



CRITICAL AREAS REPORT

October 2, 2023



13th Street Gas Station
Camas, WA

Prepared for

PAK USA Camas, LLC
c/o Taz Khan
3993 NW Currawong Court
Camas, WA 98607
(512) 779-4999

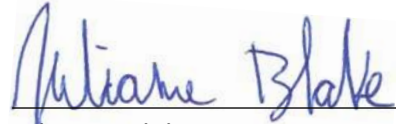
Prepared by

Ecological Land Services

1157 3rd Avenue, Suite 220A • Longview, WA 98632
(360) 578-1371 • Project Number 3934.01

SIGNATURE PAGE

The information in this report was compiled and prepared under the supervision and direction of the undersigned.

A handwritten signature in blue ink that reads "Julianne Blake". The signature is written in a cursive style and is positioned above a horizontal line.

Julianne Blake
Biologist III

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INTRODUCTION

Ecological Land Services, Inc. (ELS) was contracted by PAK USA Camas, LLC to complete a critical areas assessment for wetlands and fish and wildlife habitat conservation areas, for the purpose of future development. The site is approximately 0.97 acres and consists of Clark County Tax Parcel 176148000 located at 20101 NE 13th Street within the NW ¼ of Section 29, Township 2 North, and Range 3 East of the Willamette Meridian in Camas, Washington (Figure 1). Field work was conducted on August 29, 2023. This report summarizes the findings of the site visit in accordance with *Camas Municipal Code (CMC) Title 16 Environment* (2023).

SITE DESCRIPTION

The 0.97-acre site consists of Clark County Tax Parcel 176148000 and is accessed by a paved driveway off NE 13th Street. The site is zoned as Business Park (BP) and currently contains a single-family mobile home, shed, carport, and paved driveway. The site is bordered to the north by NE 13th Street, to the east by NW Friberg-Strunk Street, to the south by undeveloped land and commercial development in progress, and to the west by undeveloped land and a single-family residence (Figure 2).

Vegetation onsite consists primarily of regularly mowed grasses, ornamental shrubs, and coniferous and deciduous trees. Topography onsite is generally flat with NE 13th Street and NW Friberg-Strunk Street roughly two feet higher in elevation than the site. One Oregon white oak (*Quercus garryana*, FACU) was identified onsite along the southern property boundary.

METHODOLOGY

The property was evaluated for the presence of wetlands using the Routine Determination Method according to the U.S. Army Corps of Engineers' 1987 *Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers' Wetland Delineation Manual* (Environmental Laboratory 1987); *Western Mountains, Valleys, and Coast Region (Version 2.0)* (Corps 2010). The Routine Determination Method and defining wetland criteria are discussed further in Appendix A. Wetlands are regulated as "Waters of the United States" by the U.S. Army Corps of Engineers (Corps) and as "Waters of the State" by the Washington Department of Ecology (Ecology), and locally by The City of Camas (City).

ELS biologists evaluated the property on August 29, 2023, to determine the presence or absence of critical areas including streams, wetlands, and priority habitats. One Oregon white oak (oak) was identified onsite, and no wetlands, streams, or other priority habitats were identified. Vegetation, soil, and hydrology data were collected from one test plot (TP) to determine whether wetlands were present onsite. No wetlands were present onsite. TP-1 was taken in the southwest corner of the site in an area with mapped hydric soils. The oak dripline and test plot location were mapped using a hand-held Global Positioning System (GPS) unit capable of sub-meter accuracy under ideal conditions.

VEGETATION

General vegetation consists primarily of regularly mowed grass and ornamental trees and shrubs (Photoplates 1 and 2). One Oregon white oak was observed along the southern site boundary. The plant indicator status following the plant scientific name is defined by the *National Wetland Plant List Indicator Rating Definitions* (Corps 2012) and can be found in Appendix A.

Dominant vegetation consisted of domestic apple trees (*Malus* spp., assumed FAC), Japanese maple (*Acer palmatum*, UPL), rhododendron (*Rhododendron* spp., assumed FACU), Oregon white oak, osoberry (*Oemleria cerasiformis*, FACU), mowed English hawthorn saplings (*Crataegus monogyna*, FAC), swordfern (*Polystichum munitum*, FACU), and fescue grass (*Festuca* spp., assumed FAC). The wetland determination data form contains vegetation information at TP-1 and is in Appendix B.

SOILS

The Natural Resources Conservation Service (NRCS) designates soils onsite as cove silty clay loam, thin solum, 0 to 3 percent slopes (CwA), and Wind River gravelly loam, 0 to 8 percent slopes (WrB) (Figure 3, NRCS 2023B). Of the two soil types found onsite, cove silty clay loam, thin solum, 0 to 3 percent slopes is designated as hydric.

According to soil profile descriptions developed by NRCS, cove silty clay loam, thin solum, is characterized as a poorly drained soil, forming on floodplains, with a depth to water table of 0 to 12 inches below ground surface (BGS). A typical soil profile includes silty clay loam from 0 to 14 inches, clay from 14-21 inches, and silt loam from 21 to 60 inches BGS. Wind River gravelly loam is categorized as a somewhat excessively drained soil with a typical soil profile of gravelly loam from 0 to 4 inches, coarse sandy loam from 4 to 24 inches, and loamy coarse sand from 24 to 60 inches BGS. Wind River gravelly loam forms on floodplains from alluvium parent material and has an average depth to water table of more than 80 inches.

