Wetland Report

Arthur R. Bowman Dam

Crooked River, Oregon



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Normandeau Associates, Inc.

On Behalf of Ochoco Irrigation District



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Abstract

A wetland delineation was performed at the Bureau of Reclamation Arthur R. Bowman Dam on the Crooked River in Crook County, Oregon. Wetland identification followed the U.S. Army Corps of Engineers Wetland Delineation Manual (1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (2008). Staff scientists conducted the delineation site visits on May 30 and 31, 2012; additional reconnaissance visits were made in July, September, and October 2011, and April and May 2012 while staff was conducting other studies in the study area. Six wetlands were delineated within the study area. Each of the five riverine fringe wetlands are 0.01 acres or less in size, typically between 2 and 10 feet wide, and have a 2 to 3% slope (measured perpendicular to the river). Wetland 3 has one small area in a less unconfined setting that is 18 feet wide. All five riverine wetlands classify as Palustrine, Emergent, Seasonally Flooded (PEMC) wetlands and are located on narrow low terraces that are bound on the upland side by steep slopes. The sixth wetland is a 0.56 acre depressional wetland that was formed in the previous (pre-dam) Crooked River channel. The wetland has a gated culvert as its outlet and would classify as Palustrine, Aquatic Bed, Permanently Flooded, Diked/Impounded (PABHh).

Introduction

Normandeau Associates, Inc. (Normandeau) performed a wetland investigation and delineation at the existing Bureau of Reclamation (BOR) Arthur R. Bowman Dam (Bowman Dam) on the Crooked River in Crook County, Oregon. Bowman Dam is located approximately 15 miles upstream of Prineville, Oregon, and impounds the Prineville Reservoir. The BOR owns the facility, which the Ochoco Irrigation District (OID) operates and maintains. The land surrounding the dam is public land managed by the Bureau of Land Management as a Wild and Scenic Waterway, and permission to conduct the wetland delineation was granted by that agency.

National Wetland Inventory (NWI) and high-level vegetation cover and soils mapping is currently the only information available regarding wetlands in the the study area. While this information provides baseline data for analysis, there are no known and readily available site-specific data for wetlands immediately below Bowman Dam. This study will provide the necessary baseline information on wetland resources at the base of Bowman Dam. Reconnaissance visits were made on July, September, and October 2011, and April and May 2012. The wetland delineation was conducted on May 30 and 31, 2012. A series of five riverine fringe wetlands and one ponded wetland were delineated. Additionally, the Ordinary High Water Line (OHWL) of the Crooked River in the vicinity of a proposed bridge crossing was flagged and recorded.

Landscape Setting and Land Use

The study area consists of 12.4 acres within a steep bedrock canyon created by the Crooked River and includes the area from Bowman Dam (an earthen fill structure) to approximately 1000 feet downstream (see Appendix A). The area includes the Crooked River, its floodplain and adjacent upland areas, as well as the historic Crooked River channel located south of the current channel. The lower terrace adjacent to the river is typically between 1 and 10 feet wide. The uplands along the north shore of the Crooked River are primarily talus hillslopes with cobble to boulder sized rocks. Dirt access roads and associated fill, created during the dam's construction, are located on both sides of the Crooked River, but they are used infrequently.

The Crooked River for 15 miles below Bowman Dam is classified as a Wild and Scenic River and supports recreation uses including camping, fishing, and hiking. Prineville Reservoir supports boating, fishing, camping, and resort uses. The surrounding area is part of a vast, high desert prairie (PGE 2011) and is similar to historic conditions.

Site Alterations

This site underwent extensive modifications during the construction of Bowman Dam from 1958 through 1961. Extensive grading occurred and fill was added to the site for construction of the dam and access roads along both shores of the river. A new river channel was excavated from uplands and armored approximately 150 feet to the north of the original channel to connect with the new spillway. The original river channel was culverted and partially gated on the south end, resulting in a ponded wetland most of the year. It appears that this pond receives backwater inputs through the culvert during high river flows when levels exceed the top of the partially gated culvert. According to the OID (Mike Kasberger, pers. comm.), the pond also receives water from groundwater leakage through the base of the dam, thus allowing surface water to exist throughout the summer in most years.

Precipitation Data and Analysis

A comparison of historical precipitation obtained from the WETS Station Prineville 4 NW (see Appendix D) and recent observations from the National Weather Service Prineville (356883) station shows that conditions were normal for the 2012 water year (Table 1). Overall, May was within the normal range of precipitation, but was 64% of average. In the two weeks prior to fieldwork, four days received precipitation; however, almost all precipitation for the period, 0.51 inches out of a total of 0.62 inches, fell on May 25, five days before the site visit (Table 2).

Table 1. Summary of Precipitation in Prineville, Oregon.

Month	Total Precipitation (inches)	Normal Range WETS (inches)	Within Normal Range	Average (inches)	Departure from Normal (inches)
October 2011	0.42	0.37 - 1.02	Yes	1.06	-0.64
November 2011	0.21	0.78 - 1.58	No – Lower	0.87	-0.66
December 2011	0.76	0.52 - 1.50	Yes	0.62	0.14
January 2012	1.19	0.64 - 1.39	Yes	0.47	0.72
February 2012	0.45	0.51 - 1.23	No – Lower	0.42	0.03
March 2012	0.69	0.61 - 1.15	Yes	0.83	-0.14
April 2012	1.88	0.48 - 1.02	No – Higher	1.30	0.58
May 2012	0.79	0.52 - 1.29	Yes	1.23	-0.44
TOTAL	6.39	4.43 – 10.18	Yes	6.80	-0.41

Table 2. Daily Precipitation Two Weeks Prior to and During Fieldwork in Prineville, Oregon.

Date	Precipitation
	(inches)
5/17	0.00
5/18	0.00
5/19	0.00
5/20	0.00
5/21	0.00
5/22	0.06
5/23	0.04
5/24	0.01
5/25	0.51
5/26	0.00
5/27	0.00
5/28	0.00
5/29	0.00
5/30	0.00
5/31	0.00
TOTAL	0.62

Direct surface runoff and precipitation onto the site do not play a dominant role in the hydrology of the observed wetlands. The riverine wetlands primarily receive hydrology inputs from surface overflow and subsurface water exchange with the adjacent Crooked River. The pond's hydrology consists of two sources: 1) groundwater seepage from Prineville Reservoir through Bowman Dam, and 2) backwater flow through the gated culvert during high river flows. River flows just downstream of the site averaged 303 cfs for May, much lower than the 70-year historical average of 555 cfs. The Natural Resources Conservation Service (NRCS) growing season recorded in the

WETS table, based on the 28°F standard for the 50 percentile, is 108 days between May 29 and September 14.

Methods

The study area was based on the potential boundary of a hydro project being considered to be constructed below Bowman Dam. However, to provide continuity and perspective, the western boundaries of two fringe wetlands were delineated beyond the project area boundary. Wetland identification followed the U.S. Army Corps of Engineers Wetland Delineation Manual (1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (2008). A background review was performed, including an assessment of NWI maps, U.S. Geological Survey topographic maps, and aerial photographs. Although a county or regional soil survey has not been completed, soil mapping adjacent to Prineville Reservoir, including the study area directly below Bowman Dam, has been completed and reported in the Prineville Reservoir Resource Management Plan (RMP) (BOR 2003). Redcliff-Rock Outcrop Complex, a well-drained, non-hydric soil unit, is mapped in the study area.

Staff scientists conducted the delineation site visits on May 30 and 31, 2012; additional reconnaissance visits were made numerous times during July, September, and October 2011, and April and May 2012 while staff was conducting other studies in the study area. In general, the wetland review consisted of assessing vegetation, soil, and hydrologic characteristics to identify natural areas meeting the wetland criteria. Plant names and wetland indicator status followed the 2012 National Wetland Plant List (NWPL). Wildlife and invasive plant species observed during the May 2012 site visits were also recorded (see Appendix E).

Site-specific methods for conducting the field investigation were used at each data plot. Factors such as type of wetland boundary (e.g., gradual versus abrupt), topography, amount of soil disturbance, and water flow were taken into account when selecting sample plot locations and determining boundaries. A total of four paired plots where chosen to best represent the wetland and adjacent non-wetland. The riverine fringe wetlands were found to be similar in landscape position, hydrology, soil, and vegetation communities. Therefore, two sets of paired plots were selected as representative of all five riverine fringe wetlands delineated. Two paired plots were

located on opposite sides of the pond wetland: one pair along the northern boundary to document where the wetland-upland boundary lies at the base of a steep slope near the water's edge, and a second pair along the southern boundary to document where the boundary occurs where topography is more gentle and the distinction between wetland and upland less abrupt.

Because most of the wetlands are very narrow strips, the vegetation plot shapes were adjusted to fit within the wetland. Often the plots were longer and narrower, more rectangular, instead of the typical circular plot.

Soil pits were dug to 18 inches except where a preponderance of cobbles and boulders prevented such deep excavations.

The OHWL was determined based on analysis of field indicators including clean cobbles and boulders, flood deposits, top of bank, water stains, sediment lines, and direct observations of river surface elevation on numerous occasions during the previous two years.

The wetland boundary, paired data plots, and OHWL were flagged in the field using numbered, colored surveyor pin-flags or tape. Flagged locations were collected by a Trimble GeoExplorer XH capable of subfoot accuracy. The wetlands were classified using the U.S. Fish and Wildlife Service Cowardin system (Cowardin, et al. 1979) and assessed following the Oregon Rapid Wetland Assessment Protocol (ORWAP) (see Appendix F).

Results

Description of All Wetlands and Other Non-Wetland Waters

Wetlands

Six wetlands were delineated within the study area. Five wetlands are riverine fringe wetlands with similar landscape position, hydrology, soil, and vegetation communities. The sixth is a ponded wetland with very different vegetative and landscape characteristics. Wetlands along the current section of the Crooked River in the study area were created when the channel was excavated in upland. All wetlands are likely jurisdictional by Oregon Department of State Lands (DSL) and the US Army Corps of Engineers (USACE).

<u>Wetlands 1 through 5</u> – Each of the five riverine fringe wetlands are 0.01 acres or less in size (see Table 3 for individual areas), typically between 2 and 10 feet wide, and have a 2 to 3% slope (measured perpendicular to the river). Wetland 3 has one small area in a less unconfined setting that is 18 feet wide. Wetlands 1 and 5 both extend approximately 100 feet west of the project area and are similar in character (see Appendix A). All five wetlands classify as Palustrine, Emergent, Seasonally Flooded (PEMC) wetlands and were located on narrow low terraces that are bound on the upland side by steep slopes.

Hydrology of these wetlands is dominated by surface and subsurface flow from the adjacent river. Flows in the Crooked River typically peak in mid-April and then drop significantly by the start of the growing season. Because the site visit was conducted at the beginning of the growing season (May 30 and 31), it is likely that the hydrologic conditions observed were typical of the wettest part of the growing season.

Dominant vegetation of the riverine fringe wetlands includes herbaceous species such as Kentucky bluegrass (*Poa pratensis*, FAC), common rush (*Juncus effusus*, FACW), mountain rush (*Juncus arcticus var. littoralis*, FACW), scouringrush horsetail (*Equisetum hyemale*, FACW), water horsetail (*Equisetum fluviatile*, OBL), Carex spp., leafy spurge (*Euphorbia esula*, UPL), clover (*Trifolium* spp.), silverweed cinquefoil (*Argentina anserina*, OBL), Fuller's teasel (*Dipsacus fullonum*, FAC), curly dock (*Rumex crispus*, FAC), marsh marigold (*Caltha* spp.), and common dandelion (*Taraxacum officinale*, FACU). Vegetation within Wetland 5 also includes some narrowleaf cattail (*Typha angustifolia*, OBL), star duckweed (*Lemna trisulca*, OBL), and common mare's-tail (*Hippuris vulgaris*, OBL) along the edge of a backwater area receiving slower river flow. Although all species were evaluated, the presence of yellow sweet-clover (*Melilotus officinalis*, FACU) most closely defined the upland wetland boundary and was a key species when delineating the wetlands.

Soils of the riverine fringe wetlands were very difficult to excavate due to the high proportion of large gravel, cobbles, and boulders. Digging deeper than five inches was impractical in many locations. One example is the soil profile at wetland plot W2. Here the apparent stream-side armoring allowed an excavation of only five inches. The surface (A horizon) was sandy loam with a 10YR3/2 matrix and 5% distinct concentrations of 10YR4/4. This qualifies as hydric soil

indicator F6 Redox Dark Surface. In other locations the proportion of large gravel, cobbles, and boulders is less and deeper pits may be excavated. At wetland plot W1 a profile was obtained down to 14 inches. The surface horizon was a gravelly loamy sand with a 10YR3/2 matrix and 5% distinct concentrations of 10YR4/6 and 10YR4/2 depletions. The horizon below was a very gravelly loamy sand with a 10YR4/2 matrix and many 10YR4/6 and 10YR5/6 prominent redox concentrations. This soil profile qualifies as having hydric soil indicator S5 Sandy Redox. Overall, the soils of the riverine fringe wetlands typically show a dark surface with redox features and, where excavations are possible, a depleted matrix below, illustrating that similar soil processes are occurring in these wetland soils and on this landscape position. The principal difference being a variation in the texture (sand/loamy sand vs. sandy loam) of soil profiles resulting in different (but similar) hydric soil indicators.

<u>Wetland 6</u> – This wetland is a 0.56 acre depressional wetland entirely within the project area that was formed in the previous (pre-dam) Crooked River channel. The wetland has a gated culvert as its outlet and would classify as Palustrine, Aquatic Bed, Permanently Flooded, Diked/Impounded (PABHh). The northern edge of the pond is bound by a steep hillslope (15% to 30%) (comprising native soil and fill) leading down from a high terrace, which results in a sharp wetland boundary at the water's edge. The southern edge of the pond is topographically less distinct with a sloping low terrace.

As noted above, the hydrology of this pond is controlled by groundwater seepage through Bowman Dam and backwater from the Crooked River during higher flows. At the time of the site visit the downstream end of the culvert was about six inches above the surface of the Crooked River. Evidence of water stains, deposits, and sediment lines, as well as a site visit in June 2011, indicate that the water level of the pond fluctuates two to four feet over the year, but it is likely the pond always has some amount of surface water at all times. At the time of the site visit the deepest part of the pond was estimated to be three to four feet deep.

Dominant vegetation of the ponded wetland primarily includes common mare's-tail, narrowleaf cattail, and star duckweed. Around the margin of the pond are species similar to those identified along the riparian fringe including: common rush, arctic rush, scouring rush horsetail, Carex spp., Kentucky bluegrass, silverweed cinquefoil, Fuller's teasel, cocklebur (*Xanthium*

strumarium, FAC), beaked sedge (*Carex rostrata*, OBL), curly dock, marsh marigold, and common dandelion. Throughout the spring and summer the pond progresses from mostly open water to a more densely vegetated state with a considerable amount of algae.

At wetland plot W6b the surface horizon of the soil profile is a 10YR2/2 mucky sandy loam under which is a horizon with a 10YR4/1 depleted matrix with 10YR4/6 and 10YR5/6 common prominent concentrations, and 10YR3/2 depletions. The soil profile for the pond wetland qualifies for F3 Depleted Matrix. The soil plot (W6a) for the north boundary of the ponded wetland was under 12 inches of water during the site visit and the inundation and lack of soil cohesion prevented completion of a soil profile description. However, both the W6a and W6b soil pits have a distinct hydrogen sulfide odor when excavated and qualify for indicator A4 Hydrogen Sulfide.

Waters

<u>Crooked River</u> – The Crooked River is a perennial, fish-bearing stream that comprises approximately 0.90 acres within the study area and is typically 60 to 70 feet wide at the OHWL. The OHWL was determined by evaluating field indicators such as the presence of clean cobbles and boulders, flood deposits, top of bank, water stains, sediment lines, and a comparison of observed stream flows on multiple occasions with historical flow records. The channel originates at the Bowman Dam outlet and flows southwest through the project area. At the southwest edge there is a 100-foot long backwater area that is part of the historic channel. During high spring flows the water overflows the adjacent banks. The riverine system would be classified as Riverine Upper Perennial, Unconsolidated Bottom, Permanently Flooded (R3UBH). The river would be considered jurisdictional by DSL and USACE.

Uplands

Vegetation in the uplands is dominated by western juniper (*Juniperus occidentalis*, UPL), big sagebrush (*Artemisia tridentate*, UPL), grey rabbitbrush (*Chrysothamnus nauseosa*, UPL), green rabbitbrush (*Chrysothamnus viscidiflorus*, UPL), absinthium (*Artemisia absinthium*, UPL), yellow sweet-clover, purple sage (*Salvia dorrii*, UPL), bluebunch wheatgrass (*Pseudoroegneria spicata*, UPL), cheatgrass (*Bromus* tectorum, UPL), common yarrow (*Achillea* millefolium, FACU), great mullein (*Verbascum* thapsus, FACU), Canadian thistle (*Circium arvense*, FACU),

common dandelion, whitetop (*Cardaria draba*, UPL), Fuller's teasel, alfalfa (*Medicago sativa*, UPL), scouringrush horsetail, Kentucky bluegrass, diffuse knapweed (*Centaurea diffusa*, UPL), spotted knapweed (*Centaurea stoebe*, UPL), and lupine (*Lupinus* spp.).

The upland soils in the study area have an admixture of native soil and fill added to build the access roads and prevent erosion of the created stream channel and dam structures. Soil along the riverine sections is predominantly a 10YR3/2 and 10YR3/3 with no redox features. One area where the soil does not contain fill is the area directly adjacent to the south side of the pond. Soil in this area does not express hydric soil features within the upper 17 inches.

Deviation from LWI or NWI

There is no Local Wetland Inventory (LWI) map available for the project area. Allowing for the variance in scale, the NWI mapped wetlands are similar in location to those delineated here, but do not show most of the small, narrow riverine fringe wetlands in the project area. The Crooked River was mapped by NWI as R3UBH with a Palustrine, Emergent, Temporary Flooded (PEMA) wetland mapped along the backwater area. The pond is mapped as PABHh with a border of Palustrine, Emergent, Seasonally Flooded, Diked/Impounded (PEMCh).

Mapping Method

The GPS locations were collected with a Trimble GeoExplorer XH mapping grade GPS unit capable of subfoot accuracy. The mapping accuracy of all points was one meter or less based on the post-processing report with an average accuracy of less than one foot.

Discussion

A total of six wetlands and the Crooked River were identified and delineated within the study area. Five of the wetlands are riverine fringe wetlands with similar landscape position, hydrology, soil, and vegetation communities. The riverine wetlands are all located on a low terrace confined by a hillslope and classifies as Palustrine, Emergent, Seasonally Flooded (PEMC) wetlands. The sixth wetland is a pond that is impounded by a gated culvert and would be classified as Palustrine, Aquatic Bed, Permanently Flooded, Diked/Impounded (PABHh). See Table 3 for a summary of these resources.

Table 3. Summary of Water Resources within the Study Area.

Resource	Area (Sqft)	Area (Acres)	Dominant Cowardin Class	HGM Class	DSL Regulated ¹	USACE Regulated ¹
Wetland 1	459	0.011	PEMC	Riverine	Yes	Yes
Wetland 2	365	0.008	PEMC	Riverine	Yes	Yes
Wetland 3	595	0.014	PEMC	Riverine	Yes	Yes
Wetland 4	65	0.001	PEMC	Riverine	Yes	Yes
Wetland 5	445	0.010	PEMC	Riverine	Yes	Yes
Wetland 6	24,590	0.565	PABHh	Depressional	Yes	Yes
Crooked River	39,291	0.902	R3UBH	N/A	Yes	Yes

¹This is based on Normandeau best professional judgment. Only DSL and USACE can determine if they regulate the wetland

Disclaimer

This report documents the investigation, best professional judgment, and conclusions of the investigator. It is correct and complete to the best of the investigator's knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk unless it has been reviewed and approved in writing by the Oregon Department of State Lands in accordance with OAR 141-090-0005 through 141-090-0055.

References

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Appendix A. Maps

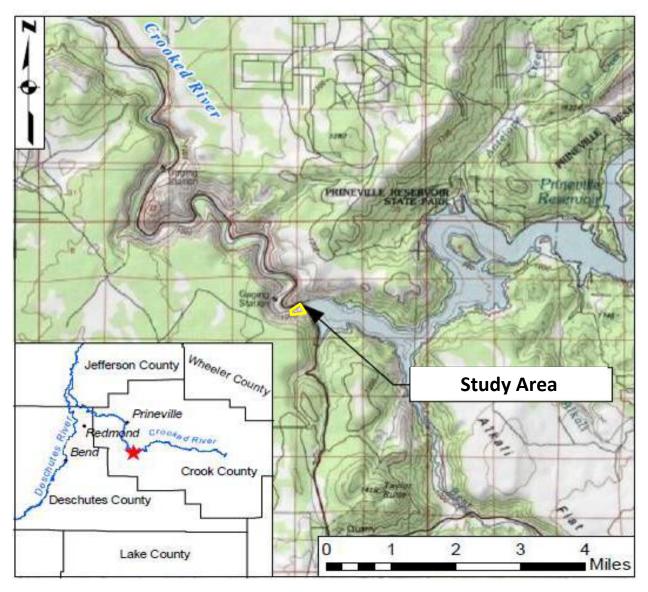


Figure 1. Vicinity Map.

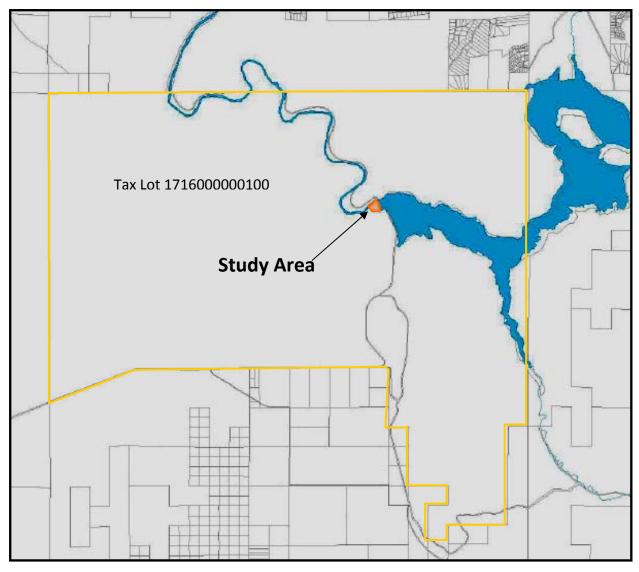


Figure 2. Tax Lot Map. Study Area is in Tax Lot 1716000000100 which is located within the yellow boundary. The parcel is all public land which extends to the tax lots to the west, north, and east.

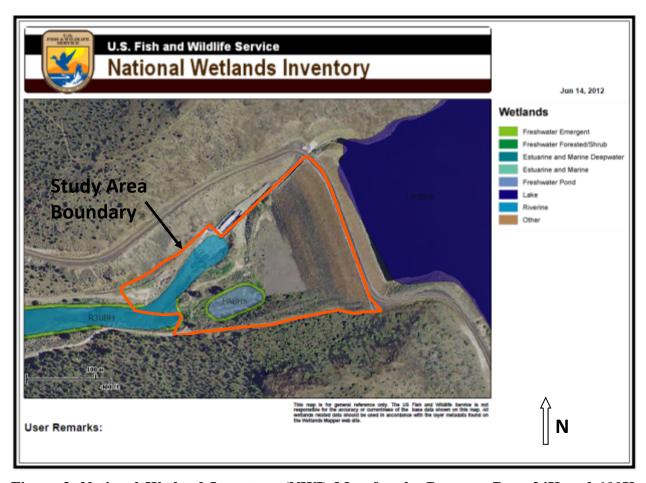


Figure 3. National Wetland Inventory (NWI) Map for the Bowman Dam 24K and 100K Quadrangle.

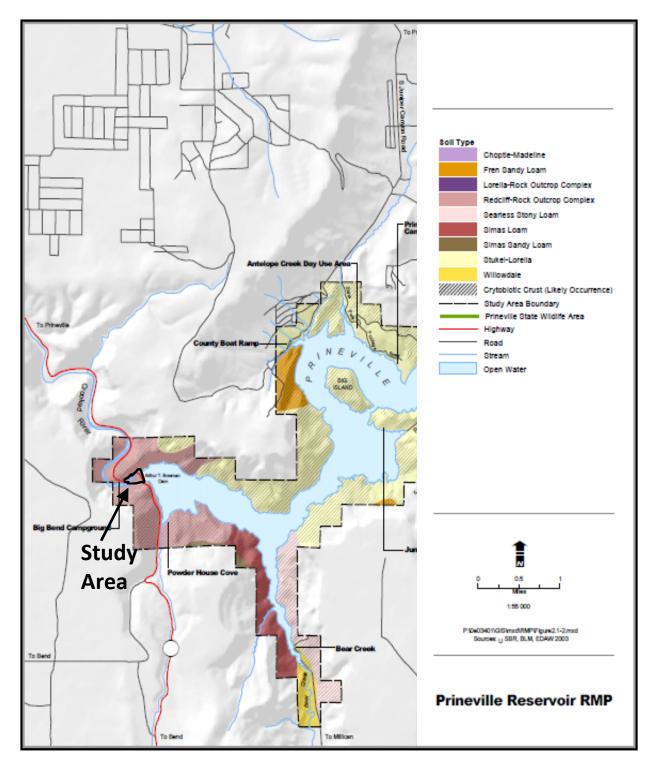


Figure 4. Soil Map from the Prineville Reservoir RMP (BOR 2003).



Figure 5. Aerial Photograph - USDA Farm Service Agency June 28, 2005.



Figure 6. Aerial Photograph - USDA Farm Service Agency August 1, 2011.

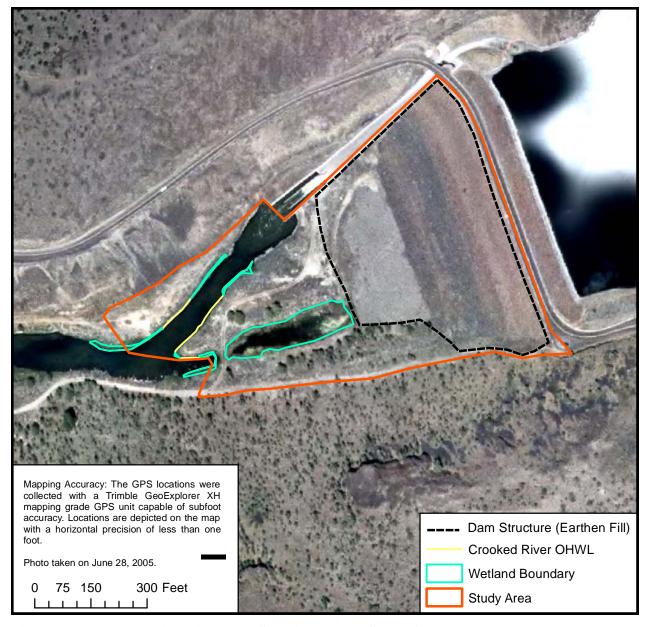


Figure 7. Wetland Delineation Map Showing Entire Study Area.

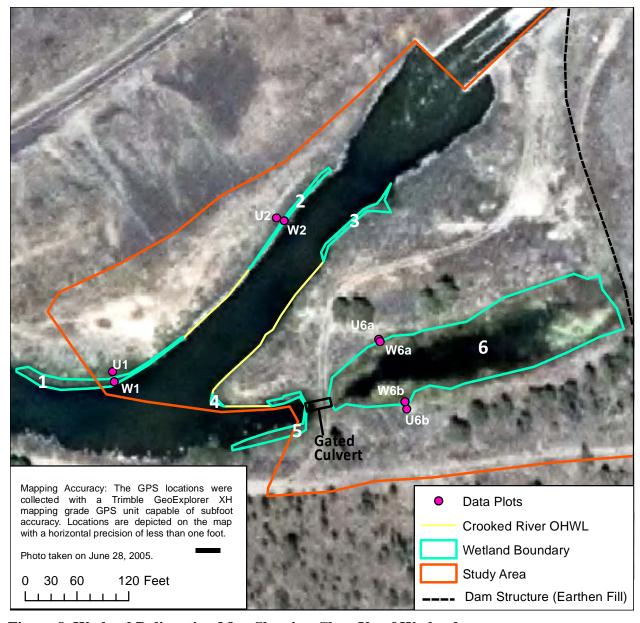


Figure 8. Wetland Delineation Map Showing Close Up of Wetlands.



