

WARM FILE COPY

C. Gary Schulz

Wetland/Forest Ecologist

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December 1, 2017

RECEIVED

DEC 14 2017

KING COUNTY
D.P.E.R.

Mr. John Priebe
Raging River Mining, LLC

Re: **Technical Response for the Raging River Quarry Expansion (Parcel # 222407-9033): Clearing & Grading Permit Application # GRDE15-0166 King County, WA.**

Dear Mr. Priebe:

Per your request this letter is written as response to current County review comments for "Raging River Quarry Expansion" (Review of Ecological Critical Areas and Shorelines - 4/11/17 Memo from Laura Casey). The intent of the response letter is to address the County's 4/11/17 Memo comments and provide technical information to support the findings of the 2016 wetland report (Wetland & Stream Reconnaissance for the Raging River Quarry Expansion: (Parcel # 2224079033) King County, WA, 8/27/16 Schulz).

The critical areas comments from the 4/11/17 Memo were not numbered but are listed below and followed by responses. The County comments have been numbered in this response letter and retain their original order for reference and citation.

- 1) "There is a stream crossing the southern portion of the site....I did not see any deep pools that could support trout during the dry season in the area I observed. This is not addressed in the critical areas reports. The stream slope is mapped as greater than 16% as it drops to the Raging River. Therefore, the stream meets the presumption that it does not provide salmonid fish habitat. The stream qualifies as a Type N aquatic area. The standard buffer on a Type N stream is 65 feet on either side of the ordinary high mark of the stream channel. However, where the stream buffer falls on a steep slope or mapped landslide hazard as on this property, the aquatic area buffer extends to the top of the steep slope or hazard area".

Response: On 5/9/17 an additional stream reconnaissance was conducted starting at about the northeast corner of the Ditch property (Parcel No. 2124079088). Similar physical and hydrologic conditions were observed as during the initial 2016 investigations. The stream channel was dry near the north boundary of the Expansion Parcel. Stream flow was observed to daylight near Wetland Transect point T-3-2.

The winter and spring seasons of 2017 had above normal rainfall. Deep pool areas containing water within the stream channel were not observed. It is very unlikely that resident trout could survive in the stream due to the very seasonal hydrology, lack of refugia, and steep channel gradients.

Acknowledge that there are steep slope areas adjacent to the subject stream. The top of 40% steep and/or landslide hazard slopes has been approximately mapped using topographic resources that are available such as iMap and Lidar. The accurate locations will be surveyed and accurately mapped during the Quarry Expansion phase of mining to coincide with extended stream buffer.

- 2) "I observed a few small riverine wetlands along the stream. It is likely the buffer from the stream and steep slope would encompass any potential wetland buffer. I also observed a wetland southwest of the stream in one location. No mining is proposed south of the stream so it is not necessary to delineate and rate those wetlands".

Response: "Riverine" wetlands are described as being in an active floodplain of a river, and have important hydrologic links to the water dynamics of the river or stream. "The distinguishing characteristic of riverine wetlands in Washington is that they are frequently flooded by overbank flow from the stream or river. The floodwater is a major environmental factor that structures the ecosystem in these wetlands" (page 27, WA State Wetland Rating System for Western WA - Ecology 2004). Wetland Data Plot 8 sampled an area upstream of the Property on 4/19/16 that was flat and about 15 feet from the active channel. Non-hydric soils were observed with no wetland hydrology and the stream channel was dry. The majority of stream area observed has distinct banks due to channel incision. No areas of overbank flooding were observed.

The 4/11/17 County Memo does not include any scientific data or approximate mapping of observed wetland locations. Therefore as stated in the 1st response on page 1 an additional stream and wetland reconnaissance was conducted on 5/9/17 within the stream corridor. Wetland soil pits were excavated in two areas that may have developed wetland conditions. Both of these areas were flagged and labeled. The first location is off-site and upstream of the Property. This location is the confluence of a small tributary stream that flows into the subject stream from the southwest side. Two wetland soil pits were excavated at the confluence. Both pits were non-hydric soil to a depth of 18 inches and dry at a time of year when wetland hydrology is a reliable criteria. The second location is on the north side of the stream channel near Transect T-3-1. The soil is non-hydric but water was seeping into the pit at 16 inches deep.