Evaluated soils were characterized as loamy with a value of 4, and a chroma of 3, with no observations of redoximorphic concentrations and meeting no hydric soil indicators. Mapped hydric soils do not necessarily mean that an area is or is not a wetland—hydrology, hydrophytic wetland vegetation, and hydric soils must all be present to classify an area as a wetland. The test plot data form is in Appendix B.

HYDROLOGY

No evidence of wetland hydrology was observed at TP-1 or onsite.

PRECIPITATION

Precipitation data was gathered from the NOAA Regional Climate Centers *Clark County, Washington, WETS Station: Battle Ground*, which is located closest to the site. No rainfall occurred the day of the site visit or in the two weeks prior. Rainfall in June, July, and August was below exceedance levels and approximately 94 percent of August rainfall occurred prior to the site visit. Furthermore, review of the USACE Antecedent Precipitation Tool (APT) indicates rainfall

in the two months preceding the August 29th site visit was drier than normal with a score of 6. A copy of the APT data is provided in Appendix C. Table 1 summarizes the precipitation data.

Table 1. Precipitation Summary

Precipitation (inches)								
Date of Visit	Two Weeks Prior	3 Months Prior		30%	70%	DAREM ¹		
		30 Days Ending	Observed			Value	Weight	Total
8/29/23 0.0	8/15/23 – 8/28/23 0.0	8/29/23	0.05	0.25	0.99	1	3	3
		7/30/23	0.0	0.24	0.82	1	2	2
		6/30/23	0.83	1.48	2.80	1	1	1
Rainfall 3 months prior was: drier than normal (sum 6-9), normal (sum 10-14), wetter than normal (sum 15-18). ¹								6
Year to Date Average Rainfall ^{2,3} : 50.06								
Year to Date Actual Rainfall ³ : 45.32								

¹ Direct Antecedent Rainfall Evaluation Methods (Sumner et al 2009)

² Includes 94% of August Rainfall

³ Based on a water year, October 2022 – August 2023

CRITICAL AREA INVENTORIES

NATIONAL WETLANDS INVENTORY

The National Wetlands Inventory (NWI) map does not indicate any wetlands onsite (Figure 4, USFWS 1988). ELS agrees with the NWI mapping, as no wetlands were identified onsite.

CLARK COUNTY CRITICAL AREA INVENTORY

The Clark County Critical Area Inventory (CCCAI) map does not indicate any wetlands onsite but does indicate potential wetlands presence on the property to the south. Hydric soils are mapped along the eastern site boundary and the southwestern corner, and a habitat area is mapped over the majority of the eastern portion of the site (Figure 5). ELS partially agrees with the CCAI as no wetlands were identified onsite and one oak was observed in the vicinity of the mapped habitat area. The potential wetlands mapped to the south of the site are located in the footprint of a commercial development that has received permit approval. However, ELS does not agree with the extent of the mapped habitat area as only one oak was identified onsite and no other critical habitats were identified.

WASHINGTON DEPARTMENT OF NATURAL RESOURCES STREAM TYPE

The Washington Department of Natural Resources (WDNR) Stream Type Map does not depict any streams onsite (Figure 6, WDNR 2023). ELS agrees with the WDNR mapping as no streams were observed onsite.

PRIORITY HABITATS AND SPECIES

The Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) maps indicate oak woodland and caves or cave-rich areas on the southern boundary of the site

and within 300 feet of the site to the southwest (Figure 7, WDFW 2023). ELS confirmed the presence of a single oak along the southern site boundary, but no oak woodlands or caves were observed onsite.

Critical area inventory maps are typically used to gather general information about a region and due to the large scale necessary for regional mapping, are limited in accuracy for localized analyses.

CRITICAL AREAS SUMMARY

PRIORITY HABITATS

OREGON WHITE OAK

Oregon white oaks are considered a priority habitat and are regulated by the Washington Department of Fish and Wildlife (WDFW) and locally by the City of Camas. According to WDFW's Management Recommendations for Washington's priority habitats: Oregon white oak woodlands (Larsen and Morgan, 1998), in urban or urbanizing areas west of the Cascades, priority oak habitat is defined as single oaks, stands of pure oak, or oak/conifer associations, one acre or greater in size. WDFW may also consider individual Oregon white oak trees a priority habitat when found to be particularly valuable to wildlife [i.e., contains many cavities, has a large diameter at breast height (DBH), is used by priority species, or has a large canopy]. The site is within the City of Camas. WDFW recommendation is that in urban and urbanizing areas, single trees should be maintained if they are deemed important to species highly associated with Oregon white oak. Oaks and their associated floras comprise distinct woodland ecosystems with various plant communities providing valuable habitat that contributes to wildlife diversity; oak woodlands provide a mix of feeding, resting, and breeding habitat for many wildlife species (Larsen and Morgan 1998).

The WDFW Priority Habitats and Species online mapping tool depicts oak woodlands within the vicinity of the observed oak along the southern site boundary. One oak tree measuring approximately 52 inches DBH was mapped along the southern site boundary during site reconnaissance (Figure 2). The oak has several live and dead branches, cavities, and has canopy connectivity with other trees in the vicinity but is not connected with other oaks. The oak location was mapped using a GPS system capable of submeter accuracy in ideal conditions. According to *CMC 16.61.010(3)(a)*, individual Oregon white oak trees with a twenty-inch DBH are considered a priority habitat.

