

Appendix A

Wetland Delineation Report

Northern 100 Acres associated with the McKenzie Conservation Area
(Spokane County, Washington)

[Located in Sections 27 & 28, Township 27 North, Range 45 East]

June 2010

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Introduction

This wetland delineation was authorized by Ben Brattebo, Spokane County Utilities Division, in order to properly define the wetland boundaries within the approximately 106-acre defined study area, pursuant to the U.S. Army Corps of Engineers Wetland Delineation Manual Technical Report Y-87-1 (1987 Manual) and the Arid West Regional Supplement (2008). The defined study area is linked to a potential wetland restoration site located within Sections 27 & 28, Township 27 North, Range 45 East, Spokane County, Washington.

This investigation was performed to determine the presence or absence of wetland boundaries within the defined study area. The actual field investigations were conducted on March 30th and April 12th, 2010. It should be noted that the field conditions were observed near the beginning of the growing season, when hydrologic characteristics were evident. The primary investigator was Vincent Barthels, Biologist for J-U-B ENGINEERS, Inc. Jeremiah Nill, a biologist, and Gregg Rayner, a senior biologist, both with J-U-B ENGINEERS, Inc. also assisted in the delineation and the subsequent report write-up.

Methods

The wetland delineation was conducted using methodology described in the U.S. Army Corps of Engineers Wetland Delineation Manual (1987 Manual) and the Arid West Regional Supplement (2008). Specific investigations were performed along 5 established wetland transects within the study area. In most cases, the wetland transects were established in concert with established groundwater monitoring wells (GWs), which were developed in accordance with WAC 173-162. Soil test pits (STPs) were developed (i.e. including one STP at each GW) in order to identify the presence/absence of hydrophytic plant communities, wetland hydrology and hydric soils along each of the transects. The soil test pits were marked with wooden lath and blue flagging.

Professional land surveying was performed by Spokane County Engineers. The survey was completed with a Single Base Line RTK Solution and a field calibration. Field procedures were utilized to provide an accuracy of ± 0.15 of a foot horizontal and vertical. Spokane County GPS Survey crew also picked up the center of the channel ground shots and channel widths along the streams located within the defined study area. The survey points were downloaded into Land Desktop 2009 in order to develop the Wetland Delineation Map (see appendix). This map aided in the calculations associated with wetland and stream resources located within the defined study area. Photos were taken to properly document pertinent locations (see appendix - photo inventory).

Sources of information used for this investigation included: 1) Spokane County Soil Survey and Web Soil Survey (see Soil Map in the appendix); 2) Newman Lake, WA USGS 7.5 minute Quad Map; 3) National List of Plant Species that Occur in Wetlands (Resource Management Group, Inc. 1994); 4) Plant identification references (see references); 5) Newman Lake, WA - National Wetland Inventory (NWI) Map (see appendix); 6) DNR Water Typing Maps (2)(see appendix); 7) Munsell soil chart (2000 Edition); and, 8) Hydric Soils List - Spokane County, Washington (USDA 2005).

Discussion

Topography

The topography of the project study area is fairly flat (0-10% slopes). Somewhat steeper slopes can be associated with the western end of the study area. The elevation of the study area falls within the range of 2,130 to 2,165 feet above sea level. Approximately 85% of the project study area falls within the range of 2,130 to 2,140 feet above sea level.

Climate

The project area has an average temperature of 47.3 degrees F and an average of 16.67 inches of precipitation, with an average snowfall of 44.3 inches. The typical growing season is between April 12 and October 19, which totals 190 days (NRCS, 2009). This year (i.e. 2010) the growing season started early (on March 30th) and was confirmed by measuring the soil temperature (i.e. greater than 41 degrees Fahrenheit) at a depth of 12 inches at STP # 2; and, furthermore, was linked to the emergence of herbaceous plants from the ground (specifically, reed canary grass and meadow foxtail).

Plant communities

Plant communities primarily consisted of assorted herbaceous plants, eight types of shrubs, and nine types of prevalent trees. Table 1.0 illustrates the vegetative assemblages encountered within the subject property.

Table 1.0 - Identified Plant Species

Common Name	Scientific Name	Wetland Indicator Status
Alder	<i>Alnus rubra</i>	FAC
Baltic Rush	<i>Juncus balticus</i>	FACW
Blue-bunch Wheatgrass	<i>Agropyron spicatum</i>	FACU
Bulbous Blue Grass	<i>Poa bulbosa</i>	FACU
Canadian Thistle	<i>Cirsium arvense</i>	FACU
Cattail	<i>Typha latifolia</i>	OBL
Cheat Grass	<i>Bromus tectorum</i>	FACU
Clover	<i>Trifolium repens</i>	FAC
Club moss	<i>Lycopodium spp.</i>	FAC
Columbia Needle Grass	<i>Stipa columbiana</i>	FACU
Common Mullein	<i>Verbascum thlapsus</i>	FACU
Common tansy	<i>Tanacetum vulgare</i>	FACU
Common yarrow	<i>Achillea millefolium</i>	FACU
Cottonwood	<i>Populus trichocarpa</i>	FAC
Dandelion	<i>Taraxacum officinale</i>	FACU
Douglas Fir	<i>Pseudotsuga menziesii</i>	FACU
Flix-weed	<i>Descurainia Sophia</i>	FACU
Golden Currant	<i>Ribes aureum</i>	FAC
Grand Fir	<i>Abies grandis</i>	FACU
Hawthorn	<i>Crataegus douglasii</i>	FAC
Horsetail	<i>Equisetum arvense</i>	FAC
Idaho Fescue	<i>Festuca idahoensis</i>	FACU
Kentucky Bluegrass	<i>Poa pratensis</i>	FAC
Lodge Pole Pine	<i>Pinus contorta</i>	FAC
Lupine	<i>Lupinus spp.</i>	FACU
Meadow foxtail	<i>Alopecurus pratensis</i>	FACW
Nettles	<i>Stachys spp.</i>	FACW

Common Name	Scientific Name	Wetland Indicator Status
Oceanspray	<i>Holodiscus discolor</i>	FACU
Oregon Grape	<i>Mahonia spp.</i>	FACU
Pasture wormwood	<i>Artemisia frigida</i>	UPL
Peat Moss	<i>Sphagnum spp.</i>	FACW
Ponderosa Pines	<i>Pinus ponderosa</i>	FACU
Quaking Aspen	<i>Populus tremuloides</i>	FAC
Red-osier Dogwood	<i>Cornus sericea</i>	FAC
Reed Canary Grass	<i>Phalaris arundinacea</i>	FACW
Sedge	<i>Carex spp.</i>	FACW
Smooth Brome	<i>Bromus inermis</i>	FACU
Snowberry	<i>Symphoricarpos albus</i>	FACU
Spiraea	<i>Spiraea douglasii</i>	FACW
Spotted Knapweed	<i>Centaurea maculosa</i>	FACU
St. John's wort	<i>Hypericum majus</i>	FAC
Sword Fern	<i>Polystichum spp.</i>	FAC
Tamarack	<i>Larix occidentalis</i>	FACU
Western Cedar	<i>Thuja plicata</i>	FAC
Willow	<i>Salix spp.</i>	FAC
Wood's Rose	<i>Rosa woodsii</i>	FACU

Hydrology

Mountainous seeps or springs originating at higher elevations, two type "F" stream channels, two County Roadway cross-drain culverts, and a high water table are contributing features that supplement wetland hydrology to the identified wetland areas.

Six groundwater monitoring wells were established on April 15th, 2010 (see wetland delineation map). Utilizing data loggers, the groundwater elevations at the wells were recorded through June 10th. The collected data depicts the peak hydrologic conditions, during the previously mentioned monitoring window, correlate to May 2nd.

Soils

Soils identified for the project areas included: Konner silty clay loam, drained (Kd); Moscow silt loam, 0 to 30 percent slopes (MmC); Moscow silt loam, 30 to 55 percent slopes (MmD); Naff silt loam, 5 to 30 percent slopes (NcA); Semiahmoo muck, drained (Sk); Spokane loam, 0 to 30 percent slopes (SpC); and, Spokane loam, 30 to 55 percent slopes (SpD) (NRCS/USDA 1968). Kd, NcA and Sk are listed as hydric on the Spokane County Hydric Soils List, dated 10/30/2005 (NRCS).

The soils found in the project area have a few similar general characteristics, which include: (1) they are either medium textured silt loams or mucks and (2) the frost-free season for each soil type falls within the ranges of 90 to 110 days (NRCS/USDA 1968 & 2009). Differences amongst the soil types are best exemplified in their texture and structure distinctiveness, by their color differences which range from yellowish to dark black, and amongst the general characteristics exemplified in Table 2.0 (NRCS/USDA 1968 & 2009).

Table 2.0 - Soil Characteristics (NRCS/USDA 1968 & 2009).

Soil Type	Drainage Class	Permeability	Erosion Potential	Run-off Potential
Konner silty clay loam, drained (Kd)	Somewhat poorly drained	Slowly	Little to none	Slow
Moscow silt loam, 0 to 30 percent slopes (MmC)	Well drained	Moderately Rapid	Severe	Rapid
Moscow silt loam, 30 to 55 percent slopes (MmD)	Well drained	Moderately Rapid	Severe	Rapid
Naff silt loam, 5 to 30 percent slopes (NcA)	Moderately Well drained	Moderate	Slight	Slow
Semiahmoo muck, drained (Sk)	Poorly Drained	Moderate	None	Slow
Spokane loam, 0 to 30 percent slopes (SpC)	Well drained	Moderate	Moderate to Severe	Medium
Spokane loam, 30 to 55 percent slopes (SpD)	Well drained	Moderate	Severe	Rapid

Reference Map Wetland/Stream Classifications

The National Wetlands Inventory (NWI) Map classifies a large percentage of the defined project study area as a PEM1Cd (palustrine, emergent, persistent, seasonally flooded, partially drained/ditched) (see attached NWI Map).

The DNR forest practice activity maps, pertaining to Sections 27 and 28, classifies several type F and N streams (all of which are un-named), which traverse through the identified wetland area.

Findings

Data forms reflect the conditions as assessed in the field and can be found in the Appendix attached to this report. The following subsections summarize the findings along the established transects, how the wetland boundary was determined and discusses the classification and functionality of the wetland.

Field Investigations:

Transect 1 (STP #1, STP # 2 and GW # 1):

Transect 1 is located in the northeastern portion of the subject property. Wetland parameters were fulfilled at STP #1 and GW # 1. Hydrophytic vegetative structure consisted mainly of reed canary grass and meadow foxtail. The wetland hydrology was evidenced by the presence of saturation and a high water table within the upper 12 inches of the soil profile. Hydric soil conditions were evidenced by hydrogen sulfide smell in the upper 12 inches of the soil profile. Conversely, STP #2 did not fulfill all of the wetland parameters and consequently received upland designation. STP # 2 was located near the toe of West Newman Lake Drive.

Transect 2 (STP #7, GW # 2 and GW # 3):

Transect 2 is north-south oriented and is situated in a fashion that divides the subject property into two pieces (i.e. an eastern third, and a western two-thirds). Along the northern portion of the transect, the wetland edge starts along the elevation of an active ant hill (see photo 6). STP # 7 did not fulfill all of the wetland parameters and consequently received an

upland designation. Only the vegetation parameter was fulfilled, based on the dominant presence of reed canary grass, spiraea, and aspens in the area. The elevation or relative topography of STP # 7 kicked this data point into an upland designation. Both the data points associated with GW # 2 and GW # 3 fulfilled all of the wetland criteria. The wetland data points along this transect can be characterized as: emergent features with vegetative communities dominated by reed canary grass and meadow foxtail; histosol soils (containing high percentages of organic materials); and, containing high water tables near the surface.

Transect 3 (STP # 3, GW # 4 and GW # 5):

Transect 3 is located in the western portion of the subject property. Wetland parameters were fulfilled at GW # 4 and GW # 5. Hydrophytic vegetative structure consists of reed canary grass and meadow foxtail. The wetland hydrology was evidenced by the presence saturation and a high water table within the upper 12 inches of the soil profile. Hydric soil conditions were evidenced by prominent redox features in the upper 20 inches and a hydrogen sulfide smell in the upper 12 inches of the soil profile. Conversely, STP # 3 did not fulfill all of the wetland parameters and consequently received upland designation. STP # 3 can be characterized as a disturbed area (an abandoned well casing is in the area) that contains scattered and sparse ponderosa pine saplings and an understory mainly dominated by spotted knapweed.

Transect 4 (STP# 4 and STP # 5):

Transect 4 is located in the southwestern portion of the subject property. Wetland parameters were fulfilled at STP #5. Hydrophytic vegetative structure consisted mainly of reed canary grass and a sparse overstory of cedars, cottonwoods and alders. The wetland hydrology was evidenced by the presence of saturation and a high water table within the upper 12 inches of the soil profile. Hydric soil conditions were evidenced by prominent redox features in the upper 20 inches and a hydrogen sulfide smell in the upper 12 inches of the soil profile. Conversely, STP # 4 did not fulfill all of the wetland parameters and consequently received upland designation. STP # 4 was situated above the wetland flat, on a north facing forested aspect.

Transect 5 (STP #6 and GW # 6):

Transect 5 is located perpendicular to the southern wetland boundary in the central portion of the property. Two soil test pits were dug along this established transect. Wetland parameters were fulfilled at GW # 6. Hydrophytic vegetation structure consisted of meadow foxtail, reed canary grass, peat moss and clover. The wetland hydrology was evidenced by the presence of a high water table observed at the surface. Hydric soils were indicated by a hydrogen sulfide smell encounter just below the existing grade of the histosol soils. STP #6 did not fulfill all of the wetland parameters and, consequently, received an upland designation. STP # 6 was situated above the wetland flat, along an abandoned forested road and adjacent to a north facing forested aspect.

How the wetland and/or stream boundaries were chosen:

The wetland boundary was determined primarily by the distinct vegetation and topography shifts. Vegetation shifts were linked to the aforementioned hydrophytic species and upland and/or transitional species, such as cheat grass, common mullein, smooth brome or snowberry. Topography shifts were linked to the grade changes linked to the roadway prism of West Newman Lake Road, along the northern portions of the study area; and, a defined north facing forested aspect along the wetland's southern edge. Hydric soil indicators and wetland hydrology further substantiated the delineated boundaries. Streams and/or ditches were delineated based on the ordinary high mark, in accordance with 33 CFR 328.3.

Stream channels identification and classification:

The typed streams illustrated on the wetland delineation map are consistent with the DNR Water Typing Map, except for the following conditions:

- (1) The wetland delineation map illustrates several additional spurs and braided components of the Type F channels, mainly stemming from the channel that enters the western portion of the property through a 2-foot shotgun culvert (see photo # 2).
- (2) A Type "Np" (non-fish perennial) channel was added near the northwestern portion of the subject property. This channel goes subsurface prior to intercepting the Type F channel that originates from the 3-foot culvert along the northern portion of the property.
- (3) The two mapped Type "N" channels located near the eastern portion of the subject property are man-made, farmed drainage ditches that lack connectivity to a Type F channel. Accordingly, these channelized features are classified as Type "X" channels on the Wetland Delineation Map.

Wetland identification, classification and functionality:

The wetland feature located within the defined study area and identified on the wetland delineation map is classified as emergent, sloped, Category III wetland (see wetland delineation map).

Based on Cowardin's (1979) wetland classification system, this wetland feature is field verified to be PEM1Cd, which is consistent with the NWI Map designation.

The Department of Ecology's Wetland Rating System for Eastern Washington was applied. In terms of the DOE rating system, the wetland area within the defined study area is rated as a sloped system and scored to be a Category III Wetland based on its rating (see DOE rating forms), which scored a total of 47 points [24 for Water Quality functions, 4 for hydrologic functions and 19 for habitat functions]. The standard buffer for Category III wetland is 150 feet in accordance with Spokane County's Critical Areas Ordinance (Section 11.20.050.C).

The wetlands identified in this report share several important functions and values that include: the ability to protect and improve water quality; flood storage; ground water recharge; and, provide for wildlife habitat. These wetlands generally act as a sloped catch basin by intercepting run-off from adjacent higher elevations. These wetlands filter the water by degrading or breaking down pollutants, prior to the waters having the potential to flow into Newman Lake.

Conclusion

Within the approximately 106-acre defined study area, an emergent, sloped, category III wetland occupying approximately 97 acres has been identified. This sloped wetland contains several intermittent typed streams as well as ephemeral farmed drainage ditches (i.e. type "X" channels). The enclosed wetland delineation map illustrates the delineated features located within the defined project study area. It should be noted, however, that final authority rests with the appropriate regulatory agencies.

Respectfully submitted by:

Vincent J. Barthels, Biologist
J-U-B ENGINEERS, Inc.