All riparian areas reviewed were determined to be non-wetland areas. Groundwater seepage rather than overbank flooding would likely be the support for wetland hydrology. No groundwater seepage zones were observed along the stream corridor.

- 3) "I also observed wetland conditions along Transect T-1 at data point 2 identified in the Schulz report. There is a ponded area surrounded with saturated soils that appear to be hydric, and hydrophytic vegetation growing in the area".

Response: The Data Plot 2 location along Transect T-1 was re-investigated on 4/28/17. A second wetland data plot (#2A) was installed and flagged near the Data Plot 2 that was installed during the 2016 investigation. All wetland data plots (2016 & 2017) from this location are attached to this letter. The vegetation cover is nearly the same and dominated by hydrophytic species – salmonberry and lady fern. However, both soil pits exhibited non-hydric soil due to lighter soil color above a depth of 12 inches (10YR2/2) and below 12 inches (10YR5/3). The soil data as recorded does not meet the criteria of having a "depleted matrix" typical of a hydric soil.

Acknowledge that there was a ponded area adjacent to the Data Plot 2 location. This small area of 100 to 200 square feet in size is an old excavated pit from previous quarry research related to bedrock depth and the mine. Vegetation was not observed growing in the inundated pit. An attempt to excavate a soil pit in about 4 inches of standing water during the 4/28/17 investigation found the soil profile to be similar as the adjacent soil pits for Data Plot 2. This data plot point is numbered 2B.

Due to the timing related to the completion of this response letter a second re-investigation site visit was conducted 10/4/17. The primary purpose of this site visit was to observe the soils during a dryer period when inundation and over-saturation is absent and a more intact soil profile can be viewed. Two additional wetland data plots were installed (#2C and #2D). Data plot #2C was installed in the center of the excavated depression and #2D was installed downslope of the depression. The observed soil in the depression found mixed soil chroma values (colors) with gravel and wood debris. This is typical of a disturbed soil. Data plot #2D exhibited soil color and profile similar to the two data plots upslope of the depression area (#2 and #2A). The results of the second site visit did not observe hydric soil criteria including a "depleted matrix". The depression is reportedly manmade and the investigations confirm it is a disturbed area within a natural swale. Several photographs of this location are attached to this letter.

- 4) "Neither report addresses the wildlife corridor along the Raging River, or any possible wildlife habitat conservation areas on site".

Response: The stated "Purpose" sections in both reports were to determine wetland and/or stream habitats on the subject parcels. However, the County's 2016 Comprehensive Plan has mapped Wildlife Habitat Network & Public Ownership. This mapping shows the 300-foot wide Raging River Wildlife Corridor and it is outside of the active mining operation. The Wildlife Corridor (150 feet on each side of the River) is contained within the 200-foot Shoreline Management Zone.

The Schulz reports did not include identifying possible wildlife habitat conservation areas. Although none of the wildlife species the County is required to protect were observed on the site the reports were not intended to conduct wildlife studies.

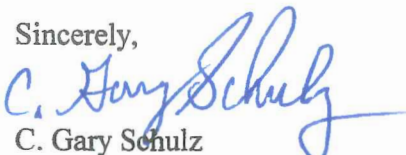
- 5) "Impacts to fish and wildlife from increased dust and particulates, and blasting noise have not been addressed in the critical areas report".

Response: The Schulz reports focused on wetland and buffer determinations and reconnaissance level investigation. The intent of mining plans is to avoid direct impacts to critical areas as regulated by the County and specific to the mining operation. There is no assessment of potential impacts other than to identify and use the standards found in the County's Critical Areas code.

Potential dust and particulates caused by the mining operation and blasting noise levels are regulated by State agencies (PSCAA, WADNR, WADOE). Periodic inspections and reports are required by regulatory agencies. Reportedly the monitoring of air quality and evaluation of blasting noise has been on-going and is focused on potential impacts to humans.