Table 2: Oak Summary

Canopy Area	Diameter at Breast Height	Number of Trunks	Noteworthy Habitat Features
0.08 acres	52 inches	1	<ul style="list-style-type: none"> • Canopy is interconnected with adjacent trees, but not other oaks • Two large cavities

LIMITATIONS

ELS bases this report's determinations on standard scientific methodology and best professional judgment. In our opinion, local, state, and federal regulatory agencies should agree with our determinations. However, the information contained in this report should be considered preliminary and used at your own risk until it has been approved in writing by the appropriate regulatory agencies. ELS is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this report.

REFERENCES

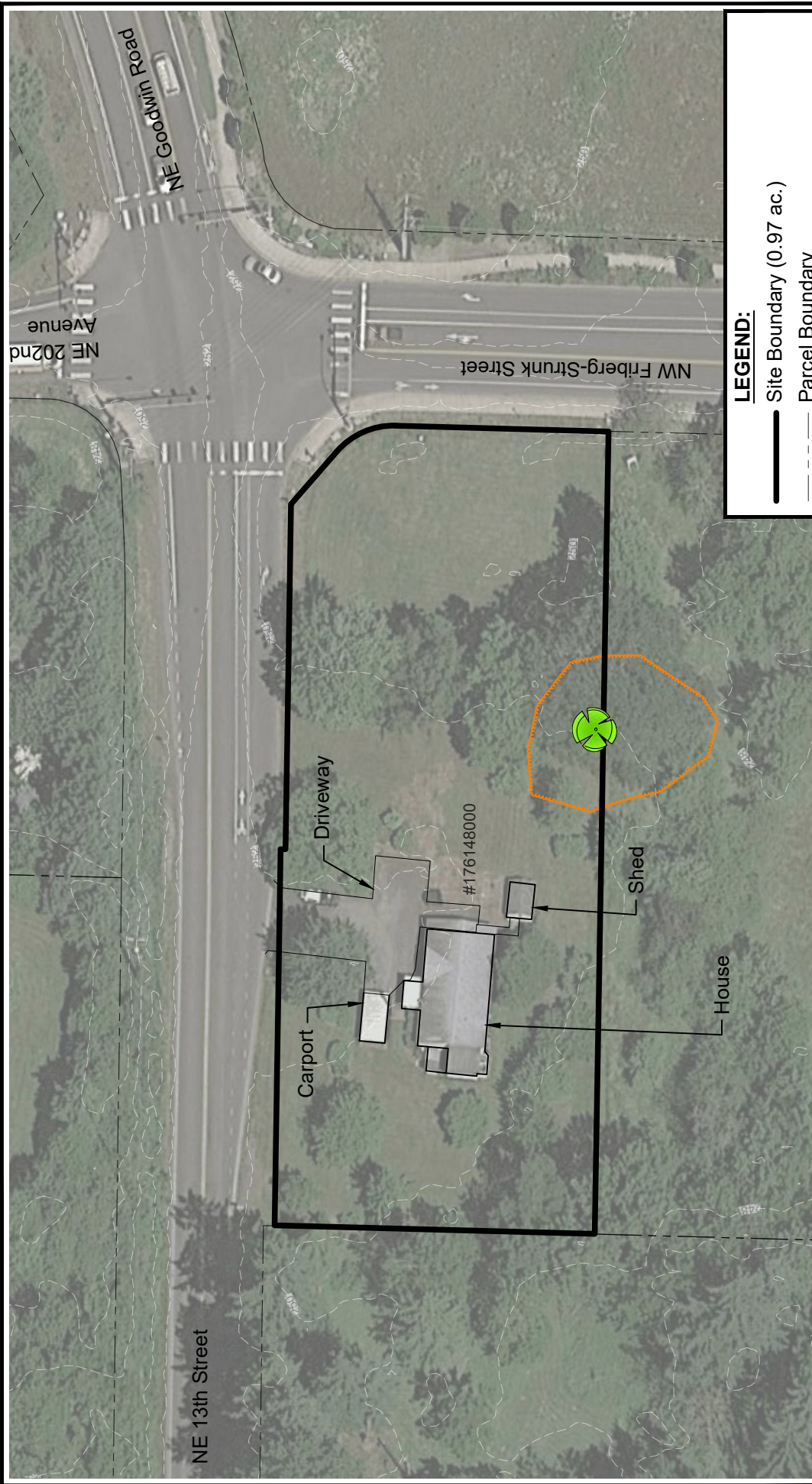
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<https://fpamt.dnr.wa.gov/2d-view#activity?-13635352,-13631683,5720608,5722297>.
Accessed October 2023.

FIGURES AND PHOTOPLATES

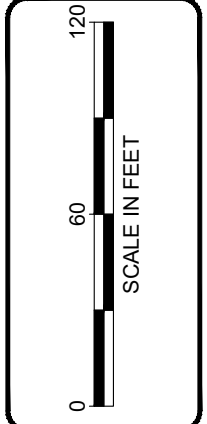


LEGEND:

- Site Boundary (0.97 ac.)
- - - Parcel Boundary
- Oregon White Oak Tree Location
- Oak Dripline (0.08 ac. total/0.03 ac. onsite)
- 1' Contours

NOTE(S):

1. Aerial from Google Earth™ (6/17/2021).
2. Site boundary, oak tree location, and oak dripline surveyed by PLS Engineering, Inc.
3. Parcel data from Clark County GIS Department.
4. Topography from 2013 Clark County Lidar provided by WDNR at <https://lidarportal.dnr.wa.gov>.