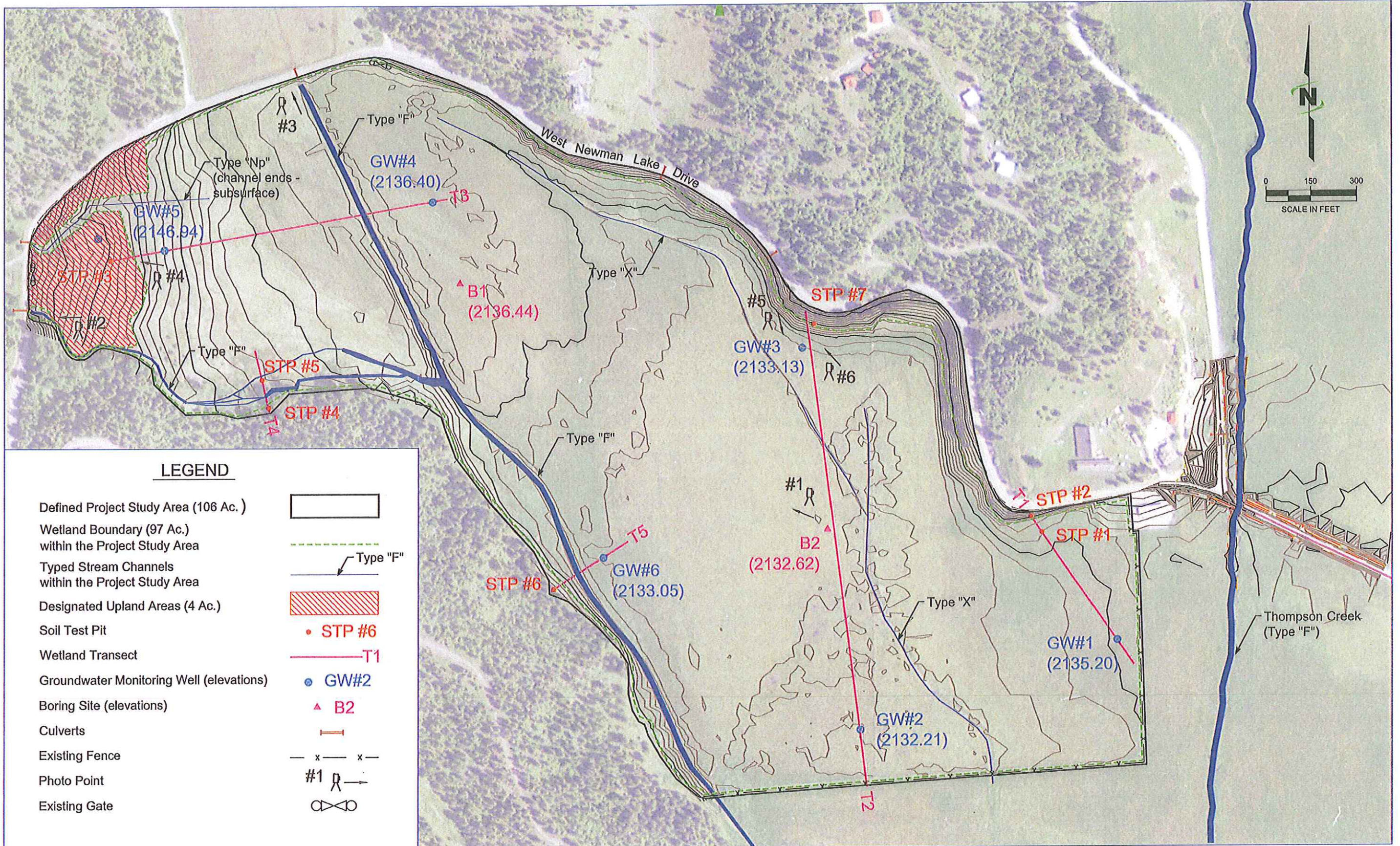


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References

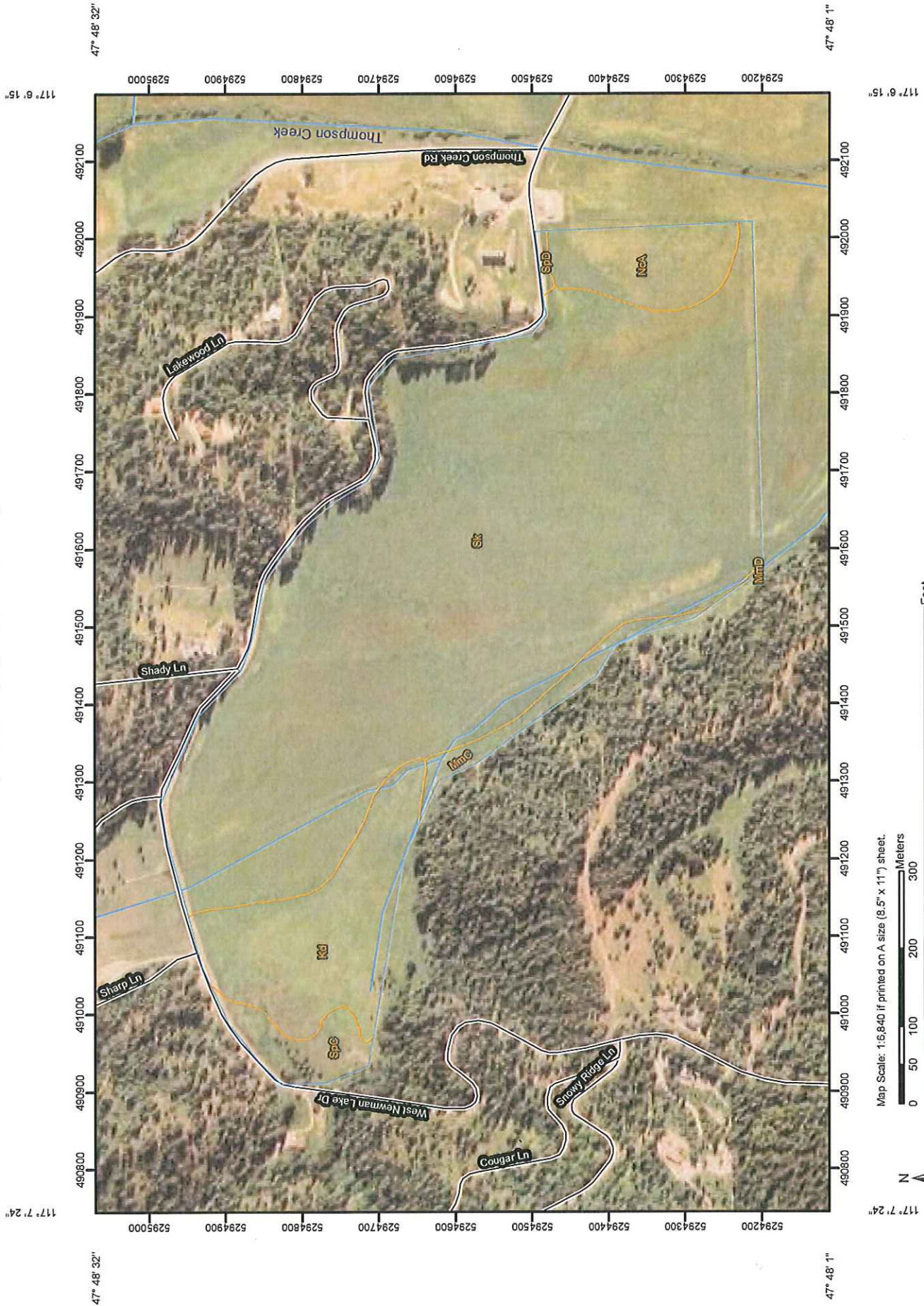
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Appendix

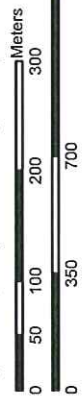


Spokane County
 McKenzie Property - North Newman Lake
 Wetland Delineation Map



























Soil Map—Spokane County, Washington
(McKenzie Property - North Newman Lake)



Map Scale: 1:6,840 if printed on A size (8.5" x 11") sheet.



MAP LEGEND

 Area of Interest (AOI)	 Very Stony Spot
 Soils	 Wet Spot
 Area of Interest (AOI)	 Other
 Soil Map Units	
Special Point Features	Special Line Features
 Blowout	 Gully
 Borrow Pit	 Short Steep Slope
 Clay Spot	 Other
 Closed Depression	
 Gravel Pit	Political Features
 Gravelly Spot	 Cities
 Landfill	Water Features
 Lava Flow	 Oceans
 Marsh or swamp	 Streams and Canals
 Mine or Quarry	
 Miscellaneous Water	Transportation
 Perennial Water	 Ralls
Rock Outcrop	 Interstate Highways
Saline Spot	 US Routes
Sandy Spot	 Major Roads
Severely Eroded Spot	 Local Roads
Sinkhole	
Slide or Slip	
Sodic Spot	
Spoil Area	
Stony Spot	

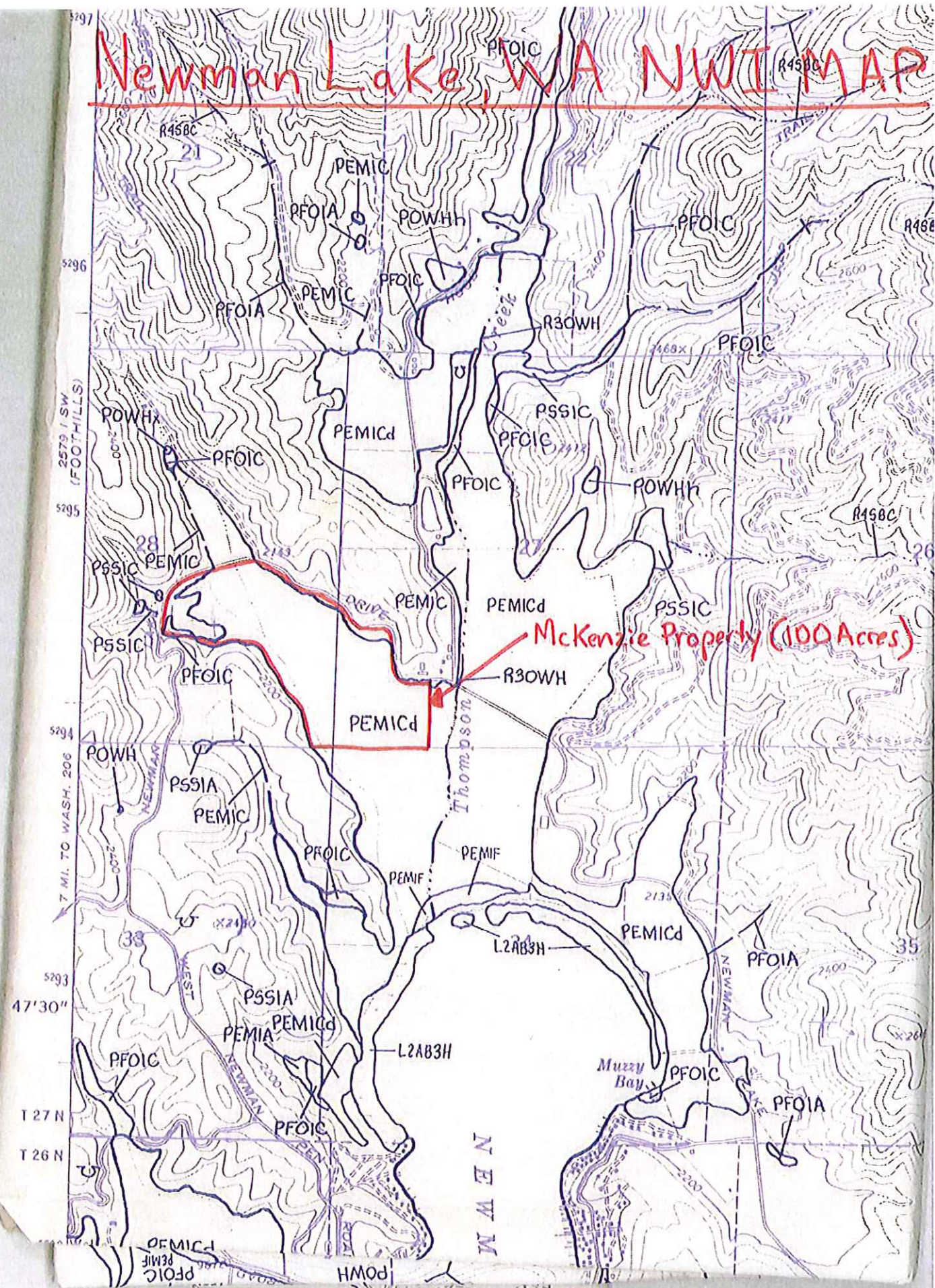
MAP INFORMATION

Map Scale: 1:6,840 if printed on A size (8.5" x 11") sheet.
 The soil surveys that comprise your AOI were mapped at 1:20,000.
 Please rely on the bar scale on each map sheet for accurate map measurements.
 Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: UTM Zone 11N NAD83
 This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.
 Soil Survey Area: Spokane County, Washington
 Survey Area Data: Version 2, Jun 9, 2009
 Date(s) aerial images were photographed: 7/2/2006
 The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Spokane County, Washington (WA063)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Kd	Konner silty clay loam, drained	12.2	11.6%
MmC	Moscow silt loam, 0 to 30 percent slopes	2.3	2.2%
MmD	Moscow silt loam, 30 to 55 percent slopes	0.0	0.0%
NcA	Narcisse silt loam, 0 to 5 percent slopes	5.5	5.2%
Sk	Semiahmoo muck, drained	82.1	77.9%
SpC	Spokane loam, 0 to 30 percent slopes	3.0	2.9%
SpD	Spokane loam, 30 to 55 percent slopes	0.3	0.3%
Totals for Area of Interest		105.5	100.0%

