention (PR)	10.00	Higher		2.27	Lower		10.00	1.89
Nitrate Removal & Retention (NR)	10.00	Higher		1.83	Lower		10.00	1.89
Anadromous Fish Habitat (FA)	0.00	Lower		0.00	Lower		0.00	0.00
Resident Fish Habitat (FR)	0.00	Lower		0.00	Lower		0.00	0.00
Amphibian & Reptile Habitat (AM)	4.58	Moderate	LM	6.67	Moderate	MH	4.15	6.67
Waterbird Nesting Habitat (WBN)	0.00	Lower		0.00	Lower		0.00	0.00
Waterbird Feeding Habitat (WBF)	0.00	Lower		0.00	Lower		0.00	0.00
Aquatic Invertebrate Habitat (INV)	3.66	Lower	LM	2.65	Lower		5.17	3.14
Songbird, Raptor, Mammal Habitat (SBM)	3.62	Lower	LM	5.33	Moderate		5.29	5.33
Water Cooling (WC)	2.22	Lower	LM	0.00	Lower		1.94	0.00
Native Plant Diversity (PD)	0.00	Lower		0.00	Lower		0.00	0.00
Pollinator Habitat (POL)	4.38	Moderate		4.12	Moderate		3.83	3.33
Organic Nutrient Export (OE)	0.00	Lower					0.00	
Carbon Sequestration (CS)	2.36	Lower					2.80	
Public Use & Recognition (PU)				3.71	Lower	LM		4.28

Other Attributes:	Score	Rating	Rating Break Proximity		
Wetland Sensitivity (SEN)	2.89	Moderate			4.86
Wetland Ecological Condition (EC)	1.59	Lower			3.33
Wetland Stressors (STR)	8.26	Higher			7.60

GROUPS	Selected Function	Function Rating	Rating Break Proximity	Values Rating	Rating Break Proximity
Hydrologic Function (WS)	Water Storage & Delay (WS)	Higher		Lower	
Water Quality Support (SR, PR, or NR)	Phosphorus Retention (PR)	Higher		Lower	
Fish Habitat (FA or FR)	Anadromous Fish Habitat (FA)	Lower		Lower	
Aquatic Habitat (AM, WBF, or WBN)	Amphibian & Reptile Habitat (AM)	Moderate	LM	Moderate	MH
Ecosystem Support (WC, INV, PD, POL, SBM, or OE)	Pollinator Habitat (POL)	Moderate		Moderate	

NOTE: A score of 0 does not always mean the function or value is absent from the wetland. It usually means that this wetland has equal or less capacity than the lowest-scoring one, for that function or value, from among the 200 calibration wetlands that were assessed previously by Oregon Department of State Lands.



Attachment C: Veranda at Pleasant Valley ESRA-PV Planting Specifications Tables

Veranda at Pleasant Valley Subdivision ESRA-PV Enhancement Planting Specifications

Planting specifications for the enhancement of **+11.27 acres of ESRA-PV riparian enhancement area (includes +/-6.71 acres of voluntary riparian enhancement area)**. Plant quantities for the +/-4.26 acres of ESRA-PV mitigation area were calculated based on City of Gresham Development Code (GDC) Section 4.1445.F.1.b Mitigation Option 2 (trees and shrubs planted at a rate of 820 per acre of mitigation). Recommended plant species were selected based on *Moist Riparian* (Powell soil unit) vegetation community recommendations under Table 4.1445(B) of GDC. Species have been prescribed to match the hydrologic regime and general site conditions of the existing plant communities, and in accordance with the Gresham Native Plant List. The total number of native trees specified was revised to account for the dripline of existing trees in accordance with 4.1445.F.3 of GDC.

Scientific Name*	Common Name*	Size	Spacing/ Seeding Rate	Quantity
Trees (total 8,000)				
<i>Acer macrophyllum</i>	Big-leaf maple	bareroot	7 feet on center	2,000
** <i>Alnus rhombifolia</i>	white alder	or appropriate size		2,000
<i>Abies grandis</i>	Grand fir	depending on		2,000
<i>Thuja plicata</i>	Western redcedar	availability/season		2,000
Shrubs (total 9,000)				
<i>Crataegus douglasii</i>	Black hawthorn	bareroot	4-5 feet on center individually or clusters of no more than four plants installed planted 8-10 feet on center.	1,500
<i>Mahonia aquifolium</i>	Oregon grape	or appropriate size		1,500
<i>Oemleria cerasiformis</i>	Osoberry	depending on		1,500
<i>Corylus cornuta</i>	Beaked hazelnut	availability/season		1,500
<i>Acer circinatum</i>	Vine maple			1,500
<i>Rubus spectabilis</i>	Salmonberry			1,500
Native Seed Mix				
<i>Danthonia californica</i>	California oatgrass	NA	Sow in open soil areas greater than 25 square feet	Consult local seed supplier for recommended application rates and ratios
<i>Bromus sitchensis</i>	Alaska brome	NA		
<i>Elymus glaucus</i>	Blue wildrye	NA		
<i>Hordeum brachyantherum</i>	Meadow barley	NA		
<i>Solidago lepida</i> var. <i>salebrosa</i>	Western goldenrod	NA***		
<i>Lupinus polyphyllus</i>	Large-leaved lupine	NA***		

** *White alder (Alnus rhombifolia)* has been substituted for red alder (*Alnus rubra*) following the recommendation in Appendix B of Gresham's 2020 Environmental Technical Guidance Manual.