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Figure 2
EXISTING CONDITIONS
 13th Street Gas Station
 PAK USA Camas, LLC
 City of Camas, Clark County, Washington
 Section 29, Township 2N, Range 3E, W.M.

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LEGEND:

- Site Boundary
- NRCS Soil Boundary
- CwA** Cove silty clay loam, thin solum, 0 to 3 percent slopes. Hydric.
- WrB** Wind River gravelly loam, 0 to 8 percent slopes. Not hydric.

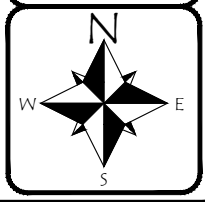
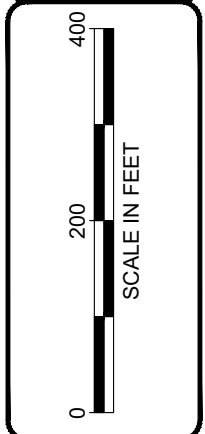
NOTE(S):

1. Map provided on-line by NRCS at web address:
<http://websoilsurvey.nrcs.usda.gov/app/>

Figure 3
NRCS SOIL SURVEY
 13th Street Gas Station
 PAK USA Camas, LLC
 City of Camas, Clark County, Washington
 Section 29, Township 2N, Range 3E, W.M.

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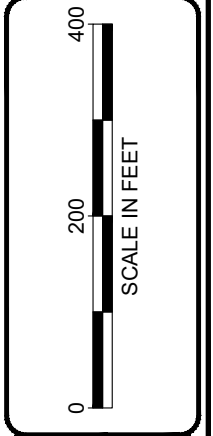
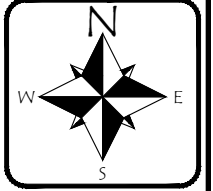
No mapped wetlands indicated onsite by US Fish & Wildlife Service.

LEGEND:

-  Site Boundary
- Wetlands**
-  Riverine

NOTE(S):

1. Map provided on-line by US Fish & Wildlife Service at web address:
<https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper>



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Figure 4
USFWS NATIONAL WETLANDS INVENTORY
 13th Street Gas Station
 PAK USA Camas, LLC
 City of Camas, Clark County, Washington
 Section 29, Township 2N, Range 3E, W.M.

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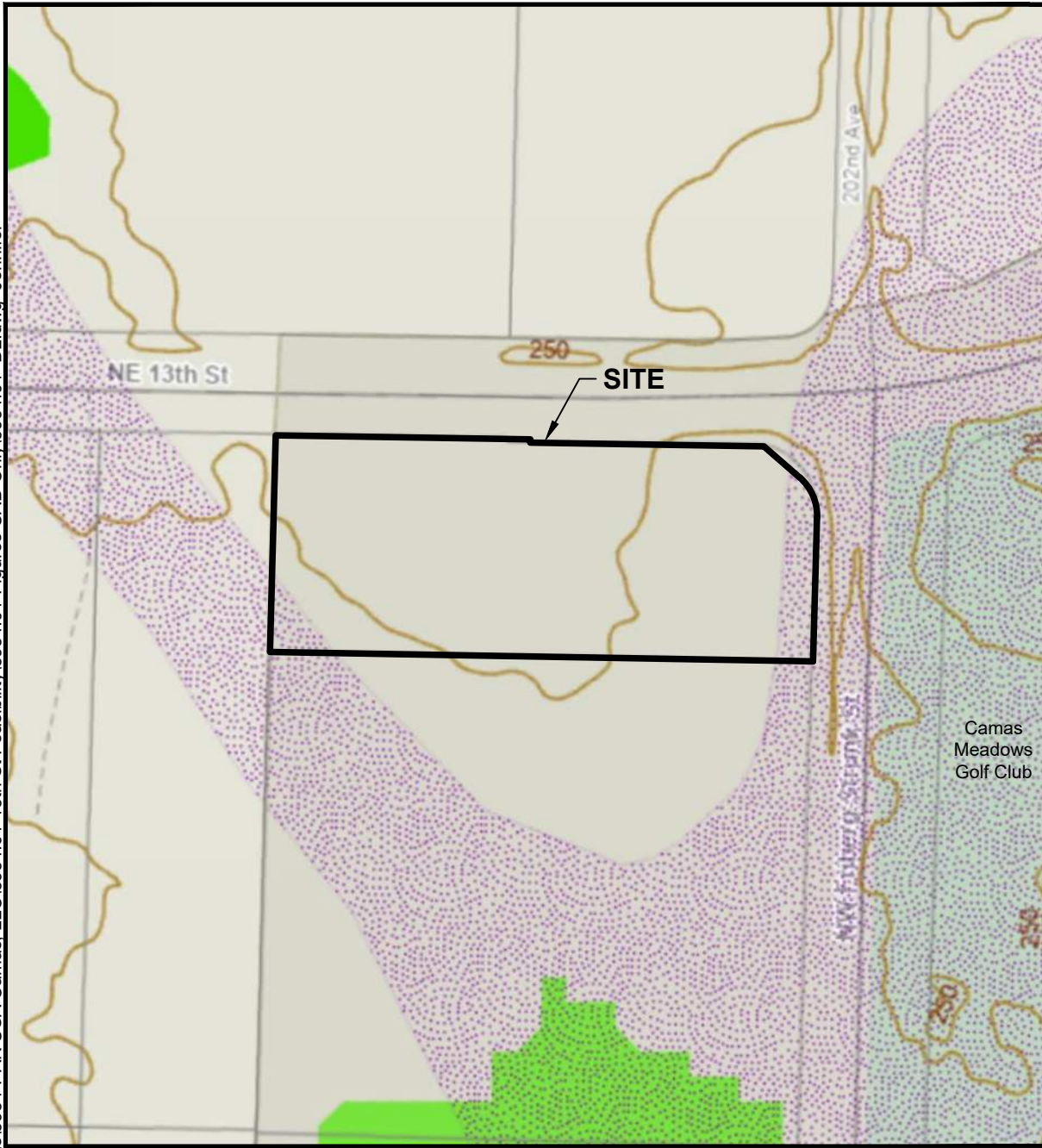