In summary the County comments that were considered to be primary and requiring responses are cited and listed in the same order as in the review memo for GRDE15-0166. The intent is not to eliminate or overlook any of the comments but to work towards resolving them. Additional field investigations and review of wetland information found determinations to be nearly the same as provided in the August 27, 2016 wetland and stream report. Please contact me if there are questions or a need for more information.

Sincerely,


C. Gary Schulz
Wetland/Forest Ecologist

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

Project Site: Raging River Quarry Expansion City/County: King Sampling Date: 4/28/17
 Applicant/Owner: John Priebe State: WA Sampling Point: 2A-2017
 Investigator(s): Gary Schulz Section, Township, Range: 22, 24N, 7E
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0
 Subregion (LRR): A Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Alderwood & Kitsap (AkF) NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks: Transect T-1 at Flag # T-1-2 in dry swale. This plot is a re-sample of same location as 2016.			

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 1/100 th acre)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	<u>n/a*</u>	<u>=</u>	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>2</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<u>2</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>100</u> (A/B)
4. _____	_____	_____	_____		
50% = _____, 20% = _____	_____	= Total Cover			
Sapling/Shrub Stratum (Plot size: 1/100th acre)					
1. <u>Rubus spectabilis</u>	<u>90</u>	<u>yes</u>	<u>FAC</u>	Prevalence Index worksheet:	
2. _____	_____	<u>n/a*</u>	<u>=</u>	Total % Cover of:	Multiply by:
3. _____	_____	_____	_____	OBL species	x1 = _____
4. _____	_____	_____	_____	FACW species	x2 = _____
5. _____	_____	_____	_____	FAC species	x3 = _____
50% = _____, 20% = _____	<u>90</u>	= Total Cover		FACU species	x4 = _____
				UPL species	x5 = _____
Herb Stratum (Plot size: 1/100th acre)				Column Totals:	<u>_____</u> (A) <u>_____</u> (B)
1. <u>Athyrium filix-femina</u>	<u>40</u>	<u>yes</u>	<u>FACW</u>	Prevalence Index = B/A = _____	
2. <u>Tolmiea menziesii</u>	<u>I</u>	<u>no</u>	<u>FAC</u>		
3. <u>Polystichum munitum</u>	<u>10</u>	<u>no</u>	<u>FACU</u>		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
50% = _____, 20% = _____	<u>50</u>	= Total Cover			
Woody Vine Stratum (Plot size: _____)					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
50% = _____, 20% = _____	_____	= Total Cover			
% Bare Ground in Herb Stratum _____					

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
☒ 2 – Dominance Test is >50%
☐ 3 – Prevalence Index is ≤3.0¹
☐ 4 – Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
☐ 5 – Wetland Non-Vascular Plants¹
☐ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present?

Yes ☒ No ☐

Remarks:

Project Site: Raging River Quarry Expansion

SOIL

Sampling Point: 2A-2017

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		
8	10YR2/2	100					sandy loam	dry - moist
14	10YR5/3	100					sandy loam	dry
18	10YR5/3	95	7.5YR5/6	5	C	M	sandy loam	dry
	10YR4/4						sand	thin sand layer

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.)

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present?

Yes

☐ No

☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- | | |
|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) |
| <input type="checkbox"/> High Water Table (A2) | (except MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Stunted or Stresses Plants (D1) (LRR A) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- | |
|--|
| <input type="checkbox"/> Water-Stained Leaves (B9) |
| (MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Frost-Heave Hummocks (D7) |

Field Observations:

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

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

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

Wetland Hydrology Present?

Yes

☐ No

☒

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

Remarks:

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

Project Site: Raging River Quarry Expansion City/County: King Sampling Date: 4/28/17
 Applicant/Owner: John Priebe State: WA Sampling Point: 2B-2017
 Investigator(s): Gary Schulz Section, Township, Range: 22, 24N, 7E
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0
 Subregion (LRR): A Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Alderwood & Kitsap (AkF) NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks: Near sample point 2A along Transect T-1 in a dry swale. This plot is located within the ponded depression just south of Flag # T-1-2.			