Project/Site: Bowman Dam		City/C	ounty:	Prineville	, Crook	S	ampling Date:	5/30/12
Applicant/Owner: Portland General Electric								
Investigator(s): Melanie Sharp, Kent Snyder		Section	n, Tov	wnship, Rar	nge: <u>S10, T17S,</u>	R16E		
Landform (hillslope, terrace, etc.): Low Terrace		Local	relief	(concave, c	convex, none): SI	lightly cor	ivex Slop	e (%): <u>3</u>
Subregion (LRR): <u>LLR B-Columbia/Snake River Platea</u>	u_Lat: 44.	1100	79298	3	Long: -120.79	0380567	Datun	n:
Soil Map Unit Name: Redcliff-Rock Outcrop Complex					NWI			
Are climatic / hydrologic conditions on the site typical for thi	s time of ve	ar? Y	es (No	(If no, exp	lain in Rem	arks.)	
Are Vegetation, Soil, or Hydrology	-				Normal Circumst			, No
Are Vegetation, Soil, or Hydrology					eded, explain an			
SUMMARY OF FINDINGS – Attach site map				•	·	-	,	atures, etc.
Hydrophytic Vegetation Present? Yes N	lo				_			
	lo			e Sampled				
Wetland Hydrology Present? Yes V			withi	n a Wetlan	d? Yo	es <u> </u>	No	
Remarks:								
Narrow (2 to 10 feet wide) wetland band of		side	of a	meande	r. Plot on no	orth side	of the rive	r.
VEGETATION – Use scientific names of plan								
Tree Stratum (Plot size: 6' R)	Absolute % Cover				Dominance Te			
1. None					Number of Don That Are OBL,			(A)
2					Total Number o	of Dominan	•	
3					Species Across			(B)
4					Percent of Dom	ninant Spec	ies	
Sapling/Shrub Stratum (Plot size: 6' R)		_ = To	tal Cov	/er	That Are OBL,			(A/B)
1. None					Prevalence Inc	dex worksl	neet:	
2					Total % Co	over of:	Multiply	by:
3.							x 1 =	-
4					FACW species		x 2 =	
5					FAC species		x 3 =	
S.I.D.		_ = To	tal Cov	/er	FACU species		x 4 =	
Herb Stratum (Plot size: 6' R)	2			EAC)A/	UPL species		x 5 =	
1. Equisetum hyemale	_ 3		<u>N</u>	FACW	Column Totals:		(A)	(B)
Equisetum fluviatile Argentina anserina	_ <u>5</u> 2		N	OBL OBL	Prevalenc	ce Index =	B/A =	
4. Poa pratensis	 50		Y	FAC	Hydrophytic V		·	
5. Broadleaf grass A	30		/A	*	<u>✓</u> Dominance	-		
6. Juncus effusus	10		V	FACW	Prevalence			
7. Trifolium spp. (repens or pratense)			N	FACU	Morpholog	ical Adapta	tions¹ (Provide s	supporting
8. Taraxacum officinale	2		N	FACU			r on a separate	•
	109	= To	tal Cov		Problemati	c Hydrophy	tic Vegetation ¹	(Explain)
Woody Vine Stratum (Plot size: 6' R)		_			1			
1. None							nd wetland hydro ed or problemati	
2					, ,		p. 55.0au	-
		_ = To	tal Cov	/er	Hydrophytic Vegetation			
% Bare Ground in Herb Stratum	r of Biotic C	rust _	0		Present?	Yes _	<u> </u>	
Remarks:								
*Broadleaf grass A was too small and lacked any he earlike auricles. Within the last month the plot was								

or wetter. However, the species was not used in the vegetation dominance test and it still passed as hydrophytic. Absolute cover listed.

Profile Des	cription: (Describe	to the de	epth needed to docu			or confi	rm the absence	e of indicators.)
Depth	Matrix	0/		ox Feature		Loc ²		Domarko
(inches)	Color (moist)	%	Color (moist)	%	Type ¹ _		Texture	Remarks
0-6	10YR3/2	90	10YR4/2	5	<u>D</u>	<u>M</u>	grls	
			10YR4/6	5	<u>C</u>	M	_	
6-12	10YR4/2 - 4/1	70	10YR3/1	_10	<u>C</u>	M	vgrls	
			10YR4/6	10	С	М		
			10YR5/6	10	С	М		
					- 			organic matter stains
12.14	10VD4/1	60	10YR4/2	20		N.4		
12-14	10YR4/1				_ <u>D</u>		grs	(10YR6/2 matrix when dry)
1			10YR4/4	_ 10	<u>C</u>	<u>M</u>		10YR5/2, 10%, D, M
			M=Reduced Matrix, C			ed Sand (ocation: PL=Pore Lining, M=Matrix.
-		cable to a	II LRRs, unless other		tea.)			s for Problematic Hydric Soils ³ :
Histosol			<u>✓</u> Sandy Red					Muck (A9) (LRR C)
	pipedon (A2)		Stripped M		-L (E4)			Muck (A10) (LRR B)
	istic (A3)		Loamy Mu					ced Vertic (F18)
	en Sulfide (A4) d Layers (A5) (LRR	C)	Loamy Gle	-				Parent Material (TF2) r (Explain in Remarks)
	uck (A9) (LRR D)	0)	Redox Dai				Other	(Explain in Remarks)
	d Below Dark Surfa	ce (A11)	Nedox Dail		` '			
	ark Surface (A12)	00 (/ (/ 1 /)	Redox Dep				3Indicator	s of hydrophytic vegetation and
	Mucky Mineral (S1)		Vernal Poo		()			d hydrology must be present,
-	Gleyed Matrix (S4)			, ,				disturbed or problematic.
Restrictive	Layer (if present):							
Type: Ro	ock							
Depth (inches): 14						Hydric So	il Present? Yes <u></u> ✓ No	
Remarks:								
			ecause sample v		en from	the w	ater. Rock	fragments (cobbles, gravel,
HYDROLO								
	drology Indicators	::						
_			ed; check all that app	olv)			Seco	ondary Indicators (2 or more required)
	: Water (A1)		Salt Crus	•				Water Marks (B1) (Riverine)
	ater Table (A2)		Biotic Cru	, ,			·	Sediment Deposits (B2) (Riverine)
<u>✓</u> Saturati			Aquatic II		es (R13)			Drift Deposits (B3) (Riverine)
	Marks (B1) (Nonrive	rine)	Hydroger					Drainage Patterns (B10)
	nt Deposits (B2) (No					Living R		Dry-Season Water Table (C2)
	posits (B3) (Nonriv		Presence					Crayfish Burrows (C8)
	Soil Cracks (B6)	erine)	Recent Ir					Saturation Visible on Aerial Imagery (C9)
		Imagan, /				u Solis (C		
	ion Visible on Aerial Stained Leaves (B9)		B7) Thin Muc					Shallow Aquitard (D3) FAC-Neutral Test (D5)
Field Obser	` '		Other (Ex	piaiii iii ix	ciliaiks)		·	1 AO-Neutral Test (D3)
		Vaa	No. 1/ Donth (i	achae\:				
Surface Wat			No Post (ii		`	-		
Water Table			No Depth (ii			-		
	pillary fringe)		No Depth (ii					gy Present? Yes No
Describe Re	ecorded Data (stream	m gauge, r	monitoring well, aerial	photos, p	revious in	spections), if available:	
Remarks:								
_	• •	-				ce and	water was	found 12 inches down.
C£			the plot on Api	04 0	043			

Project/Site: Bowman Dam	(City/Co	unty:	Prineville	e, Crook	Samp	oling Date:	5/30/12
Applicant/Owner: Portland General Electric					State: C	OR Samp	ling Point: _	U1
Investigator(s): Melanie Sharp, Kent Snyder		Section	n, Tov	vnship, Rar	nge: <u>S10, T17S, F</u>	R16E		
Landform (hillslope, terrace, etc.): Low Terrace		Local	relief	(concave, o	convex, none): no	ne	Slop	e (%): <u>10</u>
Subregion (LRR): LLR B-Columbia/Snake River Plateau				•	,		•	. , —
					NWI c			
Are climatic / hydrologic conditions on the site typical for this								
Are Vegetation, Soil, or Hydrology sig	-				Normal Circumsta			No
	-					·		NO
Are Vegetation, Soil, or Hydrology na SUMMARY OF FINDINGS – Attach site map s				•	eded, explain any		•	itures, etc.
Hydrophytic Vegetation Present? Yes No			•		· · · · · · · · · · · · · · · · · · ·			<u> </u>
Hydric Soil Present? Yes No				Sampled		_		
Wetland Hydrology Present? Yes No	✓		withi	n a Wetlan	nd? Ye	s !	No	
Remarks:		I						
Upland plot about one foot in elevation above	ve the w	etlar	a br	lot and t	en feet in dist	ance. Plot	located o	on second
low terrace.			-					
VEGETATION – Use scientific names of plant								
	Absolute % Cover				Dominance Tes			
1. None					Number of Domi That Are OBL, F			(A)
2								
3					Total Number of Species Across		3	(B)
4					Dereent of Demi	nant Cnasica	·-	,
CID.		= Tota	al Cov	/er	Percent of Domi That Are OBL, F		: 33	(A/B)
Sapling/Shrub Stratum (Plot size: 6'R)	45	.,		LIDI				
1. Artemisia tridentata					Prevalence Inde	ex worksneet er of:		bu:
2. Chrysothamnus nauseosa					OBL species			-
3					FACW species			
4 5					FAC species			
J	17				FACU species			
Herb Stratum (Plot size: 6'R)					UPL species			
1. Poa pratensis	60	Y		FAC	Column Totals:		(A)	(B)
2. <u>Cirsium arvense</u>		Y		FACU		5/4		
3. Broadleaf grass spp. A	<u>15</u>	N		*N/A		Index = B/A		
4. <u>Taraxacum officinale</u>	2	N		FACU	Hydrophytic Ve	_	cators:	
5. Cardaria draba	2	N		UPL	Dominance Prevalence			
6. Carex spp.	2 	N		UNK	Morphologic		s¹ (Provide s	supporting
7. <u>Juncus effusus</u> 8. Melilotus officinalis	20	N		FACW FACU		emarks or on		
8. <u>INTERNOLUS OFFICITIONS</u>	126				Problematic	Hydrophytic \	√egetation¹ (Explain)
Woody Vine Stratum (Plot size: 6'R)	120	_ 1016	ai Cov	/ei				
1. None					¹ Indicators of hyd			
2					be present, unle	ss disturbed d	or problemati	C.
		= Tota	al Cov	/er	Hydrophytic			
% Bare Ground in Herb Stratum 0	of Biotic C	rust	0		Vegetation Present?	Yes	No•	,
Remarks:						<u> </u>		
*The broadleaf grass was too small and lacked any ho	ead and v	vas no	t ahl	e to he ide	entified It had v	ery short lig	rules (<1/2r	nm) and
small earlike auricles and was more prominent in nea								
dominant species and does not affect the dominance					-			
Absolute covers listed.								

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SOIL	Sampling Point: <u>U1</u>		
Profile Description: (Describe to the depth needed to document the indicator or o	confirm the absence of indicators.)		
Depth Matrix Redox Features			
(inches) Color (moist) % Color (moist) % Type ¹ L	<u>_oc² Texture</u> Remarks		
0-4 <u>10YR3/2 100</u>	grsl Fill		
4-10 10YR3/3 100	grsl Fill		
10-18 7.5YR3/3 100	sl Fill		
10 10 7.51K3/3 100			
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated S	Sand Grains. ² Location: PL=Pore Lining, M=Matrix.		
lydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils ³ :		
Histosol (A1) Sandy Redox (S5)	1 cm Muck (A9) (LRR C)		
Histic Epipedon (A2) Stripped Matrix (S6)	2 cm Muck (A10) (LRR B)		
Black Histic (A3) Loamy Mucky Mineral (F1)	Reduced Vertic (F18)		
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2)	Red Parent Material (TF2)		
Stratified Layers (A5) (LRR C)	Other (Explain in Remarks)		
Depleted Below Dark Surface (A11) Depleted Dark Surface (F7)			
Thick Dark Surface (A12) Redox Depressions (F8)	³ Indicators of hydrophytic vegetation and		
Sandy Mucky Mineral (S1) Vernal Pools (F9)	wetland hydrology must be present,		
_ Sandy Gleyed Matrix (S4)	unless disturbed or problematic.		
lestrictive Layer (if present):			
Type: None			
Depth (inches):	Hydric Soil Present? Yes No		
VDDOLOGY			
Vetland Hydrology Indicators:			
Vetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)		
Vetland Hydrology Indicators: 'rimary Indicators (minimum of one required; check all that apply) Surface Water (A1) Salt Crust (B11)	Water Marks (B1) (Riverine)		
Vetland Hydrology Indicators: Varimary Indicators (minimum of one required; check all that apply) Surface Water (A1) High Water Table (A2) Salt Crust (B11) Biotic Crust (B12)	Water Marks (B1) (Riverine)Sediment Deposits (B2) (Riverine)		
Vetland Hydrology Indicators: Irimary Indicators (minimum of one required; check all that apply) Surface Water (A1) High Water Table (A2) Saturation (A3) Aquatic Invertebrates (B13)	Water Marks (B1) (Riverine)Sediment Deposits (B2) (Riverine)Drift Deposits (B3) (Riverine)		
Vetland Hydrology Indicators: Vrimary Indicators (minimum of one required; check all that apply) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Surface Water (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1)	 Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) 		
Vetland Hydrology Indicators: Irimary Indicators (minimum of one required; check all that apply) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Livi	 Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) 		
Vetland Hydrology Indicators: Verimary Indicators (minimum of one required; check all that apply) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Presence of Reduced Iron (C4)	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ing Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8)		
Vetland Hydrology Indicators: Verimary Indicators (minimum of one required; check all that apply) 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) Wetland Hydrology Indicators: Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Livi Presence of Reduced Iron (C4)	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ing Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C		
Vetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) 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) Inundation Visible on Aerial Imagery (B7) Palt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Livi Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled States (B7) Thin Muck Surface (C7)	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ing Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) oils (C6) Saturation Visible on Aerial Imagery (C Shallow Aquitard (D3)		
Vetland Hydrology Indicators: Varimary Indicators (minimum of one required; check all that apply) Surface Water (A1) Surface Water (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (B7) Water Stained Leaves (B9) Water Marks (B1) (Nonriverine) Surface Soil Cracks (B6) Thin Muck Surface (C7) Water-Stained Leaves (B9) Surface All that apply) Aquatic Intertion (B12) Surface Crust (B12) Aquatic Invertebrates (B13) Aquatic In	 Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Ing Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C 		
Vetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) 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) Inundation Visible on Aerial Imagery (B7) Water Stained Leaves (B9) Veter Kall that apply) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Livi Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soil Thin Muck Surface (C7) Water-Stained Leaves (B9) Other (Explain in Remarks)	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ing Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) oils (C6) Saturation Visible on Aerial Imagery (C Shallow Aquitard (D3)		
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Surface Water (A1) Salt Crust (B11) High Water Table (A2) Biotic Crust (B12) Saturation (A3) Aquatic Invertebrates (B13) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Livi Drift Deposits (B3) (Nonriverine) Presence of Reduced Iron (C4) Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Simple Simple Surface (C7) Water-Stained Leaves (B9) Other (Explain in Remarks) Sield Observations: No Depth (inches):	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ing Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) oils (C6) Saturation Visible on Aerial Imagery (C6) Shallow Aquitard (D3)		
Vetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) 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) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9) Water Table Present? Yes No Depth (inches): Vater Table Present? Surface Water Table Present? Yes No Depth (inches): Jali Crust (B11) Aquatic Invertebrates (B13) Aquatic Inverteb	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ing Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) oils (C6) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)		
Perimary Indicators (minimum of one required; check all that apply) Surface Water (A1)	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ing Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) oils (C6) Saturation Visible on Aerial Imagery (C Shallow Aquitard (D3) FAC-Neutral Test (D5) Wetland Hydrology Present? Yes No V		
Perimary Indicators (minimum of one required; check all that apply) Surface Water (A1)	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ing Roots (C3) Crayfish Burrows (C8) oils (C6) Saturation Visible on Aerial Imagery (C Shallow Aquitard (D3) FAC-Neutral Test (D5) Wetland Hydrology Present? Yes No✓		
High Water Table (A2) Biotic Crust (B12) Saturation (A3) Aquatic Invertebrates (B13) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Livi Drift Deposits (B3) (Nonriverine) Presence of Reduced Iron (C4) Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Si Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) Water-Stained Leaves (B9) Other (Explain in Remarks) Field Observations: Surface Water Present? Yes No Depth (inches): Water Table Present? Yes No Depth (inches): Saturation Present? Yes No Depth (inches): Saturation Present? Yes No Depth (inches): Security Depth (inches): Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections)	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ing Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) oils (C6) Saturation Visible on Aerial Imagery (C Shallow Aquitard (D3) FAC-Neutral Test (D5) Wetland Hydrology Present? Yes No V		
Perimary Indicators (minimum of one required; check all that apply) Surface Water (A1)	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ing Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) oils (C6) Saturation Visible on Aerial Imagery (C3) Shallow Aquitard (D3) FAC-Neutral Test (D5) Wetland Hydrology Present? Yes No V		
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Surface Water (A1) Salt Crust (B11) High Water Table (A2) Biotic Crust (B12) Saturation (A3) Aquatic Invertebrates (B13) Water Marks (B1) (Nonriverine) Oxidized Rhizospheres along Living Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Living Drift Deposits (B3) (Nonriverine) Presence of Reduced Iron (C4) Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Simplement (C7) Water-Stained Leaves (B9) Other (Explain in Remarks) Field Observations: Other (Explain in Remarks) Water Table Present? Yes No	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ing Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) oils (C6) Saturation Visible on Aerial Imagery (C3) Shallow Aquitard (D3) FAC-Neutral Test (D5) Wetland Hydrology Present? Yes No V		
Vetland Hydrology Indicators: trimary Indicators (minimum of one required; check all that apply) Surface Water (A1) Salt Crust (B11) High Water Table (A2) Biotic Crust (B12) Saturation (A3) Aquatic Invertebrates (B13) Water Marks (B1) (Nonriverine) Oxidized Rhizospheres along Living Drift Deposits (B2) (Nonriverine) Presence of Reduced Iron (C4) Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Structure (C7) Water-Stained Leaves (B9) Other (Explain in Remarks) ield Observations: No	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ing Roots (C3) Crayfish Burrows (C8) oils (C6) Saturation Visible on Aerial Imagery (C Shallow Aquitard (D3) FAC-Neutral Test (D5) Wetland Hydrology Present? Yes No✓		

Project/Site: <u>Bowman Dam</u>	(City/Co	ounty	: Prineville	e, Crook	Samplin	g Date:	5/30/12
Applicant/Owner: Portland General Electric								
Investigator(s): Melanie Sharp, Kent Snyder	;	Sectio	n, To	wnship, Rar	nge: <u>S10, T17S, F</u>	R16E		
Landform (hillslope, terrace, etc.): Ripraped low terrace		Local	relief	(concave, c	convex, none): <u>co</u>	ncave	Slope	· (%): <u>3</u>
Subregion (LRR): LLR B-Columbia/Snake River Plateau	Lat: 44.1	11059	9209	1	Long: -120.789	632091	Datum:	:
Soil Map Unit Name: Redcliff-Rock Outcrop Complex					NWI c			
Are climatic / hydrologic conditions on the site typical for this								
Are Vegetation, Soil, or Hydrology sig	-				Normal Circumsta			No
Are Vegetation, Soil, or Hydrology na					eded, explain any			
SUMMARY OF FINDINGS – Attach site map s								tures, etc.
Hydrophytic Vegetation Present? Yes No No Yes No				e Sampled				
Wetland Hydrology Present? Yes ✓ No			with	in a Wetlan	id? Ye	s <u> </u>		
Remarks: Plot about 2 feet from river and 7 inches about VEGETATION – Use scientific names of plants		er su	rfac	e. Wetlar	nd strip is a ve	ery narrow (a few fee	et wide).
·	Absolute	Dom	inant	Indicator	Dominance Tes	t worksheet:		
	% Cover	Spec	cies?	Status	Number of Domi			
					That Are OBL, F	ACW, or FAC:	1	(A)
2 3					Total Number of Species Across		1	(B)
4.		= Tota	al Co	ver	Percent of Domi		100	(A/B)
Sapling/Shrub Stratum (Plot size: 2'X10') 1. None					Prevalence Inde	ex worksheet:		
2						er of:	Multiply b	ov:
3.					OBL species			-
4.					FACW species			
5					FAC species			
			al Co	ver	FACU species			
Herb Stratum (Plot size: 2'X10')					UPL species	x	5 =	
Argentina anserina	3	N		OBL_	Column Totals:	(A	.)	(B)
2. Carex spp.		Y		N/A	Drovolonos	e Index = B/A =		
3. Euphorbia esula	·		<u>'</u>	UPL	Hydrophytic Ve			
Juncus effusus Poa pratensis			<u>\</u> '	<u>FACW</u> FAC	<u>✓</u> Dominance	_	itors.	
				FAC	Prevalence			
6 7					Morphologic		(Provide su	upporting
8.					data in R	emarks or on a	separate sl	neet)
· -	116	= Tota	al Co	ver	Problematic	Hydrophytic Ve	getation ¹ (E	Explain)
Woody Vine Stratum (Plot size: 2'X10')			u. 00					
1. <u>None</u>					¹ Indicators of hydbe present, unle			
2					, ,	ss disturbed or p	Dioblematic	·-
		= Tota	al Co	ver	Hydrophytic Vegetation			
% Bare Ground in Herb Stratum	of Biotic Cr	rust	C)	Present?	Yes 🗸	No	
Remarks:					1			
Carex spp. did not have seed heads and cou	ıld not h	oe no	ositi	velv iden	itified. It is no	resumed to	be FAC	or wetter
rating but was not used in the vegetation d		•		•	•			

 $\begin{tabular}{ll} US \ Army \ Corps \ of \ Engineers \end{tabular} & Page \ B-6 \end{tabular} Arid \ West - Version \ 2.0 \end{tabular}$

	cription: (Describe	to the de				or confir	m the absence	e of indicators.)
Depth (inches)	Matrix Color (moist)	%	Color (moist)	ox Feature %	s Type ¹	Loc²	Texture	Remarks
0-5	10YR3/2	80	10YR3/1	10	C	M	sl	very high in organic matter
0 0	101113/12		10YR4/1	5	D	M	<u> </u>	may be mineral histic soil
		-						may be mineral matic son
			10YR4/4	_ 5	<u>C</u>	<u>M</u>		
	-	-		_			-	
		-		_				
		<u> </u>						
					- ·	-		
Type: C=C	Concentration, D=Dep	letion, RM	=Reduced Matrix, C	S=Covere	d or Coate	ed Sand G	Grains. ² Lo	cation: PL=Pore Lining, M=Matrix.
lydric Soil	Indicators: (Applic	able to all	LRRs, unless othe	rwise not	ed.)		Indicators	s for Problematic Hydric Soils ³ :
Histoso	` '		Sandy Red					Muck (A9) (LRR C)
	pipedon (A2)		Stripped M	` '	J (E4)			Muck (A10) (LRR B)
	listic (A3) en Sulfide (A4)		Loamy Mud Loamy Gle	-				ced Vertic (F18) Parent Material (TF2)
	ed Layers (A5) (LRR (C)	Depleted M	-	(1 2)			(Explain in Remarks)
	uck (A9) (LRR D)	,	✓ Redox Dar	, ,	(F6)		_	
Deplete	ed Below Dark Surfac	e (A11)	Depleted D		` '			
	ark Surface (A12)		Redox Dep		F8)			s of hydrophytic vegetation and
-	Mucky Mineral (S1) Gleyed Matrix (S4)		Vernal Poo	ls (F9)				hydrology must be present, disturbed or problematic.
	Layer (if present):						uniess	disturbed of problematic.
Type: N								
	nches):						Hydric Soi	l Present? Yes <u>✓</u> No
Remarks:								
	bbles and bould		Jugilout prever		969 P.			
YDROLC								
-	drology Indicators:							
-	icators (minimum of c	ne require		•				ndary Indicators (2 or more required)
	e Water (A1)		Salt Crust Biotic Cru				·	Water Marks (B1) (Riverine)
⊓igii w <u>✓</u> Saturati	ater Table (A2)		Aquatic Ir		se (R13)			Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine)
	Marks (B1) (Nonriver	ine)	Hydrogen					Orainage Patterns (B10)
	ent Deposits (B2) (No					Living Ro		Ory-Season Water Table (C2)
Sedime			Presence		-	_		Crayfish Burrows (C8)
	eposits (B3) (Nonrive	rine)						` ,
Drift De	posits (B3) (Nonrive Soil Cracks (B6)	rine)	Recent Iro				6) 5	Saturation Visible on Aerial Imagery (C9
Drift De Surface				on Reduct	ion in Tille			Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3)
Drift De Surface Inundat	e Soil Cracks (B6)			on Reduct k Surface	ion in Tille (C7)		;	
Drift De Surface Inundat Water-S	e Soil Cracks (B6) ion Visible on Aerial I Stained Leaves (B9)		37) Thin Mucl	on Reduct k Surface	ion in Tille (C7)		;	
Drift De Surface Inundat Water-S	e Soil Cracks (B6) ion Visible on Aerial (Stained Leaves (B9) rvations: ter Present?	magery (E	7) Thin Mucl Other (Ex	on Reducti k Surface plain in Re nches):	ion in Tille (C7) emarks)	d Soils (C	;	Shallow Aquitard (D3)
Drift De Surface Inundat Water-S Field Obser Surface Wa	e Soil Cracks (B6) ion Visible on Aerial Stained Leaves (B9) rvations: ter Present? Present? Y	magery (E	7) Thin Mucl v Other (Ex No v Depth (ir No v Depth (ir	on Reduction Red	ion in Tille (C7) emarks)	d Soils (C	; 1	Shallow Aquitard (D3) FAC-Neutral Test (D5)
Drift De Surface Inundat Water-S Field Obser Surface Wa Water Table Saturation F	e Soil Cracks (B6) ion Visible on Aerial I Stained Leaves (B9) rvations: ter Present? Present? Y	magery (E	7) Thin Mucl Other (Ex	on Reduction Red	ion in Tille (C7) emarks)	d Soils (C	; 1	Shallow Aquitard (D3)
Drift De Surface Inundat Water-S Field Obsel Surface Wa Water Table Saturation F (includes ca	e Soil Cracks (B6) ion Visible on Aerial Stained Leaves (B9) rvations: ter Present? Present? Y	resresresresresresresresresresresresres_res	No Depth (ir No De	on Reduct k Surface plain in Re nches):	ion in Tille (C7) emarks)	d Soils (C	and Hydrolog	Shallow Aquitard (D3) FAC-Neutral Test (D5)
Drift De Surface Inundat Water-S Field Obsel Surface Wa Water Table Saturation F includes ca Describe Re	e Soil Cracks (B6) ion Visible on Aerial Stained Leaves (B9) rvations: ter Present? Present? Present? Y pipillary fringe)	resresresresresresresresresresresresres_res	No Depth (ir No De	on Reduct k Surface plain in Re nches):	ion in Tille (C7) emarks)	d Soils (C	and Hydrolog	Shallow Aquitard (D3) FAC-Neutral Test (D5)
Drift De Surface Inundat Water-S Field Obser Surface Wa Water Table Saturation F includes ca Describe Re	e Soil Cracks (B6) ion Visible on Aerial I Stained Leaves (B9) rvations: ter Present? Present? Y	res	No V Depth (ir No Depth (ir noitoring well, aerial	on Reductive Surface of plain in Reduction Red	ion in Tille (C7) emarks)	d Soils (C	and Hydrolog	Shallow Aquitard (D3) FAC-Neutral Test (D5) gy Present? Yes No
Drift De Surface Inundat Water-S Surface Wa Water Table Saturation F Sincludes ca Describe Re Remarks:	e Soil Cracks (B6) ion Visible on Aerial I Stained Leaves (B9) rvations: ter Present? Present? Y	YesYesYesYesYesYesYes	No V Depth (ir No Depth (ir onitoring well, aerial	on Reductive Surface of plain in Reductive Surface of plain in Reductive Surface of the surface	revious ins	Wet	aland Hydrolog , if available: water table	Shallow Aquitard (D3) FAC-Neutral Test (D5) By Present? Yes No is also likely present but

Project/Site: Bowman Dam	(City/Co	unty:	Prineville	e, Crook	Sampling	Date:	5/30/12
					State: OR			
Investigator(s): Melanie Sharp, Kent Snyder								
Landform (hillslope, terrace, etc.): Hillslope					_			
Subregion (LRR): LLR B-Columbia/Snake River Plateau								
Soil Map Unit Name: Redcliff-Rock Outcrop Complex					NWI clas			
Are climatic / hydrologic conditions on the site typical for this								
Are Vegetation, Soil, or Hydrology si	-				Normal Circumstance		Yes 🗸	No
Are Vegetation, Soil, or Hydrology na	-				eded, explain any ans			
SUMMARY OF FINDINGS – Attach site map s								tures, etc.
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No Remarks: Rip rap and fill slope comprised of gravel to	boulder	,	withi		nd? Yes _			ut 6 feet
from the wetland plot and up 2 feet in eleva								
VEGETATION – Use scientific names of plant								
Tree Stratum (Plot size: 2'X10') 1. None	Absolute % Cover	Speci	es?		Number of Dominar That Are OBL, FAC	nt Species	0	(A)
3.					Total Number of Do Species Across All		2	(B)
4			I Cov	er	Percent of Dominan That Are OBL, FAC		0	(A/B)
1. Artemisia tridentata	3	Y		UPL	Prevalence Index v	worksheet:		
2					Total % Cover	of:	Multiply	by:
3					OBL species			
4					FACW species			
5					FAC species			
Herb Stratum (Plot size: 2'X10')	3	= Tota	I Cov	er/	FACU species			
1. Dipsacus fullonum	1	N		FAC	UPL species Column Totals:	x 5		
2. Melilotus officinalis				FACU	Column Totals.	(A)	-	(D)
3. Medicago sativa				UPL	Prevalence In	dex = B/A =		
4					Hydrophytic Veget	ation Indicat	ors:	
5					Dominance Tes			
6					Prevalence Inde			
7					Morphological A	Adaptations¹ (l larks or on a s	Provide s	upporting
8					Problematic Hy		•	•
Woody Vine Stratum (Plot size: 2'X10')	8	= Tota	I Cov	er/		a. op) a.o . og	(
1. None					¹ Indicators of hydric	soil and wetla	and hydro	logy must
2.					be present, unless of	disturbed or pr	oblemation	D
		= Tota	I Cov	ver	Hydrophytic Vegetation	Vaa	No. 44	,
% Bare Ground in Herb Stratum 90 (rock) % Cover	UI DIOUC CI	ust	U		Present?	Yes	NO	
Remarks: Vegetation is sparse and grows between th	e rock ii	n the	ripr	ap slope	e. Absolute cove	er listed.		