Figure 5
CLARK COUNTY CRITICAL AREAS
 13th Street Gas Station
 PAK USA Camas, LLC
 City of Camas, Clark County, Washington
 Section 29, Township 2N, Range 3E, W.M.

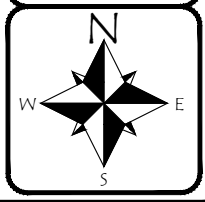
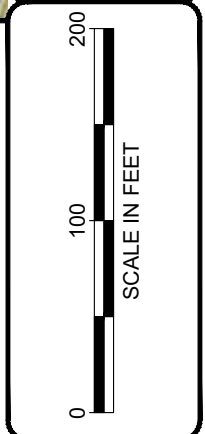
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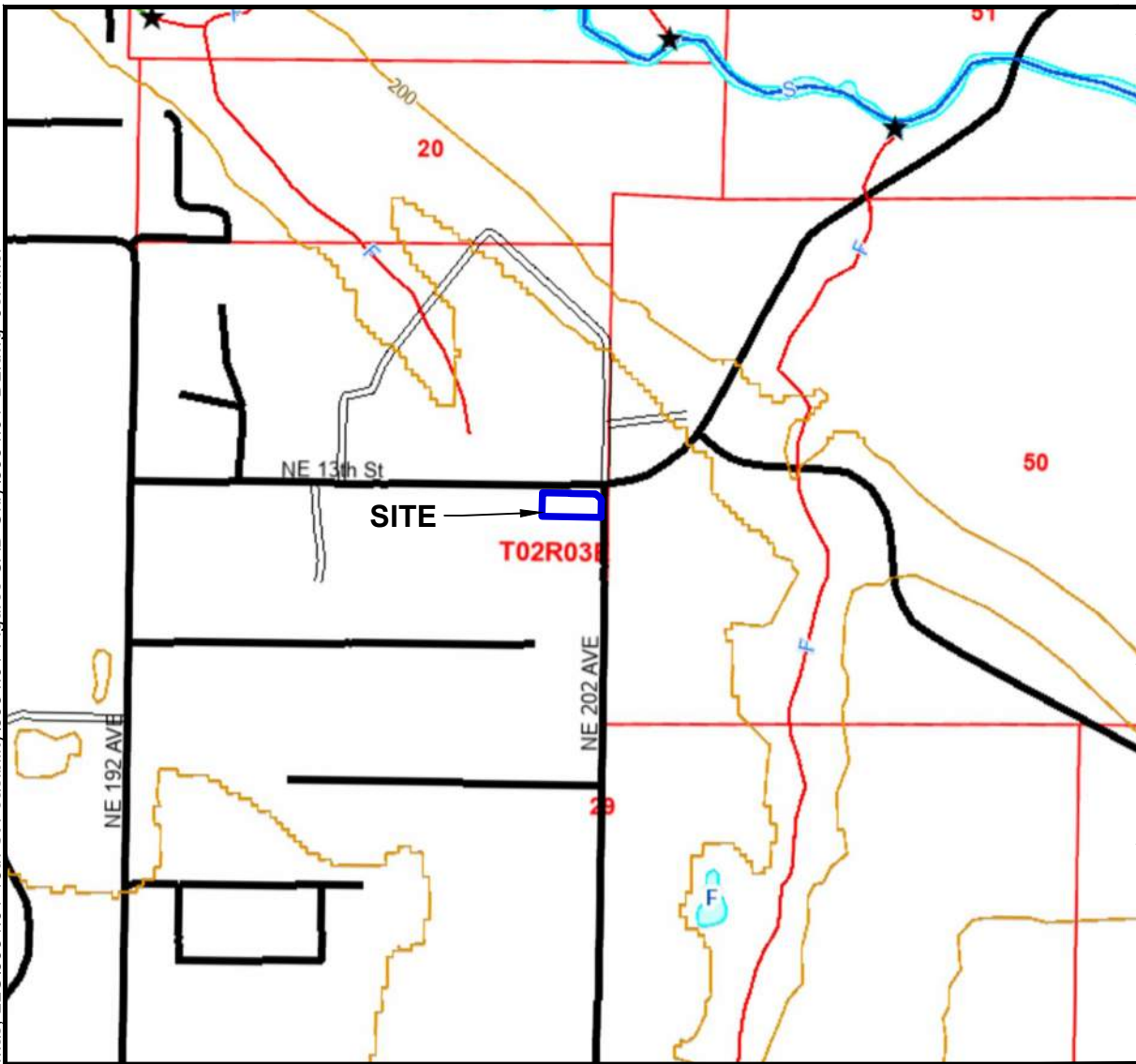
- Site Boundary
- Slopes and Geologic Hazards Group Contour Lines
- Contour Lines - 10 ft
- Soils and Wetlands Inventory Hydric Soils
- Potential Wetlands Presence
- Permitted Wetland



NOTE(S):

1. Map provided on-line by Clark County at web address: <https://gis.clark.wa.gov/maponline/index.cfm?site=Environmental>

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No mapped streams indicated onsite by the Washington State Department of Natural Resources (DNR).