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 1/100 th acre)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	<u>n/a*</u>	<u>=</u>	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>1</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<u>1</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>100</u> (A/B)
4. _____	_____	_____	_____		
50% = _____, 20% = _____	_____	= Total Cover			
<u>Sapling/Shrub Stratum (Plot size: 1/100th acre)</u>					
1. <u>Rubus spectabilis</u>	<u>65</u>	<u>yes</u>	<u>FAC</u>	Prevalence Index worksheet:	
2. _____	_____	<u>n/a*</u>	<u>=</u>	Total % Cover of:	Multiply by:
3. _____	_____	_____	_____	OBL species	x1 = _____
4. _____	_____	_____	_____	FACW species	x2 = _____
5. _____	_____	_____	_____	FAC species	x3 = _____
50% = _____, 20% = _____	<u>65</u>	= Total Cover		FACU species	x4 = _____
				UPL species	x5 = _____
				Column Totals:	<u>_____</u> (A) <u>_____</u> (B)
				Prevalence Index = B/A = _____	
<u>Herb Stratum (Plot size: 1/100th acre)</u>					
1. <u>Athyrium filix-femina</u>	<u>10</u>	<u>no</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators:	
2. _____	_____	<u>n/a*</u>	<u>=</u>	<input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation	
3. _____	_____	<u>n/a*</u>	<u>=</u>	<input checked="" type="checkbox"/> 2 – Dominance Test is >50%	
4. _____	_____	_____	_____	<input type="checkbox"/> 3 – Prevalence Index is ≤3.0 ¹	
5. _____	_____	_____	_____	<input type="checkbox"/> 4 – Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
6. _____	_____	_____	_____	<input type="checkbox"/> 5 – Wetland Non-Vascular Plants ¹	
7. _____	_____	_____	_____	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
8. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
50% = _____, 20% = _____	<u>10</u>	= Total Cover			
<u>Woody Vine Stratum (Plot size: _____)</u>					
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
2. _____	_____	_____	_____		
50% = _____, 20% = _____	_____	= Total Cover			
% Bare Ground in Herb Stratum _____					

Remarks: No groundcover vegetation growing in the ponded depression.

Project Site: Raging River Quarry Expansion

SOIL

Sampling Point: 2B-2017

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		
18	10YR2/2	100					sandy loam	saturated
20	10YR5/3	95	7.5YR5/6	5	C	M	sandy loam	saturated

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.)

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present?

Yes

☐ No

☒

Remarks: This location in the ponded area had a 4- inch depth of inundation.

HYDROLOGY

Wetland Hydrology Indicators:

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

- | | |
|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) |
| <input type="checkbox"/> High Water Table (A2) | (except MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Stunted or Stresses Plants (D1) (LRR A) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

Secondary Indicators (2 or more required)

- | |
|--|
| <input type="checkbox"/> Water-Stained Leaves (B9) |
| (MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Frost-Heave Hummocks (D7) |

Field Observations:

Surface Water Present?	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	Depth (inches):	4
Water Table Present?	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	Depth (inches):	0

Wetland Hydrology Present?

Yes

☒ No

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

Remarks:

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

Project Site: Raging River Quarry Expansion City/County: King Sampling Date: 10/4/17
 Applicant/Owner: John Priebe State: WA Sampling Point: 2C-2017
 Investigator(s): Gary Schulz Section, Township, Range: 22, 24N, 7E
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0
 Subregion (LRR): A Lat: Long: Datum:
 Soil Map Unit Name: Alderwood & Kitsap (AkF) NWI classification:
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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 type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks: Near sample point 2A along Transect T-1 in a dry swale. This plot is located within the ponded depression just south of Flag # T-1-2.			