SOIL			Sampling Point: U2
Profile Description: (Describe to the	e depth needed to document the indicator or	confirm the absence of	ndicators.)
Depth <u>Matrix</u>	Redox Features		
(inches) Color (moist) %	Color (moist) % Type ¹	Loc ² Texture	Remarks
N/A			
			
	<u> </u>		
			
Type: C=Concentration, D=Depletion	, RM=Reduced Matrix, CS=Covered or Coated	Sand Grains. ² Location	on: PL=Pore Lining, M=Matrix.
	o all LRRs, unless otherwise noted.)		Problematic Hydric Soils ³ :
Histosol (A1)	Sandy Redox (S5)	1 cm Muc	k (A9) (LRR C)
Histic Epipedon (A2)	Stripped Matrix (S6)	2 cm Muc	k (A10) (LRR B)
Black Histic (A3)	Loamy Mucky Mineral (F1)	Reduced \	Vertic (F18)
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)	Red Parer	nt Material (TF2)
Stratified Layers (A5) (LRR C)	Depleted Matrix (F3)	Other (Exp	olain in Remarks)
1 cm Muck (A9) (LRR D)	Redox Dark Surface (F6)		
Depleted Below Dark Surface (A1	· _ · · · · · · · · · · · · · · · · · ·	2	
Thick Dark Surface (A12)	Redox Depressions (F8)		ydrophytic vegetation and
Sandy Mucky Mineral (S1)	Vernal Pools (F9)		rology must be present,
Sandy Gleyed Matrix (S4)		unless distu	rbed or problematic.
Restrictive Layer (if present):			
Type:			
Depth (inches):		Hydric Soil Pre	esent? Yes No
YDROLOGY			
Netland Hydrology Indicators:		0	
Primary Indicators (minimum of one re			y Indicators (2 or more required)
Surface Water (A1)	Salt Crust (B11)		r Marks (B1) (Riverine)
High Water Table (A2)	Biotic Crust (B12)		ment Deposits (B2) (Riverine)
Saturation (A3)	Aquatic Invertebrates (B13)	Drift	Deposits (B3) (Riverine)
Water Marks (B1) (Nonriverine)	Hydrogen Sulfide Odor (C1)	Drain	age Patterns (B10)
Sediment Deposits (B2) (Nonrive	ine) Oxidized Rhizospheres along Li	ving Roots (C3) Dry-S	Season Water Table (C2)
Drift Deposits (B3) (Nonriverine)	Presence of Reduced Iron (C4)	•	fish Burrows (C8)
Surface Soil Cracks (B6)	Recent Iron Reduction in Tilled :	Soils (C6) Satu	ration Visible on Aerial Imagery (C9
Inundation Visible on Aerial Image	ry (B7) Thin Muck Surface (C7)	Shall	ow Aquitard (D3)
Water-Stained Leaves (B9)	Other (Explain in Remarks)	FAC-	Neutral Test (D5)
Field Observations:			
Surface Water Present? Yes	No V Depth (inches):		
Water Table Present? Yes	No Depth (inches):	-	
Saturation Present? Yes	No Depth (inches):	Wetland Hydrology Pr	resent? Yes No 🗸
includes capillary fringe)			
Describe Recorded Data (Stream gaug	e, monitoring well, aerial photos, previous inspe	ections), ii avallable:	
Domarko.			
Remarks:			

Project/Site: Bowman Dam	(City/Co	unty:	Prineville	e, Crook	Samp	ing Date:	5/30/12
Applicant/Owner: Portland General Electric								
Investigator(s): Melanie Sharp, Kent Snyder Section, Township, Range: S10, T17S, R16E								
Landform (hillslope, terrace, etc.): Old stream channel (de								
Subregion (LRR): LLR B-Columbia/Snake River Plateau								
					NWI			on aujacent
Are climatic / hydrologic conditions on the site typical for this	-							
Are Vegetation, Soil, or Hydrology sig					Normal Circumsta			No
Are Vegetation, Soil, or Hydrology na	turally pro	blemat	ic?	(If ne	eded, explain any	answers in Re	emarks.)	
SUMMARY OF FINDINGS - Attach site map s	howing	samı	pling	g point lo	ocations, tran	sects, impo	ortant fea	tures, etc.
Hydrophytic Vegetation Present? Yes <u>✓</u> No								
Hydric Soil Present? Yes No				e Sampled		,		
Wetland Hydrology Present? Yes <u>✓</u> No			withi	n a Wetlan	ıd? Ye	es 🔽 N	lo	
Remarks:								
The wetland plot is approximately 3 feet from the edge of a pond	in the wate	er. The	wetla	and boundar	v is at the edge of t	he pond where	the steep slop	e starts. The
pond is an old river channel that has been diverted. The pond rec								
west end before emptying into the redirected river.								
VEGETATION – Use scientific names of plants	3.							
	Absolute				Dominance Te	st worksheet:		
4 Maria	% Cover				Number of Dom			(4)
					That Are OBL, F	-ACW, or FAC:		(A)
2					Total Number o		2	(5)
3					Species Across	All Strata:		(B)
4					Percent of Dom		400	
Sapling/Shrub Stratum (Plot size: 10'X10')		= 1018	ai Cov	/er	That Are OBL, F	FACW, or FAC:	100	(A/B)
1. None					Prevalence Ind	ex worksheet		
2.					Total % Co	ver of:	Multiply	by:
3.					OBL species		x 1 =	
4					FACW species		x 2 =	
5					FAC species	-	x 3 =	
		= Tota	al Cov	/er	FACU species		x 4 =	
Herb Stratum (Plot size: 6' R)					UPL species		x 5 =	
1. Typha angustifolia		<u> </u>		OBL	Column Totals:		(A)	(B)
2. <u>Equisetum hyemale</u>				FACW				
3. <u>Juncus effusus</u>				FACW		e Index = B/A		
4. <u>Lemna trisulca</u>					Hydrophytic Vo	_	cators:	
5					<u>✓</u> Dominance			
6					Prevalence Morphologi		1 (Dravida a	unnortina
7					data in F	Remarks or on	a separate s	apporting heet)
8					Problemation			
Woody Vine Stratum (Plot size: 10'X10')	100	= Tota	al Cov	/er	_	, , ,		. ,
1. <u>None</u>					¹ Indicators of hy	dric soil and w	etland hydro	logy must
2					be present, unle	ess disturbed or	r problematio).
					Hydrophytic			
					Vegetation	V 4	NI-	
% Bare Ground in Herb Stratum 0 % Cover of	JI BIOUC CI	ust	U		Present?	Yes	No	
Remarks:								
Absolute cover listed.								

SUIL	Sampling Point: W6a
Profile Description: (Describe to the depth needed to document the indicated in the indicat	cator or confirm the absence of indicators.)
Depth Matrix Redox Features	
(inches) Color (moist) % Color (moist) % T	ype ¹ Loc ² Texture Remarks
N/A	
	
	
	
·	
	<u> </u>
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or	
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils ³ :
Histosol (A1) Sandy Redox (S5)	1 cm Muck (A9) (LRR C)
Histic Epipedon (A2) Stripped Matrix (S6)	2 cm Muck (A10) (LRR B)
Black Histic (A3) Loamy Mucky Mineral (F	• • • • • • • • • • • • • • • • • • • •
<u>✓</u> Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2	· · · · · · · · · · · · · · · · · · ·
Stratified Layers (A5) (LRR C) Depleted Matrix (F3)	Other (Explain in Remarks)
1 cm Muck (A9) (LRR D) Redox Dark Surface (F6)	
Depleted Below Dark Surface (A11) Depleted Dark Surface (F	
Thick Dark Surface (A12) Redox Depressions (F8)	³ Indicators of hydrophytic vegetation and
Sandy Mucky Mineral (S1) Vernal Pools (F9)	wetland hydrology must be present,
Sandy Gleyed Matrix (S4)	unless disturbed or problematic.
Restrictive Layer (if present):	
Type: N/A	
Depth (inches):	Hydric Soil Present? Yes <u>✓</u> No
Remarks:	l
Soil plot is 12" under the water all year. There was a stro	ng hydrogen sulfide odor from sample.
HYDROLOGY	
Wetland Hydrology Indicators:	
	Consider Indicators (O. o. more required)
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<u>✓</u> Surface Water (A1) Salt Crust (B11)	Water Marks (B1) (Riverine)
High Water Table (A2) Biotic Crust (B12)	Sediment Deposits (B2) (Riverine)
Saturation (A3) Aquatic Invertebrates (B	Drift Deposits (B3) (Riverine)
Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor	(C1) Drainage Patterns (B10)
Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres	along Living Roots (C3) Dry-Season Water Table (C2)
Drift Deposits (B3) (Nonriverine) Presence of Reduced In	on (C4) Crayfish Burrows (C8)
Surface Soil Cracks (B6) Recent Iron Reduction in	n Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9)
Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7)	
Water-Stained Leaves (B9) Other (Explain in Remai	
Field Observations:	
4	
Water Table Present? Yes No Depth (inches):	
Saturation Present? Yes V No Depth (inches):	Wetland Hydrology Present? Yes ✓ No
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous)	us inspections) if available:
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous	ous inspections), ii avaliabie:
Remarks:	
Depth of surface water is 12" at 3' from the edge of the p	nond
Deput of surface water is 12 at 3 from the eage of the p	JOHA.

Project/Site: Bowman Dam		Citv/Co	ountv:	Prineville	e, Crook	Sampling	Date:	5/30/12	
Applicant/Owner: Portland General Electric					State: OR				
Investigator(s): Melanie Sharp, Kent Snyder									
Landform (hillslope, terrace, etc.): Hillslope					_				
Subregion (LRR): LLR B-Columbia/Snake River Plates					=				
Soil Map Unit Name: Redcliff-Rock Outcrop Complex					NWI classifi		ne (RZUI	sh adjacent	
Are climatic / hydrologic conditions on the site typical for the									
Are Vegetation, Soil, or Hydrology	significantly	disturt	oed?	Are "	Normal Circumstances"	present? \	Yes <u> </u>	No	
Are Vegetation, Soil, or Hydrology	naturally pro	blema	tic?	(If ne	eded, explain any answ	ers in Rema	arks.)		
SUMMARY OF FINDINGS - Attach site map	showing	sam	pling	g point lo	ocations, transects	s, import	ant fea	tures, etc.	
Hydrophytic Vegetation Present? Yes	No				_				
Hydric Soil Present? Yes No			Is the Sampled Area						
Wetland Hydrology Present? Yes					nd? Yes	No_	No <u> </u>		
Remarks:									
The OHWM is about 1' above the current		el ar	nd th	ne uplan	d plot is about 2-3	3' above	the OH	IWM.	
VEGETATION – Use scientific names of pla									
Tree Stratum (Plot size: 10'X10')	Absolute % Cover			Indicator	Dominance Test wor				
4 None					Number of Dominant S That Are OBL, FACW,		2	(A)	
1. None 2.					mat Aic OBE, I AOVV,	, 01 1 70.		(/\)	
3					Total Number of Domi Species Across All Str		3	(B)	
4								(D)	
					Percent of Dominant S That Are OBL, FACW,		67	(A/D)	
Sapling/Shrub Stratum (Plot size: 10'X10')							07	(٨١٥)	
1					Prevalence Index wo	rksheet:			
2					Total % Cover of:			-	
3					OBL species				
4					FACW species				
5					FAC species				
Herb Stratum (Plot size: 6' R)		_ = Tot	al Cov	/er	FACU species				
1. Cirsium arvense	20	١	/	FACU	· -	x 5			
Dipsacus fullonum			<u></u>	FAC	Column Totals:	(A)	-	(B)	
3. Equisetum hyemale			N	FACW	Prevalence Inde	x = B/A =			
Artemisia tridentata	<u></u>		<u>, </u>	UPL	Hydrophytic Vegetat				
5. Euphorbia esula			<u>, </u>	UPL	✓ Dominance Test is				
6. Poa pratensis	15		٧	FAC	Prevalence Index	is ≤3.0 ¹			
7. Juncus spp. (likely effusus)			· · ·	*FACW	Morphological Ada	aptations1 (I	Provide si	upporting	
8. Medicago sativa			١	UPL	data in Remark			•	
	117	= Tot	al Cov		Problematic Hydro	ophytic Veg	etation ¹ (I	Explain)	
Woody Vine Stratum (Plot size: 10'X10')									
1. None					¹ Indicators of hydric so be present, unless dis				
2						———	Obicinatio	·•	
		_ = Tot	al Cov	/er	Hydrophytic Vegetation				
% Bare Ground in Herb Stratum 0	er of Biotic C	rust	0			es 🗸	No		
Remarks:					I				
Juncus spp carex that was not flowering, likely to	o be FAC or	wette	er. It i	s likely a s	stunted J. effusus and	was in the	e genera	area of	
other J. effusus. If this Juncus were removed from									
dominance test would be negative. However this	doesn't cha	nge tł	ne ov	erall findir	ng that the plot is not	within a w	vetland.	Absolute	

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cover listed.

SOIL							Sampling Point: <u>U6a</u>			
Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)										
Depth			Redo	x Features						
(inches)	Color (moist)		Color (moist)	<u>% Type¹</u>	Loc ²	<u>Texture</u>	Remarks			
0-4	10YR3/2	100		· ——	sl		fill, surface has gravelly cover of			
							fill and concrete, common roots			
4-9	2.5YR3/2	100			sl		fill, more org. and roots than			
							layer below, common roots			
9-19	2.5YR3/2	100			sl		fill, consoidal fracturing, mica			
							flakes, pebbles, few roots			
			Reduced Matrix, CS				ocation: PL=Pore Lining, M=Matrix.			
Hydric Soil	Indicators: (Appli	cable to all I	_RRs, unless other	wise noted.)	ı	ndicators	s for Problematic Hydric Soils ³ :			
Histosol	(A1)		Sandy Redo	ox (S5)		1 cm	Muck (A9) (LRR C)			
Histic E	pipedon (A2)		Stripped Ma	atrix (S6)	<u>-</u>	2 cm	Muck (A10) (LRR B)			
Black Hi	istic (A3)		Loamy Muc	ky Mineral (F1)	_	Reduced Vertic (F18)				
Hydroge	en Sulfide (A4)			red Matrix (F2)		Red F	Parent Material (TF2)			
	d Layers (A5) (LRR	C)	Depleted Ma	, ,	-		(Explain in Remarks)			
	uck (A9) (LRR D)	-,		Surface (F6)	-		(
	d Below Dark Surfa	ce (A11)		ark Surface (F7)						
	ark Surface (A12)	00 (7111)		ressions (F8)	3	Indicators	s of hydrophytic vegetation and			
	Mucky Mineral (S1)		Vernal Pool			³ Indicators of hydrophytic vegetation and				
	Gleyed Matrix (S4)		vemai room	5 (1 9)		wetland hydrology must be present, unless disturbed or problematic.				
						uilless	disturbed of problematic.			
	Layer (if present):									
Type: No										
Depth (in	ches):				Н	ydric Soi	I Present? Yes No			
Remarks:										
10400600	± منظئن، مملطط	سمائمه مط	afila Cail muine		יין ייד ד:וו					
LOTS OF CC	obbies within t	ne son pr	ofile. Soil prim	iarily compose	ed of fill.					
UVDBOLO	CV									
HYDROLO										
•	drology Indicators									
	•	one required	; check all that apply				endary Indicators (2 or more required)			
Surface	Water (A1)		Salt Crust	(B11)		Water Marks (B1) (Riverine)				
High Wa	ligh Water Table (A2) Biotic Crust (B12)				8	Sediment Deposits (B2) (Riverine)				
Saturation	Saturation (A3) Aquatic Invertebrates (B13)					[Drift Deposits (B3) (Riverine)			
Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1)						Drainage Patterns (B10)				
						` ,				
Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Living Roots (C3) Dry-Season Water Table (C2)										
						Crayfish Burrows (C8)				
	Soil Cracks (B6)			n Reduction in Tille	d Soils (C6)		Saturation Visible on Aerial Imagery (C9)			
Inundati	on Visible on Aerial	Imagery (B7				(Shallow Aquitard (D3)			
Water-S	tained Leaves (B9)		Other (Exp	olain in Remarks)		F	FAC-Neutral Test (D5)			
Field Obser	vations:									
Surface Wat	er Present?	Yes N	No Depth (inc	ches):						
Water Table	Present?	Yes N	No 🗸 Depth (inc	ches):						
						Wetland Hydrology Present? Yes No <u>✓</u>				
(includes capillary fringe)										
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:										
Remarks:										
i veillaitts.										

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bowman Dam	(Citv/Co	untv:	Prineville	e, Crook	Samp	oling Date:	5/30/12
Applicant/Owner: Portland General Electric								
Investigator(s): Melanie Sharp, Kent Snyder							-	
Landform (hillslope, terrace, etc.): Flat pond								
Subregion (LRR): LLR B-Columbia/Snake River Plateau								
					NWI			
Are climatic / hydrologic conditions on the site typical for this								Dir adjacent
Are Vegetation, Soil, or Hydrology sig	-				Normal Circumsta			No
Are Vegetation, Soil, or Hydrology na	aturally pro	blemati	ic?	(If ne	eded, explain any	answers in R	emarks.)	
SUMMARY OF FINDINGS – Attach site map s				point lo	ocations, tran	ısects, imp	ortant fea	tures, etc
Hydrophytic Vegetation Present? Yes No	·		le tho	Sampled	Aroa			
Hydric Soil Present? Yes No				n a Wetlan		es <u>/</u> M	No	
Wetland Hydrology Present? Yes No								
Remarks:								
The wetland is a pond created from an old river through the adjacent dam and a culvert constrict					•	_		_
		ter at	tile	west end	before empty			
VEGETATION – Use scientific names of plant								
	Absolute % Cover				Dominance Te			
1. None		-			Number of Dom That Are OBL, F			(A)
2							·	(//)
3.					Total Number of Species Across		2	(B)
4.							_	(=)
		= Tota	l Cov	er	Percent of Dom That Are OBL, F) (A/B)
Sapling/Shrub Stratum (Plot size: 10'X10')							<u> </u>	` '
1. None					Prevalence Ind			b
2						ver of:		
3					OBL species FACW species			
4					FAC species		·	
5		= Tota	I Cov		FACU species			
Herb Stratum (Plot size: 3'R)		_ 10ta	ii COV	Ci				
1. Juncus effusus	60	Y		FACW	Column Totals:		-	<u>_</u>
2. Typha angustifolia	20	Y		OBL			. ,	
3. <u>Lemna trisulca</u>				OBL		e Index = B/A		
4. Hippuris vulgaris	-				Hydrophytic Vo	_		
5. Argentina anserina	1	N		OBL	<u>✓</u> Dominance			
6					Prevalence			
7		-			Morphologi data in F	cai Adaptation: Remarks or on	a separate s	upporting sheet)
8					Problemation			
Woody Vine Stratum (Plot size: 10'X10')	90	= Tota	I Cov	er				
1. <u>None</u>					¹ Indicators of hy			
2.					be present, unle	ss disturbed o	r problemation	3.
		= Tota	l Cov	er	Hydrophytic			
% Bare Ground in Herb Stratum 10 (water) % Cover	of Biotic C	rust	0		Vegetation Present?	Yes 🗸	No	
Remarks:								
Absolute coverage listed.								

Profile Des	cription: (Descri	be to the de	epth needed to docu	ment the	indicator	or confi	rm the absence	e of indicators.)
Depth	Matrix			ox Feature				,
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-4	10YR2/2	100	_				mucky sl	
4-15	10YR4/1	60	10YR3/2	25	D	М	sl	
			10YR5/6			М		
			10YR4/6	10	<u>C</u>	<u>M</u>		
15-18	10YR2/2	60	10YR4/2	20	<u>D</u>	M	<u>S</u>	
			10YR5/6	20	<u>C</u>	M		
			_ M=Reduced Matrix, C			ed Sand (cation: PL=Pore Lining, M=Matrix.
Hydric Soil	Indicators: (App	olicable to a	II LRRs, unless other	erwise no	ted.)		Indicators	for Problematic Hydric Soils ³ :
Histoso	` '		Sandy Red	. ,				Muck (A9) (LRR C)
	pipedon (A2)		Stripped M					Muck (A10) (LRR B)
	listic (A3)		Loamy Mu					ced Vertic (F18)
	en Sulfide (A4) ed Layers (A5) (LR	P C)	Loamy Gle	-				Parent Material (TF2) (Explain in Remarks)
	uck (A9) (LRR D)		Redox Dai	. ,			Other	(Explain in Nomains)
	ed Below Dark Sur	face (A11)	Depleted [` '			
	ark Surface (A12)		Redox Dep				³ Indicators	of hydrophytic vegetation and
Sandy I	Mucky Mineral (S1)	Vernal Poo	ols (F9)			wetland	hydrology must be present,
-	Gleyed Matrix (S4)						unless o	disturbed or problematic.
Restrictive	Layer (if present):						
Type: <u>N</u>	one							
							Hydric Soi	I Present? Yes <u> ✓</u> No
Type: N Depth (ir Remarks: IYDROLO Wetland Hy Primary Indi	OGY vdrology Indicato		ed; check all that app	•			Seco	ndary Indicators (2 or more required) Water Marks (B1) (Riverine)
Type: N Depth (ir Remarks: IYDROLO Wetland Hy Primary Indi V Surface	OGY rdrology Indicato			t (B11)			<u>Seco</u>	ndary Indicators (2 or more required)
Type: N Depth (ir Remarks: IYDROLO Wetland Hy Primary Indi V Surface	OGY /drology Indicato icators (minimum of the Water (A1) ater Table (A2)		Salt Crus Biotic Cru Aquatic I	it (B11) ust (B12) nvertebrat	, ,		Seco	ndary Indicators (2 or more required) Water Marks (B1) (Riverine)
Type: N Depth (in Remarks: IYDROLO Wetland Hy Primary Indi V Surface V High W V Saturati V Water N	OGY Adrology Indicato icators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) (Nonriv	of one requir	Salt Crus Biotic Cru Aquatic II Hydroger	ust (B11) ust (B12) nvertebrat n Sulfide C	Odor (C1)		Seco — V — S	ndary Indicators (2 or more required) Vater Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10)
Type: N Depth (in Remarks: IYDROLO Wetland Hy Primary Indi V Surface V High W V Saturat V Water N V Sedime	OGY rdrology Indicato icators (minimum of the Water (A1) ater Table (A2) ion (A3) Marks (B1) (Nonrivent Deposits (B2) (of one requir verine) Nonriverine	Salt Crus Biotic Cru Aquatic II Hydroger Oxidized	ust (B11) ust (B12) nvertebrat n Sulfide C Rhizosph	Odor (C1) eres along	-	Seco \ \ \ \ \ \ \	ndary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2)
Type: N Depth (in Remarks: HYDROLO Wetland Hy Primary Indi V Surface V High W V Saturat V Water N V Sedime V Drift De	OGY vdrology Indicato icators (minimum of water (A1) ater Table (A2) ion (A3) Marks (B1) (Nonriv ent Deposits (B2) (Nonriv	of one requir verine) Nonriverine	Salt Crus Biotic Cru Aquatic II Hydroger Oxidized Presence	ust (B11) ust (B12) nvertebrate n Sulfide C Rhizosphe	Odor (C1) eres along ed Iron (C4	4)	Seco	ndary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Orift Deposits (B3) (Riverine) Orainage Patterns (B10) Ory-Season Water Table (C2) Crayfish Burrows (C8)
Type: N Depth (in Remarks: HYDROLO Wetland Hy Primary Indi V Surface V High W V Saturat V Water N V Sedime V Drift De Surface	OGY /drology Indicato icators (minimum of the Water (A1) ater Table (A2) ion (A3) Marks (B1) (Nonrivent Deposits (B2) (Nonrivent Deposits (B3) (Nonrivent Deposits (B3) (Nonrivent Deposits (B6))	of one requir verine) Nonriverine iverine)	Salt Crus Biotic Cru Aquatic II Hydroger Oxidized Presence Recent Ir	t (B11) ust (B12) nvertebrat n Sulfide C Rhizosphe of Reduc	Odor (C1) eres along ed Iron (C4 tion in Tille	4)	Seco V S [C	ndary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Orift Deposits (B3) (Riverine) Orainage Patterns (B10) Ory-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (CS
Type: N Depth (in Remarks: IYDROLO Wetland Hy Primary Indi V Surface V High W V Saturat V Water N V Sedime V Drift De Surface Inundat	OGY Idrology Indicato icators (minimum of the Water (A1) ater Table (A2) ion (A3) Marks (B1) (Nonrivent Deposits (B2) (Nonrivent Deposits (B3) (Nonrivent Deposits (B6) (N	of one requireverine) Nonriverine iverine)	Salt Crus Biotic Cru Aquatic II Hydroger Oxidized Presence Recent Ir B7) Thin Muc	t (B11) ust (B12) nvertebrat n Sulfide C Rhizosph e of Reduc on Reduc	Odor (C1) eres along ed Iron (C4 tion in Tille (C7)	4)	Seco	ndary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Orift Deposits (B3) (Riverine) Orainage Patterns (B10) Ory-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (CS) Shallow Aquitard (D3)
Type: N Depth (in Remarks: IYDROLO Wetland Hy Primary Indi Surface High W Saturat Water N Sedime Unift De Surface Inundat Water-S	OGY Adrology Indicato icators (minimum of the Water (A1) ater Table (A2) ion (A3) Marks (B1) (Nonring the Deposits (B2) (Nonring the Soil Cracks (B6) ion Visible on Aeri Stained Leaves (B)	of one requireverine) Nonriverine iverine)	Salt Crus Biotic Cru Aquatic II Hydroger Oxidized Presence Recent Ir B7) Thin Muc	t (B11) ust (B12) nvertebrat n Sulfide C Rhizosphe of Reduc	Odor (C1) eres along ed Iron (C4 tion in Tille (C7)	4)	Seco	ndary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Orift Deposits (B3) (Riverine) Orainage Patterns (B10) Ory-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9
Type: N Depth (in Remarks: HYDROLO Wetland Hy Primary Indi V Surface V High W V Saturat V Water N V Sedime V Drift De Surface Inundat Water-S Field Obser	OGY vdrology Indicato icators (minimum of water (A1) ater Table (A2) ion (A3) Marks (B1) (Nonrie ent Deposits (B2) (I eposits (B3) (Nonrie e Soil Cracks (B6) ion Visible on Aeri Stained Leaves (Be rvations:	of one required werine) Nonriverine(iverine) ial Imagery (Salt Crus Biotic Cru Aquatic II Hydroger Oxidized Presence Recent Ir B7) Thin Muc Other (Ex	t (B11) ust (B12) nvertebrat n Sulfide C Rhizosphe e of Reduce on Reduce k Surface kplain in R	odor (C1) eres along ed Iron (C4 tion in Tille (C7) emarks)	4)	Seco	ndary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Orift Deposits (B3) (Riverine) Orainage Patterns (B10) Ory-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (CS) Shallow Aquitard (D3)
Type: N Depth (in Remarks: HYDROLO Wetland Hy Primary Indi V Surface V High W V Saturat V Water N V Sedime V Drift De Surface Inundat Water-S Field Obser	OGY /drology Indicato icators (minimum of the Water (A1) ater Table (A2) ion (A3) Marks (B1) (Nonrivent Deposits (B3) (Nonrivent Deposits (B3) (Nonrivent Deposits (B6) ion Visible on Aeri Stained Leaves (B6) ivations: ter Present?	verine) Nonriverine iverine) ial Imagery (9) Yes	Salt Crus Biotic Cru Aquatic II Hydroger e) Oxidized Presence Recent Ir B7) Thin Muc Other (Ex	t (B11) ust (B12) nvertebrat n Sulfide C Rhizosph e of Reduc on Reduc ck Surface xplain in R	Odor (C1) eres along ed Iron (C4 tion in Tille (C7) emarks)	4) d Soils (0	Seco	ndary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Orift Deposits (B3) (Riverine) Orainage Patterns (B10) Ory-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (CS) Shallow Aquitard (D3)
Type: N Depth (in Remarks: HYDROLO Wetland Hy Primary Indi V Surface V High W V Saturat V Water N V Sedime V Drift De Surface Inundat Water-S Field Obser Surface Wa	OGY Idrology Indicator Educators (minimum of the Water (A1) Idrology Indicator Water (A2) Idrology Indicator Water (A2) Idrology Indicator Water (A3) Warks (B1) (Nonrive Posit (B3) (Nonrive Posit (B4) Water (B4) W	verine) Nonriverine iverine) ial Imagery (9) Yes	Salt Crus Biotic Cru Aquatic II Hydroger Oxidized Presence Recent Ir B7) Thin Muc Other (Ex	t (B11) ust (B12) nvertebrat n Sulfide C Rhizosph e of Reduct on Reduct k Surface kplain in R nches): 2 nches): 0	Odor (C1) eres along ed Iron (C4 tion in Tille (C7) emarks)	4) d Soils (C	Seco	ndary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Orift Deposits (B3) (Riverine) Orainage Patterns (B10) Ory-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3) FAC-Neutral Test (D5)
Type: N Depth (in Remarks: HYDROLO Wetland Hy Primary Indi V Surface V High W V Saturati V Water N V Sedime V Drift De Surface Inundat Water-S Field Obset Surface Wa Water Table Saturation F	OGY Idrology Indicator icators (minimum of the Water (A1) ater Table (A2) ion (A3) Marks (B1) (Nonriversity (B2) (Indicators (B3) (Nonriversity (B4) (Nonriversity (Nonriversity (B4) (Nonriversity (Nonriver	verine) Nonriverine iverine) ial Imagery (9) Yes	Salt Crus Biotic Cru Aquatic II Hydroger e) Oxidized Presence Recent Ir B7) Thin Muc Other (Ex	t (B11) ust (B12) nvertebrat n Sulfide C Rhizosph e of Reduct on Reduct k Surface kplain in R nches): 2 nches): 0	Odor (C1) eres along ed Iron (C4 tion in Tille (C7) emarks)	4) d Soils (C	Seco	ndary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Orift Deposits (B3) (Riverine) Orainage Patterns (B10) Ory-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (CS) Shallow Aquitard (D3)
Type: N Depth (in Remarks: HYDROLO Wetland Hy Primary Indi Surface High W Saturati Sedime Unift De Surface Inundat Water-S Field Obset Surface Wa Water Table Saturation F (includes ca	OGY /drology Indicato icators (minimum of the Water (A1) ater Table (A2) ion (A3) Marks (B1) (Nonrivent Deposits (B2) (Nonrivent Deposits (B3) (Nonrivent Deposits (B6) (verine) Nonriverine iverine) ial Imagery (9) Yes Yes Yes	Salt Crus Biotic Cru Aquatic II Hydroger Oxidized Presence Recent Ir B7) Thin Muc Other (Ex	t (B11) ust (B12) nvertebrat n Sulfide C Rhizosph e of Reduct on Reduct k Surface k plain in R nches): 2 nches): 0	Odor (C1) eres along ed Iron (C4 tion in Tille (C7) emarks)	4) d Soils (C	Seco V S C coots (C3) C C6) S F	ndary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Orift Deposits (B3) (Riverine) Orainage Patterns (B10) Ory-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (CS) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Type: N Depth (in Remarks: HYDROLO Wetland Hy Primary Indi V Surface V High W V Saturati V Water N V Sedime V Drift De Surface Inundat Water-S Field Obset Surface Wa Water Table Saturation F (includes ca	OGY /drology Indicato icators (minimum of the Water (A1) ater Table (A2) ion (A3) Marks (B1) (Nonrivent Deposits (B2) (Nonrivent Deposits (B3) (Nonrivent Deposits (B6) (verine) Nonriverine iverine) ial Imagery (9) Yes Yes Yes	Salt Crus Biotic Cru Aquatic II Hydroger Oxidized Presence Recent Ir B7) Thin Muc Other (Ex	t (B11) ust (B12) nvertebrat n Sulfide C Rhizosph e of Reduct on Reduct k Surface k plain in R nches): 2 nches): 0	Odor (C1) eres along ed Iron (C4 tion in Tille (C7) emarks)	4) d Soils (C	Seco V S C coots (C3) C C6) S F	ndary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Orift Deposits (B3) (Riverine) Orainage Patterns (B10) Ory-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3) FAC-Neutral Test (D5)
Type: N Depth (in Remarks: HYDROLO Wetland Hy Primary Indi V Surface V High W V Saturati V Water N V Sedime V Drift De Surface Inundat Water-S Field Obset Surface Wa Water Table Saturation F (includes ca	OGY /drology Indicato icators (minimum of the Water (A1) ater Table (A2) ion (A3) Marks (B1) (Nonrivent Deposits (B2) (Nonrivent Deposits (B3) (Nonrivent Deposits (B6) (verine) Nonriverine iverine) ial Imagery (9) Yes Yes Yes	Salt Crus Biotic Cru Aquatic II Hydroger Oxidized Presence Recent Ir B7) Thin Muc Other (Ex	t (B11) ust (B12) nvertebrat n Sulfide C Rhizosph e of Reduct on Reduct k Surface k plain in R nches): 2 nches): 0	Odor (C1) eres along ed Iron (C4 tion in Tille (C7) emarks)	4) d Soils (C	Seco V S C coots (C3) C C6) S F	ndary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Orift Deposits (B3) (Riverine) Orainage Patterns (B10) Ory-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3) FAC-Neutral Test (D5)
Type: N Depth (in Remarks: HYDROLO Wetland Hy Primary Indi V Surface V High W V Saturat V Water N V Sedime V Inundat Water-S Field Obser Surface Wa Water Table Saturation F (includes ca Describe Re	OGY /drology Indicato icators (minimum of the Water (A1) ater Table (A2) ion (A3) Marks (B1) (Nonrivent Deposits (B2) (Nonrivent Deposits (B3) (Nonrivent Deposits (B6) (verine) Nonriverine iverine) ial Imagery (9) Yes Yes Yes	Salt Crus Biotic Cru Aquatic II Hydroger Oxidized Presence Recent Ir B7) Thin Muc Other (Ex	t (B11) ust (B12) nvertebrat n Sulfide C Rhizosph e of Reduct on Reduct k Surface k plain in R nches): 2 nches): 0	Odor (C1) eres along ed Iron (C4 tion in Tille (C7) emarks)	4) d Soils (C	Seco V S C coots (C3) C C6) S F	ndary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Orift Deposits (B3) (Riverine) Orainage Patterns (B10) Ory-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C8) Shallow Aquitard (D3) FAC-Neutral Test (D5)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bowman Dam		Citv/C	ountv:	Prineville	e, Crook	Sampling	Date:	5/30/12
Applicant/Owner: Portland General Electric					State: OR			
Investigator(s): Melanie Sharp, Kent Snyder								
Landform (hillslope, terrace, etc.): hillslope					_			
Subregion (LRR): LLR B-Columbia/Snake River Plate								
Soil Map Unit Name: Redcliff-Rock Outcrop Complex					NWI classific			
							ie (NZO	bri aujaceni
Are climatic / hydrologic conditions on the site typical for	-							
Are Vegetation, Soil, or Hydrology				Are "	Normal Circumstances"	present? \	res	No
Are Vegetation, Soil, or Hydrology	_ naturally pro	blema	tic?	(If ne	eded, explain any answe	ers in Rema	ırks.)	
SUMMARY OF FINDINGS - Attach site ma	p showing	sam	pling	g point l	ocations, transects	s, import	ant fea	tures, etc.
Hydrophytic Vegetation Present? Yes	No 🗸							
Hydric Soil Present? Yes				e Sampled				
Wetland Hydrology Present? Yes			withi	n a Wetlar	nd? Yes	No _		
Remarks:		ı						
Plot about 10 feet from wetland.								
VEGETATION – Use scientific names of pla	ants.							
Total Ottachura (Diataina) 10/V10/	Absolute			Indicator	Dominance Test work	ksheet:		
Tree Stratum (Plot size: 10'X10')	% Cover				Number of Dominant S		1	(4)
1. None					That Are OBL, FACW,	or FAC:		(A)
2					Total Number of Domir		2	(D)
3					Species Across All Stra	ata:	3	(B)
4					Percent of Dominant S		22	(4.47)
Sapling/Shrub Stratum (Plot size: 10'X10')	-	101	lai CO	/ei	That Are OBL, FACW,	or FAC: _	33	(A/B)
1. Artemisia tridentata	10		Y	UPL	Prevalence Index wor	rksheet:		
2. Juniperus occidentalis	5		Υ	UPL	Total % Cover of:		Multiply	by:
3					OBL species	x 1	=	
4					FACW species	x 2	=	
5					FAC species	x 3	=	
210	15	_ = Tot	tal Cov	/er	FACU species	x 4	=	
Herb Stratum (Plot size: 3'R)	40			546	· —	x 5	_	<u>_</u>
1. Dipsacus fullonum			<u>\</u>	FAC	Column Totals:	(A)		(B)
2. Equisetum hyemale			N	FACW	Prevalence Index	⁄ = R/Δ =		
Artemisia absinthium Verbascum thapsus			N N	<u>UPL</u> FACU	Hydrophytic Vegetati			
verbascum thapsus Broadleaf grass spp. A			<u>ν</u> Υ	*UNK	Dominance Test is		515.	
6. Poa pratensis			<u>'</u> Y	FAC	Prevalence Index			
7					Morphological Ada		Provide s	upportina
8					data in Remark			
	102			/er	Problematic Hydro	phytic Vege	etation¹ (Explain)
Woody Vine Stratum (Plot size: 10'X10')					1 Indicators of budgie as	ملاميد اممال	ad budra	logy much
1. None					¹ Indicators of hydric so be present, unless dist			
2								
% Bare Ground in Herb Stratum 0 % Co	ver of Biotic C	_	tal Cov		Hydrophytic Vegetation Present? Ye	es	No	<u>, </u>
Remarks:					<u> </u>			
*The broadleaf grass was too small and lacked an small earlike auricles and was more prominent ne it was not used in the dominance test although it	ear the stream	m in r	noiste	er areas ai	nd is likely FAC. Howe	ver, becau	use it wa	s unknown