LEGEND:

- Site Boundary
- 40-foot Contours
- 40 ft. Contours

Water Courses (FP)

- Type S
- Type F
- Type N, Np, Ns
- U, unknown
- X, non-typed per WAC 222-16

WRIA Boundaries

- WRIA Boundaries

DNR Roads

- Paved Road
- = Unpaved Road/Surface Unknown

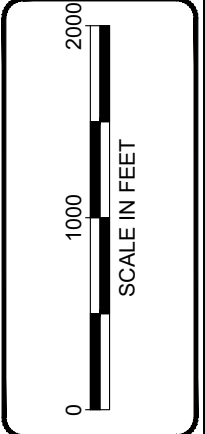
Unpaved Road/Surface Unknown

- ★ Water Type Breaks (FP)

Figure 6
 WDNR STREAM TYPE MAP
 13th Street Gas Station
 PAK USA Camas, LLC
 City of Camas, Clark County, Washington
 Section 29, Township 2N, Range 3E, W.M.

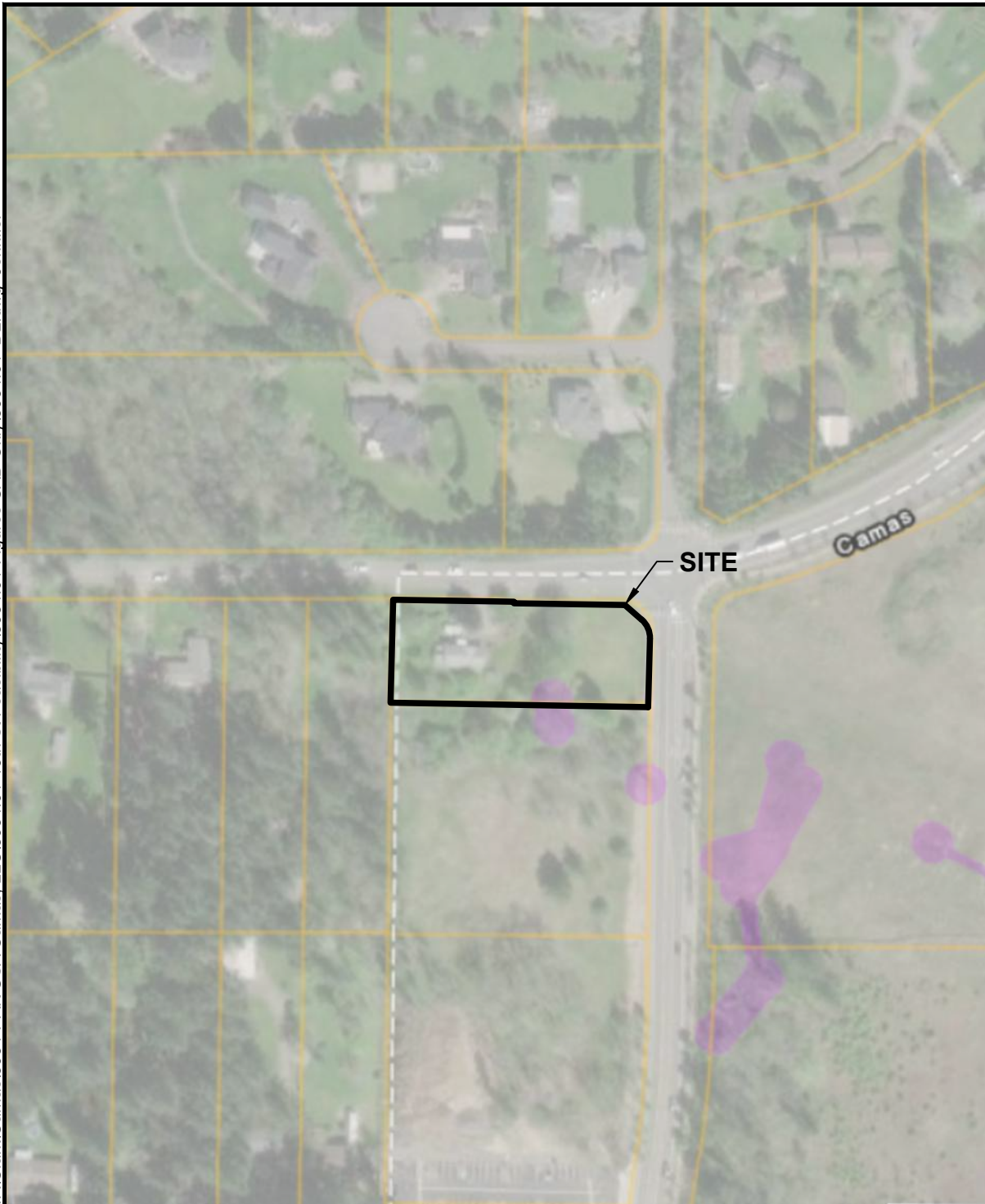
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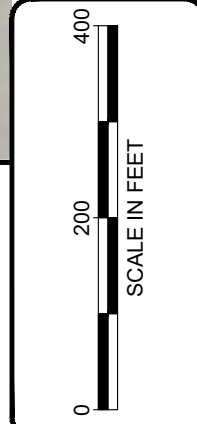
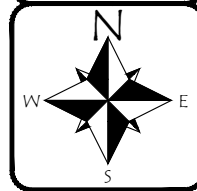