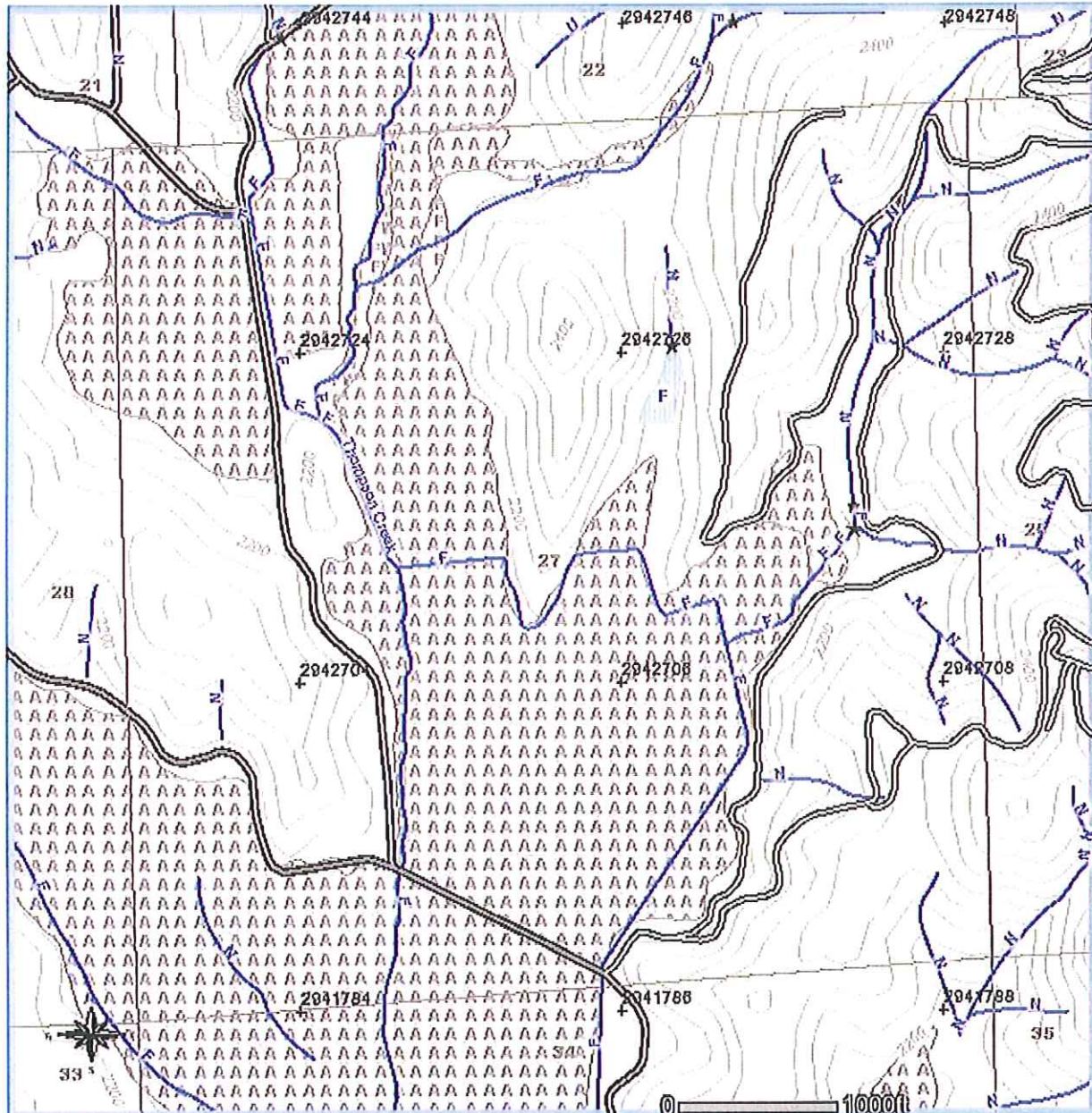
Newman Lake, WA NWI MAP



FOREST PRACTICE WATER TYPE MAP

TOWNSHIP 27 NORTH HALF 0, RANGE 45 EAST (W.M.) HALF 0, SECTION 27

Application #: N/A

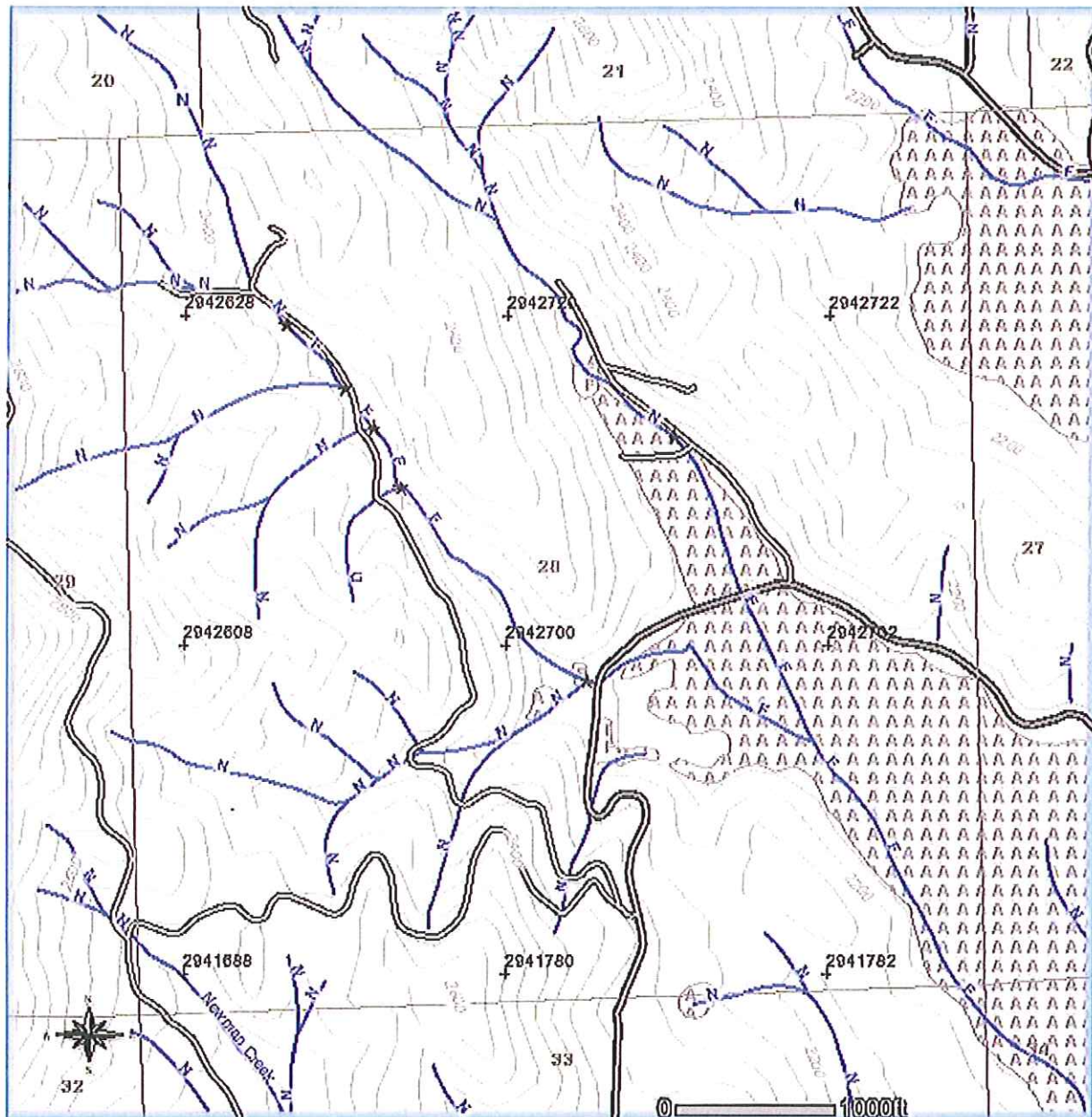


Thursday, February 04, 2010 1:45:24 PM
NAD 83
Contour Interval: 40 Feet

FOREST PRACTICE WATER TYPE MAP

TOWNSHIP 27 NORTH HALF 0, RANGE 45 EAST (W.M.) HALF 0, SECTION 28

Application #: **N/A**



Thursday, February 04, 2010 1:46:59 PM
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Contour Interval: 40 Feet

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: McKenzie Property City/County: Spokane County Sampling Date: 3/30/10
 Applicant/Owner: Spokane County State: WA Sampling Point: STP #1(Wetland)
 Investigator(s): Vince Barthels, J-U-B ENGINEERS, Inc. Section, Township, Range: S. 27 T.27 N. R.45 E
 Landform (hillslope, terrace, etc): Low terrace, floodway Local relief (concave, convex, none): Concave Slope (%): Less than 5%
 Subregion (LRR): B Lat: 47° 48' 12.91" N Long: 117° 06' 24.36" W Datum: NAD 1927
 Soil Map Unit Name: Narcisse silt loam, 0 to 5 % slopes (NcA) NWI classification: PEMICd

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? No Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain 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 Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: All of the three wetland parameters were fulfilled at this site. STP# 1 and STP #2 are paired along a transect in the NE corner of the subject property.	

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: 1 (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)
4. _____	_____	_____	_____	
Total Cover: _____				
Sampling/Shrub Stratum				Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by:
2. _____	_____	_____	_____	OBL species _____ x 1 = _____
3. _____	_____	_____	_____	FACW species _____ x 2 = _____
4. _____	_____	_____	_____	FAC species _____ x 3 = _____
5. _____	_____	_____	_____	FACU species _____ x 4 = _____
Total Cover: _____				UPL species _____ x 5 = _____
Herb Stratum				Column Totals: _____ (A) _____ (B)
1. <u>Phalaris arundinacea</u>	70	Yes	FACW	Prevalence Index = B/A = _____
2. <u>Alopecurus pratensis</u>	15	No	FACW	Hydrophytic Vegetation Indicators:
3. <u>Sphagnum spp.</u>	10	No	FACW	<input checked="" type="checkbox"/> Dominance Test is >50%
4. <u>Phleum pretense</u>	<5	No	FAC	<input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹
5. <u>Taraxacum officinale</u>	<5	No	FACU	<input type="checkbox"/> Morphological Adaptions ¹ (Provide supporting data in remarks or on a separate sheet)
6. <u>Trifolium repens</u>	<5	No	FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
Total Cover: <u>100</u>				¹ Indicators of hydric soil and wetland hydrology must be present.
Woody Vine Stratum				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
Total Cover: <u>0</u>				
% Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust <u>0</u>				
Remarks: The dominance of RCG fulfills this parameter.				

SOIL

Sampling Point: STP #1 (Wetland)

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>0-16</u>	<u>10 YR 2/1</u>	<u>100</u>	_____	_____	_____	_____	<u>Silty clay loam</u>	<u>Rhizosphere to 10 inches</u>
<u>16-20</u>	<u>10 YR 2/1</u>	<u>68</u>	<u>10YR 5/8</u>	<u>2</u>	<u>C</u>	<u>RC</u>	<u>Silty clay</u>	<u>Organic Streaking</u>
<u>16-20</u>	<u>10 YR 6/2</u>	<u>28</u>	<u>10 YR 5/8</u>	<u>2</u>	<u>C</u>	<u>RC</u>	<u>Silty clay</u>	<u>Organic Streaking</u>
<u>20-24</u>	<u>10 YR 6/3</u>	<u>53</u>	<u>10 YR 5/8</u>	<u>7</u>	<u>C</u>	<u>RC</u>	<u>Silty clay</u>	<u>Organic Streaking</u>
<u>20-24</u>	<u>10 YR 3/2</u>	<u>33</u>	<u>10 YR 5/8</u>	<u>7</u>	<u>C</u>	<u>RC</u>	<u>Silty Clay</u>	<u>Organic Streaking</u>
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

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

Indicators of Problematic Hydric Soils².

- _____ Histosol (A1)
- _____ Histic Epipedon (A2)
- _____ Black Histic (A3)
- X Hydrogen Sulfide (A4)
- _____ Stratified Layers (A5) (LRR C)
- _____ 1 cm Muck (A9) (LRR D)
- _____ 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)
- _____ Loamy Gleyed Matrix (F2)
- _____ Depleted Matrix (F3)
- _____ Redox Dark Surface (F6)
- _____ Depleted Dark Surface (F7)
- _____ Redox Depressions (F8)
- _____ Vernal Pools (F9)

- _____ 1 cm Muck (A9) (LRR C)
- _____ 2 cm Muck (A10) (LRR B)
- _____ Reduced Vertic (F18)
- _____ Red Parent Material (TF2)
- _____ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A
Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Dual matrix exists below 16 inches. Hydrogen sulfide smell evident in upper 12 inches.

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

- _____ Surface Water (A1)
- _____ High Water Table (A2)
- X Saturation (A3)
- _____ Water Marks (B1) (Nonriverine)
- _____ Sediment Deposits (B2) (Nonriverine)
- _____ Drift Deposits (B3) (Nonriverine)
- _____ Surface Soil Cracks (B6)
- _____ Induration Visible on Aerial Imagery (B7)
- _____ Water-Stained Leaves (B9)
- _____ Salt Crust (B11)
- _____ Biotic Crust (B12)
- _____ Aquatic Invertebrates (B13)
- _____ Hydrogen Sulfide Odor (C1)
- _____ Oxidized Rhizosphere along Living Roots (C3)
- _____ Presence of Reduced Iron (C4)
- _____ Recent Iron Reduction in Plowed Soils
- _____ Other (Explain in Remarks)

- _____ Water Marks (B1) (Riverine)
- _____ Sediment Deposits (B2) (Riverine)
- _____ Drift Deposits (B3) (Riverine)
- _____ Drainage Patterns (B10)
- _____ Dry-Season Table (C2)
- _____ Thin Muck Surface (C7)
- _____ Crayfish Burrows (C8)
- _____ Saturation Visible on Aerial Imagery (C9)
- _____ Shallow Aquitard (D3)
- _____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches) _____
 Water Table Present? Yes X No _____ Depth (inches) 15
 Saturation Present? Yes X No _____ Depth (inches) 8
 (includes capillary fringe)

Wetland Hydrology Present? Yes X No _____

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

N/A

Remarks:

Evident saturation 8 inches below grade.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: McKenzie Property City/County: Spokane County Sampling Date: 3/30/10
 Applicant/Owner: Spokane County State: WA Sampling Point: STP #2(Upland)
 Investigator(s): Vince Barthels, J-U-B ENGINEERS, Inc. Section, Township, Range: S. 27 T.27 N. R.45 E
 Landform (hillslope, terrace, etc): Low terrace, floodway Local relief (concave, convex, none): Concave Slope (%): Less than 5%
 Subregion (LRR): B Lat: 47° 48' 13.41" N Long: 117° 06' 25.04" W Datum: NAD 1927
 Soil Map Unit Name: Spokane loam, 30 to 55% slopes (SpD) NWI classification: PEMICd

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)
 Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes X No ___
 Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ___ No <u>X</u> Hydric Soil Present? Yes ___ No <u>X</u> Wetland Hydrology Present? Yes ___ No <u>X</u>	Is the Sampled Area within a Wetland? Yes ___ No <u>X</u>
Remarks: None of the three parameters were met. This STP is located near the toe of the roadway (West Newman Lake Drive).	

VEGEGATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet
1. ___	___	___	___	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)
2. ___	___	___	___	Total Number of Dominant Species Across All Strata: <u>5</u> (B)
3. ___	___	___	___	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>20%</u> (A/B)
4. ___	___	___	___	
Total Cover: ___				
Sampling/Shrub Stratum				Prevalence Index worksheet:
1. <u><i>Symphoricarpos albus</i></u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	Total % Cover of: _____ Multiply by:
2. <u><i>Rosa woodsii</i></u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	OBL species _____ x 1 = _____
3. <u><i>Mahonia spp.</i></u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	FACW species _____ x 2 = _____
4. ___	___	___	___	FAC species _____ x 3 = _____
5. ___	___	___	___	FACU species _____ x 4 = _____
Total Cover: <u>40</u>				UPL species _____ x 5 = _____
Herb Stratum				Column Totals: _____ (A) _____ (B)
1. <u><i>Bromus inermis</i></u>	<u>60</u>	<u>Yes</u>	<u>FACU</u>	Prevalence Index = B/A = _____
2. <u><i>Phalaris arundinacea</i></u>	<u>25</u>	<u>Yes</u>	<u>FACW</u>	
3. <u><i>Artemisia frigida</i></u>	<u>10</u>	<u>No</u>	<u>UPL</u>	Hydrophytic Vegetation Indicators:
4. <u><i>Taraxacum officinale</i></u>	<u>5</u>	<u>No</u>	<u>FACU</u>	___ Dominance Test is >50%
5. ___	___	___	___	___ Prevalence Index is ≤ 3.0 ¹
6. ___	___	___	___	___ Morphological Adaptions ¹ (Provide supporting data in remarks or on a separate sheet)
7. ___	___	___	___	___ Problematic Hydrophytic Vegetation ¹ (Explain)
8. ___	___	___	___	
Total Cover: <u>100</u>				¹ Indicators of hydric soil and wetland hydrology must be present.
Woody Vine Stratum				Hydrophytic Vegetation Present? Yes ___ No <u>X</u>
1. ___	___	___	___	
2. ___	___	___	___	
Total Cover: <u>0</u>				
% Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust <u>0</u>				
Remarks: The vegetative community at this elevation can be characterized as a "FACU" community. The parameter has not been fulfilled.				

SOIL

Sampling Point: STP #2 (Upland)

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>0-12</u>	<u>10 YR 2/1</u>	<u>100</u>	—	—	—	—	<u>Gravelly silt loam</u>	—
<u>12-22</u>	<u>10 YR 2/1</u>	<u>100</u>	—	—	—	—	<u>Silt loam</u>	—
<u>22-30</u>	<u>10 YR 2/1</u>	<u>95</u>	<u>10 YR 4/6</u>	<u>5</u>	<u>C</u>	<u>RC</u>	<u>Silty clay loam</u>	<u>Organic streaking</u>
<u>30-34</u>	<u>10 YR 2/2</u>	<u>85</u>	<u>10 YR 4/6</u>	<u>15</u>	<u>RM</u>	<u>M</u>	<u>Silty clay</u>	—
<u>34-36</u>	<u>10 YR 5/2</u>	<u>95</u>	<u>10 YR 5/6</u>	<u>5</u>	<u>RM</u>	<u>M</u>	<u>Fine sand</u>	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

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

Indicators of Problematic Hydric Soils².

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- 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)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A
Depth (inches):

Hydric Soil Present? Yes No

Remarks:

Soils were dry to a depth of 29 inches. Redox features were encountered 22 inches below existing grade. The upper gravels noted in the texture are most likely a result of the adjacent road prism.

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Induration Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizosphere along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Plowed Soils
- Other (Explain in Remarks)

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drift Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Table (C2)
- Thin Muck Surface (C7)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches)
 Water Table Present? Yes No Depth (inches) 31
 Saturation Present? Yes No Depth (inches) 29
 (includes capillary fringe)

Wetland Hydrology Present? Yes No

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

N/A

Remarks:

None of the primary hydrology indicators were met at this site.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: McKenzie Property City/County: Spokane County Sampling Date: 3/30/10
 Applicant/Owner: Spokane County State: WA Sampling Point: STP #3(Upland)
 Investigator(s): Vince Barthels, J-U-B ENGINEERS, Inc. Section, Township, Range: S. 28 T.27 N. R.45 E
 Landform (hillslope, terrace, etc): Low terrace, floodway Local relief (concave, convex, none): Concave Slope (%): Less than 5%
 Subregion (LRR): B Lat: 47° 48' 23.01" N Long: 117° 07' 09.24" W Datum: NAD 1927
 Soil Map Unit Name: Spokane loam, 0 to 30 percent slopes (SpC) NWI classification: PEMICd

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)
 Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes X No ___
 Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ___ No <u>X</u> Hydric Soil Present? Yes ___ No <u>X</u> Wetland Hydrology Present? Yes ___ No <u>X</u>	Is the Sampled Area within a Wetland? Yes ___ No <u>X</u>
Remarks: None of the three parameters were met. STP #3 is paired with GW #5 along an established transect.	

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet
1. <u><i>Pinus ponderosa</i></u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)
2. ___	___	___	___	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. ___	___	___	___	
4. ___	___	___	___	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)
Total Cover: <u>25</u>				
Sampling/Shrub Stratum				Prevalence Index worksheet:
1. ___	___	___	___	Total % Cover of: _____ Multiply by:
2. ___	___	___	___	OBL species _____ x 1 = _____
3. ___	___	___	___	FACW species _____ x 2 = _____
4. ___	___	___	___	FAC species _____ x 3 = _____
5. ___	___	___	___	FACU species _____ x 4 = _____
Total Cover: ___				UPL species _____ x 5 = _____
Herb Stratum				Column Totals: _____ (A) _____ (B)
1. <u><i>Centaurea maculosa</i></u>	<u>50</u>	<u>Yes</u>	<u>FACU</u>	Prevalence Index = B/A = _____
2. <u><i>Bromus inermis</i></u>	<u>30</u>	<u>Yes</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators:
3. <u><i>Phalaris arundinacea</i></u>	<u>15</u>	<u>No</u>	<u>FACW</u>	
4. ___	___	___	___	___ Dominance Test is >50%
5. ___	___	___	___	___ Prevalence Index is ≤ 3.0 ¹
6. ___	___	___	___	___ Morphological Adaptions ¹ (Provide supporting data in remarks or on a separate sheet)
7. ___	___	___	___	___ Problematic Hydrophytic Vegetation ¹ (Explain)
8. ___	___	___	___	¹ Indicators of hydric soil and wetland hydrology must be present.
Total Cover: <u>95</u>				
Woody Vine Stratum				Hydrophytic Vegetation Present? Yes ___ No <u>X</u>
1. ___	___	___	___	
2. ___	___	___	___	
Total Cover: <u>0</u>				
% Bare Ground in Herb Stratum <u>5</u> % Cover of Biotic Crust <u>0</u>				

Remarks:
 Upland knoll present; dominated by a FACU community.

SOIL

Sampling Point: STP #3 (Upland)

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		
0-12	10 YR 3/2	100	—	—	—	—	Gravelly loam	—
12-20	10 YR 4/3	100	—	—	—	—	Silty clay loam	Depositional material
20-27	10 YR 4/3	100	—	—	—	—	Sandy gravel	Depositional material
27-31	10 YR 3/1	100	—	—	—	—	Clay with gravel	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators of Problematic Hydric Soils ² .
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)
	<input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): Type: <u>N/A</u> Depth (inches): <u> </u>	Hydric Soil Present? Yes <u> </u> No <u> X </u>
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Remarks:
 Did not encounter any redox features. Soils appear to be extremely permeable.