Absolute coverage listed.

US Army Corps of Engineers

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B (11 5	=							f: !: ()
		to the de	pth needed to docu			or confir	m the absenc	e of indicators.)
Depth (inches)	Matrix Color (moist)	%	Color (moist)	ox Feature %	es Type ¹	Loc ²	Texture	Remarks
0-6	7.5YR3/2	100					sl	
6-12	10YR3/3	100					sl	
12-17	10YR3/3	98	10YR4/4	1		M	sl	
			10YR5/2	1		М		
17-24	10YR3/3	80	7.5RY4/4	_ 		M	sl	Also 10YR7/3 w/in, discon. sand
			10YR5/2	5	 D	M	. <u></u>	filiments
	-		10YR5/6	<u></u>	C	M		millenes
		_	10YR3/2	_ <u>5</u> 5		PL		Organic stains
¹Type: C=C	oncentration D=Der	oletion PA			d or Coate		Praine 21	ocation: PL=Pore Lining, M=Matrix.
			II LRRs, unless othe			u Sanu C		s for Problematic Hydric Soils ³ :
Histoso	`		Sandy Red		,			Muck (A9) (LRR C)
	pipedon (A2)		Stripped M					Muck (A10) (LRR B)
Black Histic (A3) Loamy Mucky M				al (F1)			iced Vertic (F18)	
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2			(F2)		Red	Parent Material (TF2)		
Stratifie	d Layers (A5) (LRR	C)	Depleted N	` ,			Othe	r (Explain in Remarks)
	uck (A9) (LRR D)		Redox Dar		. ,			
	d Below Dark Surfac	ce (A11)	Depleted D				3	
	ark Surface (A12)		Redox Dep		(F8)			s of hydrophytic vegetation and
	Mucky Mineral (S1) Gleyed Matrix (S4)		Vernal Poo	ois (F9)				d hydrology must be present, disturbed or problematic.
Restrictive	Layer (if present):							-
Restrictive Type: N								
Type: <u>N</u> Depth (in	one						Hydric So	il Present? Yes No
Type: N	one						Hydric So	il Present? Yes No 🛩
Type: <u>N</u> Depth (in Remarks:	one iches):						Hydric So	il Present? Yes No 🗸
Type: N. Depth (in Remarks:	one iches):	:					Hydric So	il Present? Yes No 🗸
Type: No Depth (in Remarks: HYDROLO Wetland Hy	one iches): OGY drology Indicators		ed; check all that app	oly)			200	il Present? Yes No
Type: N. Depth (in Remarks: HYDROLC Wetland Hy Primary Indi	one iches): OGY drology Indicators		ed; check all that app				Seco	
Type: N. Depth (in Remarks: HYDROLO Wetland Hy Primary Indi Surface	one iches): OGY rdrology Indicators cators (minimum of c			t (B11)			Seco	ondary Indicators (2 or more required)
Type: N. Depth (in Remarks: HYDROLO Wetland Hy Primary Indi Surface High W.	OGY rdrology Indicators cators (minimum of o		Salt Crus	t (B11) ust (B12)	es (B13)		Seco	ondary Indicators (2 or more required) Water Marks (B1) (Riverine)
Type: N. Depth (in Remarks: HYDROLO Wetland Hy Primary Indi Surface High W. Saturati	OGY OGY Odrology Indicators cators (minimum of of the Water (A1) ater Table (A2)	one requir	Salt Crus	t (B11) ust (B12) nvertebrate			Secondary Second	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine)
Type: N. Depth (in Remarks: HYDROLO Wetland Hy Primary Indi Surface High W. Saturati Water N	OGY OGY OGOGY Indicators Cators (minimum of of Water (A1) ater Table (A2) on (A3)	one require	Salt Crus Biotic Cru Aquatic Ir Hydrogen) Oxidized	t (B11) ust (B12) nvertebrate n Sulfide O Rhizosphe	dor (C1) eres along	-	Seco	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine)
Type: N. Depth (in Remarks: HYDROLO Wetland Hy Primary Indi Surface High W. Saturati Water N. Sedime Drift De	one ciches): drology Indicators cators (minimum of ciches) Water (A1) ater Table (A2) con (A3) Marks (B1) (Nonriver nt Deposits (B2) (Nonriver) posits (B3) (Nonriver)	one require rine) onriverine	Salt Crusi Biotic Cru Aquatic Ir Hydrogen) Oxidized Presence	t (B11) ust (B12) nvertebrate n Sulfide O Rhizosphe e of Reduce	edor (C1) eres along ed Iron (C4	4)	Second Se	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8)
Type: N. Depth (in Remarks: HYDROLO Wetland Hy Primary Indi Surface High W. Saturati Water N. Sedime Drift De Surface	one	one requir rine) onriverine erine)	Salt Crusi Biotic Cru Aquatic Ir Hydrogen Oxidized Presence Recent Ire	t (B11) ust (B12) nvertebrate n Sulfide O Rhizosphe e of Reduct on Reduct	dor (C1) eres along ed Iron (C4 ion in Tille	4)	Seconds (C3)	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9
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Type: N. Depth (in Remarks: HYDROLO Wetland Hy Primary Indi Surface High W. Saturati Water N. Sedime Drift De Surface Inundat Water-S	One	one requir rine) onriverine erine)	Salt Crusi Biotic Cru Aquatic Ir Hydrogen Oxidized Presence Recent Ire	t (B11) ust (B12) nvertebrate n Sulfide O Rhizosphe e of Reduce on Reduct k Surface	edor (C1) eres along ed Iron (C4 ion in Tille (C7)	4)	Secondary Second	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9
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Appendix C.	Ground Level Color Photographs



Photograph 1. Southwest view of the study area from the top of Bowman Dam spillway showing the approximate locations of the six wetlands. Numbers correspond to the wetlands identified in Figures 7 and 8. (Photograph date 6/17/11)



Photograph 2. Wetland 1 looking from the west end of the study area towards the east. Picture shows dead yellow sweet-clover from previous year's growth located at the edge of the approximated wetland boundary shown in yellow. (Photograph date 5/29/12)



Photograph 3. Surface substrate at Wetland 2 showing cobbles and boulders. (Photograph date 5/29/12)



Photograph 4. Wetland 3 looking toward the south. Topographic break and approximate wetland boundary is at the dashed yellow line. (Photograph date 5/29/12)



Photograph 5. Southeast view of Wetland 4 with approximate wetland boundary shown at dashed yellow line (Photograph date 5/1/12)



Photograph 6. Backwater area of Wetland 5 with approximate wetland boundary shown at dashed yellow line. Culvert is located under a dirt access road at the right of the picture. View is to the northwest. (Photograph date 6/17/11)



Photograph 7. The culvert in Wetland 5 is partially submerged during a reconnaissance visit in June 2011. The approximate wetland boundary is shown at dashed yellow line. View is to the north. (Photograph date 6/17/11)



Photograph 8. Eastern view of Wetland 6 from the dirt access road with approximate wetland boundary shown at dashed yellow line. Gated culvert shown in foreground. Bowman Dam is in the background. (Photograph date 6/17/11)



Photograph 9. Western view of Wetland 6 showing the gated culvert. The approximate wetland boundary is shown at the dashed yellow line. (Photograph date 5/30/12)



Photograph 10. Eastern view of Wetland 6 with the approximate wetland boundary shown at dashed yellow line. (Photograph date 5/31/12)

Appendix D.	Additional Tables and Information

WETS Table for Prineville 4 NW, OR6883

Creation Date: 09/09/2002

WETS Station: PRINEVILLE 4 NW, OR6883 Creation Date: Latitude: 4421 Longitude: 12054 Elevation: 02840 State FIPS/County(FIPS): 41013 County Name: Crook Start yr. - 1971 End yr. - 2000

	Temperature Degrees F.)							
					30% ch will	nance have	avg # of days	avg total
Month	avg daily max	avg daily min	avg	avg	less than	more than	w/.1 or more	snow fall
January February March April May June July August September October November December	43.0 48.7 55.1 61.7 69.4 77.7 86.5 86.3 78.2 66.1 50.3 42.7	22.2 24.7 26.4 29.1 35.2 40.5 43.7 42.5 35.7 29.8 26.6 21.6	32.6 36.7 40.7 45.4 52.3 59.1 65.1 64.4 57.0 48.0 38.5 32.2	1.14 1.00 0.95 0.83 1.06 0.87 0.62 0.47 0.42 0.83 1.30 1.23	0.64 0.51 0.61 0.48 0.52 0.34 0.14 0.05 0.10 0.37 0.78 0.52	1.39 1.23 1.15 1.02 1.29 1.07 0.75 0.55 0.53 1.02 1.58 1.50	3 3 2 3 2 1 1 1 2 4 3	3.0 2.0 0.5 0.2 0.0 0.0 0.0 0.0 0.0 0.1 1.7 2.3
Annual					8.82	11.83		
Average	63.8	31.5	47.7					
Total				10.72			28	9.7

GROWING SEASON DATES

		Temperature			
Probability	24 F or higher	28 F or higher	32 F or higher		
	Beginning and Ending Dates Growing Season Length				
50 percent *	5/ 5 to 9/29 147 days	5/29 to 9/14 108 days	6/26 to 8/29 64 days		
70 percent *	5/ 1 to 10/ 3 155 days	5/24 to 9/19 118 days	6/21 to 9/ 4 74 days		

^{*} Percent chance of the growing season occurring between the Beginning and Ending dates.

Appendix E.	Description of Other Species

Table E1 lists the wildlife species observed within or adjacent to the project area during two sunrise surveys and one late afternoon survey on May 29 and 30, 2012¹, as well as any species observed during the wetland delineation and functional assessments on May 30 and 31, 2012.

Table E1. Wildlife Observations

Species	Scientific name
Waterbirds	
Mallard	Anas platyrhynchos
Common Merganser	Mergus merganser
Great Blue Heron	Ardea herodias
Spotted Sandpiper	Actitis macularia
Canada Goose	Branta canadensis
² Killdeer	Charadrius vociferus
Raptors	
² Turkey Vulture	Cathartes aura
Osprey	Pandion haliaetus
American Kestrel	Falco sparverius
Gamebirds	
² California Quail	Callipepla californica
Passerines	
² Black-billed Magpie	Pica pica
American Goldfinch	Carduelis tristis
Common raven	Corvus corax
Cliff Swallow	Hirundo pyrrhonota
Violet-Green Swallow	Tachycienta thalassina
Northern Rough-winged Swallow	Stelgidopteryx serripennis
Red-winged Blackbird	Agelaius phoeniceus
Brewer's Blackbird	Euphagus cyanocephalus
Rock Wren	Salpinctes obsoletus
American Robin	Turdus migratorius
Chipping Sparrow	Spizella passerina
Yellow Warbler	Setophaga petechia
Western Kingbird	Tyrannus verticalis
Other birds	
Belted Kingfisher	Ceryle alcyon
Northern Flicker	Colaptes auratus
² Mourning dove	Zenaida macroura
² Rock Pigeon	Columba livia
Reptiles	
Western Fence Lizard	Sceloporus occidentalis
Mammals	
Mule Deer	Odocoileus hemionus
Goldern-mantled Ground Squirrel	Spermophilus lateralis
Mountain Cottontail	Sylvilagus nuttallii

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¹ ABR Inc. 2012. Bowman Dam Wetland Bird Surveys. Forest Grove, Oregon. June 19, 2012.

² Species observed outside project area but within 200m of the boundary.

Table E2 lists the noxious weed species (Crook County Noxious Weed List) observed within the project area during the wetland delineation and functional assessments on May 30 and 31, 2012. All the identified invasive species were widespread throughout the majority the project area.

Table E2. Invasive Species

Species	Scientific name	Noxious Weed Class
Canada thistle	Cirsium arvense	Class B
Diffuse Knapweed	Centaurea diffusa	Class B
Spotted Knapweed	Centaurea stoebe	Class B
White Top	Cardaria draba	Class B
Yellow Sweetclover	Melilotus officinalis	Class C
Common Mullein	Verbascum thapsus	Class C



CoverPg: Basic Description of Assessment	ORWAP version 2.0.2
Site Name:	Bowman Dam- Riverine Wetlands
Investigator Name:	Melanie Sharp
Date of Field Assessment:	6/1/2012
County:	Crook
Nearest Town:	Prineville
Latitude (decimal degrees):	44.1106
Longitude (decimal degrees):	-120.7896
TRS, quarter/quarter section and tax lot(s)	T17S, R16E, S10
Approximate size of the Assessment Area (AA, in acres)	0.41 acres
AA as percent of entire wetland (approx.)	100%
If delineated, DSL file number (WD #) if known	
Soil Map Units within the AA (list these in approx. rank order by area, from	None- soil survey has not been completed
WSS web site or published county survey; see manual)	The Prineville Reservoir Resource Management Plan shows Redcliff-Rock Outcrop Complex – well drained, non-hydric
Soil Map Units surrounding and contiguous to the AA (list all present in approx. rank order by area; see manual)	None- soil survey has not been completed
Cowardin Systems & Classes (indicate all present, based on field visit and/or aerial imagery): Systems: Palustrine =P, Riverine =R, Lacustrine =L, Estuarine =E	PEMC (Palustrine, Emergent, Seasonally Flooded)
<u>Classes</u> : Emergent =EM, Scrub-Shrub =SS, Forested =FO, Aquatic Bed (incl. SAV) =AB, Open Water =OW, Unconsolidated Bottom =UB, Unconsolidated Shore =US	R3UBH (Riverine Upper Perennial, Unconsolidated Bottom, Permanently Flooded
HGM Class (Scores worksheet will suggest a class; see manual section 2.4.2)	Riverine (although scores suggest Slope 4.00, Depresional 3.33, and Riverine 3.00)
If tidal, the tidal phase during most of visit:	N/A
What percent (approx.) of the wetland were you able to visit?	100
What percent (approx.) of the AA were you able to visit?	100
Have you attended an ORWAP training session? If so, indicate approximate month & year.	Yes, August 2009
	0

	A	В	С	D	E			
1		Date:06/01/12	Site Name: Bowman Dam-Riverine Wetlands		Investigator: Melanie Sharp			
	Office Data Form (OF). ORWAP version 2.0.2. Answering many of the following questions requires viewing aerial imagery and maps, covering an area up to within 2 miles of the AA. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Do not write in any shaded parts of this data form. Questions whose cells in column D have a "W" MUST be answered only for the ENTIRE wetland. Italicized indicators pertain only to wetland values. Although some land cover types (e.g., crops) can vary greatly from year to year, report only the conditions known to prevail during the majority of the past 5 years, or if unknown, then the conditions found in the available aerial imagery. Please do not attempt to fill out this data form until you're familiar with the accompanying manual.							
3	#	Indicator	Conditions	Data	Explanations, Definitions			
4	D1	Mitigation Investment	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere (0= no, 1= yes)	0	[PUv+]			
5 6 7	D2	Conservation Investment	(no information) The AA is part of or contiguous to a wetland on which public or private organizational funds were spent to preserve, create, restore, or enhance habitat mainly as part of a voluntary effort not used explicitly to offset impacts elsewhere (0= no, 1= yes) (no information)	0	voluntary= WRP, CRP, land trust easements with partial public funding, etc. Locations of some sites are shown online at: http://www.conservationregistry.org/ . Also, locations of OWEB-funded projects are mapped at http://www.oregonexplorer.info/owri_vistool/Intro.aspx [PUv+]			
	D3	Historically Lacking Trees	This AA (a) is not along (or in the biennial floodplain of) a large stream or river where riparian woodlands would be typical and (b) had a Presettlement vegetation class not dominated by trees as indicated by the Wetlands Explorer web site: www.oregonexplorer.info/wetlands/ORWAP. Enter 1 if both are true, 0= if not.	0	If the openness of the surrounding landscape is due almost entirely to agriculture and other human activities occurring within the past century, do not answer affirmatively. This question is used as a classification variable mainly to set appropriate expectations for the extent of surrounding forest cover. [INVc,FAc,FRc,SBMc,PD,CQc,SENSc]			
9	D4	Enclosed by Roads	Draw a circle of radius of 2 miles centered on the AA. Within that circle, do paved roads completely encircle the AA? (0= no, 1= yes)	0	See illustration in Appendix A of the manual. Consider only paved roads expected to have at least 1 vehicle per hour, and which are visible in aerial imagery regardless of width. Presence of culverts or bridges along the roads is irrelevant. Do not consider other potential barriers to wildlife movement (e.g., large rivers, fields). A circle of any radius can be placed on aerial imagery at http://tnm2beta.cr.usgs.gov/viewer . Click on Imagery, then GIS Toolbox,			
10 11 12 13 14		Distance to Nearest Busy Road	The distance from the center of the AA to the nearest road with an average daytime traffic rate of at least 1 vehicle/ minute is: >1 mile 0.5- 1 mile 1000-2600 ft 500-1000 ft	1 0 0	Estimate the traffic rate using your judgment and considering the road width, local population, alternate routes, and other factors. [AM-,WBN-,SBM-, PD-,STR+]			
15 16			100-500 ft <100 ft	0	-			
	D6	Forest Landscape Extent	Draw a circle of radius of 2 miles centered on the AA. Including the AA itself, the cumulative amount of forest (regardless of patch sizes) is: <5% of the circle 5 to 20% 20 to 50% 50 to 80% >80%		Forested= woody vegetation currently taller than 20 ft, and with >70% canopy closure. [SBM+]			

	A	В	С	D	Е
	D7	Forest Tract Proximity	The minimum distance from the AA edge to the closest forested tract or corridor larger than		forested tract= a land cover patch that has >70% tree cover. A corridor is simply
		•	100 acres is:		an elongated forested patch that is not narrower than 150 ft at any point. "Not
23					separated" from the AA means not separated by roads or other features that create
			<100 ft, or 100-300 ft and not separated from the AA by stretches of open water, bare	0	a tree canopy gap wider than 150 ft. [SBM+]
24			ground, lawn, or impervious surface that are wider than 150 ft.		a free carropy gap wider than 150 ft. [SDIVI+]
			100-300 ft and separated from the AA by stretches of open water, bare ground, lawn, or	0	
25			impervious surface that are wider than 150 ft.		
26			300-1000 ft	0	
27			>1000 ft	1	
	D8	Size of Nearby Forest	The largest patch or corridor within 0.5 mile of the AA edge that is forested (and not		The patch or corridor may either be entirely or only partially within the 0.5 mile
		•	separated from the AA by roads, fields, etc. that create a gap wider than 150 ft), occupies:		distance. Disqualify any patch or corridor of forest where canopy thins to <70%
20			gap man than 10 h, social and soc		cover, or where the forested patch becomes separated from the AA by a tree
28					canopy gap of >150 ft or where the forested corridor narrows to less than 150 ft
29 30 31			<1 acre of forest	1	width. See diagram in Appendix A of the manual. Patch area can be measured at
30			1-10 acres	0	http://tnm2beta.cr.usgs.gov/viewer (GIS Toolbox, Advanced) or estimated online
31			10-100 acres	0	
32			100-1000 acres	0	in GoogleEarth using the following guidelines:
			>1000 acres	0	1 acre is about: 200 ft on a side (if square)
					10 acres is about: 660 ft on a side
33					100 acres is about: 0.5 mile on a side
	D9	Natural Land Cover	Within a 2-mile radius measured from the center of the AA, the percent of the land that has		Natural land cover includes wooded areas, native prairies, sagebrush, vegetated
2.4			natural land cover (see definition on right) is:		wetlands, as well as relatively unmanaged commercial lands such as ryegrass
34			. ,		fields, hayfields, lightly grazed pastures, timber harvest areas, and rangeland. It
35 36 37			<5% of the land	0	does not include water, row crops (vegetable, orchards, Christmas tree farms),
36			5 to 20% of the land	0	residential areas, golf courses, recreational fields, pavement, bare soil, rock, bare
37			20 to 60% of the land	0	sand, or gravel or dirt roads. Natural land cover is not the same as native
38			60 to 90% of the land	0	vegetation. It frequently includes a dominance of non-native plants (e.g., cheat
			>90% of the land	1	grass, Himalayan blackberry). Although some land cover types (e.g., crops) can
39					vary greatly from year to year, report only the conditions known to prevail during the
	D10	Type of Land Cover	Within a 2-mile radius measured from the center of the AA, the area that is not "natural land		majority of the past 5 years, or if unknown, then the conditions found in the available [POLv-,AM+,SBM+]
		• • •			[FOLV-,AIVIT,SBIVIT]
40		Alteration	cover" or water is mostly:		
41			impervious surface, e.g., paved road, parking lot, building, exposed rock	0	
			bare pervious surface, e.g., dirt or gravel road, plowed fields, dunes, recent clearcut or	0	1
42			landslide		
43			cultivated row crops, orchards, vineyards, tree plantations	0	
44			artificially landscaped areas or lawn	0	1
45			grassland grazed or mowed to a height usually shorter than 4 inches	0	1
46			other	0	
47			(none of above; land cover is >90% natural land cover)	1	
	D11	Proximity to Natural Land	The minimum distance from the AA edge to the edge of the closest tract or corridor of		Natural land cover includes wooded areas, native prairies, sagebrush, vegetated
			natural (not necessarily native) land cover larger than 100 acres, is:		wetlands, as well as relatively unmanaged commercial lands such as ryegrass
			The state of the s		fields, hayfields, lightly grazed pastures, timber harvest areas, and rangeland. It
48					does not include water, row crops (vegetable, orchards, Christmas tree farms),
			<100 ft, or the AA contains >100 acres of vegetation, or >100 acres of natural land cover is	1	, , ,
			connected to the AA and is not separated from it by stretches of open water, bare ground,		residential areas, golf courses, recreational fields, pavement, bare soil, rock, bare
			lawn, or impervious surface that are wider than 150 ft.		sand, or gravel or dirt roads. Natural land cover is not the same as native
49					vegetation. It frequently includes a dominance of non-native plants (e.g.,
					Tele estatue e Llime eleviere le le eleberario HIVI. IMV. AM. CDM. Como 1