NOTE: Map provided on-line by Washington State Department of Natural Resources at web address: <http://fortress.wa.gov/dnr/app1/Fpars/viewer.htm>

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- LEGEND:**
-  Site Boundary
 -  Parcel Boundary
 -  Oak Woodland - Habitat Feature
- By Township
Caves or Cave-rich Areas




**Ecological
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Figure 7
WDFW PRIORITY HABITAT AND SPECIES
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City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

NOTE: Map provided on-line by Washington State Department of Fish & Wildlife at web address:
<http://apps.wdfw.wa.gov/phsontheweb/>



Photo 1 was taken facing east and shows general conditions onsite.



Photo 2 was taken facing west and shows general conditions onsite. The oak is visible on the left.



Photo 3 shows the onsite Oregon white oak.



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Photoplate 1
13th Street Gas Station
Camas, WA
Section 29, Township 2N, Range 3E, W.M.



Photo 4 was taken facing north at TP-1 and shows general conditions onsite.



Photo 5 was taken facing west.



Photo 6 was taken facing west at TP-1.



Photo 7 was taken facing east at TP-1 and shows general conditions onsite.



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Photoplate 2
13th Street Gas Station
Camas, WA
Section 29, Township 2N, Range 3E, W.M.

APPENDIX A

ROUTINE DETERMINATION METHOD AND PLANT INDICATOR RATING DEFINITIONS

ROUTINE DETERMINATION METHOD

The Routine Determination Method is defined according to the U.S. Army Corps of Engineers' 1987 *Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers' Wetland Delineation Manual* (Environmental Laboratory 1987); *Western Mountains, Valleys, and Coast Region (Version 2.0)* (Corps 2010). The Routine Determination Method examines three parameters – vegetation, soils, and hydrology – to determine if wetlands exist in a given area. Hydrology is critical in determining what is a wetland, but is often difficult to assess because hydrologic conditions can change periodically (hourly, daily, or seasonally). Consequently, it is necessary to determine if hydrophytic vegetation and hydric soils are present, which would indicate that water is present for a long enough duration to support a wetland plant community. By definition, wetlands are those areas that are inundated or saturated by surface or groundwater 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.

VEGETATION INDICATOR STATUS

The indicator status, following the scientific names of plant species, indicates the likelihood of the species to be found in wetlands according to the *National Wetland Plant List Indicator Rating Definitions* (Corps 2012). Listed from most likely to least likely to be found in wetlands, the indicator status 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.

APPENDIX B

WETLAND DETERMINATION DATA FORM

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

Project/Site: 13th Street Gas Station City/County: Camas/Clark Sampling Date: 08/29/2023
 Applicant/Owner: PAK USA Camas, LLC State: WA Sampling Point: TP-1
 Investigator(s): J. Blake Section, Township, Range: S29, T2N, R3E
 Landform (hillslope, terrace, etc.): Floodplains Local relief: (concave, convex, none): Convex Slope (%): 0-3%
 Subregion (LRR): LRR MLRA2 Lat: 45.6318544 Long: -122.4669931 Datum: NAD83
 Soil Map Unit Name: Cove silty clay loam, thin solum, 0 to 3 percent slopes 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 <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soils Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: TP-1 is located in the southwest corner of the site in an area with mapped hydric soils. TP-1 does not meet all three wetland indicators and is therefore in uplands. Hydrologic conditions were not typical for this time of year, as antecedent rainfall was determined to be drier than normal for the two months prior to the site visit.	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet
Tree Stratum (Plot size: <u>30</u> ft radius)				Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>83</u> (A/B)
1. <u>Malus spp.*</u>	20%	yes	FAC	
2. <u>Fraxinus latifolia</u>	20%	yes	FACW	
3. <u>Robinia pseudoacacia</u>	20%	yes	FACU	
4. <u>Crataegus monogyna</u>	15%	yes	FAC	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= _____
50% = <u>38</u> 20% = <u>15</u>	75%	=Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15</u> ft. radius)				
1. _____	%			
2. _____	%			
3. _____	%			
4. _____	%			
5. _____	%			
50% = _____ 20% = _____	%	=Total Cover		
Herb Stratum (Plot size: <u>5</u> ft radius)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 – Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
1. <u>Festuca spp.*</u>	93%	yes	FAC	
2. <u>Iris spp.*</u>	5%	no	FACW	
3. <u>Rubus ursinus</u>	2%	no	FACU	
4. _____	%			
5. _____	%			
6. _____	%			
7. _____	%			
8. _____	%			
9. _____	%			
10. _____	%			
11. _____	%			
50% = <u>50</u> 20% = <u>20</u>	100%	=Total Cover		
Woody Vine Stratum (Plot size: <u>15</u> ft radius)				
1. <u>Rubus armeniacus</u>	5%	yes	FAC	
2. _____	%			
50% = <u>3</u> 20% = <u>1</u>	5%	=Total Cover		
% Bare Ground in Herb Stratum <u>0</u> %				
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				

Remarks: *Festuca spp.** and *Malus spp.** indicator statuses assumed FAC. *Iris spp.** indicator status assumed FACW.