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 1/100 th acre)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. <u> </u>	<u> </u>	<u>n/a*</u>	<u>=</u>	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>1</u> (A)
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Total Number of Dominant Species Across All Strata:	<u>2</u> (B)
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>50</u> (A/B)
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>		
50% = <u> </u> , 20% = <u> </u>	<u> </u>	<u>= Total Cover</u>			
Sapling/Shrub Stratum (Plot size: 1/100 th acre)					
1. <u>Rubus spectabilis</u>	<u>40</u>	<u>yes</u>	<u>FAC</u>	Prevalence Index worksheet:	
2. <u> </u>	<u> </u>	<u>n/a*</u>	<u>=</u>	Total % Cover of:	Multiply by:
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	OBL species	x1 = <u> </u>
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	FACW species	x2 = <u> </u>
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>	FAC species	x3 = <u> </u>
50% = <u> </u> , 20% = <u> </u>	<u>40</u>	<u>= Total Cover</u>		FACU species	x4 = <u> </u>
Herb Stratum (Plot size: 1/100 th acre)				UPL species	x5 = <u> </u>
1. <u>Athyrium filix-femina</u>	<u>I</u>	<u>no</u>	<u>FACW</u>	Column Totals:	<u> </u> (A) <u> </u> (B)
2. <u>Polystichum munitum</u>	<u>20</u>	<u>yes</u>	<u>FACU</u>	Prevalence Index = B/A = <u> </u>	
3. <u> </u>	<u> </u>	<u>n/a*</u>	<u>=</u>	Hydrophytic Vegetation Indicators:	
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation	
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<input checked="" type="checkbox"/> 2 – Dominance Test is >50%	
6. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<input type="checkbox"/> 3 – Prevalence Index is ≤3.0 ¹	
7. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<input type="checkbox"/> 4 – Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
8. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<input type="checkbox"/> 5 – Wetland Non-Vascular Plants ¹	
9. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
10. <u> </u>	<u> </u>	<u> </u>	<u> </u>	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
11. <u> </u>	<u> </u>	<u> </u>	<u> </u>		
50% = <u> </u> , 20% = <u> </u>	<u>20</u>	<u>= Total Cover</u>			
Woody Vine Stratum (Plot size: <u> </u>)					
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Hydrophytic Vegetation Present?	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
50% = <u> </u> , 20% = <u> </u>	<u> </u>	<u>= Total Cover</u>			
% Bare Ground in Herb Stratum <u> </u>					

Remarks: No groundcover vegetation growing in the ponded depression.

Project Site: Raging River Quarry Expansion

SOIL

Sampling Point: 2C-2017

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		
18	10YR2/2	80					sandy loam	moist
	10YR5/3	20					sandy loam	mixed soil matrix with wood pieces

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.)

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) |

Indicators for Problematic Hydric Soils³:

- ☐ 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: _____

Depth (inches): _____

Hydric Soils Present? Yes ☐ No ☒

Remarks: This soil appeared mixed from past excavation and included wood and gravel. Depleted soil conditions not observed.

HYDROLOGY

Wetland Hydrology Indicators:

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

- | | |
|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) |
| <input type="checkbox"/> High Water Table (A2) | (except MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Stunted or Stresses Plants (D1) (LRR A) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | |

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? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks: Assumed by non-hydric soil.

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

Project Site: Raging River Quarry Expansion City/County: King Sampling Date: 4/28/17
 Applicant/Owner: John Priebe State: WA Sampling Point: 2D-2017
 Investigator(s): Gary Schulz Section, Township, Range: 22, 24N, 7E
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0
 Subregion (LRR): A Lat: Long: Datum:
 Soil Map Unit Name: Alderwood & Kitsap (AkF) NWI classification:
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in 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"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks: Transect T-1 near Flag # T-1-2 in dry swale. This plot is on the south side and downslope of the depression.			