So the final systems from the weeke to systems can be ground, lewn, or a comparison surface that are weder than 150 ft. 10 10 10 300 ft. and not separated from the wetland by stretches of open water, bare ground, lewn, or one control and the stretches of the stretches of popen water, bare ground, lewn, or one control that are weder than 150 ft. 10 10 10 10 10 10 10 10 10 10 10 10 10 1		A	В	C	D	Е
Size of Largest Neathy Tract or Condor of expense and from the welland by stretches of open water, bere ground, 0 100-300 ft, but separated from the welland by stretches of open water, bere ground, lawn, or or improvious surface hat are wider than 150 ft. 100-300 ft, but separated from the welland by stretches of open water, bere ground, lawn, or or provious surface hat are wider than 150 ft. 100-300 ft. but separated from the AA by roads etc. that create gaps wider than 150 ft. 100-300	50				0	Theatylass, Hillialayan biackberry). [FOL+,IIVV+,AIVI+,SDIVI+,Selis-]
100-300 k, but separated from the welland by stelethese of open water, bare ground, lawn, or macranics surface that are wider than 150 ft. NONE of the above some name and the stellar of Comrisor of Natural Land Cover				100-300 ft; and not separated from the wetland by stretches of open water, bare ground,	0	
Size of Largest Nearby Time (Seeple spetch or corridor that is natural land cover and is within 0.5 mile of the AA Size of Corridor of Natural Land Cover Natural Land Co	52			100-300 ft, but separated from the wetland by stretches of open water, bare ground, lawn, or	0	
Tract or Corridor of Natural Land Cover Occupies: Sample Control of Natural Land Cover Coccupies: Case	53				0	1
1-10 acres 1-1		D12	Tract or Corridor of	edge, and not separated from the AA by roads etc. that create gaps wider than 150 ft,		distance. Disqualify any patch or corridor of natural land cover where it becomes separated from the AA by a gap of >150 ft, if the gap is comprised of impervious
Total Color	55			<1 acre	0	
10 acros is about. 560 ft on a side 10 acros is about. 560 ft on a side 100 acros is about. 50 ft on a side 100 acros is about. 5 ft on it on a side 100 acros is about. 5 ft on it on a side 100 acros is about. 5 ft on it on a side 100 acros is about. 5 ft on it on a side 100 acros is about. 5 ft on it on a side 100 acros is about. 5 ft on it on a side 100 acros is about. 5 ft on it on a side 100 acros is about. 5 ft on it on a side 100 acros is about. 5 ft on it on a side 100 acros is about. 5 ft on it on a side 100 acros is about. 5 ft on it on a side 100 acros is about. 5 ft on it on a side 100 acros is about. 5 ft on it on a side 100 acros is about. 5 ft on it on a side 100 acros is about. 5 ft on it on a side 100 acros is about. 5 ft on it on a side 100 acros is about. 5 ft on it on a side 100 acros is about. 5 ft on a side 100 acros is about. 5 ft on it on a side 100 acros is about. 5 ft on a side 100 acros is about. 5 ft on a side 100 acros is about. 5 ft on a side 100 acros is about. 5 ft on it on a side 100 acros is about.	56			1-10 acres	0	
100 acres is about 0.5 mile on a side 100 acres is about 0.5 mile or in acres in about 0.5 mile acres is about 0.5 mile acres in a					0	
D13 Local Wetland Uniqueness Within 0.5 mille of the center of the AA, the AA and vegetation of the same form that is configuous to the AA together provide (select all that apply): Configuous to the AA together provide (sel	58				0	
Local Welland Uniqueness Uniq	59			>1000 acres	1	
the largest patch of unshaded shrubland (excluding plantations) the largest patch of unshaded shrubland (excluding plantations) the largest patch of unshaded shrubland (excluding plantations) the largest patch of deciduous or evergreen trees (excluding plantations) NONE of above 1 Herbaceous Open Land in Draw a circle of radius of 2 miles centered on the AA. The amount of herbaceous penland is: Sin 20% 50 to 50% 50 to 50% 50 to 80% 70 D15 Proximity to Open Land The distance from the AA edge to the closest patch of herbaceous openland larger than 1 acre is: 400 to 300 ft 100 to 300 ft 100 to 300 ft 100 to 300 ft 100 to 300 ft 100 to 300 ft 100 to 300 ft 100 to 300 ft 207 To 208 Ponded Water in Landscape D16 Ponded Water in Landscape D17 D17 D18 Ponded Water in Landscape D19 D19 D19 D19 D10 D10 D10 D10		D13				This question will require field verification. In all cases, the patch may be entirely within the wetland, or may cover only part of the wetland but extend into
the largest patch of unshaded shrubland (excluding plantations) NORE of above D14 Herbaceous Open Land in Draw a circle of radius of 2 miles centered on the AA. The amount of herbaceous openland can include (for example) pasture, herbaceous vertically and herbaceous openland can include (for example) pasture, herbaceous vertically and herbaceous openland can include (for example) pasture, herbaceous vertically and herbaceous openland can include (for example) pasture, herbaceous vertically and herbaceous openland can include (for example) pasture, herbaceous vertically and herbaceous openland can include (for example) pasture, herbaceous vertically and herbaceous openland can include (for example) pasture, herbaceous vertically and herbaceous openland can include (for example) pasture, herbaceous vertically and herbaceous openland can include (for example) pasture, herbaceous vertically and herbaceous openland can include (for example) pasture, herbaceous vertically and herbaceous openland can include (for example) pasture, herbaceous vertically and herbaceous openland can include (for example) pasture, herbaceous vertically and herbaceous openland can include (for example) pasture, herbaceous vertically and herbaceous openland can include (for example) pasture, herbaceous vertically and herbaceous openland can include (for example) pasture, herbaceous vertically and herbaceous openland can include (for example) pasture, herbaceous vertically and herbaceous openland can include (for example) pasture, herbaceous vertically and herbaceous openland can include (for example) pasture, herbaceous vertically and herbaceous openland can include (for example) pasture, herbaceous vertically and herbaceous openland can include (for example) pasture, herbaceous vertically and herbaceous openland can include (for example) pasture, herbaceous vertically and herbaceous openland can include (for example) pasture, herbaceous openland can include (for example) pasture, herbaceous openland can include herbaceous openland can i	61			the largest patch of currently ungrazed, unmowed, and unshaded herbaceous vegetation	0	
The largest patch of deciduous or evergreen trees (excluding plantations) Day				the largest patch of unshaded shrubland (excluding plantations)	0	[POLv+,AMv+,WBNv+,SBMv+,PDv+]
NONE of above None of abov				the largest patch of deciduous or evergreen trees (excluding plantations)	0	
Herbaceous Open Land in Draw a circle of radius of 2 miles centered on the AA. The amount of herbaceous openland can include (for example) pasture, herbaceous wetland, meadow, prairie, ryegrass fields, row crops, plowed land, herbaceous rangeland, golf courses, grassed airports, and hayfields but only if they are known to be in flat terrain (almost no noticeable slope). Do not include open water of lakes, ponds, or rivers. See photographs in Appendix A of manual. In dry parts of the state, croplands in flat areas are often irrigated and are distinctly greener in aerial images. [POLv+,WBF+] Proximity to Open Land acre is: 100 to 300 ft 100 to 300 ft 2100 to 1000				NONE of above	1	
Landscape openland is: Comparison of the land Comparison of the la		D14	Herbaceous Open Land in			Herbaceous openland can include (for example) pasture, herbaceous wetland.
Section Sect			•			, , , , , , , , , , , , , , , , , , , ,
Fig. 20% 20 to 50% 20 to	_			<5% of the land	1	
20 to 50% 50 to 80% 50 t					0	flat terrain (almost no noticeable slope). Do not include open water of lakes,
So to 80% Sate, croplands in flat areas are often irrigated and are distinctly greener in aerial images. FOLv+,WBF+						
Second					0	
The distance from the AA edge to the closest patch of herbaceous openland larger than 1 acre is: The distance from the AA edge to the closest patch of herbaceous openland larger than 1 acre is: See definition of herbaceous openland above, and photographs in Appendix A of manual Must be in flat terrain. [POLv+,WBF+] The distance from the AA edge to the closest patch of herbaceous openland larger than 1 acre is: See definition of herbaceous openland above, and photographs in Appendix A of manual Must be in flat terrain. [POLv+,WBF+] The distance from the AA edge to the closest patch of herbaceous openland larger than 1 acre is: See definition of herbaceous openland above, and photographs in Appendix A of manual Must be in flat terrain. [POLv+,WBF+] The distance from the AA edge to the closest patch of herbaceous openland above, and photographs in Appendix A of manual Must be in flat terrain. [POLv+,WBF+] The distance from the AA edge to the closest patch of exception acre is: The distance from the AA edge to the closest patch of herbaceous openland above, and photographs in Appendix A of manual Must be in flat terrain. [POLv+,WBF+] The distance from the AA edge to the close openland above, and photographs in Appendix A of manual Must be in flat terrain. [POLv+,WBF+] The distance from the AA edge to the closest patch as edge to the close openland above, and photographs in Appendix A of manual Must be in flat terrain. [POLv+,WBF+] The distance from the AA edge to the close of such cover of such c						images. [POLv+,WBF+]
Consult the order of such cover Consult the online wetland maps at Wetland Explorer and note wetlands that are not obviously intersected by streams and are not estuarine Consult the online wetland maps at Wetland Explorer and note wetlands that are not obviously intersected by streams and are not estuarine Consult the Order of Such cover Consult the Order of Such cove		D15	Proximity to Open Land			
To To To To To To To To				<100 ft, or the AA contains >1 acre of such cover, or is contiguous to >1 acre of such cover	0	
300 to 1000 ft 75 300 to 1000 ft 76 76 76 77 78 79 80 80 80 80 80 80 80 8	73			100 to 300 ft	n	1
75 71000 ft 71	74					1
Day a circle of radius of 2 miles centered on the AA. Including water ponded in the AA itself or in a fringing water body, the amount of non-tidal water that is ponded during most of the year is: Ponded Water = any surface water that is not obviously part of a river, stream, or tidal system. Include herbaceous (emergent) wetlands larger than 1 acre if they are inundated and water is ponded at least seasonally. Also include waters such as sloughs that are ponded most of the year but connected seasonally to rivers. So of the circle, located in 5 ponds or lakes 0 0 0 0 0 0 0 0 0	75				1	
Landscape itself or in a fringing water body, the amount of non-tidal water that is ponded during most of the year is: To To To To			Ponded Water in			Ponded water = any surface water that is not obviously part of a river, stream, or
the year is: the year is:				y i		
77	76					, , ,
78 <5% of the circle, located in >5 ponds or lakes 0 Consult the online wetland maps at Wetland Explorer and note wetlands that are not obviously intersected by streams and are not estuarine 5 to 30%, located in >10 ponds or lakes 0 [AM+,WBF+,WBN+,SBM+,Sens-]					0	
5 to 30%, located in 10 or fewer ponds or lakes 1 not obviously intersected by streams and are not estuarine 5 to 30%, located in >10 ponds or lakes [AM+,WBF+,WBN+,SBM+,Sens-]	78					· · · · · · · · · · · · · · · · · · ·
5 to 30%, located in >10 ponds or lakes 0 [AM+,WBF+,WBN+,SBM+,Sens-]	79				1	
				,	0	
				>30%, located in 15 or fewer ponds or lakes		1

	A	В	C	D	Е
82			>30%, located in >15 ponds or lakes	0	
83	D17		The minimum distance from the AA edge to the closest non-tidal wetland, pond, or lake that is larger than 1 acre, is ponded most of the year, and is not part of the same associated wetland, pond, or lake, is:		If multiple smaller water bodies are separated by <150 ft they may be combined when evaluating acreage. "Uninterrupted" means no impervious surfaces wider than 150 ft interrupt the corridor. "Natural" land corridor means a corridor
84		1	<300 ft, and connected with a natural land corridor	0	comprised of natural land cover as defined in D9 above. Consult wetland maps,
85			<300 ft, but no uninterrupted natural land corridor	0	considering only those polygons whose water regime may be "permanent,"
86			300-1000 ft, and connected with a natural land corridor	0	"intermittently exposed," or "semipermanent" (codes F, G, or H on NWI maps).
87			300-1000 ft, but no uninterrupted natural land corridor	1	[AM+,WBF+,WBN+,SBM+,Sens-]
88			>1000 ft, and connected with a natural land corridor	0	_
89	D.10		>1000 ft, but no uninterrupted natural land corridor	0	
	D18	Large Ponded Water	The distance from the AA edge to the closest (but separate) non-tidal body of water that is		If multiple smaller water bodies are separated by <150 ft they may be combined
90		Proximity	ponded during most of the year and is larger than 20 acres (about 1000 ft on a side) is:		when evaluating acreage. Consult wetland maps, considering only those polygons whose water regime may be "permanent," "intermittently exposed," or
91			<1 mile	1	"semipermanent" (codes F, G, or H on NWI maps). [WBF+,WBN+,Sens-]
92			1-5 miles	0	-
93			>5 miles	0	
	D19	Tidal Proximity	The distance from the AA edge to the closest tidal body of water is:		[CS+,WBF+]
95			<1 mile	0	_
96 97			1-5 miles	0	
	D00	Harden Call Franklik ilk	>5 miles	1	On the ODIMAD and of facilities of a section to the latest this information with
98	D20	' '	Using the Web Soil Survey procedure described in the ORWAP manual, the rating of the soil map unit which occupies the largest percentage of the zone 200 ft uphill from the AA is:		See the ORWAP manual for instructions on how to obtain this information online. [SRv+, Sens+]
99		· ·	very severe	0	
100			severe	0]
101			moderate	0	
102			slight	0	
103			(could not determine)	1	
	D21	Extent of Dominant Vegetation Class in Wetland	Using the Web Soil Survey AOI tool to measure it, what is the area of the largest patch of emergent, shrub, or forest vegetation within the entire wetland of which the AA is a part? Use just the dominant class. See instructions in last column.		When drawing the polygon around the patch, exclude vegetation of the same patch type if separated by a gap created by open water, a road, dike, or upland that is wider than 150 ft. [WBF+, WBN+, SBM+, POL+, Sens-]
104			d0 4 and	1	
105 106			<0.1 acre 0.1 - 1 acre	0	1
107			1 to 10 acres	0	1
108			10 to 100 acres	0	1
109			100 to 1000 acres	0	1
110			>1000 acres	0	1
111	D22	in Watershed	From the Wetlands Explorer web site (see Manual), note the 12-digit code number for this wetland's HUC6 (Hydrologic Unit Code, i.e., watershed). Then turn to the HUC4, HUC5, and HUC6 worksheets in the ORWAP_Supplnfo file. Compare the extent of the wetland's dominant vegetation form (from above) with that of the largest wetlands of the same class in the same HUC4 (first 8 digits), the same HUC5 (first 10 digits), and the same HUC6 (12 digits). Enter "1" for all that apply below:		"of its type" means Cowardin system and class. First determine size importance in HUC6 and if criteria met, then also screen for importance in HUC5 and if met then in HUC4. Alternatively, instead of checking the worksheets, you may go to the Wetland Explorer web site, locate this wetland, activate the boundaries for wetlands plus the HUC4, 5, and 6, and then determine visually if this is the largest wetland of its class. Note that data are lacking for some HUCs. Also note that a HUC4 is the same as an 8-digit HUC, a HUC5 is the same as a 10-digit HUC, and a HUC6 is the same as a 12-digit HUC. [WBFv+, WBNv+, SBMv+]

	A	В	С	D	Е
112			the vegetated part of this wetland is as large or larger than any of its class mapped in its HUC4 watershed	0	
113			the vegetated part of this wetland is as large or larger than any of its class mapped in its HUC5 watershed	0	
114			the vegetated part of this wetland is as large or larger than any of its class mapped in its HUC6 watershed	0	
115			none of above	0	
116			data are inadequate (NWI mapping not >90% completed in HUC)	1	
117	D23	Wetland Number & Diversity Uniqueness	Turn to the HUCbest worksheet in the ORWAP_SuppInfo file. Using the HUC code noted from the web site, is this AA located in one of the HUCs that are listed as having a large diversity of wetland types relative to area of wetlands (column 3), or a large number (column 4) or area (column 5) of wetlands relative to area of the HUC? Enter "1" for all that apply below:		"type diversity" was based on Cowardin system and class (e.g., Palustrine emergent). Note that data are lacking for some HUCs. Because the diversity of types, number of wetlands, and proportional area of wetlands are highly intercorrelated, the criteria used to define "large" were based on the residuals of regression of those variables against wetland area or numbers in the associated HUC. Thus, the relative rather than the absolute number of types or number of
118			yes, for the HUC4 watershed	0	wetlands in the HUC was the basis for judging "large," and the top 5% of the
119			yes, for the HUC5 watershed	0	residuals was used to identify the most outstanding wetlands in each category.
120			yes, for the HUC6 watershed	0	[AM+, WBF+, WBN,+ SBM]+
121			none of above	0	
122			data are inadequate (NWI mapping not completed in HUC)	1	
123		s where allowed and s Historical Hydrologic	Compared to extent of wetland that may have been originally present at this location (just	W	"Originally present" means immediately prior to widespread settlement of the region
124		Connectivity	prior to settlement in 1851), the current wetland is:	VV	by western cultures (generally, about 1850). See ORWAP manual (section 2.2.8)
125			same size and boundaries, approximately. For example, wetland boundary may be nearly identical to hydric soil boundary	0	for instructions on how to see hydric soils in the vicinity. If the hydric soil map units that intersect the wetland are together much larger than the wetland, assume fragmentation has occurred. If possible, also see maps of pre-settlement
126			smaller (50-99% of the original size) and/or severed (by roads, dikes, drained soils, etc) from a few historically connected wetlands that may no longer exist. Soil map may show hydric soil extending somewhat beyond current wetland boundary.	0	vegetation (available from ORNHIC for parts of Oregon), and topography. [CQ+]
			much smaller (<50% of the original size) and/or extensively severed (by roads, dikes, drained soils) from many historically connected wetlands that may no longer exist. Soil map may show hydric soil extending far beyond current wetland boundary.	0	
127			larger (due to damming of stream or runoff, excavation, removal of obstructions, irrigation, etc. that floods soils not mapped as hydric) or has been connected to wetlands from which it existed in isolation just prior to settlement.	1	
129			no wetland is known to have been present at this location originally (no hydric soil is mapped and presettlement vegetation was not wetland; the entire wetland may have resulted from impoundment, excavation, or regrading of upland soils)	0	

	A	В	C	D	E
130	D25	Special Conservation Designations of the Wetland or Local Area	Go to the Oregon Wetlands Explorer web site or other sources noted below and use those to help determine each of the following:		See section 2.2.8 of the ORWAP manual.
131		Trestand of Educative	a) the AA is within or is connected to (at least seasonally) a stream or other water body within 0.5 mile that has been designated as Essential Indigenous Anadromous Salmonid Habitat (ESH)	0	You must use information not contained on the Wetlands Explorer web site to determine if such a connection exists at least seasonally. If no mapped ESH is near the AA but ODFW has confirmed the accessibility of the AA by salmonids and the presence of salmonids in nearby waters, this question may be answered affirmatively. Many potential blockages along streams are shown in maps that may be downloaded from:
132			b) the AA is within or contiguous to a Special Protected Area managed by a conservation group or designated as specially protected for conservation by a state or federal resource agency,	1	This includes BLM Area of Critical Environmental Concern (ACEC) or Outstanding Natural Area (ONA), Federal Research Natural Area (RNA) or Special Interest Area (SIA), or Natural Heritage Conservation (NHCA), Land Trust and Nature
133			c) the AA is within or contiguous to a Wetland Priority Area as determined partly by ODFW	0	As recognized by the Oregon Wildlife Conservation Strategy or the Oregon Natural Heritage Program
134			d) the AA is within an IBA (Important Bird Area, as officially designated) and listed in the IBA worksheet in the ORWAP_SuppInfo file	0	
135			NONE of above	0	
136	D26	'	According to the Wetlands Explorer web site, the score for occurrences of rare non- anadromous fish species in the vicinity of this AA is:		Species include Pit-Klamath brook lamprey (S3), Miller Lake lamprey (S1), Klamath lamprey (S3), Malheur mottled sculpin (S3), Margined sculpin (S3), Slender sculpin
137		Concern	high (≥ 0.75 for maximum score, or ≥ 0.90 for this group's score sum), or there is a recent (within 5 yrs) onsite observation of any of these species by a qualified observer under conditions similar to what now occur	0	(S3), Alvord chub (S2), Tui chub (S), Borax Lake chub (S1), Speckled dace (SS), Oregon chub (S2), Umpqua chub (S2), Modoc sucker (S1), Klamath smallscale sucker (SS), Warner sucker (S1), Shortnose sucker (S1), Pit Sculpin (S1), Klamath
138			intermediate (i.e., not as described above or below)	0	Lake Sculpin (S3), Bull Trout (S3), Blue Chub (S3), Umpqua Dace (S3), Lahontan Redside (S2), Klamath Largescale Sucker (S3), Tahoe Sucker (S1), Lost River
139			low (≤ 0.33 for both the maximum score this group's score sum, but not 0 for both)	0	Sucker (S1), Sacramento Perch (S3). Note that for some of these species, only specific geographic populations are designated. S1 is the most imperiled, S3
140			zero for both this group's maximum and its sum score, and no recent onsite observation of these species by a qualified observer under conditions similar to what now occur	1	less so, according to ratings by the Oregon Natural Heritage Information Center. [FRv+]
141	D27	Invertebrate Species of Conservation Concern	According to the Wetlands Explorer web site, the score for occurrences of rare invertebrate species in the vicinity of this AA is:		
142			high (≥ 0.75 for maximum score, or for this group's score sum), or there is a recent onsite observation of any of these species by a qualified observer under conditions similar to what now occur	0	
143			low (< 0.75 for maximum score AND for this group's score sum, but not 0 for both)	0	
144			zero for both this group's maximum and its sum score, and no recent onsite observation of these species by a qualified observer under conditions similar to what now occur	1	
	D28	Amphibian or Reptile of Conservation Concern	According to the Wetlands Explorer web site, the score for occurrences of rare amphibian or reptile species in the vicinity of this AA is:		Species include: Painted Turtle (S2), Northwestern Pond Turtle (S2), Clouded Salamander (S3), Oregon Slender Salamander (S2), Larch Mountain Salamander
146			high (≥ 0.60 for maximum score, or >0.90 for score sum), or there is a recent onsite observation of any of these species by a qualified observer under conditions similar to what now occur	0	(S2), Siskiyou Mountains Salamander (S2), Cope's Giant Salamander (S2), Cascade Torrent Salamander (S3), Columbia Torrent Salamander (S3), Coastal Tailed Frog (S3), Inland Tailed Frog (S2), Northern Red-legged Frog (S3), Foothill
147			intermediate (i.e., not as described above or below)	0	Yellow-legged Frog (S2), Cascades Frog (S3), Northern Leopard Frog (S1), Oregon
148			low (≤ 0.21 for maximum score AND <0.15 for score sum, but not 0 for both)	0	Spotted Frog (S2), Columbia Spotted Frog (S2), Great Basin Back-collared Lizard

	A	В	С	D	Е
149			zero for both this group's maximum and its sum score, and no recent onsite observation of these species by a qualified observer under conditions similar to what now occur	1	(S3), Desert Horned Lizard (S3), Night Snake (S3), Common Kingsnake (S3), Ground Snake (S3). [AMv+]
150	D29	Nesting Waterbird Species of Conservation	According to the Wetlands Explorer web site, the score for occurrences of rare nesting waterbird species in the vicinity of this AA is: high (≥ 0.60 for maximum score, or ≥1.00 for this group's score sum), or there is a recent	0	Species include: Red-necked Grebe (S1), Am. White Pelican (S2), Snowy Egret (S2), Barrow's Goldeneye (S3), Bufflehead (S2), Yellow Rail (S1), Sandhill Crane
151		Concern	onsite observation of any of these species by a qualified observer under conditions similar to what now occur	U	(S3), Snowy Plover (S2), Black-necked Stilt (SS), Long-billed Curlew (S3), Franklin's Gull (S2), Caspian Tern (SS). [WBNv+]
152			intermediate (i.e., not as described above or below)	0	
153			low (≤ 0.09 for maximum score and for score sum, but not 0 for both)	0	
154			zero for both this group's maximum and its sum score, and no recent onsite observation of these species by a qualified observer under conditions similar to what now occur	1	
155	D30	Feeding (Non-breeding) Waterbird Species of	According to the Wetlands Explorer web site, the score for occurrences of rare non-breeding (feeding) waterbird species in the vicinity of this AA is:		"Non-breeding" mainly refers to waterbird feeding during migration and winter. [WBFv+]
156		Conservation Concern	high (≥ 0.33 for maximum score, or there is a recent onsite observation of any of these species by a qualified observer under conditions similar to what now occur	0	
157			low (< 0.33 for maximum score and for score sum, but not 0 for both)	0	
158			zero for both this group's maximum and its sum score, and no recent onsite observation of these species by a qualified observer under conditions similar to what now occur	1	
159	D31	Songbird, Raptor, Mammal Species of	According to the Wetlands Explorer web site, the score for occurrences of rare songbird, raptor, or mammal species in the vicinity of this AA is:		Species include: Bald Eagle (SS), Northern Goshawk (S3), Swainson's Hawk (S3), Ferruginous Hawk (S3), Peregrine Falcon (S1), Band-tailed Pigeon (S3),
160		Conservation Concern	high (≥ 0.60 for maximum score, or >1.13 for score sum), or there is a recent onsite observation of any of these species by a qualified observer under conditions similar to what now occur	0	Flammulated Owl (S3), Burrowing Owl (S3), Spotted Owl (S3), Great Gray Owl (S3), Short-Eared Owl (SS), Common Nighthawk (SS), Lewis's Woodpecker (S3), White-Headed Woodpecker (S2), Black-Backed Woodpecker (S3), American Three-toed Woodpecker (S3), Pileated Woodpecker (SS), Olive-sided Flycatcher (S3), Willow
161			intermediate (i.e., not as described above or below)	0	Flycatcher (SS), Horned Lark (SS), Purple Martin (S2), White-breasted (Slender-
162			low (≤ 0.09 for maximum score AND <0.13 for score sum, but not 0 for both)	0	billed) Nuthatch (SS), Blue-gray Gnatcatcher (S3), Varied Thrush (SS), Loggerhead Shrike (S3), Yellow-breasted Chat (SS), Chipping Sparrow (SS), Brewer's Sparrow
163			zero for both this group's maximum and its sum score, and no recent onsite observation of these species by a qualified observer under conditions similar to what now occur	1	(SS), Vesper Sparrow (SS), Sage Sparrow (SS), Grasshopper Sparrow (S2), Western Meadowlark (SS), Fringed Myotis (S2), Long-Legged Myotis (S3), California Myotis (S3), Silver-haired Bat (S3), Hoary Bat (S3), Spotted Bat (S2), Townsend's Big-eared Bat (S2), Pallid Bat (S2), Red Tree Vole (S3), Kit Fox (S1),
164	D32	Plant Species of Conservation Concern	According to the Wetlands Explorer web site, the score for occurrences of rare plant species in the vicinity of this AA is:		[PDv+]
165			high (≥ 0.75 for maximum score, or > 4.00 for score sum), or there is a recent onsite observation of any of these species by a qualified observer under conditions similar to what now occur	0	
166			intermediate (i.e., not as described above or below)	0	
167			low (≤ 0.12 for maximum score AND < 0.20 for score sum, but not 0 for both)	0	
168			zero for both this group's maximum and its sum score, and no recent onsite observation of these species by a qualified observer under conditions similar to what now occur	1	

	A	В	С	D	Е
169	D33	Floodable Property	According to the Wetlands Explorer web site:		Do not consider pasture or hayfields to be "cropland." See the ORWAP manual for
170			The AA is tidal, or is either (a) not within a 100-yr floodplain of a river, or (b) there are no inhabited buildings or cropland within 2 miles downslope that are within the 100-yr floodplain. Mark "1" then SKIP TO D35.	1	instructions on how to obtain this information online at http://www.oregonexplorer.info/wetlands/ORWAP [WSv+]
171			Inhabited buildings within 1 mile downslope from the AA also are within the 100-yr floodplain	0	
172			Croplands but no inhabited buildings are within 1 mile downslope from the AA, and that cropland is also within the 100-yr floodplain	0	
173			Inhabited buildings within 1-2 miles downslope from the AA are also are within the 100-yr floodplain	0	
174			Croplands but no inhabited buildings are within 1-2 miles downslope from the AA, and that cropland is also within the 100-yr floodplain	0	
155			No floodplain data are available, and damage from river floods has not been known to have occurred within 2 miles downgradient. Mark "1" then SKIP to D35.	0	
175	D34	Downslope Storage			"Seasonally ponded areas" includes (for example) detention ponds, reservoirs, and
176	D3 4	Downsiope Storage	Between the AA and any floodable buildings or cropland located within 2 miles downslope:		depressional wetlands [WSv-]
177			river flow is regulated and there are many seasonally ponded areas capable of storing water.	0	
178			river flow is regulated or there are many seasonally ponded areas capable of storing water.	0	
179			NONE of the above	0	
180	D35	Relative Elevation in Watershed	According to Wetlands Explorer map showing this AA's position within its HUC4 (8-digit) watershed, the AA is [see last column and Manual for specific guidance]:		 Which end of the HUC4 is the bottom? Where streams join, the "V" that they form on the map points towards bottom of the HUC. If the AA is closer to the HUC4's outlet than to its upper end, and is closer to the
181			in the upper one-third of its watershed	1	river or large stream that exits at the bottom of the HUC4 than it is to the boundary (margin) of the HUC4, then check "lower 1/3" If not near that river, check "middle
182			in the middle one-third of its watershed	0	1/3". 3) If the AA is not in a 100-yr floodplain, is closer to the HUC4 upper end than to its
183			in the lower one-third of its watershed	0	outlet, and is closer to the boundary (margin) of the HUC4 than to the river or large stream that exits at the bottom of the HUC4, then check "upper 1/3"
184	D36	Contributing Area (CA) Percent	Based on the definition and protocol in the ORWAP manual, the area of the wetland of which this AA is a part, relative to the wetland's contributing area (CA) is:	W	The CA is basically the upslope area that has the potential to deliver water to the wetland. The CA boundary typically does not cross any streams or ditches except the one at the wetland outlet (if any). Remember that if the wetland is flooded as
185			<1% of its CA (true if wetland is tidal, or along major river, or has many tributaries, or gets substantial water drawn from other surface water bodies, e.g., flood irrigation)	1	little as once every 2 years by river flow, the CA includes all upslope areas that feed that river. If the wetland is on the fringe of a pond or lake, compare the area of that water body to its contributing area not the area of the wetland
186			1 to 10% of its CA	0	compared to only the wetland's contributing area. For most wetlands, and
187			10 to 100% of its CA	0	especially ones containing tributaries, the first choice will be the most appropriate. For AA's that are intercepted by a mapped stream, delineation and area calculation
188			Larger than the area of its CA (wetland has essentially no CA, e.g., isolated by dikes with no input channels, or is in terrain so flat that a CA can't be delineated). SKIP TO D40.	0	for the CA will be done automatically at this USGS web site: http://streamstats.usgs.gov/orstreamstats/index.asp . Enter the coordinates, zoom to scale of 1:24000 or finer, click on the stream, and click on Basin