SOIL

Sampling Point: TP-1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 4/3	100%		%			Loam	
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

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

- Histosal (A1)
- 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 (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and Wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: Hardpan
Depth (inches): 6

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (min. of one required; check all that apply)

- 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)
- Sparsely Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres 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 (B9) (MLRA 1, 2, 4A, and 4B)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- FAC Neutral Test (D5)
- Raised Ant Mounds (D6) (LRR A)
- Frost-Heave Hummocks (D7)

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

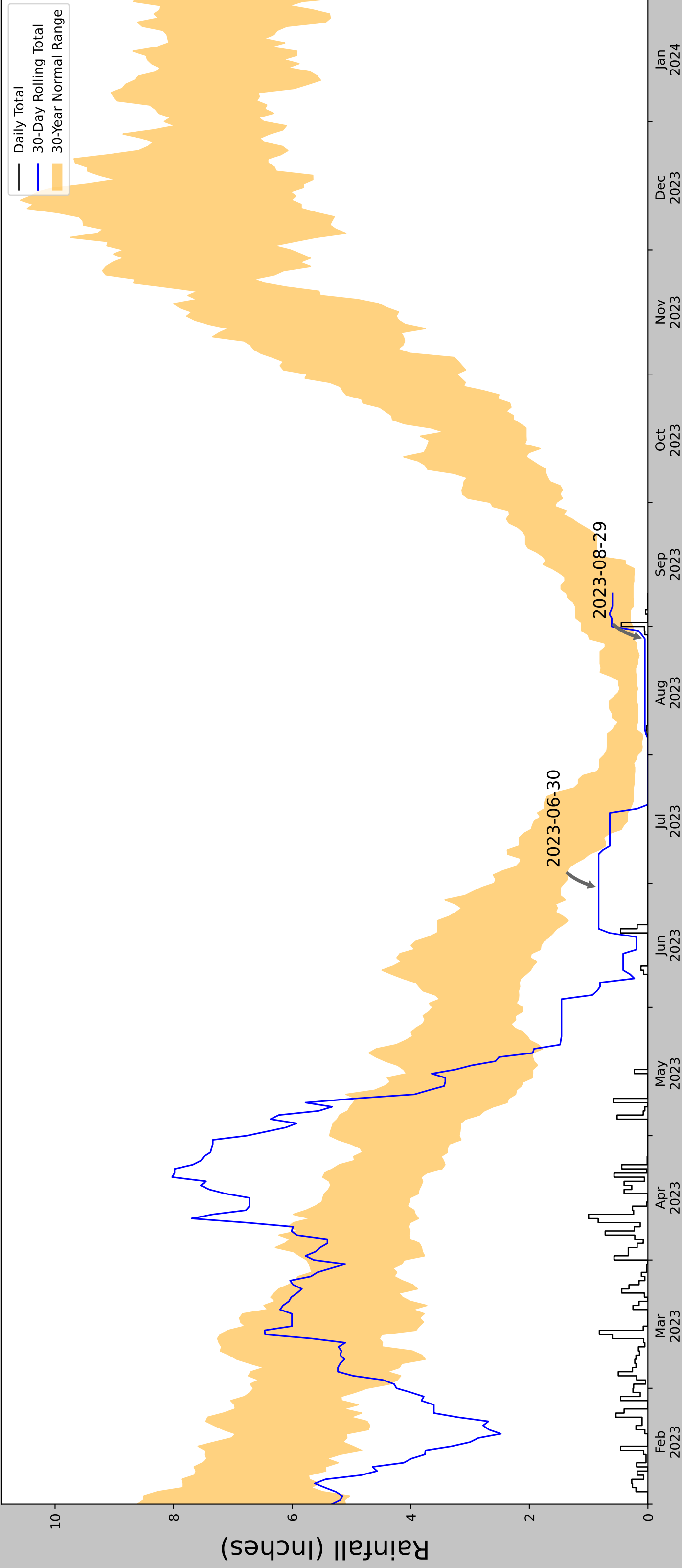
Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrologic conditions were not typical for this time of year, as antecedent rainfall was determined to be drier than normal for the two months prior to the site visit.

APPENDIX C

PRECIPITATION INFORMATION

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	45.632018, -122.467297
Observation Date	2023-08-29
Elevation (ft)	253.44
Drought Index (PDSI)	Severe drought
WebWIMP H ₂ O Balance	Dry Season

30 Days Ending	30 th %ile (in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-08-29	0.253543	0.986221	0.051181	Dry	1	3	3
2023-07-30	0.24252	0.814961	0.0	Dry	1	2	2
2023-06-30	1.475197	2.795276	0.830709	Dry	1	1	1
Result							Drier than Normal - 6

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by:
U.S. Army Corps of Engineers and
U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
BATTLE GROUND	45.7717, -122.5286	284.121	10.094	30.681	4.852	11318	69
BATTLE GROUND 0.8 N	45.794, -122.5443	316.929	1.716	32.808	0.828	0	1
BATTLE GROUND 1.2 NE	45.7958, -122.5275	361.877	1.666	77.756	0.879	0	20
VANCOUVER 4 NNE	45.6775, -122.6514	220.144	8.8	63.977	4.523	4	0
MERWIN DAM	45.955, -122.5625	224.081	12.769	60.04	6.513	31	0