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Induration Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizosphere along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Plowed Soils <input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) (Riverine) <input type="checkbox"/> Sediment Deposits (B2) (Riverine) <input type="checkbox"/> Drift Deposits (B3) (Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Table (C2) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes <u> </u> No <u> X </u> Depth (inches) <u> </u> Water Table Present? Yes <u> X </u> No <u> </u> Depth (inches) <u> 26 </u> Saturation Present? Yes <u> X </u> No <u> </u> Depth (inches) <u> 24 </u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u> </u> No <u> X </u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
N/A

Remarks:
 No saturation in the upper 12 inches of the STP.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: McKenzie Property City/County: Spokane County Sampling Date: 3/30/10
 Applicant/Owner: Spokane County State: WA Sampling Point: STP #4(Upland)
 Investigator(s): Vince Barthels, J-U-B ENGINEERS, Inc. Section, Township, Range: S. 28 T.27 N. R.45 E
 Landform (hillslope, terrace, etc): Low terrace, floodway Local relief (concave, convex, none): Concave Slope (%): Less than 5%
 Subregion (LRR): B Lat: 47° 48' 17.94" N Long: 117° 07' 00.98" W Datum: NAD 1927
 Soil Map Unit Name: Moscow silt loam, 0 to 30 percent slopes (MmC) NWI classification: PEMICd

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)
 Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes X No ___
 Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ___ No <u>X</u> Hydric Soil Present? Yes ___ No <u>X</u> Wetland Hydrology Present Yes ___ No <u>X</u>	Is the Sampled Area within a Wetland? Yes ___ No <u>X</u>
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Remarks:
 None of the three parameters were met. STP # 4 is paired with STP # 5 to describe the wetland boundary along the southern edge of the subject property.

VEGEGATION

<u>Tree Stratum</u> (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet
1. <u><i>Thuja plicata</i></u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. <u><i>Populus trichocarpa</i></u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	Total Number of Dominant Species Across All Strata: <u>5</u> (B)
3. _____	___	___	___	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40%</u> (A/B)
4. _____	___	___	___	
Total Cover: <u>80</u>				
<u>Sampling/Shrub Stratum</u>				<u>Prevalence Index worksheet:</u>
1. <u><i>Symphoricarpos albus</i></u>	<u>40</u>	<u>Yes</u>	<u>FACU</u>	Total % Cover of: _____ Multiply by:
2. <u><i>Abies grandis</i></u>	<u>30</u>	<u>Yes</u>	<u>FACU</u>	OBL species _____ x 1 = _____
3. _____	___	___	___	FACW species _____ x 2 = _____
4. _____	___	___	___	FAC species _____ x 3 = _____
5. _____	___	___	___	FACU species _____ x 4 = _____
Total Cover: <u>70</u>				UPL species _____ x 5 = _____
<u>Herb Stratum</u>				Column Totals: _____ (A) _____ (B)
1. <u><i>Bromus inermis</i></u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	Prevalence Index = B/A = _____
2. _____	___	___	___	Hydrophytic Vegetation Indicators:
3. _____	___	___	___	___ Dominance Test is >50%
4. _____	___	___	___	___ Prevalence Index is ≤ 3.0 ¹
5. _____	___	___	___	___ Morphological Adaptions ¹ (Provide supporting data in remarks or on a separate sheet)
6. _____	___	___	___	___ Problematic Hydrophytic Vegetation ¹ (Explain)
7. _____	___	___	___	
8. _____	___	___	___	¹ Indicators of hydric soil and wetland hydrology must be present.
Total Cover: <u>20</u>				
<u>Woody Vine Stratum</u>				Hydrophytic Vegetation Present? Yes ___ No <u>X</u>
1. _____	___	___	___	
2. _____	___	___	___	
Total Cover: <u>0</u>				
% Bare Ground in Herb Stratum <u>80</u> % Cover of Biotic Crust <u>0</u>				

Remarks:
 FAC-FACU community located on the transition, landward of the wetland boundary.

SOIL

Sampling Point: STP #4 (Upland)

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>0-2</u>	<u>N/A</u>	<u>100</u>	—	—	—	—	<u>Litter</u>	—
<u>2-9</u>	<u>10 YR 2/1</u>	<u>100</u>	—	—	—	—	<u>Silt loam</u>	—
<u>9-35</u>	<u>10 YR 4/3</u>	<u>100</u>	—	—	—	—	<u>Gravelly loam</u>	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators of Problematic Hydric Soils².
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)
	<input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): Type: <u>N/A</u> Depth (inches): <u> </u>	Hydric Soil Present? Yes <u> </u> No <u> X </u>
Remarks: No redox features were observed to a depth of 35 inches.	

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Induration Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizosphere along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Plowed Soils <input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) (Riverine) <input type="checkbox"/> Sediment Deposits (B2) (Riverine) <input type="checkbox"/> Drift Deposits (B3) (Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Table (C2) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:	Wetland Hydrology Present? Yes <u> </u> No <u> X </u>
Surface Water Present? Yes <u> </u> No <u> X </u> Depth (inches) <u> </u> Water Table Present? Yes <u> </u> No <u> X </u> Depth (inches) <u> </u> Saturation Present? Yes <u> </u> No <u> X </u> Depth (inches) <u> </u> (includes capillary fringe)	

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

Remarks:
 No saturation was observed to a depth of 35 inches. This site is not expected to see wetland hydrology, because of the heightened elevation.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: McKenzie Property City/County: Spokane County Sampling Date: 4/12/10
 Applicant/Owner: Spokane County State: WA Sampling Point: STP #5(Wetland)
 Investigator(s): Vince Barthels, J-U-B ENGINEERS, Inc. Section, Township, Range: S. 28 T.27 N. R.45 E
 Landform (hillslope, terrace, etc): Low terrace, floodway Local relief (concave, convex, none): Concave Slope (%): Less than 5%
 Subregion (LRR): B Lat: 47° 48' 19.47" N Long: 117° 07' 01.98" W Datum: NAD 1927
 Soil Map Unit Name: Konner silty clay loam, drained (Kd) NWI classification: PEMICd

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? No Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain 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 Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: All three of the parameters are met. This STP (#5) is paired with STP #4 along the established transect. This transect helps to define the wetland boundary along the southern edge of the subject property.	

VEGEGATION

<u>Tree Stratum</u> (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	<u>Dominance Test Worksheet</u>
1. <u><i>Thuja plicata</i></u>	10	Yes	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)
2. <u><i>Populus trichocarpa</i></u>	10	Yes	FAC	Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
4. _____	_____	_____	_____	
Total Cover: <u>20</u>				
<u>Sampling/Shrub Stratum</u>				<u>Prevalence Index worksheet:</u>
1. <u><i>Alnus spp.</i></u>	10	Yes	FAC	Total % Cover of: _____ Multiply by:
2. _____	_____	_____	_____	OBL species _____ x 1 = _____
3. _____	_____	_____	_____	FACW species _____ x 2 = _____
4. _____	_____	_____	_____	FAC species _____ x 3 = _____
5. _____	_____	_____	_____	FACU species _____ x 4 = _____
Total Cover: <u>10</u>				UPL species _____ x 5 = _____
<u>Herb Stratum</u>				Column Totals: _____ (A) _____ (B)
1. <u><i>Phalaris arundinacea</i></u>	90	Yes	FACW	Prevalence Index = B/A = _____
2. <u><i>Alopecurus pratensis</i></u>	10	No	FACW	<u>Hydrophytic Vegetation Indicators:</u>
3. <u><i>Sphagnum spp.</i></u>	<5	No	FACW	<input checked="" type="checkbox"/> Dominance Test is >50%
4. _____	_____	_____	_____	<input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹
5. _____	_____	_____	_____	<input type="checkbox"/> Morphological Adaptions ¹ (Provide supporting data in remarks or on a separate sheet)
6. _____	_____	_____	_____	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
Total Cover: <u>100</u>				¹ Indicators of hydric soil and wetland hydrology must be present.
<u>Woody Vine Stratum</u>				<u>Hydrophytic Vegetation Present?</u> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
Total Cover: <u>0</u>				
% Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust <u>0</u>				

Remarks:
 This parameter is met based on the dominance test.

SOIL

Sampling Point: STP #5 (Wetland)

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		
0-16	10 YR 2/1	95	7.5 YR 4/6	5	C	PL	Silty clay loam	
16-20	2.5 Y 4/1	95	10YR 4/6	5	C	PL	Silty clay	
20-25	2.5 Y 5/3	100					Silt	
25-27	2.5 Y 4/2	100					Fine sand	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators of Problematic Hydric Soils².	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): Type: <u>N/A</u> Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____
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Remarks:
Prominent redox features in the upper 20 inches. Faint "rotten egg" smell present in the upper 12 inches.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (any one indicator is sufficient)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)	
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizosphere along Living Roots (C3)	<input type="checkbox"/> Dry-Season Table (C2)	
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Induration Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Surface Water Present?	Yes _____ No <input checked="" type="checkbox"/> Depth (inches) _____		
Water Table Present?	Yes <input checked="" type="checkbox"/> No _____ Depth (inches) <u>5</u>		
Saturation Present?	Yes <input checked="" type="checkbox"/> No _____ Depth (inches) <u>2</u>		
(includes capillary fringe)			

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

Remarks:
Evident wetland hydrology present; this parameter is fulfilled.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: McKenzie Property City/County: Spokane County Sampling Date: 4/12/10
 Applicant/Owner: Spokane County State: WA Sampling Point: STP #6(Upland)
 Investigator(s): Vince Barthels, J-U-B ENGINEERS, Inc. Section, Township, Range: S. 28 T.27 N. R.45 E
 Landform (hillslope, terrace, etc): Low terrace, floodway Local relief (concave, convex, none): Concave Slope (%): Less than 5%
 Subregion (LRR): B Lat: 47° 48' 11.87" N Long: 117° 06' 48.52" W Datum: NAD 1927
 Soil Map Unit Name: Moscow silt loam, 0 to 30 percent slopes (MmC) NWI classification: PEMICd

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)
 Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes X No ___
 Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No ___ Hydric Soil Present? Yes ___ No <u>X</u> Wetland Hydrology Present Yes ___ No <u>X</u>	Is the Sampled Area within a Wetland? Yes ___ No <u>X</u>
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Remarks:
 This STP is paired with GW #6 along an established transect. This upland pit is located on top of an abandoned roadway. Based on the topography at STP #6, this site is not expected to see wetland hydrology.

VEGEGATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet
1. <u>Abies grandis</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. <u>Thuja plicata</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. <u>Larix occidentalis</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66%</u> (A/B)
4. <u>Pinus ponderosa</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
5. <u>Pinus contorta</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
6. ___	___	___	___	
Total Cover: <u>60</u>				Prevalence Index worksheet:
				Total % Cover of: _____ Multiply by:
Sampling/Shrub Stratum				OBL species _____ x 1 = _____
1. ___	___	___	___	FACW species _____ x 2 = _____
2. ___	___	___	___	FAC species _____ x 3 = _____
3. ___	___	___	___	FACU species _____ x 4 = _____
4. ___	___	___	___	UPL species _____ x 5 = _____
5. ___	___	___	___	Column Totals: _____ (A) _____ (B)
Total Cover: ___				Prevalence Index = B/A = _____
Herb Stratum				Hydrophytic Vegetation Indicators:
1. <u>Phalaris arundinacea</u>	<u>70</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Dominance Test is >50%
2. <u>Lycopodium spp.</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	___ Prevalence Index is ≤ 3.0 ¹
3. ___	___	___	___	___ Morphological Adaptions ¹ (Provide supporting data in remarks or on a separate sheet)
4. ___	___	___	___	___ Problematic Hydrophytic Vegetation ¹ (Explain)
5. ___	___	___	___	
6. ___	___	___	___	
7. ___	___	___	___	
8. ___	___	___	___	
Total Cover: <u>75</u>				¹ Indicators of hydric soil and wetland hydrology must be present.
Woody Vine Stratum				Hydrophytic Vegetation Present? Yes <u>X</u> No ___
1. ___	___	___	___	
2. ___	___	___	___	
Total Cover: <u>0</u>				
% Bare Ground in Herb Stratum <u>25</u> % Cover of Biotic Crust <u>0</u>				

Remarks:
 In a transitional area. Based on the dominance test, this parameter is fulfilled.

SOIL

Sampling Point: STP #6 (Upland)

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		
0-10	10 YR 3/1	100	—	—	—	—	Silt loam	—
10-21	10 YR 4/2	70	—	—	—	—	Silt loam	—
10-21	2.5 Y 5/6	30	—	—	—	—	Silt loam	—
21-26	2.5 Y 5/2	45	10 YR 5/6	5	C	PL	Silty clay	—
21-26	2.5 Y 6/4	45	10 YR 5/6	5	C	PL	Silty clay	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

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

Indicators of Problematic Hydric Soils².

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- 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)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A
Depth (inches): —

Hydric Soil Present? Yes No

Remarks:

Between 10-21 inches a dual matrix (lacking redox features) was observed. Redox features were commonly observed below 21 inches.

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Induration Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizosphere along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Plowed Soils
- Other (Explain in Remarks)

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drift Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Table (C2)
- Thin Muck Surface (C7)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

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:

N/A

Remarks:

No saturation to a depth of 26 inches.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: McKenzie Property City/County: Spokane County Sampling Date: 4/12/10
 Applicant/Owner: Spokane County State: WA Sampling Point: STP #7(Upland)
 Investigator(s): Vince Barthels, J-U-B ENGINEERS, Inc. Section, Township, Range: S. 27 T.27 N. R.45 E
 Landform (hillslope, terrace, etc): Low terrace, floodway Local relief (concave, convex, none): Concave Slope (%): Less than 5%
 Subregion (LRR): B Lat: 47° 48' 20.08" N Long: 117° 06' 35.30" W Datum: NAD 1927
 Soil Map Unit Name: Semiahmoo muck, drained (Sk) NWI classification: PEMICD

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)
 Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes X No ___
 Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No ___ Hydric Soil Present? Yes ___ No <u>X</u> Wetland Hydrology Present Yes ___ No <u>X</u>	Is the Sampled Area within a Wetland? Yes ___ No <u>X</u>
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Remarks:
 STP #7 is paired with GW #3, along an established transect. These STPs help define the wetland boundary along the northern edge of the subject property. An active ant hill was located along the same elevation of STP # 7 and in the general vicinity (less than 10 feet).

VEGEGATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet
1. <u>Populus tremuloides</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. ___	___	___	___	Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. ___	___	___	___	
4. ___	___	___	___	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75%</u> (A/B)
Total Cover: <u>30</u>				
Sampling/Shrub Stratum				Prevalence Index worksheet:
1. <u>Spiraea douglasii</u>	<u>50</u>	<u>Yes</u>	<u>FACW</u>	Total % Cover of: _____ Multiply by:
2. <u>Rosa woodsii</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	OBL species _____ x 1 = _____
3. <u>Mahonia spp.</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	FACW species _____ x 2 = _____
4. ___	___	___	___	FAC species _____ x 3 = _____
5. ___	___	___	___	FACU species _____ x 4 = _____
Total Cover: <u>70</u>				UPL species _____ x 5 = _____
Herb Stratum				Column Totals: _____ (A) _____ (B)
1. <u>Phalaris arundinacea</u>	<u>80</u>	<u>Yes</u>	<u>FACW</u>	Prevalence Index = B/A = _____
2. <u>Bromus inermis</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptions ¹ (Provide supporting data in remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
3. ___	___	___	___	
4. ___	___	___	___	
5. ___	___	___	___	
6. ___	___	___	___	
7. ___	___	___	___	
8. ___	___	___	___	
Total Cover: <u>100</u>				
Woody Vine Stratum				¹ Indicators of hydric soil and wetland hydrology must be present.
1. ___	___	___	___	Hydrophytic Vegetation Present? Yes <u>X</u> No ___
2. ___	___	___	___	
Total Cover: <u>0</u>				
% Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust <u>0</u>				

Remarks:
 Based on the dominance test, this parameter is fulfilled.

SOIL

Sampling Point: STP #7 (Upland)

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>0-19</u>	<u>10 YR 2/1</u>	<u>100</u>	—	—	—	—	<u>Silt loam</u>	—
<u>19-25</u>	<u>10 YR 3/2</u>	<u>95</u>	<u>10 YR 4/6</u>	<u>5</u>	<u>C</u>	<u>RC</u>	<u>Silt loam</u>	<u>Mottles</u>
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators of Problematic Hydric Soils².
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): Type: <u>N/A</u> Depth (inches): <u> </u>	Hydric Soil Present? Yes <u> </u> No <u>X</u>
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Remarks:
 Compared to wetland STP (GW #3) the upper horizon lacked mucky, organic soils. Common mottling did not occur, until below 19 inches.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)		
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Induction Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizosphere along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Plowed Soils <input type="checkbox"/> Other (Explain in Remarks)	
		<input type="checkbox"/> Water Marks (B1) (Riverine) <input type="checkbox"/> Sediment Deposits (B2) (Riverine) <input type="checkbox"/> Drift Deposits (B3) (Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Table (C2) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:		Wetland Hydrology Present? Yes <u> </u> No <u>X</u>
Surface Water Present?	Yes <u> </u> No <u>X</u> Depth (inches) <u> </u>	
Water Table Present?	Yes <u> </u> No <u>X</u> Depth (inches) <u> </u>	
Saturation Present? (includes capillary fringe)	Yes <u> </u> No <u>X</u> Depth (inches) <u> </u>	

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

Remarks:
 No saturation observed to a depth of 25 inches.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: McKenzie Property City/County: Spokane County Sampling Date: 4/12/10
 Applicant/Owner: Spokane County State: WA Sampling Point: GW #1 (wetland)
 Investigator(s): Vince Barthels, J-U-B ENGINEERS, Inc. Section, Township, Range: S. 27 T.27 N. R.45 E
 Landform (hillslope, terrace, etc): Low terrace, floodway Local relief (concave, convex, none): Concave Slope (%): Less than 5%
 Subregion (LRR): B Lat: 47° 48' 09.18" N Long: 117° 06' 20.98" W Datum: NAD 1927
 Soil Map Unit Name: Narcisse silt loam, 0 to 5 % slopes (NcA) NWI classification: PEMICD

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? No Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain 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 Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: All of the three wetland parameters were fulfilled at this site.	