	A	В	С	D	E
	D37	Unvegetated Surface in	The proportion of the CA comprised of buildings, roads, parking lots, other pavement,	W	[WSv-,SRv-,PRv-,NRv-]
189		the Contributing Area	exposed bedrock, and other impervious surface is about :		
190			>25%	0	
191			10 to 25%	0	
192			<10%, or wetland is tidal	1	
193	D38	Upslope Storage	The cumulative area of seasonally ponded areas in the same CA is:	W	"Seasonally ponded area" includes (for example) detention ponds, reservoirs, and depressional wetlands [WSv-,SRv-,PRv-,NRv-]
194			Much (>10x) greater than the area of this wetland (plus any contiguous pond or lake), or inflow is strongly regulated by dams etc.	1	depressional wettands [wsv-,skv-,rkv-,nkv-]
195			Somewhat greater than the area of this wetland (plus any contiguous pond or lake) and flows to wetland are not strongly regulated	0	
196			Less than the area of this wetland (plus any contiguous pond or lake), or wetland is tidal, or no upslope wetlands/ ponds and no inflow regulation	0	
	D39	Transport From Upslope	A relatively large proportion of the precipitation that falls farther upslope in the CA reaches this wetland quickly as runoff (surface water), as indicated by the following: (a) input channel is present, (b) CA slopes are steep, (c) input channels have been straightened, (d) upslope wetlands have been ditched extensively, (e) land cover is mostly non-forest, and/or (f) most CA soils are shallow and/or have high runoff coefficients). This statement is:	W	[WSv+,SRv+,PRv+,NRv+]
198			Mostly true	1	
199			Somewhat true	0	
200			Mostly untrue, or wetland is tidal	0	
	D40		Within 1 mile upstream from the wetland, at least one of the major sources of surface water to this wetland (at least seasonally) has been designated as Water Quality Limited (303d) for at least one of the parameters below. Obtain from web site only do not guess. Select all that apply.	W	See the ORWAP manual (section 2.2.7) for instructions on how to obtain this information online at http://deq12.deq.state.or.us/lasar2/default.aspx [SRv+,PRv+,NRv+,TRv+,INV-,WBF-,WBN-,STR+]
201			() () () () () () () () () ()		
202			total suspended solids (TSS), sedimentation, or turbidity	0	
203 204 205 206			phosphorus	0	
204			nitrate or ammonia	0	
203			toxics, dioxin, heavy metals (iron, manganese, lead, zinc, etc.)	0	
			temperature	1	
207	544		None of above, or degraded water cannot reach wetland, or no data.	1	
208	D41		Within 1 mile downstream or downslope from this wetland, there is at least one stream or other water body that has been designated as Water Quality Limited (303d) for at least one of the parameters below. The water body need not be connected to the AA. Obtain from web site only do not guess. Select all that apply.	W	See the ORWAP manual (section 2.2.7) for instructions on how to obtain this information online at http://deq12.deq.state.or.us/lasar2/default.aspx [SRv+,PRv+,NRv+,TRv+,INV-,WBF-,WBN-,STR+]
209			total suspended solids (TSS), sedimentation, or turbidity	0	
209 210 211 212 213			phosphorus	0	
211			nitrate or ammonia	0	
212			toxics, dioxin, heavy metals (iron, manganese, lead, zinc, etc.)	0	
213			temperature	0	
214			None of above, or no data. Mark "1" then SKIP TO D43.	1	

	A	В	С	D	E
	D42	Type of Outflow	At least part of the AA is connected to the downstream 303d water mentioned in D41 above:		persistent water= flows for more than 9 months during most years.
215		Connection to 303d			[SRv+,PRv+,NRv+,TRv+,INV-,WBF-,WBN-,STR+]
			for 9 or more continuous months annually (persistent water in a stream, ditch, lake, or other	0	
216			water body)		
217			intermittently (at least once annually, but for less than 9 months continually)	0	1
218			Not connected, or connected less than annually	0	
219	D43	Drinking Water Source	According to the ODEQ LASAR database, the AA is within:		See the ORWAP manual (section 2.2.7) for instructions on obtaining this online from
220		(DEQ)	the source area for a surface-water drinking water (DW) source	0	http://deq12.deq.state.or.us/lasar2/default.aspx [NRv+]
221			the source area for a groundwater drinking water source	0	
222			Neither of above	1	
223	D44	Groundwater Risk	The AA is (select all that apply):		[NRv+]
		Designations	within a designated Groundwater Management Area (ODEQ), see maps in Appendix A of	0	
224			ORWAP manual.		
			within a designated Sole Source Aquifer area (EPA): the North Florence Dunal Aquifer. See	0	1
			map downloadable from: http://oregonstatelands.us/DSL/WETLAND/or_wet_prot.shtml		
225					
226			NONE of above	1	
	D45		According to the PRISM Data Explorer (see ORWAP manual for instructions), annual		Obtain online as explained in Manual from:
	2.0		precipitation in the vicinity of the wetland has normally been:		http://gisdev.nacse.org/prism/nn/index.phtml
227			production in the vieling of the western had not many soon.		25th, 50th, 75th, and 90th percentiles of all points in a comprehensive spatial grid of
228			<10 inches per year	0	annual precipitation points in Oregon, for the years 1971-2000.
229			10-12 inches per year	1	[INVv+,AMv+,WBFv+,WBNv+,SBMv+,PDv+,Sens-]
230			13-19 inches per year	0	[INVV-, NINV-, TIBI V-, TBINV-, IBV-, OSINO]
231			20-47 inches per year	0	1
232			48-77 inches per year	0	1
233			>77 inches per year	0	1
	D46	County Rank for	The phosphorus loading rank of the county in which the AA is located is: (select one); see		If you don't know it, determine which county the wetland is in from the ODEQ web
	2.0		WQprob worksheet in ORWAP Supplnfo file.		site ttp://deq12.deq.state.or.us/lasar2/default.aspx as explained in Manual. Data
234		i noophordo Lodding	·		used for these rankings are from a national survey by USGS and represent the
235			top 4 in Oregon (Marion, Malheur, Umatilla, Linn)	0	combined inputs (kg of P per sq. km.) from fertilizer (2001) and livestock (average of
236 237			top 18 (see Table 6 in WQprob worksheet in file ORWAP_SuppInfo)	1	the years 1982, 1987, 1992, and 1997). [PRv+]
238			bottom 18 (see Table 6 in WQprob worksheet)	0	
	D47		bottom 4 (Josephine, Hood River, Lincoln, Clatsop)	U	Determine county from a man or culing for
	D47		The nitrogen loading rank of the county in which the AA is located is: (select one); see		Determine county from a map or online from
239		Loading	WQprob worksheet in ORWAP SuppInfo file.		http://deq12.deq.state.or.us/lasar2/default.aspx as explained in Manual. Data used
240			top 4 in Oregon (Marion, Malheur, Umatilla, Linn)	0	for these rankings are from a national survey by USGS and represent the combined
241			top 18 (see Table 7 in WQprob worksheet)	1	inputs (kg of N per sq. km.) from fertilizer, livestock, and atmospheric deposition of
242			bottom 18 (see Table 7 in WQprob worksheet)	0	N during 2001. [NRv+]
243			bottom 4 (Curry, Josephine, Lincoln, Clatsop)	0	
		these final two questions			
245	D48	Estuarine Position	The AA's relative position in the estuary is (SKIP if nontidal):		[WSv+,PR+,PD+]
			lower 1/3 (often on a bay and distant from the head-of-tide of a major river; includes most	0	
246			saline tidal wetlands)	_	
247			mid 1/3	0	
2.46			upper 1/3 (near the head-of-tide of a major river; includes most brackish and fresh tidal	0	
248			wetlands)		

	A	В	C	D	E
	D49	Salinity	The usual maximum water-surface salinity during high tide in summer in the main channel or		Refer to Estuary Salinity maps at
249			bay closest to the AA is (SKIP if nontidal):		http://oregonstatelands.us/DSL/WETLAND/or_wet_prot.shtml or (preferably)
250	Ĭ		>30 parts per thousand (undiluted seawater)	0	determine this from field measurement or from data at the ODEQ LASAR web site
251	I		5-30 ppt (mesohaline, polyhaline)	0	(see ORWAP manual for instructions on accessing those data). [SR-,PR-
252			0.5 - 5 ppt (oligohaline)	0	,CS+,OE+,FA-,PD-]
253			<0.5 ppt (fresh)	0	
			no data for nearby locations found at the ODEQ LASAR web site or from other sources	0	
254					

	A	В	С	D	E				
1		Date:06/01/12	Site Name:Bowman Dam- Riverine Wetlands		Investigator:Melanie Sharp				
2	Field F data form. ORWAP version 2.0.2. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in any shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. Although accuracy will be greater if questions are answered for the entire wetland (not limiting only to the part potentially affected by a project), most questions may be answered for just part of a wetland—the assessment area (AA). HOWEVER, questions with a W in the gray box in column D must be answered for the ENTIRE wetland of which the AA is a part.								
3	#	Indicator	Conditions	Data	Explanations, Definitions				
4		Presence of Specific Wetland Types	Does the AA contain, or is it part of, any of these wetland types? Mark "1" next to all that apply.	W					
5			Tidal wetland : receives tidal water at least once during a normal year, regardless of salinity, and dominated by emergent or woody vegetation.	0	tidal = level of surface water fluctuates every ~6 hours on a daily basis in response to tides. [All functions, as classifier]				
6			Lacustrine wetland: an undiked non-tidal wetland bordering a body of standing open water that is >20 acres.	0	open water = surface water that contains no vegetation (except perhaps floating-leaved or completely submersed species). [WBN+]				
7			Fringe wetland: an undiked "shoreline" wetland bordering persistent open water that is >3 times wider than the wetland (includes most tidal, lacustrine, large riverine, some others).	1	[WSv-, T-, FA+,FR+, WBF+]				
8			NONE of above	0					
9		Wetland Type of Conservation Concern	Does the AA contain, or is it part of, any of these wetland types? Mark "1" next to all that apply. Consult the "Rare Wetland Type" reported for the general vicinity by the Oregon Explorer web site, but be aware that those may not apply to the exact AA you have delimited.	W					
10			Bog or Fen: contains a sponge-like organic soil layer which covers most of the AA AND often has extensive cover of sedges and/or broad-leaved evergreen shrubs (e.g., <i>Ledum</i>). Often lacks tributaries, being fed mainly by groundwater and/or direct precipitation.	0	[CS+,Sens+]				
			Playa, Salt Flat, or Alkaline Lake: a non-tidal ponded water body usually having saline (salinity >1 ppt or conductivity >1000 μS) or alkaline (conductivity >2000 μS and pH >9) conditions and large seasonal water level fluctuations (if inputs-outputs unregulated). If a playa or salt flat, vegetation cover is sparse and plants typical of saline or alkaline conditions (e.g., <i>Distichlis</i> , <i>Atriplex</i>) are common.	0	See file ORWAP_SuppInfo, worksheet P_Salt for species typically occurring in tidal or saline conditions. [PR+,CS+,INV+,FA-,FR-,AM-,WBF+]				
11			Hot spring (anywhere in Oregon): a wetland where discharging groundwater in summer is >10 degrees (F) warmer than the expected water temperature.	0	[FA-]				
13			Native wet prairie (west of the Cascade crest): a seasonally inundated wetland, usually without a naturally-occurring inlet or outlet, and dominated primarily by native graminoids often including species in column E.	0	Deschampsia caespitosa, Danthonia californica, Camassia quamash, Triteleia hyacinthina, Carex densa, C. aperta, and/or C. unilateralis [PDv,CQc]				
14			Vernal pool (Willamette Valley): a seasonally inundated wetland, underlain by hardpan or claypan, with hummocky micro-relief, usually without a naturally-occurring inlet or outlet, and with native plant species distinctly different from those in slightly higher areas, and often including species in column E.	0	Downingia elegans, Isoetes nuttallii, Triteleia hyacinthina, Eleocharis spp., Eryngium petiolatum, Plagiobothrys figuratus, Plagiobothrys scouleri, Grindelia nana, Veronica peregrina, Lasthenia glaberrima, Cicendia quadrangularis, Kickxia elatine, Gnaphalium palustre, and/or Callitriche spp.[PDv]				
15			Vernal pool (Medford area): a seasonally inundated acidic wetland, underlain by hardpan, with hummocky micro-relief, usually without a naturally-occurring inlet or outlet, and having concentric rings of similar native vegetation, often including species in column E.	0	Downingia vina, Isoetes nuttalli, Pilularia americana, Triteleia hyacinthina, Eleocharis spp., Eryngium petiolatum, Plagiobothrys brachteatus, Plagiobothrys scouleri, Grindelia nana, Veronica peregrina, Alopecurus saccatus, Lasthenia californica, Deschampsia danthonioides, and/or Callitriche spp. [PDv]				

	A B	C	D	E
16		Vernal pool (Modoc basalt & Columbia Plateau): a seasonally inundated wetland, usually without a naturally-occurring inlet or outlet, located on shallow basalt bedrock and often having species in column E.	0	Blennosperma nanum, Camassia quamash, Epilobium densiflorum, Callitriche marginata, Cicendia quadrangularis, Eryngium vaseyi, Psilocarphus brevissimus, and/or Sedella pumila. [PDv]
17		Interdunal wetland (Coastal ecoregion): a seasonally inundated wetland, usually without a naturally-occurring inlet or outlet, located between sand dunes where wind has scoured the sand down to the water table (deflation plain), and often with significant cover of native species in column E.	0	Carex obnupta, Argentina egedii, Juncus Iesueurii, J. nevadensis, J. falcatus, Sisyrinchium californicum, and/or Salix hookeriana [PDv]
		Mature forested wetland (anywhere): a wetland in which mean diameter of trees (d.b.h., FACW and FAC species only) exceeds 18 inches, and/or the average age of trees exceeds 80 years, or there are >5 trees/acre with diameter >32 inches.	0	To qualify, the diameter of >18 inches must be the mean measured from at least 10 trees. [PDv]
18		Ultramafic soil wetland (mainly southwestern Oregon): a low-elevation wetland, usually with a sponge-like organic soil layer, occurring in an area with exposed serpentine or peridotite rock, and/or in soils with very low Ca:Mg ratios.	0	[PDv]
20		Wooded tidal wetlands with >30% cover of trees and shrubs. A wetland inundated at least once annually by tides and often dominated by woody plant species.	0	The plant species may include Sitka spruce, crabapple, and/or others [PDv]
21		Undiked tidal freshwater wetland: an emergent or wooded wetland inundated at least once annually by tides and with surface salinity <0.5 ppt during most of spring and summer, and which has never been diked.	0	[PDv]
22		NONE of above	1	
	s part of the site tidal? If y	res, answer next 2 questions. If no, SKIP TO # F5.		
24 F3	3 Low Marsh	The percent of the vegetated part of the AA that is "low marsh" (covered by tidal water for part of almost every day) is:		Include any natural channels within the marsh that are inundated at least once daily by tide. See file ORWAP_SuppInfo, worksheet P_LowTidal. [WS-,OE+,POL-,INV+,FA+,FR+,WBF+,WBN-,SBM-,PD-]
25 26 27		>95% of the AA	0	
26		50-95% of the AA	0	
27		25-50% of the AA	0	
28		1-25% of the AA	0	
29		<1% or none of the AA (high marsh only)	0	
30 F	4 Tidal-Nontidal Hydroconnectivity	This tidal wetland is (select one):	W	contiguous = abutting, with no major physical separation that prohibits free exchange or flow of surface water, if any is present. See diagram in Appendix A of the manual. [FA+,WBF+,WBN+,PD+]
31		contiguous to a non-tidal palustrine wetland that contains surface water at least seasonally, and mostly not separated by a dike or other barrier, allowing fish access to both wetlands during spring.	0	
32		contiguous to a non-tidal palustrine wetland that contains surface water at least seasonally, but mostly separated by a dike or other barrier, yet still allowing fish access to both wetlands during spring.	0	
22		not contiguous to a non-tidal palustrine wetland that contains surface water, but has an inflowing stream that allows fish during the springtime to access a non-tidal wetland < 1 mile upstream.	0	
33		not contiguous to a non-tidal palustrine wetland that contains surface water, but has an inflowing stream that allows fish during the springtime to access a non-tidal wetland > 1 mile upstream.	0	
34		not contiguous to a non-tidal palustrine wetland, and lacks an inflowing non-tidal stream that provides fish access to an upstream wetland that contains surface water at least seasonally.	0	
	- 1	Select one:	_	[PR-,NR-,CS-,OE+,INV+,FR-,WBF+,WBN+,PD+]
36 F5	5 Interrupted Hydroperiod			

	Α	В	С	D	E
			during 4 of the last 5 years most of the AA has been covered year-round with surface water, but	0	_
			that part went mostly dry during at least one unusual event.	-	
37					
	ĺ		during 4 of the last 5 years most of the AA has been dry year-round on the surface (i.e.,	1	
			saturated only below the surface), but during at least one unusual event most of that part was		
38			flooded, even if only briefly.		
39	i		neither of above	0	
40			unknown	0	
40		Saturated-only Wetland	No part of the AA is ever inundated (contains at least 1 inch of water above the land surface) for		[classifier for all functions]
	10	Saturateu-ority Wettanu	more than 14 consecutive days during a normal year. That is, it is a saturated-only wetland. If	U	[classifier for all furtifiers]
			true, mark "1" here, then SKIP TO F39 (Herbaceous Extent)		
			tide, filation in filete, titlett Skif 10 F37 (Herbaceous Exterit)		
41					
	F7	Seasonal Water Extent	During normal years, the percent of the AA that is inundated only seasonally (more than 14		Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully
			consecutive days but no more than 9 months, or in tidal wetlands is "high marsh" that is		inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant
			inundated by tides fewer than half the days in any month) is:		species. Vegetation may be patterned in concentric or parallel zones, as one moves outward & away from
42					the deepest part of the wetland or channel. Although useful only as a general guide, the NRCS county soil
43	1		>75% of the AA	1	survey descriptions of the predominant soil types usually includes information on flooding frequency and
44	1		50-75% of the AA	0	saturation persistence. [WS+,SR+,NR+,CS+,OE+,INV-,FA+, AM-, Sens+]
45			25-50% of the AA	0	
46			5-25% of the AA	0	
47			<5% of the AA, or none	0	
	F8	Extent of Persistent	When the AA's surface water is at its lowest annual level, the percent of the AA still containing		For tidal sites, consider the condition that would exist at annual lowest tide. Indicators of persistence may
40		Surface Water (Dry	surface water (whether obscured by vegetation or not) is:		include fish, some dragonflies, beaver, and muskrat. In the county soil survey, the NRCS descriptions of the
48		Season)	3 3		predominant soil types may include information on saturation persistence in those types. [WS-,PR-,NR-,CS-
49	1	Scasony	>95% of the AA	0	,POL-,INV+,FR+,AM+,WBF+,WBN+,SB-]
50			50-95% of the AA	0	1 OE-11101 + 1 IX + MUIT + WOINT - 20-]
51	-		25-50% of the AA	0	
52	1		1-25% of the AA	0	
			None of the above, and the AA contains or is part of a fringe wetland, SKIP to F10	1	
53					
54			None of the above, and not a fringe wetland, SKIP to F10	0	
	F9	Onsite Surface Water	When the AA's surface water is at its lowest annual level (for tidal wetlands = annual lowest		For tidal sites, consider the condition at annual lowest tide. See DSL web site for general maps of waters that
		Isolation (Dry Season)	tide), the percent of the surface water that is in or connected to flowing channels that exit the AA,		may be tidal. Swales and channels are areas that have surface flow for at least 2 consecutive days per year.
		-	compared to surface water that is outside of channels and their floodplains (e.g., in small		Swales are less distinct (broader and flatter in cross-section) than channels. [WS+, SR+,PR+,NR+,OE-,T-,
			depressions that do not connect annually to the channel if any), is:		INV+,FA-,FR+,AM+,WBF+,WBN+,Sens+]
55					
-	1		all (100%) located in channels, swales, or other areas with a surface water connection to a river,	0	
56			lake, or estuary at all times of year	J	
-			75-99% in or connected to channels, swales, or contiguous lake/ estuary, 1-25% in isolated pools	0	
57			1.5 7.75 5. Softmoded to originals, shallos, or softmydods laker ostadily, 1 2570 iii isolated pools	3	
37	1		50-75% in or connected to channels, swales, or other areas with a surface water connection to a	0	
			river, lake, or estuary at all times of year, 25-50% in isolated pools	3	
58					
50	1		25-50% in or connected to channels, swales, or other areas with a surface water connection to a	0	
			river, lake, or estuary at all times of year, 50-75% in isolated pools	3	
59					
37	1		1-25% in or connected to channels, swales, or other areas with a surface water connection to a	0	
			river, lake, or estuary at all times of year, 75-99% in isolated pools	5	
60			inter, rance, or estudity at all littles of year, 10 7770 III Isolated pools		
00	1		all located in isolated pools or a single isolated pond from which no surface water exits when	0	
61			levels are lowest	5	
01			iovois die iowest		

	Α	В	C	D	E
62	F10	Onsite Surface Water Isolation (Wet Season)	During the wettest time of a normal year, the percent of the surface water that is in or connected to ditches, swales, or flowing channels that exit the AA, compared to surface water that is in isolated pools that do not connect annually to channels or swales (if any), is:		For tidal sites, consider the condition at mean high tide. See DSL web site for general maps of waters that may be tidal. Swales and channels are areas that have surface flow for at least 2 consecutive days per year. Swales are less distinct (broader and flatter in cross-section) than channels. Sites fed by unregulated streams that descend on north-facing slopes tend to remain wet longer into the summer, especially in montane snow-fed areas.[WS+, SR+,PR+,NR+,CS+,OE-,INV+,FA-,FR+,AM+,WBF+]
63			all (100%) located in channels, swales, or in other areas with a wet-season surface connection to channels or to a contiguous lake or estuary	1	informatic show-red dieds.[W51, 5K1,1 K1,4K1,651,625,1KV1,1 A-,1 K1,AM1,WBI 1]
64			75-99% in or connected to channels, swales, or contiguous lake/ estuary, 1-25% in isolated pools	0	
65			50-75% in or connected to channels, swales, or contiguous lake/ estuary, 25-50% in isolated pools	0	
66			25-50% in or connected to channels, swales, or contiguous lake/ estuary, 50-75% in isolated pools	0	
67			1-25% in or connected to channels, swales, or contiguous lake/ estuary, 75-99% in isolated pools	0	
68			all located in isolated pools or a single isolated pond from which no surface water exits	0	
69		Predominant Water Fluctuation Range	During most years, the difference in surface water level between the driest and wettest time of year in most of the area that is not inundated year-round is:		[WS+,PR-,NR+,CS-,OE+,INV-, AM-,WBN-]
70			>6 ft change	0	
71			3-6 ft change	0	
72			1-3 ft change	1	
73			0.5 - 1 ft change	0	
74			<0.5 ft or no change (stable)	0	
75		Predominant Depth Class	When present, surface water in most of the AA is usually:		"Usually" means the majority of the weeks during which the AA is at least partly inundated. This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only
76			>6 ft deep		seasonal or temporary. If inundation in most but not all of the AA is brief, the answer will be based on the
77			2-6 ft deep		depth of the most persistently inundated part of the AA. Include surface water in channels and ditches as well
78			1-2 ft deep	0	as ponded areas. See diagram in Appendix A of the manual. For tidal sites, assess the condition as it exists
79	-		0.5 - 1 ft deep		at mean high tide. [SR+,PR+,CS-,OE-,T+,INV-,FA+,FR+,WBF-,WBN-,PD-,Sens-]
19	-		<0.5 ft deep (but >0)	1	democrating reads (entry respect for spires) from the process of
80			(<0.5 it deep (but >0)	- 1	
81	F13	Depth Class Distribution	When present, surface water in most of the AA usually consists of (select one):		Estimate these proportions by considering the gradient and microtopography of the site. See diagram in Appendix A of the manual. For tidal waters, estimate at mean high tide. [INV+,FR+,WBF+,WBN+]
82			One depth class (use the classes in F12) that comprises >90% of the AA's inundated area	0	
83			One depth class that comprises >50% of the AA's inundated area	1	
84			Neither of above	0	
85		Deep Spots	Ponded nontidal water deeper than 3 ft covers at least 1 acre or >5% of the AA during (check all that apply):		[AM+, WBN+]
86			most of the period (generally, November-April) when waterfowl are migrating or wintering, and/ or amphibians are in aquatic phases	0	
87			most of the period (generally, May-August) when waterfowl are breeding	0	
88			neither of above (no ponded water >3 ft deep is that extensive)	1	
89			impossible to tell	0	

	АВ	C	D	I				Е			
F1!		Visualize the extent and distribution of ponded open water within the AA, relative to the		INR+ (OE+.INV+	,FA+,FR+,WI	BF+.WBN+1	Е			
	With Partly Inundated Vegetation	distribution of the most dominant form of partly-submerged vegetation (herbaceous or woody, with stems and leaves >4" above the water surface). Visualize this as it occurs during May of most years. In the table to the right, first estimate the percent open water (left column) in the AA,				Cat-tail, plant sub	bulrush, o s which are merged in	partly May	partly s	er plants v submerged	in May
90		then its distribution (secondary header). Select the highest applicable number and enter it in column D. See photographs in Appendix A of manual. If the AA has no ponded water during May, score it "1." If this is a fringe wetland, assume Open Water is >70%.		v a	open vater as % of AA >70	with open water in many small patches	inter- mediate	open water in one/ few larger patches	with open water in many small patches	inter- mediate	open water in one/ few larger patches
		Note: Ponded open water is surface water that is not visibly flowing and contains no vegetation			30-70	20	16	7	14	10	4
		(except perhaps floating-leaved or completely submersed species) and is not beneath a canopy			1-30	18	14	5	11	8	2
		of trees or shrubs. For tidal sites, consider the condition at average mid-tide.			<1	1	1	1	1	1	1
91				_							
92 F1	6 Inflow	When surface water enters the AA, it enters as (select all applicable choices):		[HGM,	, Sens]						
93		flow moving in streams, ditches, other channels	0	ł							
94		surface water exchanged broadly as overflow with contiguous waters such as an estuary, lake, or river	1								
95		water pumped into or intentionally diverted to the AA, e.g., as part of a stormwater dispersion system, irrigation practice, or drainage tile outlet	0								
96		groundwater, runoff, and direct precipitation	0								
97 F1	7 Groundwater	Select one:	W				summer is wa +,AM+,HGM]	rmer than am	bient air temp	erature, answ	er "None of the above.
98		Part of the wetland contains strong evidence of groundwater discharges at the wetland surface during summer: (a) Springs are observed or are shown on Wetland Explorer map, or (b) water is cooler in summer and warmer in winter than in other local wetlands, or (c) measurements from shallow wells indicate groundwater is discharging to the wetland.	0	-[IVIX+,	03+,1+,1+	OLT,IIIVT,I A	.T,AIVIT,HUIVIJ				
		Part of the wetland has less definitive evidence of discharging groundwater during summer. Wetland has no perennial tributary and is on organic, sandy, or gravelly soil (as determined in F58) AND has one or more: (a) outflow is present and persists during most of the summer or (b) on a natural slope of >5%, or (c) very close to the base of a natural slope steeper than 15%, and longer than 300 ft, or (d) located at a geologic fault, or (e) has rust deposits, colored precipitates, or dispersible natural oil sheen, or (f) within a mile of the top of a HUC4 watershed (see Wetland Explorer for boundaries).	0								
99											
100		Neither of above is true, although some groundwater may discharge to or flow through the wetland, and wetland is in a region of eastern Oregon with mean annual precipitation of less than 20 inches.	1								
101		None of the above	0	1							
F18	8 Outflow Duration	The most durable surface water connection between the wetland and the closest contiguous	W	The co	onnection	may be via a	ditch, pipe, tid	legate, or culv	ert as well as	through a nati	ıral channel, floodplair
102		and/or downslope surface waters is:		or ove	rflow area	Do not rely	only on topog	raphic or NWI	maps to show	v this; inspect	while in field. The
103		persistent (>9 months/yr), or daily tidal exchange	1								need not occur during
104		seasonal (14 days to 9 months/yr, not necessarily consecutive)	0				hotographs in	Appendix A of	f manual. [WS	S-,SR+,PR+,N	R+,CS-
105		temporary (<14 days, not necessarily consecutive)	0	_,OE+,1	I+,FA+,FF	R+,Sens-]					
106		none the wetland lacks an outlet. If so, mark "1" here and SKIP TO F25 (Sheltering of Water).	0								
F19	9 Outflow Confinement	During major runoff events, in the places where surface water exits the wetland it is:	W				delay or reduc auses by storm				unoff events" would ,NR+,CS-