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 1/100 th acre)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. <u> </u>	<u> </u>	<u>n/a*</u>	<u>=</u>	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>1</u> (A)
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Total Number of Dominant Species Across All Strata:	<u>1</u> (B)
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>100</u> (A/B)
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>		
50% = <u> </u> , 20% = <u> </u>	<u> </u>	<u>= Total Cover</u>			
Sapling/Shrub Stratum (Plot size: 1/100 th acre)				Prevalence Index worksheet:	
1. <u>Rubus spectabilis</u>	<u>60</u>	<u>yes</u>	<u>FAC</u>	Total % Cover of:	Multiply by:
2. <u>Acer circinatum</u>	<u>5</u>	<u>no</u>	<u>FAC</u>	OBL species <u> </u>	x1 = <u> </u>
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	FACW species <u> </u>	x2 = <u> </u>
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	FAC species <u> </u>	x3 = <u> </u>
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>	FACU species <u> </u>	x4 = <u> </u>
50% = <u> </u> , 20% = <u> </u>	<u>65</u>	<u>= Total Cover</u>		UPL species <u> </u>	x5 = <u> </u>
Herb Stratum (Plot size: 1/100 th acre)				Column Totals: <u> </u> (A)	<u> </u> (B)
1. <u>Athyrium filix-femina</u>	<u>I</u>	<u>no</u>	<u>FACW</u>	Prevalence Index = B/A = <u> </u>	
2. <u>Tolmiea menziesii</u>	<u>I</u>	<u>no</u>	<u>FAC</u>		
3. <u>Polystichum munitum</u>	<u>15</u>	<u>no</u>	<u>FACU</u>		
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>		
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>		
6. <u> </u>	<u> </u>	<u> </u>	<u> </u>		
7. <u> </u>	<u> </u>	<u> </u>	<u> </u>		
8. <u> </u>	<u> </u>	<u> </u>	<u> </u>		
9. <u> </u>	<u> </u>	<u> </u>	<u> </u>		
10. <u> </u>	<u> </u>	<u> </u>	<u> </u>		
11. <u> </u>	<u> </u>	<u> </u>	<u> </u>		
50% = <u> </u> , 20% = <u> </u>	<u>15</u>	<u>= Total Cover</u>			
Woody Vine Stratum (Plot size: <u> </u>)				Hydrophytic Vegetation Indicators:	
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<input checked="" type="checkbox"/> 2 – Dominance Test is >50%	
50% = <u> </u> , 20% = <u> </u>	<u> </u>	<u>= Total Cover</u>		<input type="checkbox"/> 3 – Prevalence Index is ≤3.0 ¹	
% Bare Ground in Herb Stratum <u> </u>				<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 Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Remarks:

Project Site: Raging River Quarry Expansion

SOIL

Sampling Point: 2D-2017

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		
<u>6</u>	<u>10YR3/2</u>	<u>100</u>	_____	_____	_____	_____	<u>sandy loam</u>	<u>dry</u>
<u>16</u>	<u>10YR5/3</u>	<u>100</u>	_____	_____	_____	_____	<u>sandy loam</u>	<u>dry</u>
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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 Soils³:

- ☐ 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: _____

Depth (inches): _____

Hydric Soils Present?

Yes

☐ No

☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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 Stresses 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? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

Wetland Hydrology Present?

Yes

☐ No

☒

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

Remarks:



Wetland Data Plot 2B was located within an old excavated exploration pit.

<

Wetland Data Plot 2A was excavated in an undisturbed area adjacent to Data Plot 2B as a reference soil profile.

>



Reference Data Plot 2A has chroma / value 10YR 5/3 sandy loam below 8 inches deep. The bright color is not indicative of depleted soil associated with wetland (hydric) soils. No wetland hydrology indicators are present.

<



Wetland Data Plot 2B was excavated within the depression in approximately 4 inches of standing water. Salmonberry shrubs and lady fern growing around the outer edges of the depression. The depression intercepts shallow groundwater and surface water runoff.

<

Wetland Data Plot 2B had a soil profile similar to reference Plot 2A but was disturbed years ago. The 10YR 5/3 chroma / value is present at a depth of 18 inches. The data plots all have a dark brown (10YR2/2) color in the upper layer and the lighter brown 10YR5/3 color at depths to 18 inches. The observed soils are not depleted.



Wetland Data Plot 2B has the same chroma / value color of 10YR 5/3 as observed in the undisturbed area of Wetland Data Plot 2A.