VEGEGATION

<u>Tree Stratum</u> (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: 2 (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)
4. _____	_____	_____	_____	
Total Cover: _____				
<u>Sampling/Shrub Stratum</u>				Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by:
2. _____	_____	_____	_____	OBL species _____ x 1 = _____
3. _____	_____	_____	_____	FACW species _____ x 2 = _____
4. _____	_____	_____	_____	FAC species _____ x 3 = _____
5. _____	_____	_____	_____	FACU species _____ x 4 = _____
Total Cover: _____				UPL species _____ x 5 = _____
<u>Herb Stratum</u>				Column Totals: _____ (A) _____ (B)
1. <u><i>Alopecurus pratensis</i></u>	60	Yes	FACW	Prevalence Index = B/A = _____
2. <u><i>Phalaris arundinacea</i></u>	20	Yes	FACW	
3. <u><i>Poa pratensis</i></u>	10	No	FAC	
4. <u><i>Sphagnum spp.</i></u>	5	No	FACW	
5. <u><i>Trifolium repens</i></u>	5	No	FAC	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
Total Cover: <u>100</u>				
<u>Woody Vine Stratum</u>				Hydrophytic Vegetation Indicators:
1. _____	_____	_____	_____	<input checked="" type="checkbox"/> Dominance Test is >50%
2. _____	_____	_____	_____	<input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹
Total Cover: <u>0</u>				<input type="checkbox"/> Morphological Adaptions ¹ (Provide supporting data in remarks or on a separate sheet)
				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
% Bare Ground in Herb Stratum <u>0</u>				¹ Indicators of hydric soil and wetland hydrology must be present.
% Cover of Biotic Crust <u>0</u>				
				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Remarks:
 This parameter is met based on the dominance test. The wet meadow grasses (Meadow foxtail and RCG) are actively cut for hay.

SOIL

Sampling Point: GW #1 (wetland)

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

Depth Inches	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-12	10 YR 2/1	98	10 YR 4/6	2	C	RC	Silt loam/Peat	Organic Streaking
12-18	10 YR 4/2	70	10 YR 4/6	5	C	RC	Silt clay	High organic content
12-18	7.5 YR 4/6	30	—	—	—	—	Loam	High organic content
18-24	10 YR 5/3	70	10 YR 4/6	5	C	PL	Silty clay	High organic content
18-24	10 YR 2/1	30	—	—	—	—	Silty clay	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators of Problematic Hydric Soils²
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input checked="" type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input checked="" type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): Type: <u>N/A</u> Depth (inches): <u> </u>	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:
Hydrogen sulfide smell evident in upper 12 inches.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)		
<input type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Induration Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizosphere along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Plowed Soils <input type="checkbox"/> Other (Explain in Remarks)	
		<input type="checkbox"/> Water Marks (B1) (Riverine) <input type="checkbox"/> Sediment Deposits (B2) (Riverine) <input type="checkbox"/> Drift Deposits (B3) (Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Table (C2) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches) <u> </u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches) <u>8</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches) <u>5</u> (includes capillary fringe)		

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

Remarks:
Evident saturation 5 inches below grade.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: McKenzie Property City/County: Spokane County Sampling Date: 4/12/10
 Applicant/Owner: Spokane County State: WA Sampling Point: GW #2 (wetland)
 Investigator(s): Vince Barthels, J-U-B ENGINEERS, Inc. Section, Township, Range: S. 27 T.27 N. R.45 E
 Landform (hillslope, terrace, etc): Low terrace, floodway Local relief (concave, convex, none): Concave Slope (%): Less than 5%
 Subregion (LRR): B Lat: 47° 48' 06.75" N Long: 117° 06' 33.83" W Datum: NAD 1927
 Soil Map Unit Name: Semiahmoo muck, drained (Sk) NWI classification: PEMICd

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? No Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain 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 Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: All of the three wetland parameters were fulfilled at this site. GW # 2 was the wettest of the well monitoring sites.	

VEGEGATION

<u>Tree Stratum</u> (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: 1 (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)
4. _____	_____	_____	_____	
Total Cover: _____				
<u>Sampling/Shrub Stratum</u>				Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by:
2. _____	_____	_____	_____	OBL species _____ x 1 = _____
3. _____	_____	_____	_____	FACW species _____ x 2 = _____
4. _____	_____	_____	_____	FAC species _____ x 3 = _____
5. _____	_____	_____	_____	FACU species _____ x 4 = _____
Total Cover: _____				UPL species _____ x 5 = _____
<u>Herb Stratum</u>				Column Totals: _____ (A) _____ (B)
1. <u>Phalaris arundinacea</u>	65	Yes	FACW	Prevalence Index = B/A = _____
2. <u>Alopecurus pratensis</u>	15	No	FACW	
3. <u>Sphagnum spp.</u>	10	No	FACW	Hydrophytic Vegetation Indicators:
4. <u>Trifolium repens</u>	5	No	FAC	<input checked="" type="checkbox"/> Dominance Test is >50%
5. <u>Carex spp.</u>	5	No	FACW	<input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹
6. _____	_____	_____	_____	<input type="checkbox"/> Morphological Adaptions ¹ (Provide supporting data in remarks or on a separate sheet)
7. _____	_____	_____	_____	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
8. _____	_____	_____	_____	
Total Cover: <u>100</u>				¹ Indicators of hydric soil and wetland hydrology must be present.
<u>Woody Vine Stratum</u>				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____	_____	_____	_____	
Total Cover: <u>0</u>				
% Bare Ground in Herb Stratum <u>0</u>		% Cover of Biotic Crust <u>0</u>		

Remarks:
 This parameter is fulfilled, based on the dominance test.

SOIL

Sampling Point: GW #2 (wetland)

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>0-12</u>	<u>10 YR 2/1</u>	<u>100</u>	—	—	—	—	<u>Mucky peat</u>	—
<u>12-14</u>	<u>10 YR 2/1</u>	<u>75</u>	—	—	—	—	<u>Silty loam</u>	—
<u>12-14</u>	<u>7.5 YR 3/2</u>	<u>25</u>	<u>10 YR 4/6</u>	<u>2</u>	<u>RM</u>	<u>PL</u>	<u>Silty loam</u>	—
<u>14-26</u>	<u>10 YR 2/1</u>	<u>60</u>	—	—	—	—	<u>Silty clay</u>	—
<u>14-26</u>	<u>7.5 YR 4/3</u>	<u>40</u>	<u>10 YR 4/6</u>	<u>2</u>	<u>RM</u>	<u>M</u>	<u>Silty clay</u>	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators of Problematic Hydric Soils ² .	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)	
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): Type: <u>N/A</u> Depth (inches): <u> </u>	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:
Upper 12 inches consists of organic muck. Hydrogen sulfide odor evident in upper 12 inches. Dual matrix exists below 12 inches.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (any one indicator is sufficient)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)	
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizosphere along Living Roots (C3)	<input type="checkbox"/> Dry-Season Table (C2)	
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Induration Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			
Surface Water Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches)	<u> 1 </u>
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches)	<u> 0 </u>
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches)	<u> 0 </u>
		Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

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

Remarks:
Evident wetland hydrology observed at the surface; this parameter is fulfilled.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: McKenzie Property City/County: Spokane County Sampling Date: 4/12/10
 Applicant/Owner: Spokane County State: WA Sampling Point: GW #3 (wetland)
 Investigator(s): Vince Barthels, J-U-B ENGINEERS, Inc. Section, Township, Range: S. 27 T. 27 N. R. 45 E
 Landform (hillslope, terrace, etc): Low terrace, floodway Local relief (concave, convex, none): Concave Slope (%): Less than 5%
 Subregion (LRR): B Lat: 47° 48' 19.25" N Long: 117° 06' 35.70" W Datum: NAD 1927
 Soil Map Unit Name: Semiahmoo muck, drained (Sk) NWI classification: PEMICd

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? No Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain 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 Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: All of the three wetland parameters were fulfilled at this site. GW #3 is paired with STP #7, along an established transect. This transect defines the wetland boundary near the north-central portion of the subject property.	

VEGEGATION

<u>Tree Stratum</u> (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet
1. _____	_____	_____	_____	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. _____	_____	_____	_____	
Total Cover: _____				
<u>Sampling/Shrub Stratum</u>				Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by:
2. _____	_____	_____	_____	OBL species _____ x 1 = _____
3. _____	_____	_____	_____	FACW species _____ x 2 = _____
4. _____	_____	_____	_____	FAC species _____ x 3 = _____
5. _____	_____	_____	_____	FACU species _____ x 4 = _____
Total Cover: _____				UPL species _____ x 5 = _____
<u>Herb Stratum</u>				Column Totals: _____ (A) _____ (B)
1. <u>Phalaris arundinacea</u>	<u>60</u>	<u>Yes</u>	<u>FACW</u>	Prevalence Index = B/A = _____
2. <u>Alopecurus pratensis</u>	<u>25</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>Sphagnum spp.</u>	<u>10</u>	<u>No</u>	<u>FACW</u>	
4. <u>Trifolium repens</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
Total Cover: <u>100</u>				
<u>Woody Vine Stratum</u>				Hydrophytic Vegetation Indicators:
1. _____	_____	_____	_____	<input checked="" type="checkbox"/> Dominance Test is >50%
2. _____	_____	_____	_____	<input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹
Total Cover: <u>0</u>				<input type="checkbox"/> Morphological Adaptions ¹ (Provide supporting data in remarks or on a separate sheet)
% Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust <u>0</u>				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
				¹ Indicators of hydric soil and wetland hydrology must be present.
				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Remarks:
 This parameter is fulfilled, based on the dominance test.

SOIL

Sampling Point: GW #3 (wetland)

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>0-12</u>	<u>10 YR 2/1</u>	<u>100</u>	---	---	---	---	<u>Muck</u>	<u>organic</u>
<u>12-14</u>	<u>10 YR 4/4</u>	<u>100</u>	---	---	---	---	<u>Mucky peat</u>	<u>organic</u>
<u>14-24</u>	<u>10 YR 2/1</u>	<u>70</u>	---	---	---	---	<u>Silty clay</u>	---
<u>14-24</u>	<u>10 YR 4/4</u>	<u>30</u>	---	---	---	---	<u>Silt</u>	---
---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators of Problematic Hydric Soils².	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)	
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): Type: <u>N/A</u> Depth (inches): <u>---</u>	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:
Upper 14 inches consists of organic muck. Hydrogen sulfide odor evident in upper 12 inches. Dual matrix exists below 14 inches.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (any one indicator is sufficient)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)	
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizosphere along Living Roots (C3)	<input type="checkbox"/> Dry-Season Table (C2)	
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Induration Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches) <u>---</u>		
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches) <u>10</u>		
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches) <u>3</u>		

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

Remarks:
Evident wetland hydrology observed; this parameter is fulfilled.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: McKenzie Property City/County: Spokane County Sampling Date: 4/12/10
 Applicant/Owner: Spokane County State: WA Sampling Point: GW #4 (wetland)
 Investigator(s): Vince Barthels, J-U-B ENGINEERS, Inc. Section, Township, Range: S. 28 T.27 N. R.45 E
 Landform (hillslope, terrace, etc): Low terrace, floodway Local relief (concave, convex, none): Concave Slope (%): Less than 5%
 Subregion (LRR): B Lat: 47° 48' 24.72" N Long: 117° 06' 53.58" W Datum: NAD 1927
 Soil Map Unit Name: Semiahmoo muck, drained (Sk) NWI classification: PEMICD

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? No Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain 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 Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: All of the three wetland parameters were fulfilled at this site.	

VEGEGATION

<u>Tree Stratum</u> (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: 2 (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)
4. _____	_____	_____	_____	
Total Cover: _____				
<u>Sampling/Shrub Stratum</u>				Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ <u>Multiply by:</u>
2. _____	_____	_____	_____	OBL species _____ x 1 = _____
3. _____	_____	_____	_____	FACW species _____ x 2 = _____
4. _____	_____	_____	_____	FAC species _____ x 3 = _____
5. _____	_____	_____	_____	FACU species _____ x 4 = _____
Total Cover: _____				UPL species _____ x 5 = _____
<u>Herb Stratum</u>				Column Totals: _____ (A) _____ (B)
1. <u>Phalaris arundinacea</u>	60	Yes	FACW	Prevalence Index = B/A = _____
2. <u>Alopecurus pratensis</u>	25	Yes	FACW	
3. <u>Sphagnum spp.</u>	5	No	FACW	Hydrophytic Vegetation Indicators:
4. <u>Trifolium repens</u>	5	No	FAC	<input checked="" type="checkbox"/> Dominance Test is >50%
5. <u>Poa pratensis</u>	5	No	FAC	<input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹
6. _____	_____	_____	_____	<input type="checkbox"/> Morphological Adaptions ¹ (Provide supporting data in remarks or on a separate sheet)
7. _____	_____	_____	_____	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
8. _____	_____	_____	_____	
Total Cover: <u>100</u>				¹ Indicators of hydric soil and wetland hydrology must be present.
<u>Woody Vine Stratum</u>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
Total Cover: <u>0</u>				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
% Bare Ground in Herb Stratum <u>0</u>				
% Cover of Biotic Crust <u>0</u>				
Remarks: This parameter is fulfilled, based on the dominance test. Grasses (i.e. RCG + Foxtail) are cut for hay.				

SOIL

Sampling Point: GW #4 (wetland)

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		
0-16	10 YR 2/1	100	—	—	—	—	Muck	—
16-18	10 YR 2/1	95	7.5 YR 4/6	5	—	—	Silty clay loam	—
18-21	7.5 YR 5/1	100	—	—	—	—	Ash	Ash deposit
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators of Problematic Hydric Soils ² .	
<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): Type: <u>N/A</u> Depth (inches): <u>—</u>	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:
Upper 16 inches consists of organic muck.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (any one indicator is sufficient)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)	
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizosphere along Living Roots (C3)	<input type="checkbox"/> Dry-Season Table (C2)	
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Induration Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches) <u>—</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches) <u>3</u>	
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches) <u>0</u> (includes capillary fringe)	

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

Remarks:
Evident wetland hydrology observed; this parameter is fulfilled. Saturation at the surface.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: McKenzie Property City/County: Spokane County Sampling Date: 4/12/10
 Applicant/Owner: Spokane County State: WA Sampling Point: GW #5 (wetland)
 Investigator(s): Vince Barthels, J-U-B ENGINEERS, Inc. Section, Township, Range: S. 28 T.27 N. R.45 E
 Landform (hillslope, terrace, etc): Low terrace, floodway Local relief (concave, convex, none): Concave Slope (%): Less than 5%
 Subregion (LRR): B Lat: 47° 48' 23.61" N Long: 117° 07' 06.78" W Datum: NAD 1927
 Soil Map Unit Name: Konner silty clay loam, drained (Kd) NWI classification: PEMICd

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)
 Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes X No ___
 Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No ___ Hydric Soil Present? Yes <u>X</u> No ___ Wetland Hydrology Present? Yes <u>X</u> No ___	Is the Sampled Area within a Wetland? Yes <u>X</u> No ___
Remarks: All of the three wetland parameters were fulfilled at this site. GW # 5 is paired with STP # 3. This transect defines the wetland boundary along the western end of the subject property.	

VEGEGATION

<u>Tree Stratum</u> (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet
1. ___	___	___	___	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. ___	___	___	___	
3. ___	___	___	___	
4. ___	___	___	___	
Total Cover: ___	___	___	___	
<u>Sampling/Shrub Stratum</u>				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 = _____
1. ___	___	___	___	
2. ___	___	___	___	
3. ___	___	___	___	
4. ___	___	___	___	
5. ___	___	___	___	
Total Cover: ___	___	___	___	
<u>Herb Stratum</u>				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptions ¹ (Provide supporting data in remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present.
1. <u><i>Alopecurus pratensis</i></u>	<u>60</u>	<u>Yes</u>	<u>FACW</u>	
2. <u><i>Phalaris arundinacea</i></u>	<u>25</u>	<u>Yes</u>	<u>FACW</u>	
3. <u><i>Sphagnum spp.</i></u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
4. <u><i>Trifolium repens</i></u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
5. <u><i>Poa pratensis</i></u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
6. ___	___	___	___	
7. ___	___	___	___	
8. ___	___	___	___	
Total Cover: <u>100</u>	___	___	___	
<u>Woody Vine Stratum</u>				Hydrophytic Vegetation Present? Yes <u>X</u> No ___
1. ___	___	___	___	
2. ___	___	___	___	
Total Cover: <u>0</u>	___	___	___	
% Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust <u>0</u>				

Remarks:
 FACW herbaceous community present. Parameter met. The grasses are uncut at this location.