	Ι .	В	C	D	E
	Α	Б	impeded by a pipe, culvert, tidegate, narrowly breached dike, berm, beaver dam, or other	<u>D</u>	,UE+,FA+,FR+,Sens-l
			obstruction (other than natural topography), or water is pumped out of the wetland (e.g., for	U	
100			irrigation)		
108			not impeded by anything other than (possibly) natural topography	1	
109		1110111		1	
	F20	Inlet+Outlet	Either the wetland has BOTH an inlet and outlet with seasonal or persistent surface flow, or the	1	The inflow and outflow from the wetland may be via a shallow ditch, pipe, or culvert, or as overbank flow in a
110)		wetland is fringe or tidal. If so, enter "1" here and continue. If neither condition met, enter "0" here and then SKIP to F25 (Sheltering of Water).		floodplain (which counts as both an inlet and outlet). Do not rely only on topographic or NWI maps to show
			There and then SKIP to F25 (Shellering of Water).	W	this; inspect while visiting the site.
111					
	F21	Throughflow Complexity	During peak annual flow, most of the surface water that flows through the AA:		This mainly refers to surface water that moves between the inlet and outlet. Some judgment is required in
112	2				assessing straight vs. indirect flow path. See diagram in Appendix A of the manual.
			encounters little or no vegetation, boulders, or other sources of friction, or no flowing water is	1	[WS+,SR+,PR+,NR+,CS+,INV+,FA+,FR+,WBF+,WBN+]
113	4		present		
			mostly encounters herbaceous vegetation that offers little resistance, and water follows a fairly	0	
			straight path from entrance to exit (few internal channels, only slight meandering)		
114	4				
			mostly encounters herbaceous vegetation that offers little resistance and follows a fairly indirect	0	
			path from entrance to exit (non-channelized flow or many internal channels, or very braided or tightly meandering)		
115					
			encounters measurable resistance from fairly-rigid vegetation (e.g., cattail, bulrush, woody	0	
			plants) or channel-clogging debris, and follows a fairly straight path from entrance to exit.		
116	5				
			encounters measurable resistance from fairly-rigid vegetation (e.g., cattail, bulrush, woody	0	
			species) or channel-clogging debris, and follows a fairly indirect path from entrance to exit.		
117	,				
			During most of the time open water is present in the AA, vegetated areas within the AA, where		open water = surface water that contains no vegetation (except perhaps floating-leaved or completely
118	3	Width	they are contiguous to open water, are:		submersed species) when viewed from above. May include channels, ditches, ponded areas, regardless if
119			wider than the contiguous open water	0	seasonal, persistent, or temporary. For tidal areas, assess condition as it exists at mean high tide
			narrower than the contiguous open water (i.e., fringe wetlands)	1	[SRv+,PRv+,NRv+, CS+,OE-,Sens-]
120					
			The average width of vegetated area in the AA that separates adjoining uplands (if any) from		Note: For most sites larger than 10 acres and with persistent water, measure the width using aerial
121		Width	contiguous open waters (if any) is:		imagery rather than estimate in the field. For tidal areas, assess condition as it exists at mean high tide. [SR+,PR+,NR+, CS+,OE-,WBN+,Sens-]
122	2		>300 ft, or no contiguous upland or open waters (not even temporary)	0	[3R+,FR+,INR+, C3+,OL-,WDIN+,3Elis-]
123			100-300 ft	0	
124 125	1		25-100 ft	0	
125	1		5-25 ft <5 ft	0	
120		Undercut Banks	The percent of the AA's water edge, if any, that has undercut banks that are partially visible		water edge= streambank (both sides) or other edge between open water and soil. undercut= indented such
127		Gridorout Buillio	above the water is:		that surface water flows beneath a canopy layer of soil, tree roots, or sod. At tidal sites, assess this at mid-
128			>75%	0	tide. [FA+,FR+,AM+]
129			50-75%	0	•
130)		25-50%	0	
131			1-25%	0	
132	4		<1%, or no definable water edge is present	1	
133		a	cannot estimate	0	
	F25	Sheltering of Water	At mid-day in summer, the area of surface water within the AA that is shaded by herbaceous or		For tidal sites, consider the condition at mean low tide. For all sites, consider the aspect and surrounding
124			woody vegetation, incised channels, streambanks, or other features also present within the AA is:		topographic relief as well as vegetation height and density. [T+,FA+]
134			> 750/ of the water	0	
136	1		>75% of the water 50-75% of the water	0	
137	1		25-50% of the water	0	
138			5-25% of the water	0	

	Α	В	С	D	Е
139			<5% of the water	0	
140			(surface water is typically absent in summer or during low tide)	1	
141 142	F26	Abovewater Wood	The number of downed wood pieces thicker than 4 inches that remain only partly underwater during most of the spring or early summer, thus potentially serving as basking sites for turtles, birds, or frogs, is: Several	0	For tidal sites, consider the condition at mean high tide. Only the wood that is at or above the water surface is assessed because of the impracticality of assessing underwater wood accurately when using a rapid assessment method. [FA+,FR+,AM+,WBF+,SBM+]
143			Few or none, or AA never has any surface water at that time	1	
	F27	Islands	Select all that apply:	W	island = terrestrial or wetland area larger than 400 sq.ft, and smaller than 1 sq. mi, and separated from
144		isianas	,		"mainland" by water deeper than 3 ft over a distance of >50 ft during early summer. [AM+,WBF+,WBN+]
145			During early summer the wetland contains a floating vegetation mat suitable for nesting birds and isolated from the shore by water depths >3 ft. Or AA is an island with similar isolation and a gently-sloping water edge that is mostly vegetated.	0	
146			During early summer the wetland contains (or is) an island with a gently-sloping water edge, that is mostly bare and is isolated from the shore by water depths >3 ft.	0	
147			Neither of above	1	
148		Shorebird Feeding Habitats	The maximum extent of mudflats or unwooded shortgrass areas within the AA during shorebird migration and wintering (generally August through through April (and for tidal AAs, during mean low tide) is usually:		These areas must have (a) no vegetation (bare/ fallow), or herbaceous cover comprised mainly of grasses shorter than 4 inches during some part of this period, and (b) soils are saturated or are covered with <1" of water during some part of this period, and (c) no detectable surrounding slope (e.g., not the bottom of an incised dry channel), and (d) no substantial areas of shrubs or trees. See photograph in Appendix A of
149			none, or <100 sq. ft, and there are none that cover >10,000 sq. ft anywhere within 300 ft of the AA	1	manual. This addresses needs of most migratory sandpipers, plovers, stilts, avocets, curlews, and godwits. [WBF+]
150			none, or <100 sq. ft, but some that cover >10,000 are within 300 ft of the AA	0	[WDI T]
151			100-1000 sq. ft. within AA	0	
152			1000 – 10,000 sq. ft. within AA	0	
153			>10,000 sq. ft within AA	0	
154 F	F29	Waves	Which of the following is most true:		Erosive wave conditions often occur where adjoining open water has a fetch (uninterrupted distance) of
155			Wind or boats frequently generate waves of >1 ft near the AA, those waves are intercepted by the wetland, and structures behind the AA are protected from wave erosion	0	greater than approximately 1 mile in the direction of the strongest and most frequent wind. [SRv+, PD-, STR+]
156			Wind or boats frequently generate waves of >1 ft near the AA, those waves are intercepted by the wetland, but there are no structures behind the wetland	0	
157			Neither wind nor boats frequently generate waves of >1 ft near the AA	1	
158 F	F30	Vectors for Waterborne	Select all that apply:		[SRv+, FA-,FR-,AM-,PD-,STR+]
		Pests	a regularly-used boat dock is present within or contiguous to the AA	0	
160			a regularly-used boat dock is not within the AA , but there is one within 300 ft of the AA and there is a persistent or tidal surface connection between the dock and the AA	0	
161			large ships that empty ballast water are regularly present in nearby contiguous waters	0	
162			the AA has a persistent or tidal surface water connection (>9 mos./yr, via ditch, pipe, channel, tidegate, or floodplain) to a nearby perennial stream, river, lake, or estuary	1	
163			none of the above	0	
164		Non-native Aquatic Animals	The following are known or likely to have reproducing populations in this AA, its wetland, or in water bodies within 300 ft that connect to the AA at least seasonally. Select all that apply:		Assume non-native fish to be present if wetland is associated with a nearby reservoir, fish pond, or perennial stream flowing through an agricultural or residential area. Assume bullfrog, nutria, and/or carp to be present if (a) the AA contains persistent water or is flooded seasonally by an adjoining body of permanent water, and
165			non-native amphibians (e.g., bullfrog) or reptiles (e.g., red-ear slider)	0	(b) not a forested wetland, and (c) in western Oregon, elevation is lower than about 3000 ft. In the
166			carp	0	ORWAP_SuppInfo file, see Inverts_Exo worksheet for more complete list of non-native invertebrates or Oregon, and WetVerts worksheet for more complete list of fish that are not native to Oregon. You may also
		1	other non-native fish (e.g., bass, gambusia, walleye, crappie, brook trout)	1	oregon, and welvers worksheet for more complete list of fish that are not fiative to Gregori. You fill also

	Α	В	С	D	Е
		ь	non-native invertebrates (e.g., New Zealand mudsnail, mitten crab, rusty crayfish)		http://www.dfw.state.or.us/conservationstrategy/invasive_species.asp
168					INV-,FA-,FR-,AM-,CQ-
169			nutria	0	p. 17 17 1 1 1 2 1
170			none of above, or unknown	0	
	For F	32 to 34, if the stateme	nt is true, enter a "1" in column D. Otherwise that should be a "0"		
171					
	F32	Ice-free	During most years, most of the AA's surface water does not freeze, or freezes for fewer than 4	1	[WS+,PR+,NR+,CS+,OE+,FR+,WBF+,Sens-]
			continuous weeks, or surface water is absent most winters.		
172		5 1 17 1 1		0	BADA 1
	F33	Ponded Threshold	During most of the summer, the AA contains more than 0.25 acre of ponded non-tidal surface water that is deeper than 1 ft, or is within 300 ft of such an area and the intervening habitat is not	0	[WBN+]
173			developed (roads, etc.). Or nesting within the AA by ducks, geese, or swans has been proven.		
			advisiped (reads, etc.). Or hesting main the ran by addits, goess, or smalls has been proven.		
174					
	F34	No Scum	During most summers, less than 80% of the AA's water surface is covered by floating algae, duckweed, and other non-rooted aquatic plants, AND no major fish kills occur. If no surface	1	If wetland can be visited only during winter, it may not be possible to answer this question with much certainty unless local sources are contacted or indicators (e.g., dried remains of algae) are found.
			water is present in summer, mark "1" in column D.		[PR+,FA+,PD+,CQ+]
175			indice is present in summer, mark in modumin b.		
173		Submerged & Floating-	SAV (submerged & floating-leaved aquatic vegetation) occupies an annual maximum of:		SAV = herbaceous plants that characteristically grow at or below the water surface, i.e., whose leaves are
176		leaved Aquatic Vegetation			primarily and characteristically under or on the water surface during most of the part of the growing season
177		(SAV)	>95% of the surface water area	0	when surface water is present. Some species are rooted in the sediment whereas others are not. If pond lily
178			50-95% of the surface water area	0	(Nuphar) is the predominant species, consider its maximum extent only during the period when surface water
179			25-50% of the surface water area	0	is present beneath the leaves. For tidal sites, consider the condition during mean high tide. IINV+,FA+,FR+,AM+,WBF+,PDc,CQc,SENSc]
180			5-25% of the surface water area <5% of the surface water area. Mark "1" here and SKIP TO F39 (Herbaceous Extent).	0	[INV+,FA+,FK+,AIVI+,VVBF+,PDC,CQC,SENSC]
181			1 25% OF THE SURface Water area. Mark if there and SKIP TO F39 (Herbaceous Extern).	ı	
		SAV Invasive vs. Non-	The areal cover of SAV at mid-summer is comprised of:		Invasive SAV species include: Egeria densa (Brazilian elodea), Hydrilla verticillata, Myriophyllum aquaticum
	4	invasive Cover	mostly invasive SAV species (see list in column E). Mark "1" here and underline the species in	0	(parrotfeather watermilfoil), <i>Cabomba caroliniana</i> (fanwort), <i>Nymphaea odorata</i> (white pondlily). For known
183					Partition of the second
			column E. Then SKIP to F39.		distributions of these in your county, see: http://www.weedmapper.org/maps.html [PD-,CQ-,Sens-]
184			mostly non-invasive species	0	distributions of these in your county, see: http://www.weeamapper.org/maps.html [PD-,CQ-,sens-]
185			mostly non-invasive species impossible to tell	0	
185	F37	SAV Native Species	mostly non-invasive species impossible to tell Considering just the SAV species that are native:	0	alstributions of these in your county, see: http://www.weeamapper.org/maps.html [PD-,CQ-,Sens-]
185 186	F37	SAV Native Species Dominance	mostly non-invasive species impossible to tell Considering just the SAV species that are native: one or two of those species together comprise >50% of the SAV cover. Mark "1" here and write		
185	F37		mostly non-invasive species impossible to tell Considering just the SAV species that are native: one or two of those species together comprise >50% of the SAV cover. Mark "1" here and write names of dominant species in column E.	0	
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185 186 187 188 189 190 191 192 193	F37 F38 Note: wood estim majou	SAV Species Ubiquity In the next 4 questionary canopy, unless that contact herbaceous cover (ority of the last 5 years.	mostly non-invasive species impossible to tell Considering just the SAV species that are native: one or two of those species together comprise >50% of the SAV cover. Mark "1" here and write names of dominant species in column E. no two of the native SAV species together comprise >50% of the SAV cover impossible to tell Of all the SAV species in this AA: all are species that are common among Oregon's wetlands and lakes. at least one native species is a SAV plant that is not common among Oregon's wetlands and lakes, and it covers >1% of the SAV area or >100 sq. ft. See file ORWAP_SuppInfo, worksheet P_UnCom. Mark "1" in next column and write names of the species in column E. impossible to tell s, "herbaceous" does not include SAV or herbaceous plants growing under a anopy covers >80% of the vegetated part of the AA. If the AA is farmed, including crops) as it would exist under maximum cover conditions during the	0 0 0 0 0 0	[PD-, CQ-, Sens-] [PD-, CQ-, Sens-] herbaceous = forbs, graminoids, ferns, liverworts, moss. Can include crops. Do not include submersed and

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Deverbelinging (2016) Selfs Cover of grassite plants) 1	201					
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mody non-graminolitis (e.g., ficts, ferris) (59-80%) or cyaminolitis (e.g., ficts, ferris) (59-80%) non-graminolitis (59-80%) non-gramin	203				0	
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Non-native Cover Non-native Cover Non-native Cover Non-native species, of which - 10% are species considered invasive species in column E. Then SKIP to F43.	206	F41	Herbaceous Native vs.	The maximum annual areal cover of herbaceous plants is:		in the file ORWAP_SuppInfo, see P_Invas worksheet for list of invasives and P_Exo for non-native species
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at least one native species is not common among Oregon's wetlands and it covers >1% of the AA's herbaceous area or >100 sq. ft (either contiguous or scattered). See file ORWAP_Supplinfo, worksheet P_UnCom. Mark "1" in next column and write names of the species in column E. Within the AA, woody vegetation (shrubs, trees, woody vines) occupies: Note: For sites larger than 10 acres, this should be determined from aerial imagery rather than sestimated only in the field. Vines are twining or climbing plants with relatively long stems, and can be 50-95% of the vegetated AA AA	_		· ·		1	
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worksheet P_UnCom. Mark "1" in next column and write names of the species in column E. 218 F44 219 F44 220 AA 220 September 19 September 221 September 222 September 222 September 223 Woody Extent Along Water Edge 221 Woody Extent Along Water Edge 222 Water Edge 223 worksheet P_UnCom. Mark "1" in next column and write names of the species in column E. 224 Woody Extent Within the Within the AA, woody vegetation (shrubs, trees, woody vines) occupies: 225 Within the AA, woody vegetation (shrubs, trees, woody vines) occupies: 226 Within the AA, woody vegetation (shrubs, trees, woody vines) occupies: 227 September 228 Within the AA, woody vegetation (shrubs, trees, woody vines) occupies: 228 September 229 Woody Extent Along Water Edge 229 Water Edge 220 Water Edge 220 Water Edge 221 September 222 September 223 Within the AA, woody vegetation occupies: 222 September 223 September 224 Woody Extent Along Water Edge 223 September 224 September 225 S					Ü	
217 218 F44 Woody Extent Within the AA Woody Extent Within the AA Woody vegetation (shrubs, trees, woody vines) occupies: Note: For sites larger than 10 acres, this should be determined from aerial imagery rather than 95% of the vegetated part of the AA 0 estimated only in the field. Vines are twining or climbing plants with relatively long stems, and can be either woody or herbaceous. Include Himalayan blackberry. [CS+,POLc,SBM+,PDc,CQc,SENSc] 25-50% of the vegetated AA 0 either woody or herbaceous. Include Himalayan blackberry. [CS+,POLc,SBM+,PDc,CQc,SENSc] 25-5% of the vegetated AA 1 either woody or herbaceous. Include Himalayan blackberry. [SM+] SM+] SM+ SM						
F44 Woody Extent Within the AA woody vegetation (shrubs, trees, woody vines) occupies: Note: For sites larger than 10 acres, this should be determined from aerial imagery rather than						
219 AA			=			
50-95% of the vegetated AA 221 222 23 3			-			
221 25-50% of the vegetated AA 0 5-25% of the vegetated AA 0 5-25% of the vegetated AA 0 5-25% of the vegetated AA 1 1	219					
222 5.25% of the vegetated AA 0 5.25% of the vegetated AA 1 1 5.25% of the vegetated AA 1 1 5.25% of the vegetated AA 1 1 5.224 Water Edge Water Edge Specific Specif	220					Termer woody or herbaceous. Include mimarayan biackberry. [CS+,POLC,SBM+,PDC,CQC,SENSC]
223 < 5% of the vegetated AA F45 Woody Extent Along Where surface water is present during the wettest time of year, the AA's woody vegetation occupies: P45 Water Edge Occupies: P56 of the vegetated AA P47 Where surface water is present during the wettest time of year, the AA's woody vegetation occupies: P48 P49	221					
F45 Woody Extent Along Where surface water is present during the wettest time of year, the AA's woody vegetation occupies: 224 Water Edge Occupies: >95% of the area within 100 ft of the surface water 0 [SBM+]	222					
224 Water Edge occupies: 225 >95% of the area within 100 ft of the surface water 0	223	E1E			-	[CDM.]
>95% of the area within 100 ft of the surface water 0	224		-			[ουνιτ]
1225	224		Water Luge	· ·	0	
226 50-95% of the area within 100 ft of surface water 0 227 25-50% of the area within 100 ft of surface water 0	225				U	
227 25-50% of the area within 100 ft of surface water 0	226					
	227					
228 5-25% of the area within 100 ft of surface water 0	228			5-25% of the area within 100 ft of surface water	0	
<5% of the area within 100 ft of surface water; mark "1" here and SKIP TO F50 (Woody Diameter 1					1	
229 Classes).				,		
F46 Woody Distribution The woody vegetation (if any) within the AA is: "contiguous to" means separated by less than one tree height. The separation may be caused by "contiguous to" means separated by less than one tree height. The separation may be caused by "contiguous to" means separated by less than one tree height. The separation may be caused by "contiguous to" means separated by less than one tree height. The separation may be caused by "contiguous to" means separated by less than one tree height. The separation may be caused by "contiguous to" means separated by less than one tree height. The separation may be caused by "contiguous to" means separated by less than one tree height. The separation may be caused by "contiguous to" means separated by less than one tree height. The separation may be caused by "contiguous to" means separated by less than one tree height. The separation may be caused by "contiguous to" means separated by less than one tree height.	230	⊦46	Woody Distribution	The woody vegetation (if any) within the AA is:		"contiguous to" means separated by less than one tree height. The separation may be caused by

	A	В	C	D	E
$\vdash \vdash$	11	<u> </u>	clumped in fairly distinct bands or patches mostly separate from herbaceous vegetation, and	0	THEIDIACEOUS VEGETATION, PERSISTENT WATER, TOAUS, DUITUINGS, OF DATE SOII, DUITHOUSTITUDS. [SBIVI+, CQ+, SERIS+]
			most patches or bands are large (>1 acre including contiguous upland woody veg). Or nearly	ŭ	
			the entire AA is wooded. Isolated shrubs or trees are few.		
231					
231			clumped in fairly distinct bands or patches mostly separate from herbaceous vegetation, and	0	
			most patches are small (<1 acre including contiguous upland woody veg).	J	
232					
232			dispersed quite evenly amid the herbaceous vegetation, in many small patches, or many isolated	0	
222			Ishrubs or trees.	J	
233 234 F	- 47	Carrage of Manada Incombined			In the file ODWAD Constants and D. Instantian Market for list of investors and D. Fore for any method and in
234 F	47	Cover or woody invasives	Within parts of the AA having shrubs or woody vines, the areal cover is:	0	In the file ORWAP_Supplnfo, see P_Invas worksheet for list of invasives and P_Exo for non-native species
			overwhelmingly (>80%) non-natives that are categorized as invasive (see column E). Mark "1" in next column and write names of dominant invasives in column E. Then SKIP to F49.		list. Woody invasives include: Hedera helix, Ailanthus altissima, Buddleja spp., Cytisus spp., Rubus armeniacus (discolor), Rubus laciniatus, Tamarix spp., Umbellularia californica, Robinia pseudoacacia. For
225			III HEXI COIUIIIII AND WHIE HAIHES OF COITIIIIANI IIIVASIVES III COIUIIIII E. THEIT SKIP TO F49.		known distribution of some invasives in your county see: http://www.weedmapper.org/maps.html [POL-,PD-
235			overwhelmingly other non-natives. Mark "1" in next column and write names of dominant non-	0	,CQ-,Sens-]
			native shrubs/ vines in column E. Then SKIP to F49.	U	102 10010 1
201			Hative Shidds/ vines in column E. Then SKIP to F47.		
236				0	
227			mostly (50-80%) non-natives. Mark "1" in next column and write names of dominant non-native	0	
237			shrubs/ vines in column E. Then SKIP to F49. mostly (50-80%) natives	0	
239			overwhelmingly (>80%) natives	0	
240 F	1Ω	Shrub & Vine Species	Of just the shrub & woody vine species that are native:	U	[POL-,PD-,CQ-,Sens-]
2401		Dominance	one or two of the native species together comprise > 80% of the native shrub & vine cover.	0	[FOL-,FD-,CQ-,Sells-]
		Dominance	Mark "1" in next column and write names of dominant species in column E.	U	
241			iwark 1 in the k column and write names of dominant species in column E.		
211			no two of the native species together comprise >80% of the native shrub & vine cover	0	
2.42			The the of the hadre species together comprise 20070 of the hadre shidd a time cover	Ü	
242	-10	Charle 0 Mine Consider	Of all the about 0 was divided associated in this AA		[DOL DD CO Care]
243 F			Of all the shrub & woody vine species in this AA:	0	[POL-,PD-,CQ-,Sens-]
244		Ubiquity	all are species that are common among Oregon's wetlands. at least one native species is not common among Oregon's wetlands and it covers >1% of the	0	
			AA or >100 sq. ft See file ORWAP_Supplnfo, worksheet P_UnCom. Mark "1" in next column	U	
245			and write species in column E.		
245	50	Woody Diameter Classes	Select all the types occupying >5% of the wooded part of the AA or >5% of its wooded upland		wooded upland edge = where woody plants are located within one tree-height of the wetland-upland
	-50		edge if any.		boundary. Measurements are the d.b.h., which is the tree diameter at 4.5 ft above the ground. If visited only
246 247			deciduous 1-4" diameter and >3 ft tall		in winter, consider "dead standing trees" to be those that are mainly without bark. Include woody vines such
			evergreen 1-4" diameter and >3 ft tall		as Himalayan blackberry. [CS+,POL+,INV+,AM+,WBN+,SBM+,Sens+]
240			deciduous 4-9" diameter and >5 it tall	0	
250			evergreen 4-9" diameter	0	
251			dead standing 4-9" diameter	0	
248 249 250 251 252			deciduous 9-21" diameter	0	
253			evergreen 9-21" diameter	0	
254			dead standing 9-21" diameter	0	
255			deciduous >21" diameter	0	
256			evergreen >21" diameter	0	
257			dead standing >21" diameter	0	
			Lacks woody vegetation, or none of above occupy >5% of the wooded part of the AA or 5% of	1	
258			the length of the upland edge.		
F	51	N Fixers	Within the vegetated part of the AA, the cover of nitrogen-fixing plants (e.g., alder, sweetgale,		For a more complete list see file ORWAP_SuppInfo, worksheet NFIX. Do not include algae.
259			legumes) is:		
260			<1% or none	1	
261			1-25%	0	
261 262 263			25-50%	0	
263			50-75%	0	

	Α	В	С	D	E
264			>75%	0	
265	F52	Waterfowl Food Plants	The percent of the vegetated part of the AA, excluding areas that are never inundated, which contains one or more of these plants: Alisma spp., Beckmannia spp., Polygonum spp. (natives only), Potomogeton (Stuckenia) spp., Ruppia spp., Sagittaria spp., Sparganium spp., Zostera spp., is:		[WBF+,WBN+]
266			<1% or none, and none are known to occur commonly within the same wetland or within 300 ft of this AA	1	
267			<1% or none, but some are known to occur commonly within the same wetland or within 300 ft of this AA	0	
268			1-10%	0	
269			10-50%	0	
270			>50%	0	
271		History of Fire or Vegetation Removal	The last time that >5% of the AA's vegetation cover was burned or harvested for hay or timber was:		[PR-,NR-,CS-,OE+,POL-,WBF+,PD+]
272			0-12 months ago, and this occurs almost annually within part of the AA	0	
273 274 275			0-12 months ago, but was not an annual (or near-annual) event	0	
274			1-5 years ago	0	
275			>5 years ago, or never	1	
276			unknown	0	
277		Height Uniformity of Dominant Stratum	Within the stratum (herbaceous, shrub, or tree) that covers the most onsite area, the wetland plants during maximum annual cover condition are mostly:		e.g., If dominantly herbaceous, then "diverse heights" might include both short and tall forbs, some non- woody vines, and mid-height graminoids. See photograph of a vertically diverse herbaceous stratum in Appendix A of manual. [POL+,INV+,WBN+,SBM+, PD+]
278			of nearly uniform height (+ or - 20% of average)	1	
279			of very diverse heights (e.g., short & tall forbs, short & mid-height grasses)	0	
280		Bare Ground & Accumulated Plant Litter	Consider the parts of the AA that usually are not inundated in May, or are inundated by tides at least once annually. Viewed from 6 inches above the soil surface, the condition in most of this area during May is:		Estimates of "plant litter" cover should include only the litter and woody debris that would be visible from a height of 6 inches above the soil surface. Emphasis should be on plant litter that has remained from prior years ("thatch"), not recent. Erect plant stems should not be counted as plant litter, even if dead. "Bare
281			little or no (<5%) bare ground or plant litter (thatch) is visible between erect stems or under canopy. This can occur if ground surface is extensively blanketed by moss, graminoids with great stem densities, or plants with ground-hugging foliage.	Ü	ground" that is present under a tree or shrub canopy should be counted. It includes unvegetated soil, rock, sand, or mud between stems if any. See photographs in Appendix A of manual for examples. Wetlands that are dominated by annual plant species tend to have more extensive areas that are bare or covered only by plant litter, during minimum annual cover conditions. [SR-,PR-,NR-,CS-,OE-,POL-,INVAM-,SBM-,Sens+]
282			some (5-20%) bare ground or litter is visible. Herbaceous plants have moderate stem densities and do not closely hug the ground.	0	
283			much (20-50%) bare ground or plant litter is visible. Low stem density and/or tall plants with little near-ground foliage. May be mostly woody plants, woody vines, cattail, bulrush, sparse annuals.	1	
284			mostly (>50%) bare ground or accumulated plant litter. Or, during May the entire AA is constantly under water.	0	
285		Upland Edge Shape Complexity	Most of the edge between the wetland and upland is (select one):	W	See illustrations in Appendix A of the ORWAP manual . [NR+,SBM+]
286			Linear: a significant proportion of the wetland's upland edge is straight, as in wetlands bounded by partly or wholly by dikes or roads	1	
287			Convoluted: Wetland perimeter is many times longer than maximum width of the wetland, with many alcoves and indentations ("fingers")	0	
288			Intermediate: Wetland's perimeter either (a) is only mildly convoluted, or (b) mixed contains about lengths of linear and convoluted segments.	0	
289	F57	Upland Inclusions	The extent of inclusions of upland within the AA (as indicated by their topography, plants, and/or soils) is:		[NR+,AM+,SBM+]
290			Many (e.g., wetland-upland "mosaic")	0	
291			Few or none	1	