***If seeds are not available, plugs can be used.

Planting specifications for the enhancement of +/-1.55 acres of ESRA-PV voluntary floodplain enhancement area. Species were selected based on *Floodplain and Wetlands* (Wapato soil unit) vegetation community recommendations listed under Table 4.1445(B) of GDC.

Scientific Name*	Common Name*	Size	Spacing	Quantity
Trees (total 1,200)				
<i>Fraxinus latifolia</i>	Oregon ash	bareroot or appropriate size depending on availability/season	7 feet on center	600
<i>Salix lucida</i>	Pacific willow			600
Shrubs (total 1,200)				
<i>Cornus sericea</i>	Red-osier dogwood	bareroot or appropriate size depending on availability/season	4-5 feet on center individually or clusters of no more than four plants installed planted 8-10 feet on center.	300
<i>Spiraea douglasii</i>	Douglas spiraea			300
<i>Salix scouleriana</i>	Scouler's Willow			300
<i>Rosa nutkana</i>	Nootka rose			300

Planting Notes (per Section 4.1445 of the City of Gresham Development Code and City of Gresham 2020 Environmental Technical Guidance Manual):

Invasive Vegetation. Invasive vegetation on the Gresham Invasive Plant List such as Himalayan blackberry (*Rubus armeniacus*), Portugal/Cherry/English laurel (*Prunus laurocerasus/lusitanica*), Tansy ragwort (*Senecio jacobaea*), Reed canarygrass (*Phalaris arundinacea*), English ivy (*Hedera helix*), English hawthorn (*Crataegus monogyna*), English holly (*Ilex aquifolium*), Bull/Canadian thistle (*Cirsium vulgare/arvense*), Scotch broom (*Cytisus scoparius*), Common/Tufted Vetch (*Vicia sativa/cracca*), creeping buttercup (*Ranunculus repens*), Bird's-foot trefoil (*Lotus corniculatus*), yellow parentucellia (*Parentucellia viscosa*), St. Johnswort (*Hypericum perforatum*) and Queen Anne's lace (*Daucus carota*), should be removed from the mitigation area prior to planting. Per Section 5.0403.K of GDC, all non-native and invasive vegetation removal work must be done using hand-held equipment; No existing native vegetation shall be disturbed or removed.

Herbicide Use: Herbicide use requires advance review via the NRO Exemption Form Process. The NRO Exemption Form may be found at UDP's website containing Planning Handouts and Forms, at GreshamOregon.gov/Applications-and-Forms.

Plant Size. Plantings can range from live cuttings to bare root stock to container stock. Plantings should be at least 12 inches in height.

Plant Installation Timing. Plant bare/live root must be planted between December 1st and February 28th. Container stock must be planted between October 15th and April 30th.

Plant Spacing. Trees shall be planted at average intervals of 7 feet on-center. Shrubs may be clustered in single species groups of no more than four plants, with clusters planted on average between 8 and 10 feet on center. With the exception of the outer edge of a mitigation area, plants will not be planted in a linear fashion nor within the dripline of existing trees.

Bare Ground. Bare ground must be seeded with native grasses and/or herbs. Non-native sterile wheat grass may also be used in equal or lesser proportion to the native grasses or herbs.

Wildlife protection. Use plant sleeves to protect trees and shrubs against wildlife browsing.

Mulch. Mulch new plantings three inches in depth and 18 inches in diameter to retain moisture and discourage weed growth.

Irrigation. Water new plantings one inch per week from June 20th to September 15th for the three years

following planting.

Monitoring and Maintenance Notes (per Section 4.1445 of the City of Gresham Development Code):

Plant Survival. Plants that die must be replaced in kind on an annual cycle b. A minimum of 500 trees and 650 shrubs per acre required shall remain alive on the fifth anniversary of the date that the mitigation planting is completed.

Weed Control. Remove, or control, non-native or noxious vegetation listed on the City of Gresham's Invasive Plant List throughout maintenance period. See the invasive vegetation note above for details of City of Gresham approved removal methods.

Contingency Plan. Measures to improve plant survival including mulch or irrigation shall be considered.