SOIL

Sampling Point: GW #5(wetland)

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

Depth Inches	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-13	10 YR 3/1	95	7.5 YR 4/6	5	C	PL	Silty clay loam	Organic Streaking
13-15	2.5 Y 4/1	100					Silty clay loam	
15-24	2.5 Y 5/2	90	10YR 4/6	10	C	PL	Silt	
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

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

Indicators of Problematic Hydric Soils².

- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- 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)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A
Depth (inches):

Hydric Soil Present? Yes No

Remarks:

Prominent redox features observed in upper 24 inches.

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Induration Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizosphere along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Plowed Soils
- Other (Explain in Remarks)

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drift Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Table (C2)
- Thin Muck Surface (C7)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches)
 Water Table Present? Yes No Depth (inches) 5
 Saturation Present? Yes No Depth (inches) 2
 (includes capillary fringe)

Wetland Hydrology Present? Yes No

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

N/A

Remarks:

Evident wetland hydrology observed; this parameter is fulfilled.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: McKenzie Property City/County: Spokane County Sampling Date: 4/12/10
 Applicant/Owner: Spokane County State: WA Sampling Point: GW #6 (wetland)
 Investigator(s): Vince Barthels, J-U-B ENGINEERS, Inc. Section, Township, Range: S. 28 T.27 N. R.45 E
 Landform (hillslope, terrace, etc): Low terrace, floodway Local relief (concave, convex, none): Concave Slope (%): Less than 5%
 Subregion (LRR): B Lat: 47° 48' 12.62" N Long: 117° 06' 45.85" W Datum: NAD 1927
 Soil Map Unit Name: Semiahmoo muck, drained (Sk) NWI classification: PEMICd

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? No Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain 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 Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: All of the three wetland parameters were fulfilled at this site. GW # 6 is paired with STP # 6.	

VEGEGATION

<u>Tree Stratum</u> (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet
1. <u>Abies grandis</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. _____				
Total Cover: _____				
<u>Sampling/Shrub Stratum</u>				Prevalence Index worksheet:
1. _____				Total % Cover of: _____
2. _____				OBL species _____ Multiply by: x 1 = _____
3. _____				FACW species _____ x 2 = _____
4. _____				FAC species _____ x 3 = _____
5. _____				FACU species _____ x 4 = _____
Total Cover: _____				UPL species _____ x 5 = _____
<u>Herb Stratum</u>				Column Totals: _____ (A) _____ (B)
1. <u>Alopecurus pratensis</u>	<u>50</u>	<u>Yes</u>	<u>FACW</u>	Prevalence Index = B/A = _____
2. <u>Phalaris arundinacea</u>	<u>35</u>	<u>Yes</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptions ¹ (Provide supporting data in remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present.
3. <u>Sphagnum spp.</u>	<u>10</u>	<u>No</u>	<u>FACW</u>	
4. <u>Trifolium repens</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
5. _____				
6. _____				
7. _____				
8. _____				
Total Cover: <u>100</u>				
<u>Woody Vine Stratum</u>				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. _____				
2. _____				
Total Cover: <u>0</u>				
% Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust <u>0</u>				
Remarks: This parameter is fulfilled, based on the dominance test. Grasses are cut at this location.				

SOIL

Sampling Point: GW #6 (wetland)

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		
0-18	10 YR 3/1	100	—	—	—	—	Mucky peat	organic soils
18-24	10 YR 2/1	60	—	—	—	—	Silt loam	—
18-24	10 YR 4/4	40	10 YR 4/6	2	C	RC	Silt	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

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

Indicators of Problematic Hydric Soils².

- | | | |
|--|---|---|
| <input checked="" type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 1 cm Muck (A9) (LRR C) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> 2 cm Muck (A10) (LRR B) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input checked="" type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR D) | <input type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Vernal Pools (F9) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A
Depth (inches): —

Hydric Soil Present? Yes No

Remarks:

Upper 18 inches consists of organic mucky soils. Hydrogen sulfide odor evident in upper 12 inches. Dual matrix exists below 18 inches.

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

- | | | |
|--|---|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Water Marks (B1) (Riverine) |
| <input checked="" type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) | <input type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Drift Deposits (B3) (Riverine) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizosphere along Living Roots (C3) | <input type="checkbox"/> Dry-Season Table (C2) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Plowed Soils | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Induration Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | | <input type="checkbox"/> Shallow Aquitard (D3) |
| | | <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present? Yes No Depth (inches) —
 Water Table Present? Yes No Depth (inches) Surface
 Saturation Present? Yes No Depth (inches) Surface
 (includes capillary fringe)

Wetland Hydrology Present? Yes No

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

N/A

Remarks:

Evident wetland hydrology observed at the surface; this parameter is fulfilled.

Photo Inventory

Photos 1, 2, and 4 were taken on March 30th, 2010; photos 3, 5 and 6 were taken on April 14th, 2010.



Photo 1: Standing water covers most of the wetland area early in the growing season. This photo was taken from the center of the property looking westerly.



Photo 2: This 2 foot (shotgun) culvert conveys and supplies intermittent hydrology into the identified wetlands. There is a 3 foot vertical drop at this culvert outlet. In terms of potential fish habitat, this culvert represents the end of the road along this stream channel.



Photo 3: Looking northerly at the Type “F” stream that enters the project area via this 3 foot culvert. This stream travels under West Newman Lake Road and supplies intermittent hydrology into the identified wetlands. Some of the water is impounded by the roadway. Livestock grazing is evident on this adjacent property.



Photo 4: Looking westerly at soil test pit # 3. This soil test pit helps to define the designated upland areas (4 acres) in the western portion of the subject property. Scattered ponderosa pines and annual weeds dominate this area.



Photo 5: This photo was taken during the installation of ground water monitoring well # 3 (GW # 3). Wetland hydrology is at the surface. The darker, hydric, histosol soils contain high concentrations of organic materials (i.e. mucky peat). Cut or mowed clusters of reed canary grass and meadow foxtail are the dominant vegetative cover at this location.



Photo 6: Looking at soil test pit # 7, which is located immediately adjacent to an active ant hill. The wetland boundary was determined to be one foot lower in elevation than the soil test pit and the active ant hill.

Wetland name or number McKenzie CA - NW Newman Lake

WETLAND RATING FORM - EASTERN WASHINGTON

Version 2 - Updated June 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): McKenzie CA - 100 Acres Date of site visit: 3/30/10

Rated by Vince Barthels (J-V-B) Trained by Ecology? Yes ___ No ___ Date of training 10/31/07

SEC: 27, 28 TOWNSHIP: 27N RANGE: 45E Is S/T/R in Appendix D? Yes ___ No X

Map of wetland unit: Figure 1 Estimated size 97 Acres
Figure 1 = Wetland Delineation Map

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I ___ II ___ III X IV ___

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for "Water Quality" Functions	<u>24</u>
Score for Hydrologic Functions	<u>4</u>
Score for Habitat Functions	<u>19</u>
TOTAL score for functions	<u>47</u>

Category based on SPECIAL CHARACTERISTICS of wetland

I ___ II ___ III ___ Does not Apply X

Final Category (choose the "highest" category from above)

III

Summary of basic information about the wetland unit

Wetland Type	Wetland Class
Vernal Pool	Depressional
Alkali	Riverine
Natural Heritage Wetland	Lake-fringe
Bog	Slope <u>X</u>
Forest	
None of the above	<u>X</u> Check if unit has multiple HGM classes present

4-2-10

Wetland name or number McKenzie CA - NW Newman Lake

S Slope Wetlands WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality		Points (only 1 score per box)
S	S 1.0 Does the wetland have the <u>potential</u> to improve water quality?	(see p.56)
S	S 1.1 Characteristics of average slope of wetland: Slope is 1% or less (a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance) <u>points = 3</u> Slope is between 1% and 2% <u>points = 2</u> Slope is more than 2% but less than 5% <u>points = 1</u> Slope is 5% or greater <u>points = 0</u>	3
S	S 1.2 The soil 2 inches below the surface is clay or organic (use NRCS definitions of soil types) <u>YES = 3 points</u> <u>NO = 0 points</u>	3
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches. Dense, ungrazed, herbaceous vegetation > 90% of the wetland unit <u>points = 6</u> Dense, ungrazed, herbaceous vegetation > 1/2 of unit <u>points = 3</u> Dense, woody, vegetation > 1/2 of unit <u>points = 2</u> Dense, ungrazed, herbaceous vegetation > 1/4 of unit <u>points = 1</u> Does not meet any of the criteria above for herbaceous vegetation <u>points = 0</u> Aerial photo or map with vegetation polygons	Figure 1 6
S	Total for S 1 <i>Add the points in the boxes above</i>	12
S	S 2.0 Does the wetland have the <u>opportunity</u> to improve water quality? Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? <i>Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.</i> <input checked="" type="checkbox"/> Grazing in the wetland or <u>within 150ft</u> <input type="checkbox"/> Wetland is a groundwater seep within the Reclamation Area <input type="checkbox"/> Untreated stormwater flows through the wetland <input type="checkbox"/> Tilled fields or orchards within 150 feet of wetland <input checked="" type="checkbox"/> Residential, urban areas, or golf courses are <u>within 150 ft upslope of wetland</u> <input type="checkbox"/> Other <u>YES multiplier is 2</u> <u>NO multiplier is 1</u>	(see p.58) multiplier <u>2</u>
S	TOTAL - Water Quality Functions Multiply the score from S1 by the multiplier in S2 <i>Record score on p. 1 of field form</i>	24

Wetland name or number McKenzie CA - NW Newman Lake

S Slope Wetlands HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation		Points (only 1 score per box)
S	S 3.0 Does the wetland unit have the <u>potential</u> to reduce flooding and stream erosion?	(see p.59)
S	<p>S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. Choose the points appropriate for the description that best fit conditions in the wetland. See question S 1.3 for definition of dense and uncut. Rigid means that the stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows.</p> <p>Dense, uncut, rigid vegetation covers > 90% of the area of the unit points = 6 Dense, uncut, rigid vegetation > 1/2 - 90% area of unit points = 3 Dense, uncut, rigid vegetation > 1/4 - 1/2 of unit points = 1 More than 1/4 of area is grazed, mowed, tilled or vegetation is not rigid points = 0</p>	0
S	<p>S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area.</p> <p>YES <u>points = 2</u> NO points = 0</p>	2
S	Total for S3 <i>Add the points in the boxes above</i>	2
S	<p>S 4.0 Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion? (see p.61) Answer NO if the major source of water is irrigation return flow (e.g. a seep that is on the downstream side of a dam or at the base of an irrigated field). Answer YES if the wetland is in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Note which of the following conditions apply.</p> <p>— Wetland has surface runoff that can cause flooding problems downgradient X Other <u>Newman Lake</u></p> <p><u>YES</u> multiplier is 2 NO multiplier is 1</p>	multiplier <u>2</u>
S	TOTAL - Hydrologic Functions Multiply the score from S3 by the multiplier in S4 <i>Record score on p. 1 of field form</i>	4

Comments

Approximately 70% of the wetland unit is cut for hay.

Wetland name or number McKenzie CA - NW Newman Lake

<i>These questions apply to wetlands of all HGM classes.</i>		Points (only 1 score per box)								
HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat										
H 1. Does the wetland unit have the potential to provide habitat for many species?										
<p>H 1.1 <u>Categories of vegetation structure</u> (see p.62) Check the vegetation classes (as defined by Cowardin) and heights of emergents present. Size threshold for each class or height category is ¼ acre or more than 10% of the area if unit is < 2.5 acres.</p> <p><input type="checkbox"/> Aquatic bed <input checked="" type="checkbox"/> Emergent plants 0-12 in. (0 – 30 cm) high are the highest layer and have > 30% cover <input checked="" type="checkbox"/> Emergent plants >12 – 40 in. (>30 – 100cm) high are the highest layer with >30% cover <input type="checkbox"/> Emergent plants > 40 in. (> 100cm) high are the highest layer with >30% cover <input type="checkbox"/> Scrub/shrub (areas where shrubs have >30% cover) <input type="checkbox"/> Forested (areas where trees have >30% cover)</p> <p>Add the number of vegetation types that qualify. If you have:</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td>4-6 types</td> <td>points = 3</td> </tr> <tr> <td>3 types</td> <td>points = 2</td> </tr> <tr> <td><u>2 types</u></td> <td><u>points = 1</u></td> </tr> <tr> <td>1 type</td> <td>points = 0</td> </tr> </table> <p>Map of Cowardin vegetation classes and areas with different heights of emergents</p>		4-6 types	points = 3	3 types	points = 2	<u>2 types</u>	<u>points = 1</u>	1 type	points = 0	Figure <u>1</u>
4-6 types	points = 3									
3 types	points = 2									
<u>2 types</u>	<u>points = 1</u>									
1 type	points = 0									
<p>H 1.2. Is one of the vegetation types "aquatic bed?" (see p.64) YES = 1 point <u>NO = 0 points</u></p>		<u>0</u>								
<p>H 1.3. <u>Surface Water</u> (see p.65) H 1.3.1 Does the unit have areas of "open" water (without herbaceous or shrub plants) over at least ¼ acre or 10% of its area during the spring (March – early June) OR in early fall (August – end of September)? Note: answer YES for Lake-fringe wetlands YES = 3 points & go to H 1.4 NO = go to H 1.3.2 H 1.3.2 Does the unit have an intermittent or permanent stream within its boundaries, or along one side, over at least ¼ acre or 10% of its area, AND that has an unvegetated bottom (answer yes only if H-1.3.1 is NO)? <u>YES = 3 points</u> NO = 0 points Map showing areas of open water</p>		Figure <u>1</u> <u>3</u>								
<p>H 1.4. <u>Richness of Plant Species</u> (see p. 66) Count the number of plant species in the wetland that cover at least 10 ft². (different patches of the same species can be combined to meet the size threshold) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Russian Olive, Phragmites, Canadian Thistle, Yellow-flag Iris, and Salt Cedar (Tamarisk)</p> <p>If you counted: > 9 species points = 2 4-9 species <u>points = 1</u> < 4 species points = 0 points</p> <p># of species <u>5</u> List species below if you wish</p> <p><i>Reed canary grass and meadow foxtail are the two most dominant species throughout the wetland unit.</i></p>		<u>1</u>								

Wetland name or number McKenzie CA - NW Newman Lake

<p>H 1.5. Interspersion of habitats (see p. 67) Decided from the diagrams below whether interspersion between categories of vegetation (described in H 1.1), or categories and un-vegetated areas (can include open water or mudflats) is high, medium, low, or none.</p> <p>None = 0 points Low = 1 point Moderate = 2 points</p> <p>High = 3 points High = 3 points [Riparian braided channel]</p> <p>NOTE: If you have four or more vegetation categories or three vegetation categories and open water the rating is always "high". Use maps from H1.1 and H1.3</p>	<p>Figure <u>1</u></p> <p style="text-align: center;">0</p>
<p>H 1.6. Special Habitat Features: (see p. 68) Check the habitat features that are present in the wetland unit. The number of checks is the number of points you put into the next column.</p> <p><input type="checkbox"/> Loose rocks larger than 4" <u>or</u> large, downed, woody debris (>4in. diameter) within the area of surface ponding or in stream.</p> <p><input checked="" type="checkbox"/> Cattails or bulrushes are present within the unit.</p> <p><input checked="" type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland unit or <u>within 30 m (100ft)</u> of the edge.</p> <p><input type="checkbox"/> Emergent or shrub vegetation in areas that are permanently inundated/ponded. <i>The presence of "yellow flag" Iris is a good indicator of vegetation in areas permanently ponded.</i></p> <p><input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (>45 degree slope) OR signs of recent beaver activity</p> <p><input type="checkbox"/> Invasive species cover less than 20% in each stratum of vegetation (<i>canopy, sub-canopy, shrubs, herbaceous, moss/ground cover</i>)</p> <p style="text-align: right;">Maximum score possible = 6</p>	<p style="text-align: center;">2</p>
<p style="text-align: right;">TOTAL Potential to provide habitat Add the scores in the column above</p>	<p style="text-align: center;">7</p>

Comments

Wetland name or number McKenzie CA - NW Newman Lake

<p>H 2.0 Does the wetland have the opportunity to provide habitat for many species?</p> <p>H 2.1 <u>Buffers</u> (see p. 71) <i>Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed." Relatively undisturbed also means no grazing, no landscaping, no daily human use, and no structures or paving within undisturbed part of buffer.</i></p> <ul style="list-style-type: none"> — 330ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference Points = 5 <input checked="" type="checkbox"/> 330 ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. Points = 4 — 170ft (50 m) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. Points = 4 — 330ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . Points = 3 — 170ft (50 m) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. Points = 3 <p style="text-align: center;">If buffer does not meet any of the criteria above</p> <ul style="list-style-type: none"> — No paved areas (except paved trails) or buildings within 80ft (25 m) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. Points = 2 — No paved areas or buildings within 170ft (50m) of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. Points = 2 — Heavy grazing in buffer. Points = 1 — Vegetated buffers are <6.6ft wide (2m) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland). Points = 0 — Buffer does not meet any of the criteria above. Points = 1 <p style="text-align: center;">Aerial photo showing buffers</p>	<p>Figure <u>1</u></p> <p style="text-align: center; font-size: 2em;">4</p>
<p>H 2.2 <u>Wet Corridors</u> (see p. 72)</p> <p>H 2.2.1 Is the wetland unit part of a relatively undisturbed and unbroken, > 30 ft wide, vegetated corridor at least ¼ mile long with surface water or flowing water throughout most of the year (> 9 months/yr)? (dams, heavily used gravel roads, paved roads, fields tilled to edge of stream, or pasture to edge of stream are considered breaks in the corridor). YES = 4 points (go to H 2.3) NO = go to H 2.2.2</p> <p>H 2.2.2 Is the unit part of a relatively undisturbed and unbroken, > 30 ft wide, vegetated corridor, at least ¼ mile long with water <u>flowing seasonally</u>, OR a lake-fringe wetland without a "wet" corridor, OR a riverine wetland without a surface channel connecting to the stream? <u>YES = 2 points (go to H 2.3)</u> NO go to H 2.2.3</p> <p>H 2.2.3 Is the wetland within a 1/2 mile of any permanent stream, seasonal stream, or lake (do not include man-made ditches)? YES = 1 point NO = 0 points</p>	<p style="text-align: center; font-size: 2em;">2</p>

Wetland name or number McKenzie CA - NW Newman Lake

<p>H 2.3 <u>Near or adjacent to other priority habitats listed by WDFW (see p. 74)</u> Which of the following priority habitats are within 330ft (100m) of the wetland unit? <i>NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.</i></p> <p><input checked="" type="checkbox"/> Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p><input type="checkbox"/> Aspen Stands: Pure or mixed stands of aspen greater than 2 acres.</p> <p><input type="checkbox"/> Cliffs: Greater than 25 ft high and occurring below 5000 ft.</p> <p><input type="checkbox"/> Old-growth forests: (east of Cascade crest): In general, stands will be >150 years of age, with 10 trees/acre that are > 21 in dbh, and 1 - 3 snags/acre > 12-14 in diameter.</p> <p><input checked="" type="checkbox"/> Mature forests: Stands with average diameters exceeding 21 in dbh; crown cover may be less than 100%; decay, 80 - 160 years old east of the Cascade crest.</p> <p><input type="checkbox"/> Prairies and Steppe: Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.</p> <p><input type="checkbox"/> Shrub-steppe: Tracts of land consisting of plant communities with one or more layers of perennial grasses and a conspicuous but discontinuous layer of shrubs.</p> <p><input type="checkbox"/> Talus: Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft, composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.</p> <p><input type="checkbox"/> Caves: A naturally occurring cavity, recess, void, or system of interconnected passages</p> <p><input type="checkbox"/> Oregon white Oak: Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.</p> <p><input type="checkbox"/> Urban Natural Open Space: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other <i>priority habitats</i>, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.</p> <p><input type="checkbox"/> Aspen Stands: Pure or mixed stands of aspen greater than 0.8 ha (2 acres).</p> <p style="text-align: right;">If wetland has 2 or more Priority Habitats = 4 points If wetland has 1 Priority Habitat = 2 points No Priority habitats = 0 points</p> <p><i>Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)</i></p>	<p>4</p>
---	----------

Comments

Wetland name or number Mckenzie CA - NW Newman Lake

<p>H 2.4 <u>Landscape</u> (choose the one description of the landscape around the wetland that best fits) (see p. 76)</p> <ul style="list-style-type: none"> — The wetland unit is in an area where annual rainfall is less than 12 inches, and its water regime is not influenced by irrigation practices, dams, or water control structures. (Generally, this means outside boundaries of reclamation areas, irrigation district, or reservoirs) points = 5 — There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing in the connection or an open water connection along a lake shore without heavy boat traffic are OK, but connections should NOT be bisected by paved roads, fill, fields, heavy boat traffic or other development) points = 5 <input checked="" type="checkbox"/> There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed? points = 2 — There is at least 1 wetland within ½ mile. points = 1 — Does not meet any of the four criteria above points = 0 	2
<p>H 2. TOTAL Score - opportunity for providing habitat Add the scores in the column above</p>	12
<p>H 3.0 Does the wetland unit have indicators that its ability to provide habitat is reduced?</p>	
<p>H 3.1 <u>Indicator of reduced habitat functions</u> (see p. 75) Do the areas of open water in the wetland unit have a resident population of carp (see text for indicators of the presence of carp)? (NOTE: This question does not apply to reservoirs with water levels controlled by dams, such as the reservoirs on the Columbia and Snake Rivers)</p> <p style="text-align: center;">YES = - 5 points NO = 0 points</p>	<p>Points will be subtracted</p> <p>0</p>
<p>Total Score for Habitat Functions – add the points for H 1, H 2, and H 3 and record the result on p. 1</p>	19

Comments

Appendix B



Budinger & Associates

Proudly serving the Inland Northwest for 30 years

1101 N. Fancher Road
Spokane Valley, WA 99212
Tel: 509.535.8841
Fax: 509.535.9589

RECEIVED

MAY - 5 2010

Vince Barthels
JUB Engineers
422 West Riverside Avenue
Spokane, WA 99201-5116

J-U-B ENGINEERS INC.

April 21, 2010

Project Number D10006

PROJECT: McKenzie Conservation Area
Newman Lake
Spokane County, WA

SUBJECT: Monitor Well Installation

Dear Vince,

We visited the site on April 12 and 13, 2010 at your request to install six monitor wells at various locations in Sections 27 and 28 Township 27N Range 45E.

Each monitor well installation was completed with a track-mounted ASV and 12-inch solid stem auger attachment. The wells were completed to 6 feet below ground surface as follows:

- Monument: Flush mount 8-inch diameter vault set in concrete to 2 feet below grade
- Riser: 2-inch schedule 40 pvc set to 4 feet below grade with locking expansion plug
- Screen: 2-inch schedule 40 pvc (0.010-inch slot) set from 4 to 6 feet below grade with end cap
- Seal: Bentonite from 2 to 4 feet below grade
- Filter pack: #20-40 silica sand from 4 to 6 feet below grade

Soils across the site generally consisted of 2 to 3 feet of organic peat overlying silty sand or sandy silt with clay varying in color from light brown to dark brown. More detailed descriptions are in the attached *Boring Logs* and *Resource Protection Well Reports*. Groundwater was present within 10 inches of the surface at the monitor well locations and at wells GW#2 and GW#6 groundwater was at the surface.

Please contact us if you have questions or concerns regarding the information presented herein.

Respectfully Submitted:
BUDINGER & ASSOCIATES, INC.

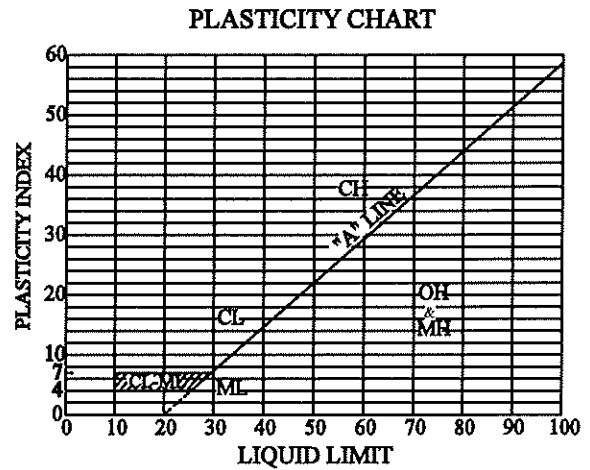
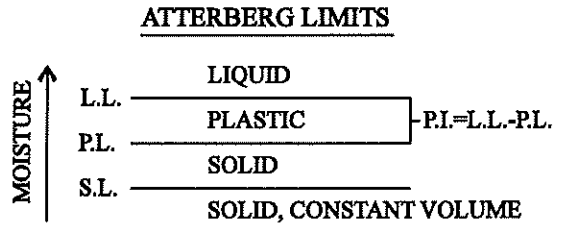
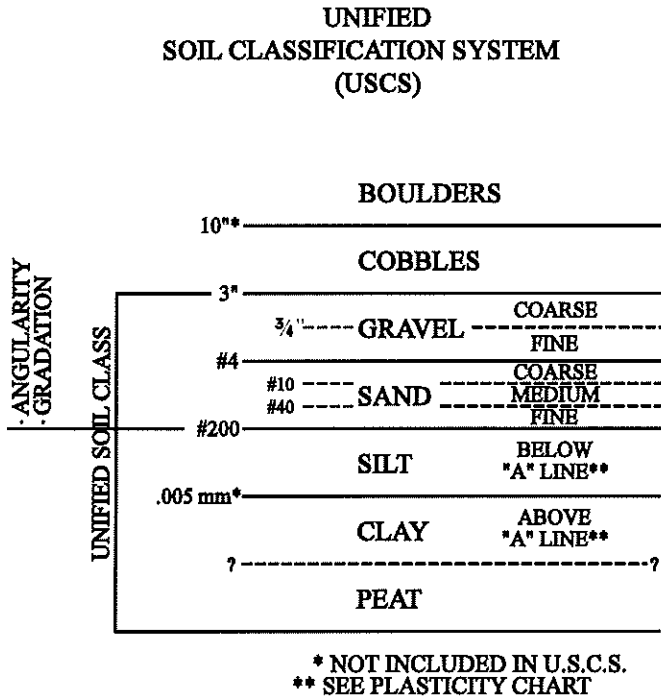
Thomas Black, EIT
Staff Engineer

Stephen D. Burchett, PE
Geotechnical Engineer

TBB/tb
Addressee - 2
Attachments:

- Guide to Soil and Rock Descriptions
- Boring Logs
- Resource Protection Well Reports

GUIDE TO SOIL & ROCK DESCRIPTIONS



GUIDE TO SOIL DESCRIPTION MODIFIERS, MOISTURE, AND CONDITION PRESENTED ON LOGS.

MODIFIER	ESTIMATED PERCENTAGE OF SAMPLE	MOISTURE	CONDITION
SUFFIX "LY" OR "Y"	GREATER THAN 40%	DRY	COARSE GRAINED: VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE
SOME	22% - 45%	SLIGHTLY MOIST	
SMALL AMOUNT	8% - 25%	VERY MOIST	
TRACE/OCCASIONAL	0% - 12%	SATURATED	

- ▽ GROUNDWATER INDICATION DURING DRILLING
- ▼ GROUNDWATER INDICATION AFTER DRILLING

SAMPLES

- ▬ STANDARD 2" PENETRATION TEST SAMPLER WITH BLOWS PER FOOT
- ▬ 3" SPLIT SPOON SAMPLER WITH BLOWS PER FOOT
- ▬ DRILL CUTTING SAMPLE
- ▬ BULK SAMPLE
- ▬ SHELBY TUBE SAMPLE
- ▬ DIAMOND CORE RUN WITH % RECOVERY & ROCK QUALITY DESIGNATION
- ▬ 4" O.D. SPLIT SPOON SAMPLER WITH BLOWS PER FOOT
- R REFUSAL OF SAMPLE (50+ BLOWS PER 6")

- FINE GRAINED:**
- VERY SOFT
 - SOFT
 - MEDIUM
 - STIFF
 - VERY STIFF
 - HARD
- ROCK:**
- SOFT
 - MODERATELY HARD
 - HARD
 - VERY HARD

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. RE04246

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission (select one)

- Construction
 Decommission ORIGINAL INSTALLATION Notice
of Intent Number _____

Consulting Firm Budinger and Associates, Inc.

Unique Ecology Well ID _____
Tag No. BBH 660 (GW-1)

Type of Well (select one)

- Resource Protection
 Geotech Soil Boring

Property Owner Spokane County

Site Address _____

City Newman Lake County Spokane

Location SW 1/4-1/4 SW 1/4 Sec 27 Twn 27 R 45 E/W/M W/W/M

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

- Driller Engineer Trainee Name (Print) Steve Burchett
Driller/Engineer /Trainee Signature _____
Driller or Trainee License No. 2107

Lat/Long (s, t, r) Lat Deg 47 Lat Min/Sec 48/09.18
still REQUIRED) Long Deg 117 Long Min/Sec 06/20.98

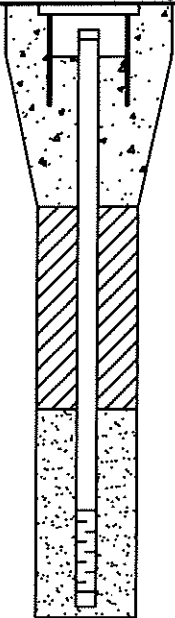
Tax Parcel No. _____

Cased or Uncased Diameter 12 inches Static Level 8 inches

Work/Decommission Start Date 4/12/10

Work/Decommission Completed Date 4/13/10

If trainee, licensed driller's _____
Signature and License No. 2107

Construction/Design	Well Data	Formation Description
	<p>Monument: Flush mount 8-inch diameter vault set in concrete to 2 feet below grade</p> <p>Riser: 2-inch schedule 40 pvc set to 5 feet below grade with locking expansion plug</p> <p>Screen: 2-inch schedule 40 pvc (0.010-inch slot) set from 5 to 6 feet below grade with end cap</p> <p>Seal: Bentonite from 2 to 4 feet below grade</p> <p>Filter pack: #20-40 silica sand from 4 to 6 feet below grade</p>	<p>Grass and weed surface</p> <p>-----</p> <p>PEAT, some Silt, fine Sand and Organics (grass roots)</p> <p>(upper 1 foot of layer had more organics)</p> <p>----- 2.5'</p> <p>----- 3'</p> <p>SAND, some Silt, small amount Clay, slightly micaceous</p> <p>----- 5.0'</p> <p>----- 6'</p> <p>End of Boring at 6 feet</p> <p>----- 7.5'</p>

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. RB04246

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission (select one)

- Construction
- Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Consulting Firm Budinger and Associates, Inc.

Unique Ecology Well ID
Tag No. BBH 659 (GW-2)

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

- Driller Engineer Trainee Name (Print) Steve Burchett
- Driller/Engineer /Trainee Signature _____
- Driller or Trainee License No. 2107

If trainee, licensed driller's
Signature and License No. 2107

Type of Well (select one)

- Resource Protection
- Geotech Soil Boring

Property Owner Spokane County

Site Address _____

City Newman Lake County Spokane

Location SW 1/4-1/4 SW 1/4 Sec 27 Twn 27 R 45 BWM WWM

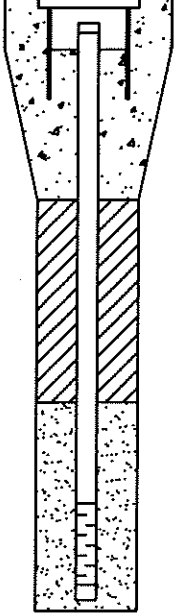
Lat/Long (s, t, r still REQUIRED) Lat Deg 47 Lat Min/Sec 48/06.75
Long Deg 117 Long Min/Sec 06/33.83

Tax Parcel No. _____

Cased or Uncased Diameter 12 inches Static Level 1 inches

Work/Decommission Start Date 4/12/10

Work/Decommission Completed Date 4/13/10

Construction/Design	Well Data	Formation Description
	<p>Monument: Flush mount 8-inch diameter vault set in concrete to 2 feet below grade</p> <p>Riser: 2-inch schedule 40 pvc set to 5 feet below grade with locking expansion plug</p> <p>Screen: 2-inch schedule 40 pvc (0.010-inch slot) set from 5 to 6 feet below grade with end cap</p> <p>Seal: Bentonite from 2 to 4 feet below grade</p> <p>Filter pack: #20-40 silica sand from 4 to 6 feet below grade</p>	<p>Grass, weeds and water surface</p> <p>-----</p> <p>PEAT, some Silt, fine Sand and Organics (grass roots)</p> <p>(upper 1 foot of layer had more organics)</p> <p style="text-align: right;">2.5'</p> <p>-----</p> <p>3'</p> <p>SILT, some Sand, small amount to trace Clay, occasional Organics (roots)</p> <p style="text-align: right;">5.0'</p> <p>-----</p> <p>6'</p> <p>End of Boring at 6 feet</p> <p style="text-align: right;">7.5'</p>

SCALE: 1"= _____

PAGE 1 OF 1

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RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. RE04246

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission (select one)

Construction

Decommission ORIGINAL INSTALLATION Notice

of Intent Number _____

Consulting Firm Budinger and Associates, Inc.

Unique Ecology Well ID _____

Tag No. BBH 662 (GW-3)

Type of Well (select one)

Resource Protection

Geotech Soil Boring

Property Owner Spokane County

Site Address _____

City Newman Lake

County Spokane

Location sw 1/4-1/4 SW 1/4 Sec 27 Twn 27 R 45

State WA WY

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller Engineer Trainee Name (Print) Steve Burchett

Driller/Engineer /Trainee Signature _____

Driller or Trainee License No. 2107

Lat/Long (s, t, r still REQUIRED)

Lat Deg 47

Lat Min/Sec 48/19.25

Long Deg 117

Long Min/Sec 06/35.70

Tax Parcel No. _____

Cased or Uncased Diameter 12 inches Static Level 10 inches

Work/Decommission Start Date 4/12/10

Work/Decommission Completed Date 4/13/10

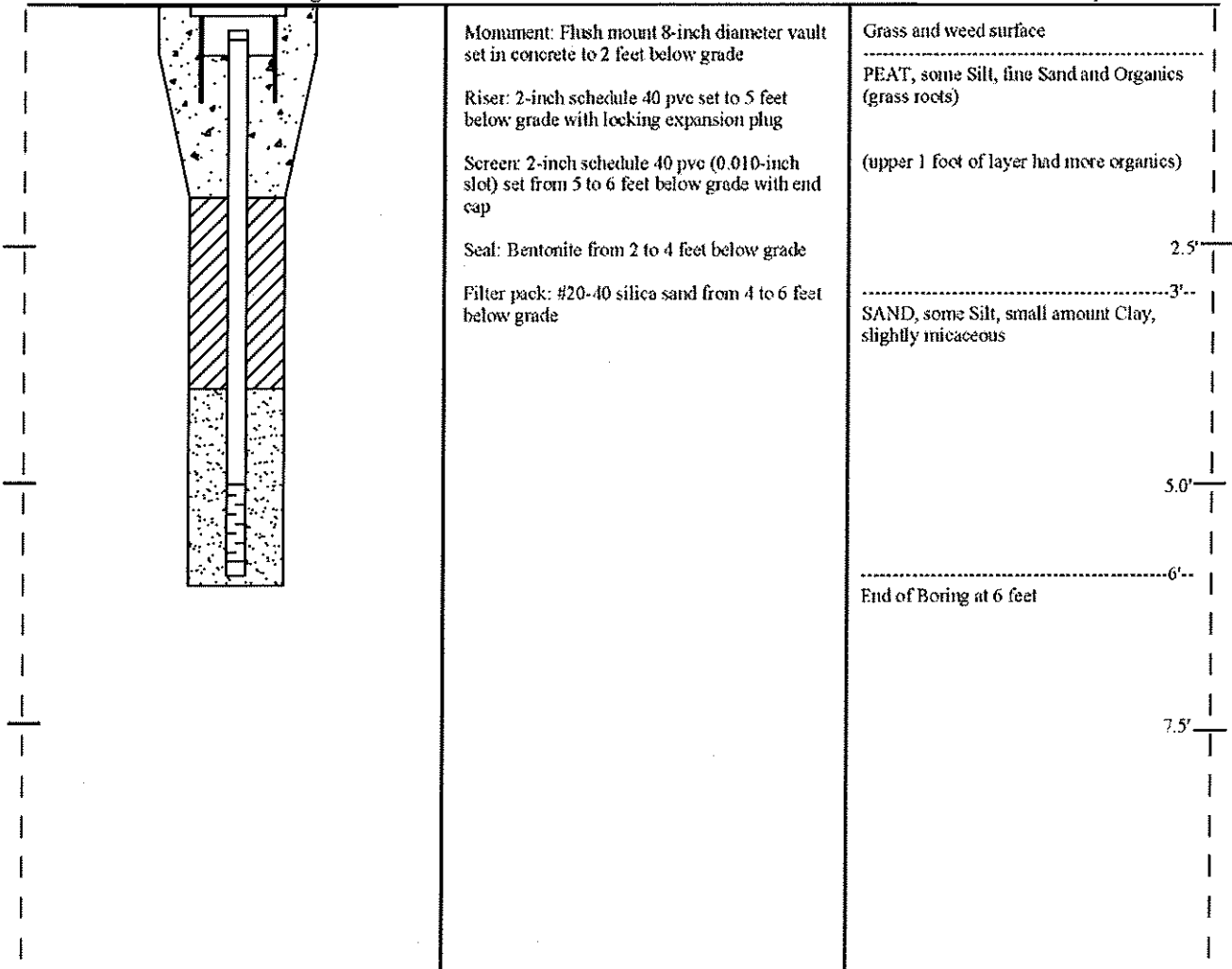
If trainee, licensed driller's

Signature and License No. 2107

Construction/Design

Well Data

Formation Description



SCALE: 1"= _____

PAGE 1 OF 1

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RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. RE04245

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission (select one)

Construction
 Decommission ORIGINAL INSTALLATION Notice
of Intent Number _____

Type of Well (select one)

Resource Protection
 Geotech Soil Boring

Consulting Firm Budinger and Associates, Inc.

Property Owner Spokane County

Unique Ecology Well ID _____

Site Address _____

Tag No. BBH 657 (GW-4)

City Newman Lake County Spokane

Location sw 1/4-1/4 SW 1/4 Sec 28 Twn 27 R 45 RR/RT W/M

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Lat/Long (s, t, r still REQUIRED) Lat Deg 47 Lat Min/Sec 48/24.72
Long Deg 117 Long Min/Sec 06/53.58

Driller Engineer Trainee Name (Print) Steve Burchett
Driller/Engineer /Trainee Signature _____
Driller or Trainee License No. 2107

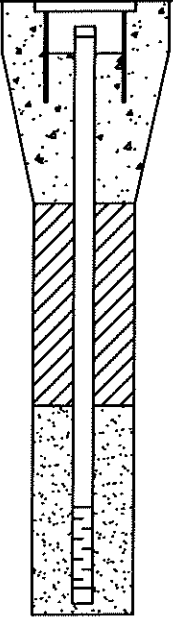
Tax Parcel No. _____

Cased or Uncased Diameter 12 inches Static Level 3 inches

If trainee, licensed driller's Signature and License No. 2107

Work/Decommission Start Date 4/12/10

Work/Decommission Completed Date 4/13/10

Construction/Design	Well Data	Formation Description
	<p>Monument: Flush mount 8-inch diameter vault set in concrete to 2 feet below grade</p> <p>Riser: 2-inch schedule 40 pvc set to 5 feet below grade with locking expansion plug</p> <p>Screen: 2-inch schedule 40 pvc (0.010-inch slot) set from 5 to 6 feet below grade with end cap</p> <p>Seal: Bentonite from 2 to 4 feet below grade</p> <p>Filter pack: #20-40 silica sand from 4 to 6 feet below grade</p>	<p>Grass and weed surface</p> <p>-----</p> <p>PEAT, some Silt, fine Sand and Organics (grass roots)</p> <p>(upper 1 foot of layer had more organics)</p> <p>-----2'-----</p> <p>SILT, some fine Sand, small amount to occasional Clay</p> <p>2.5'</p> <p>-----</p> <p>5.0'</p> <p>-----6'-----</p> <p>End of Boring at 6 feet</p> <p>-----</p> <p>7.5'</p>

SCALE: 1"= _____

PAGE 1 OF 1

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RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. RE04245

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission (select one)

Construction

Decommission ORIGINAL INSTALLATION Notice

of Intent Number _____

Consulting Firm Budinger and Associates, Inc.

Unique Ecology Well ID _____

Tag No. BBH 661 (GW-5)

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller Engineer Trainee Name (Print) Steve Burchett

Driller/Engineer/Trainee Signature _____

Driller or Trainee License No. 2107

If trainee, licensed driller's
Signature and License No. 2107

Type of Well (select one)

Resource Protection

Geotech Soil Boring

Property Owner Spokane County

Site Address _____

City Newman Lake County Spokane

Location sw 1/4-1/4 SW 1/4 Sec 28 Twn 27 R 45 BWM WWM

Lat/Long (s, t, r) Lat Deg 47 Lat Min/Sec 48/23.61

still REQUIRED) Long Deg 117 Long Min/Sec 07/06.78

Tax Parcel No. _____

Cased or Uncased Diameter 12 inches Static Level 5 inches

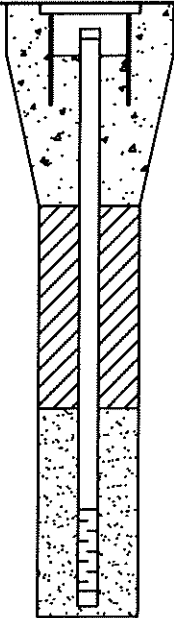
Work/Decommission Start Date 4/12/10

Work/Decommission Completed Date 4/13/10

Construction/Design

Well Data

Formation Description



Monument: Flush mount 8-inch diameter vault set in concrete to 2 feet below grade

Riser: 2-inch schedule 40 pvc set to 5 feet below grade with locking expansion plug

Screen: 2-inch schedule 40 pvc (0.010-inch slot) set from 5 to 6 feet below grade with end cap

Seal: Bentonite from 2 to 4 feet below grade

Filter pack: #20-40 silica sand from 4 to 6 feet below grade

Grass and weed surface

PEAT, some Silt, fine Sand and Organics (grass roots)

(upper 1 foot of layer had more organics)

-----2'--
SILT, some fine Sand, small amount to occasional Clay

2.5'

5.0'

-----6'--
End of Boring at 6 feet

7.5'

SCALE: 1"= _____

PAGE 1 OF 1

ECY 050-12 (Rev. 2/03)

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RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. RE04245

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission (select one)

- Construction
- Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well (select one)

- Resource Protection
- Geotech Soil Boring

Consulting Firm Budinger and Associates, Inc.
 Unique Ecology Well ID _____
 Tag No. BBH 658 (GW-6)

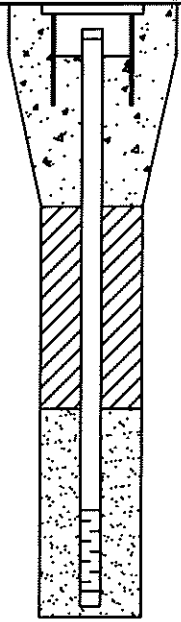
Property Owner Spokane County
 Site Address _____
 City Newman Lake County Spokane
 Location sw 1/4-1/4 SW 1/4 Sec 28 Twn 27 R 45 BWM WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

- Driller Engineer Trainee Name (Print) Steve Burchett
- Driller/Engineer /Trainee Signature _____
- Driller or Trainee License No. 2107

Lat/Long (s, t, r) still **REQUIRED** Lat Deg 47 Lat Min/Sec 48/12.62
 Long Deg 117 Long Min/Sec 06/45.85
 Tax Parcel No. _____
 Cased or Uncased Diameter 12 inches Static Level 0 inches
 Work/Decommission Start Date 4/12/10
 Work/Decommission Completed Date 4/13/10

If trainee, licensed driller's _____
Signature and License No. 2107

Construction/Design	Well Data	Formation Description
	<p>Monument: Flush mount 8-inch diameter vault set in concrete to 2 feet below grade</p> <p>Riser: 2-inch schedule 40 pvc set to 5 feet below grade with locking expansion plug</p> <p>Screen: 2-inch schedule 40 pvc (0.010-inch slot) set from 5 to 6 feet below grade with end cap</p> <p>Seal: Bentonite from 2 to 4 feet below grade</p> <p>Filter pack: #20-40 silica sand from 4 to 6 feet below grade</p>	<p>Grass, weeds and water surface</p> <p>-----3'----- PEAT, some Silt, fine Sand and Organics (grass roots)</p> <p>(upper 1 foot of layer had more organics)</p> <p>-----2.5'-----</p> <p>-----3'----- SILT, some Sand, small amount to trace Chy, occasional Organics (small roots)</p> <p>-----6'----- End of Boring at 6 feet</p> <p>-----7.5'-----</p>

SCALE: 1"= _____

PAGE 1 OF 1

MONITOR WELL 1

Date of Boring: 4-12-10
Driller: Budinger & Assoc., Inc.
Type of Drill: Tracked Bobcat ASV
Location: Lat: 47°48'09.18" N, Long: 117°06'20.98" W
Surface: grass and weeds

Elevation: ft
Logged by: T. Black
Size of hole: 12-inch solid stem auger

DEPTH	SAMPLES BLOW COUNTS N (% RECOVERY)	MOISTURE, COLOR, CONDITION	DESCRIPTION	SOIL LOG	WELL DETAILS
0		saturated, black, soft	PEAT, some Silt, fine Sand and Organics (grass roots) (upper 1 foot of layer had more organics)		Monument: Flush mount 8-inch diameter vault set in concrete to 2 feet below grade Riser: 2-inch schedule 40 pvc set to 5 feet below grade with locking expansion plug Screen: 2-inch schedule 40 pvc (0.010-inch slot) set from 5 to 6 feet below grade with end cap
5		saturated, light brown with mottling, loose	SAND, some Silt, small amount clay, slightly micaceous		Seal: Bentonite from 2 to 4 feet below grade Filter pack: #20-40 silica sand from 4 to 6 feet below grade
			End of Boring @ 6 ft		
10					
15					

MONITOR WELL D10006 - BORING LOGS.GPJ BUDINGER.GDT 5/3/10



Budinger & Associates
 1101 North Fancher Road
 Spokane Valley, WA 99212

WELL LOG

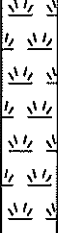

FIGURE 2-1

Project: McKenzie Conservation Area
 Location: Newman Lake
 Number: D10006

MONITOR WELL 2

Date of Boring: 4-12-10
Driller: Budinger & Assoc., Inc.
Type of Drill: Tracked Bobcat ASV
Location: Lat: 47°48'06.75" N, Long: 117°06'33.83" W
Surface: water, grass and weeds

Elevation: ft
Logged by: T. Black
Size of hole: 12-inch solid stem auger

DEPTH	SAMPLES BLOW COUNTS N (% RECOVERY)	MOISTURE, COLOR, CONDITION	DESCRIPTION	SOIL LOG	WELL DETAILS
0		saturated, black, soft	PEAT, some Silt, fine Sand and Organics (grass roots) (upper 1 foot of layer had more organics)		Monument: Flush mount 8-inch diameter vault set in concrete to 2 feet below grade Riser: 2-inch schedule 40 pvc set to 5 feet below grade with locking expansion plug Screen: 2-inch schedule 40 pvc (0.010-inch slot) set from 5 to 6 feet below grade with end cap
5		saturated, dark brown to deep reddish brown, soft	SILT, some Sand, small amount to trace Clay, occasional organics (small roots)		Seal: Bentonite from 2 to 4 feet below grade Filter pack: #20-40 silica sand from 4 to 6 feet below grade
			End of Boring @ 6 ft		
10					
15					

MONITOR WELL D10006 - BORING LOGS.GPJ BUDINGER.GDT 5/3/10



Budinger & Associates
 1101 North Fancher Road
 Spokane Valley, WA 99212

WELL LOG

FIGURE 2-2

Project: McKenzie Conservation Area

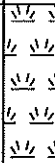
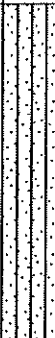
Location: Newman Lake

Number: D10006

MONITOR WELL 4

Date of Boring: 4-12-10
Driller: Budinger & Assoc., Inc.
Type of Drill: Tracked Bobcat ASV
Location: Lat: 47°48'24.72" N, Long: 117°06'53.58" W
Surface: grass and weeds

Elevation: ft
Logged by: T. Black
Size of hole: 12-inch solid stem auger

DEPTH	SAMPLES BLOW COUNTS N (% RECOVERY)	MOISTURE, COLOR, CONDITION	DESCRIPTION	SOIL LOG	WELL DETAILS
0		very moist to saturated, black, soft	PEAT, some Silt, fine Sand and Organics (grass roots) (upper 1 foot of layer had more organics)		Monument: Flush mount 8-inch diameter vault set in concrete to 2 feet below grade Riser: 2-inch schedule 40 pvc set to 5 feet below grade with locking expansion plug
5		saturated, light brown with mottling, soft	SILT, some fine Sand, small amount to occasional Clay		Screen: 2-inch schedule 40 pvc (0.010-inch slot) set from 5 to 6 feet below grade with end cap Seal: Bentonite from 2 to 4 feet below grade Filter pack: #20-40 silica sand from 4 to 6 feet below grade
			End of Boring @ 6 ft		
10					
15					

MONITOR WELL D10006 - BORING LOGS.GPJ_BUDINGER.GDT 5/3/10



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WELL LOG

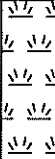

FIGURE 2-4

Project: McKenzie Conservation Area
 Location: Newman Lake
 Number: D10006

MONITOR WELL 5

Date of Boring: 4-12-10
Driller: Budinger & Assoc., Inc.
Type of Drill: Tracked Bobcat ASV
Location: Lat: 47°48'23.61" N, Long: 117°07'06.78" W
Surface: grass and weeds

Elevation: ft
Logged by: T. Black
Size of hole: 12-inch solid stem auger

DEPTH	SAMPLES BLOW COUNTS N (% RECOVERY)	MOISTURE, COLOR, CONDITION	DESCRIPTION	SOIL LOG	WELL DETAILS
0		very moist to saturated, black, soft	PEAT, some Silt, fine Sand and Organics (grass roots) (upper 1 foot of layer had more organics)		Monument: Flush mount 8-inch diameter vault set in concrete to 2 feet below grade Riser: 2-inch schedule 40 pvc set to 5 feet below grade with locking expansion plug
5		saturated, light brown with mottling, soft	SILT, some fine Sand, small amount to occasional Clay		Screen: 2-inch schedule 40 pvc (0.010-inch slot) set from 5 to 6 feet below grade with end cap Seal: Bentonite from 2 to 4 feet below grade Filter pack: #20-40 silica sand from 4 to 6 feet below grade
			End of Boring @ 6 ft		
10					
15					

MONITOR WELL D10006 - BORING LOGS.GPJ BUDINGER.GDT 5/3/10



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WELL LOG

FIGURE 2-5

Project: McKenzie Conservation Area
 Location: Newman Lake
 Number: D10006

MONITOR WELL 6

Date of Boring: 4-12-10
Driller: Budinger & Assoc., Inc.
Type of Drill: Tracked Bobcat ASV
Location: Lat: 47°48'12.62" N, Long: 117°06'45.85" W
Surface: water, grass and weeds

Elevation: ft
Logged by: T. Black
Size of hole: 12-inch solid stem auger

DEPTH	SAMPLES BLOW COUNTS N (% RECOVERY)	MOISTURE, COLOR, CONDITION	DESCRIPTION	SOIL LOG	WELL DETAILS
0		saturated, black, soft	PEAT, some Silt, fine Sand and Organics (grass roots) (upper 1 foot of layer had more organics)		Monument: Flush mount 8-inch diameter vault set in concrete to 2 feet below grade Riser: 2-inch schedule 40 pvc set to 5 feet below grade with locking expansion plug Screen: 2-inch schedule 40 pvc (0.010-inch slot) set from 5 to 6 feet below grade with end cap
5		saturated, dark brown to deep reddish brown, soft	SILT, some Sand, small amount to trace Clay, occasional organics (small roots)		Seal: Bentonite from 2 to 4 feet below grade Filter pack: #20-40 silica sand from 4 to 6 feet below grade
10			End of Boring @ 6 ft		
15					

MONITOR WELL D10006 - BORING LOGS.GPJ.BUDINGER.GDT 5/3/10



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WELL LOG

FIGURE 2-6

Project: McKenzie Conservation Area
 Location: Newman Lake
 Number: D10006

Appendix C