	Α	В	С	D	E
		Soil Composition in the	The composition of the soil in the soil pit at the ground surface (uppermost soil layer and		duff layer = leaves, woody material, and live or dead roots, moss that has undergone partial decomposition.
		Soil Pit	excluding the <i>duff layer</i> , see protocol in ORWAP Manual, section 2.3.2) is:		[PR,NR,CS,OE, PD, Sen]
292					
293			Loamy: includes silt, silt loam, loam, sandy loam	1	
			Clayey: includes clay, clay loam, silty clay, silty clay loam, sandy clay, sandy clay loam	0	
294					
295			Organic: includes muck, mucky peat, peat, and mucky mineral	0	
			Coarse: includes sand, loamy sand, gravel, cobble, stones, boulders, fluvents, fluvaquents,	0	
296			riverwash		
207	F59	Downed Wood	The number of downed wood pieces longer than 6 ft and with diameter >6", and not		include driftwood. [POL+,INV+,AM+,SBM+]
297 298			persistently submerged , is: Several (>5 if AA is >10 acres, or >2 for smaller AAs)	0	
299			Few or none	1	
	F60	Ground Irregularity	The number of animal burrows, mounds, hummocks, boulders, upturned trees, islands, natural		"microtopography" refers mainly to vertical relief of <1 m and is represented only by inorganic features, except
			levees, dry channels, pits, wide soil cracks, and microdepressions (in parts of the AA that lack		where plants have created depressions or mounds of soil. See photographs in Appendix A of manual for
300			persistent water) is: Several (extensive micro-topography)	1	examples. [WS+,SR+,PR+,NR+,CS+,POL+,INV+,AM+,SBM+,PD+]
301			Few or none (minimal microtopography; <1% of the area that isn't persistently inundated); e.g.,	0	
302			many flat sites having a single hydroperiod		
303			Intermediate	0	
304	F61	Internal Gradient	The gradient along most of the AA's water flow paths (both sheet and channel flow) is:		Except in isolated wetlands (no outlets), this is not the same as the shoreline slope. It is the elevational difference between highest and lowest points within the site, divided by the flow-distance between them and
305			>10%	0	converted to percent. If most of the surface water is impounded within the site, the gradient is the gradient of
306			6-10%	0	the water surface, not the gradient of the submerged substrate. See diagram in Appendix A. If available, use a clinometer to measure this. [WS-,SR-,PR-,NR-,CS-,OE+,AM-,WBF-,WBN-]
307			2-5% Flat (<2%, no slope or flow is ever apparent, or AA is an estuarine fringe wetland). Includes	0	use a cilitofficiel to fficasule titls. [ws-,5tt-,i-tt-,ivit-,cs-,oc+,Aivi-,wbi,wbiv-]
308			most depressional sites		
200	F62	Fish Access From Offsite	Small fish (e.g., stickleback, minnow) from elsewhere in the watershed can access part of this AA	1	Although incomplete, the species maps may be helpful at: http://map.streamnet.org/ or
			for at least 2 days during most years or are known to already be present onsite.		http://query.streamnet.org/ [INV-,FA+,FR+,AM-,WBF+]
309					
		-	Within the AA or within its wetland or within 300 ft of AA, there are bridges, buildings, caves, or		e.g., open buildings for barn swallows, bridges for cliff swallows, wood duck boxes, goose nesting platforms,
		Structures	ledges with openings/ crevices, well-maintained bird or bat boxes, elevated platforms, or other artificial structures suitable for nesting by some native bird or bat species.		sheltered places for bees and wasps [POL+,SBM+]
310			animola oracia de carabio for recentig e) como namo en a crecio pococo.		
		Cliffs, Banks, or Beaver	In the AA or within its wetland or within 100 ft of the AA, there are elevated terrestrial features	1	[POL+,SBM+]
			such as cliffs, stream banks, excavated pits, or pumice walls (but not riprap) that extend at least 6		
			ft nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas. Or there is evidence that beaver have used this AA (e.g., gnawed		
			limbs).		
311			,		
	F65	Visibility	The maximum percent of the wetland that is visible from the best vantage point on public roads,		[PU+]
			public parking lots, public buildings, or public paved paths that adjoin or are within 300 ft of the		
312			AA (select one) is:		
313 314			>50% 25-50%	0	
315			<25%	0	
	F66	Ownership	Most of the AA is (select one):		[PU+]
317			in public ownership	1	
318	E/3	D. I.I. A	in private ownership	0	
319	F6/	Public Access	For most of the AA, permission for access is normally given or allowed:		In all cases, this question assumes that permission for access may be limited to certain activities. [PU+]

	A	В	С	D	E
320	А	В	to anyone, mostly unrestricted	1	E
321			to anyone, but significant restrictions (e.g., limited dates, permit required)	0	
322			only on a case-by-case basis, but with few other restrictions	0	<u> </u>
522			only on a case-by-case basis, with restrictions (e.g., limited dates, permit required)	0	
323			on a sase by sase basis, man resultations (eng., ministration)	ŭ	
324			seldom or never	0	
325			(do not know)	0	
020	F68	Non-consumptive Uses -	Assuming access permission was granted, select all statements that are true of this AA as it		[PU+]
326		Actual or Potential	currently exists:		
			Walking is physically possible in >5% of the AA during most of year, e.g., free of deep water and	0	
327			dense shrub thickets	Ü	
321			All or part of the AA (or an area within sight of the AA and within 100 ft) would be physically	0	
328			accessible to people in wheelchairs, e.g., paved and flat	O	
520			Maintained roads, parking areas, or foot-trails are within 30 ft of the AA, or the AA can be	1	
220			accessed most of the year by boat		
329	F/0	0 1 1 10 1 117 11	-		four 1
	F69	Sustained Scientific Use	Plants, animals, or water in the AA have been monitored for >2 years, unrelated to any regulatory	0	[PU+]
			requirements, and data are available to the public. Or the AA is part of an area that has been		
			designated by an agency or institution as a benchmark, reference, or status-trends monitoring		
330			area.		
331			(do not know)	0	
	F70	Consumptive Uses	Recent evidence was found within the AA of the following potentially-sustainable consumptive		"Low impact" means adherence to Best Management Practices such as those defined by NRCS and other
332		(Provisioning Services)	uses. Select all that apply.		agencies. Evidence may consist of direct observation, or presence of physical evidence (e.g., recently cut
333		-	low-impact commercial timber harvest	0	stumps, fishing lures, shell cases), or communication with the land owner or manager. [PS+]
334			low-impact grazing	0	
335			commercial harvesting of hay or mushrooms	0	
336			waterfowl hunting or furbearer trapping	0	
337			fishing (including shellfish harvest)	1	
338			None of the above	0	
339	F71	Domestic Wells	Wells that currently provide drinking water are:		If unknown, assume this is true if there is an inhabited structure within the specified distance and the
340			Within 500 ft and downslope from the AA or at same elevation	0	neighborhood is known to not be connected to a municipal drinking water system (e.g., is outside an Urban
341			500-1000 ft and downslope or at same elevation	0	Growth Boundary), or if crops are irrigated annually and the site is distant from a major water body. [NRv+]
342			>1000 ft downslope, or none downslope, or AA is tidal, or no information	1	
	F72	Sediment Removal	Excessive accumulation of sediment has caused frequent problems for large boats, with shoaling		[SRv+]
			necessitating frequent dredging, in waters that are located:		
343					
344			contiguous to the AA, or <1 mile downslope from the AA	0	
345			1-5 miles downslope	1	
346	F70	Davis as totics	>5 miles downslope, or no shoaling, or no boats, or no information	0	TOT INIV AM WIDN CDM DD CO I
	F73	Devegetation	The percent of the AA's vegetation cover that normally grows taller than 4 inches but which has		[OE-,INV-,AM-,WBN-,SBM-,PD-,CQ-]
			been persistently reduced to less than that height by mowing (many times per year), plowing,		
2.47			and/or grazing by domestic or wild animals is:		
347			. 050/	0	
348 349			>95% 50-90%	0	
350			5-50%	0	
351			<5%, or grazing/ mowing does not cause the described condition	1	
	F74	Core Area 1	The part of the AA almost never visited by humans during an average year probably comprises:		Judge this based on proximity to population centers, roads, trails, accessibility of the AA to the public, wetland
	1 /4	Core Area I	The part of the AA annost hever visited by humans during an average year probably comprises.		size, usual water depth, and physical evidence of human visitation. Exclude visits that are not likely to
352			LOED/ of the AA	0	continue and/or that are not an annual occurrence, e.g., by construction or monitoring crews. See diagram in
353 354			>95% of the AA 50-95%	0	Appendix A of the manual. [AM+,WBF+,WBN+,SBM+,PD+,STR-]
334			5-50% and inhabited building is within 300 ft of the AA, or <5% and no inhabited building is within	0	11
355			300 ft of the AA	U	
223			JUU II UI IIIE MA		

A B Solution one of the above F75 Core Area 2 The part of the AA visited by humans almost daily for several weeks during an average year probably comprises: Solution one of the above F75 Core Area 2 The part of the AA visited by humans almost daily for several weeks during an average year probably comprises: Solution one of the above F75 Core Area 2 The part of the AA visited by humans almost daily for several weeks during an average year probably comprises: Solution one of the above F75 Core Area 2 The part of the AA visited by humans almost daily for several weeks during an average year probably comprises: Solution one of the above F75 Core Area 2 The part of the AA visited by humans almost daily for several weeks during an average year probably comprises: Solution one of the above F75 Core Area 2 The part of the AA visited by humans almost daily for several weeks during an average year probably comprises: Solution one of the above F76 Weed Source Along Upland Edge Along the AA's boundary with upland, the percent of the upland edge (within 10 ft of AA) that is occupied by species that are marked as invasive in the Plants worksheet is: Some of the most common invaders along upland edges sone of the most common invaders along upland edges of Orego knotweed, sweetbrier rose, Russian olive, English ivy, nightshade, ryegrass, quackgrass, false brome, bentgrass, dandelion, oxeye do annot be identified to species (e.g., winter conditions) but its gent annot be identified plant to also be invasive. If vegetation is so senses none of the upland edge (invasives apparently absent), or AA is not within 10 ft of upland The part of the AA's wetland-upland boundary, the percent of the upland that Natural land cover includes wooded areas, sagebrush, vegetated and the upland that are not likely to continue and/or that are not an monitoring crews.	n wetlands are Himalayan blackberry, pepperweed, medusahead, white clover, also, pennyroyal, bull and creeping thistles, pplnfo, worksheet P_Invas. If a plant us contains an invasive species, assume seed that apparently dominant edge species
F75 Core Area 2 The part of the AA visited by humans almost daily for several weeks during an average year probably comprises: P57	n wetlands are Himalayan blackberry, pepperweed, medusahead, white clover, alsy, pennyroyal, bull and creeping thistles, pplnfo, worksheet P_Invas. If a plant us contains an invasive species, assume seed that apparently dominant edge species
So-95% 1 5-50% 0 0 0 0 0 0 0 0 0	pepperweed, medusahead, white clover, laisy, pennyroyal, bull and creeping thistles, pplnfo, worksheet P_Invas. If a plant us contains an invasive species, assume sced that apparently dominant edge species d wetlands, prairies, as well as relatively
5-50% 5-50% 0	pepperweed, medusahead, white clover, laisy, pennyroyal, bull and creeping thistles, pplnfo, worksheet P_Invas. If a plant us contains an invasive species, assume sced that apparently dominant edge species d wetlands, prairies, as well as relatively
Some of the most common invaders along upland edges of Oregoner (Some of the upland edge) Some of the most common invaders along upland edges of Oregoner (Some of the upland edge) Some of the most common invaders along upland edges of Oregoner (Some of the upland edge) Some of the most common invaders along upland edges of Oregoner (Some of the upland edge) Some of the most common invaders along upland edges of Oregoner (Some of the upland edge of Upland Edge) Some of the upland edges of Oregoner (Some of the upland edge of Upland Edge) Some of the upland edge of Upland Edge of Upland Edge Some of the upland edge of Upland Edge of Upland Edge Some of the upland edge of Upland Edge of Upland Edge Some of the upland edge of Upland Edge of Upland Edge Some of the upland edge of Upland E	pepperweed, medusahead, white clover, laisy, pennyroyal, bull and creeping thistles, pplnfo, worksheet P_Invas. If a plant us contains an invasive species, assume sced that apparently dominant edge species d wetlands, prairies, as well as relatively
F76 Weed Source Along Upland Edge Along the AA's boundary with upland, the percent of the upland edge (within 10 ft of AA) that is occupied by species that are marked as invasive in the Plants worksheet is: Some of the most common invaders along upland edges of Orego knotweed, sweetbrier rose, Russian olive, English ivy, nightshade, ryegrass, quackgrass, false brome, bentgrass, dandelion, oxeye d. most (>50%) of the upland edge much (5-50%) of the upland edge much (5-50%) of the upland edge some (1-5%) of the upland edge some (1-5%) of the upland edge none of the upland edge (invasives apparently absent), or AA is not within 10 ft of upland TF77 Natural Land Cover in Natural Land Cover in Natural land cover includes wooded areas, sagebrush, vegetated.	pepperweed, medusahead, white clover, laisy, pennyroyal, bull and creeping thistles, pplnfo, worksheet P_Invas. If a plant us contains an invasive species, assume sced that apparently dominant edge species d wetlands, prairies, as well as relatively
Upland Edge occupied by species that are marked as invasive in the Plants worksheet is: knotweed, sweetbrier rose, Russian olive, English ivy, nightshade, ryegrass, quackgrass, false brome, bentgrass, dandelion, oxeye d. Most (>50%) of the upland edge much (5-50%) of the upland edge much (5-50%) of the upland edge mone of the upland edge mone of the upland edge (invasives apparently absent), or AA is not within 10 ft of upland that matural land cover includes wooded areas, sagebrush, vegetated. Vatural Land Cover in Upland Edge Notweed, sweetbrier rose, Russian olive, English ivy, nightshade, ryegrass, quackgrass, false brome, bentgrass, dandelion, oxeye d. Invasive continued to species (e.g., winter conditions) but its gent the unidentified plant to also be invasive. If vegetation is so senes cannot be identified even to genus, answer "none". [PD-,STR+]	pepperweed, medusahead, white clover, laisy, pennyroyal, bull and creeping thistles, pplnfo, worksheet P_Invas. If a plant us contains an invasive species, assume sced that apparently dominant edge species d wetlands, prairies, as well as relatively
much (5-50%) of the upland edge some (1-5%) of the upland edge none of the upland edge (invasives apparently absent), or AA is not within 10 ft of upland none of the upland cover in Within 100 ft upslope of the AA's wetland-upland boundary, the percent of the upland that nuch (5-50%) of the upland edge none identified to species (e.g., winter conditions) but its genu the unidentified plant to also be invasive. If vegetation is so senes cannot be identified even to genus, answer "none". [PD-,STR+] and Natural Land Cover in Within 100 ft upslope of the AA's wetland-upland boundary, the percent of the upland that Natural land cover includes wooded areas, sagebrush, vegetated	us contains an invasive species, assume sced that apparently dominant edge species d wetlands, prairies, as well as relatively
some (1-5%) of the upland edge none of the upland edge (invasives apparently absent), or AA is not within 10 ft of upland the unidentified plant to also be invasive. If vegetation is so senes cannot be identified even to genus, answer "none". [PD-,STR+] Natural Land Cover in Within 100 ft upslope of the AA's wetland-upland boundary, the percent of the upland that Natural land cover includes wooded areas, sagebrush, vegetated	d wetlands, prairies, as well as relatively
none of the upland edge (invasives apparently absent), or AA is not within 10 ft of upland 0 cannot be identified even to genus, answer "none". [PD-,STR+] 366 F77 Natural Land Cover in Within 100 ft upslope of the AA's wetland-upland boundary, the percent of the upland that Natural land cover includes wooded areas, sagebrush, vegetated	d wetlands, prairies, as well as relatively
366 F77 Natural Land Cover in Within 100 ft upslope of the AA's wetland-upland boundary, the percent of the upland that Natural land cover includes wooded areas, sagebrush, vegetated	
Buffer contains natural (not necessarily native) land cover is: unmanaged commercial lands such as hayfields, lightly grazed pastinclude water, row crops (vegetable, orchards, Christmas tree far	rms), residential areas, lawn, pavement,
368 >90%, or there is no upland boundary 0 bare soil, gravel or dirt roads. Natural land cover is not the same a	
60 to 90% frequently includes a dominance of non-native plants (e.g., ryegras	ss, Himalayan blackberry). If the entire site
370 0 is an island without an upland edge, select the last choice.	
371 5 to 30% [POL+,INV+,FA+,FR+,AM+,WBN+,SBM+,PD+,Sens-]	
372 5%	
F78 Type of Land Cover Alteration in Buffer Within 100 ft upslope of the AA's wetland-upland boundary, the upland land cover that is not natural (as defined above) is mostly: [INV-,FA-,AM-,WBN-,SBM-,PD-,STR+]	
impervious surface, e.g., paved road, parking lot, building, exposed rock 0	
bare pervious surface, e.g., dirt road, dike, dunes, recent clearcut, landslide	
cultivated row crops or orchard 0	
artificially landscaped areas or lawn 0	
grain fields, or grassland grazed or mowed to a height usually shorter than 4 inches 0	
other 0	
(buffer is >90% natural land cover or AA occupies all of an island) 0	
F79 Buffer Slope Along the AA's wetland-upland boundary and extending 100 ft uphill, the slope of the land is mostly: See diagram in Appendix A of the manual. If the described area or instead the slope between the wetland-upland boundary and the mostly:	nost extensive such feature. Disturbance
382 < 1% (flat almost no noticeable slope, or there is no upland boundary) 0 feature = building, paved area, recently cleared area, dirt road, law vineyard, annually-harvested row crops [Sens+]	wii, intensely grazeu pasture, orchard,
[263]	
384 5-30%	
385 0	
F80 Edge Slope Within 10 ft of ponded surface water (if any) in early summer, the percent of the herbaceous area (wetland or upland) that has a gentle or moderate slope (less than 5% slope) is: See diagram in Appendix A of the manual. If several isolated pool percent of their collective shorelines that has such a gentle slope.	s are present in early summer, estimate the [AM-,WBN-]
386	
387 >75% 1	
388 50-75% 0	
389 25-50% 0	
1-25% 0	
(ponded surface water in early summer covers <1% of AA, or AA is tidal, or no herbaceous vegetation is present near ponded water)	

	Α	В	С	D	E
	F81	Independently Sustainable	How likely is it that any or all of this AA will persist as a wetland (not necessarily of the same type)		If all such human activities and structures disappeared, would the site still be a wetland?
		Hydrology	if an existing dike or berm, water control structure (e.g., dam, weir), or pumping/ diversion system		[WSv,SRv,PRv,NRv,INVv,AMv,WBFv,WBNv,SBMv,PDv+]
			that now helps sustain it and is within 1 mile of the AA was removed or became inoperable?		
393					
394			Very likely, or no such feature is present (greater sustainability potential)	0	
395			Somewhat likely part but not all of the AA would remain a wetland	1	
396			Unlikely or not at all (lower sustainability potential)	0	

Site Name: Bowman Dam - Riverine Wetland	Investigator:Melanie Sharp		Date: 06/01/12	
ld S data form. ORWAP version 2.0.2				
Wetter Water Regime - Internal Causes				
In the last column, place an X next to any item that is likely to have caused a part of the AA to would be without that item or activity. (The items you check are not used automatically by ORV table beneath them).				
an impounding dam, dike, levee, weir, berm, road fill, or tidegate within or downgradient fi	rom the AA, or raising of outlet o	culvert elevation.		>
excavation within the AA, e.g., artificial pond, dead-end ditch				
excavation or reflooding of upland soils that adjoined the AA, thus expanding the area of the	e AA			
plugging of ditches or drain tile that otherwise would drain the AA (as part of intentional rest	oration, or due to lack of mainte	nance, sedimentation, etc.)		
vegetation removal (e.g., logging) within the AA				L
compaction (e.g., ruts) and/or subsidence of the AA's substrate as a result of machinery, liv	estock, or off road vehicles			L
changes not related directly to humans, e.g., beaver If any items were checked above, then for each row of the table below, assign points (3, 2, or `wetter water regime that still persists in the AA. To estimate that, contrast it with the condition automatically.		d or were no longer present. The s		
	Severe (3 points)	Medium (2 points)	Mild (1 point)	P
Spatial extent of resulting wetter condition	>95% of AA or >95% of its upland edge (if any)	5-95% of AA or 5-95% of its upland edge (if any)	<5% of AA and <5% of its upland edge (if any)	2
When most of AA's wetter condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	
Score the following 2 rows only if the wetter conditions began within past 10 years, and only for the part of the AA that got wetter.				
Inundation now vs. previously	persistent vs. seldom	persistent vs. seasonal	slightly longer or more often	Г
Average water level increase	>1 ft	6-12"	<6 inches	
* Score these 2 rows only for the part of the AA that got wetter, and only if the wetter conditions	s began within past 10 yrs		sum=	
0 if Sum= 0, (1 pt) if Sum= 1-4. (2 pt) if 5-6. (3 pt	t) if 7-8. (4 pt) if 9-10. (5 pt) if >10	final score=	
Wetter Water Regime - External Causes In the last column, place an X next to any item occurring in the CA (including channels flowin more frequently, more deeply, and/or for longer duration than it would be without that item or a CA includes all upstream areas of that river. subsidies from stormwater, wastewater effluent, septic system leakage, or irrigation water (or pavement, ditches, or drain tile in the CA that incidentally increase the transport of water into removal of timber or phreatophytes in the CA or along the AA's tributaries	ctivity. Remember that if the A			
removal of a water control structure or blockage in tributary upstream from the AA				┢
changes in the CA that are not related directly to humans, e.g., channel migration, landslide	es, forest die-offs, seismic activit	у		H
If any items were checked above, then for each row of the table below, assign points (3, 2, or 1 wetter water regime in the AA. To estimate that, contrast it with the condition if checked items) in the last column that describ	be the combined maximum effect o	f those items in creating a	
	Severe (3 pts)	Medium (2 pts)	Mild (1 pt)	F
Spatial extent of resulting wetter condition	>20% of the AA	5-20% of the AA	<5% of the AA	
When most of AA's wetter condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	
Score the following 2 rows only if the wetter conditions began within past 10 years, and only for the part of the AA that got wetter.				
Inundation now vs. previously	persistent vs. seldom	persistent vs. seasonal	slightly longer or more often	
Average water level increase	>1 ft	6-12"	<6 inches	
Average water level increase				
* Score this row only for the part of the AA that got wetter, and only if the wetter conditions beg	an within past 10 yrs		sum=	

Drier Water Regime - Internal Causes			
In the last column, place an X next to any item located within or immediately adjacent to the A less frequently, and/or for shorter duration that it would be without that item.	A, that is likely to have cause	d a part of the AA to be inundated	less extensively, less deeply,
ditches or drain tile in the AA or along its edge that accelerate outflow from the AA			
lowering or enlargement of a surface water exit point (e.g., culvert) or modification of a water	level control structure, resultin	g in quicker drainage	
accelerated downcutting or channelization of an adjacent or internal channel (cut below the hi	istorical water table level)		
deep ripping (e.g., with plows) that severs an underlying hydrologically-confining soil layer			
placement of fill material			
withdrawals (e.g., pumping) of natural surface or ground water directly out of the AA (not its tr	ibutaries)		
If any items were checked above, then for each row of the table below assign points (3, 2, or 1) is water regime in the AA. To estimate that, contrast it with the condition if checked items never oc			f those items in creating a drier
	Severe (3 pts)	Medium (2 pt)	Mild (1 pt)
Spatial extent of AA's resulting drier condition	>95% of AA or >95% of its upland edge (if any)	5-95% of AA or 5-95% of its upland edge (if any)	<5% of AA and <5% of its upland edge (if any)
When most of AA's drier condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago
Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the AA that got drier.			
Inundation now vs. previously	seldom vs. persistent	seasonal vs. persistent	slightly shorter or less often
Water level decrease	>1 ft	6-12"	<6 inches
	*		sum=
·	f Sum= 1-4. (2 pt) if 5-6. (3 pt	t) if 7-8. (4 pt) if 9-10. (5 pt) if >10). final score=
Drier Water Regime - External Causes			
In the last column, place an X next to any item within the CA (including channels flowing into the	e AA) that is likely to have cau	sed a part of the AA to be inundat	ed less extensively, less
deeply, less frequently, and/or for shorter duration that it would be without those.			
a dam, dike, levee, weir, berm, or tidegate that interferes with natural inflow to the AA			
relocation of natural tributaries whose water would otherwise reach the AA instream water withdrawals from tributaries whose water would otherwise reach the AA			
instream water witnorawais from tributaries whose water would otherwise reach the AA			
groundwater withdrawals that divert water that would otherwise reach the AA	or outumn olivo) or orono with	h high transmiration rates that are	noor the AA
groundwater withdrawals that divert water that would otherwise reach the AA proliferation of phreatophytes (woody plants with deep roots and high transpiration, e.g., junip	er, autumn olive) or crops with	n high transpiration rates that are	near the AA
groundwater withdrawals that divert water that would otherwise reach the AA proliferation of phreatophytes (woody plants with deep roots and high transpiration, e.g., junip changes not related directly to humans			
groundwater withdrawals that divert water that would otherwise reach the AA proliferation of phreatophytes (woody plants with deep roots and high transpiration, e.g., junip	n the last column that describe curred or were no longer pres	e the combined maximum effect o ent.	f those items in creating a drier
groundwater withdrawals that divert water that would otherwise reach the AA proliferation of phreatophytes (woody plants with deep roots and high transpiration, e.g., junip changes not related directly to humans If any items were checked above, then for each row of the table below assign points (3, 2, or 1) in water regime in the AA. To estimate that, contrast it with the condition if checked items never or	n the last column that describe curred or were no longer pres Severe (3 pts)	e the combined maximum effect o ent. Medium (2 pts)	f those items in creating a drier Mild (1 pt)
groundwater withdrawals that divert water that would otherwise reach the AA proliferation of phreatophytes (woody plants with deep roots and high transpiration, e.g., junip changes not related directly to humans If any items were checked above, then for each row of the table below assign points (3, 2, or 1) is water regime in the AA. To estimate that, contrast it with the condition if checked items never oc Spatial extent of AA's resulting drier condition	n the last column that describe curred or were no longer pres Severe (3 pts) >20% of the AA	e the combined maximum effect o ent. Medium (2 pts) 5-20% of the AA	f those items in creating a drier Mild (1 pt) <5% of the AA
groundwater withdrawals that divert water that would otherwise reach the AA proliferation of phreatophytes (woody plants with deep roots and high transpiration, e.g., junip changes not related directly to humans If any items were checked above, then for each row of the table below assign points (3, 2, or 1) is water regime in the AA. To estimate that, contrast it with the condition if checked items never or Spatial extent of AA's resulting drier condition When most of AA;s drier condition began	n the last column that describe curred or were no longer pres Severe (3 pts)	e the combined maximum effect o ent. Medium (2 pts)	f those items in creating a drier Mild (1 pt)
groundwater withdrawals that divert water that would otherwise reach the AA proliferation of phreatophytes (woody plants with deep roots and high transpiration, e.g., junip changes not related directly to humans If any items were checked above, then for each row of the table below assign points (3, 2, or 1) is water regime in the AA. To estimate that, contrast it with the condition if checked items never of spatial extent of AA's resulting drier condition When most of AA;s drier condition began Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the AA that got drier.	n the last column that describe curred or were no longer pressevere (3 pts) >20% of the AA <3 yrs ago	e the combined maximum effect o ent. Medium (2 pts) 5-20% of the AA 3-9 yrs ago	Mild (1 pt) <5% of the AA 10-100 yrs ago
groundwater withdrawals that divert water that would otherwise reach the AA proliferation of phreatophytes (woody plants with deep roots and high transpiration, e.g., junip changes not related directly to humans If any items were checked above, then for each row of the table below assign points (3, 2, or 1) is water regime in the AA. To estimate that, contrast it with the condition if checked items never of Spatial extent of AA's resulting drier condition When most of AA;s drier condition began Score the following 2 rows only if the drier conditions began within past 10 years, and only for	n the last column that describe curred or were no longer pres Severe (3 pts) >20% of the AA	e the combined maximum effect o ent. Medium (2 pts) 5-20% of the AA	f those items in creating a drier Mild (1 pt) <5% of the AA
groundwater withdrawals that divert water that would otherwise reach the AA proliferation of phreatophytes (woody plants with deep roots and high transpiration, e.g., junip changes not related directly to humans If any items were checked above, then for each row of the table below assign points (3, 2, or 1) is water regime in the AA. To estimate that, contrast it with the condition if checked items never of spatial extent of AA's resulting drier condition When most of AA;s drier condition began Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the AA that got drier.	n the last column that describe curred or were no longer pressevere (3 pts) >20% of the AA <3 yrs ago	e the combined maximum effect o ent. Medium (2 pts) 5-20% of the AA 3-9 yrs ago	Mild (1 pt) <5% of the AA 10-100 yrs ago

In the last column, place an X next to any litem that is likely to have caused the timing of water inputs (but not necessarily their volume) to shift by hours, days, or weeks, becoming either more muted (smaller or less frequent peaks spread over longer times, more temporal homogeneity of flow or water levels) or more flashy (larger or more frequent spikes but over shorter times). flow regulation in tributaries or water level regulation in adjoining water body, or tidegate or other control structure at water entry points that regulates inflow to the AA	5 Altered Timing of Water Inputs			•	
Increased powerent and office impervious surface in the CA straightening, dicking, deciding, and/or limiting of influency chareles in the CA discharges of incident, deciding, and/or limiting of influency chareles in the CA discharges of incident and an an analysis of the AA. To estimate that, continues if with the condition if checked florus neeres occurred or were no language present. Service (a pS) Medium (2 ps)	In the last column, place an X next to any item that is likely to have caused the timing of water				
discharges of irrigation valete to the AA, applied at times when natural runoff typically is not significant other If any items were checked above, then for each row of the table below assign points (3, 2, or 1) in the lest column that discribe the combined maximum effect of those items on the timing of water inputs to find the AA. To estimate that, contrast it with the condition if checked items never occurred or were no longer present. Severe (3,87)	flow regulation in tributaries or water level regulation in adjoining water body, or tidegate or	other control structure at water	entry points that regulates inflow to	the AA	Х
discharges of irrigation valete to the AA, applied at times when natural runoff typically is not significant other If any items were checked above, then for each row of the table below assign points (3, 2, or 1) in the lest column that discribe the combined maximum effect of those items on the timing of water inputs to find the AA. To estimate that, contrast it with the condition if checked items never occurred or were no longer present. Severe (3,87)	increased pavement and other impervious surface in the CA				Х
discharges of inigation water to the AA, applied at times when natural runoff typically is not significant other If any learns were checked above, then for each row of the table below assign points (3, 2, or 1) in the last column that describe the combined maximum effect of those items on the timing of water inputs to the AA. To estimate that, contrast it with the condition if checked items never occurred or were no longer present. Spatial extent within the AA of timing shift 995% of AA 99					
other If any items were checked above, then for each row of the lable below assign points (3, 2, or 1) in the last column that describe the combined maximum effect of those items in the lining of water inputs to the AA. To estimate that, contrast it with the condition if checked items never occurred or were no longer present. Severe (3 pts) Medium (2 pts) Midd (1 pt) Spatial extent within the AA of timing shift 99% of AA. 59% of AA. 59% of AA. 59% of AA. 33 When most of the timing shift began Score the following 2 raws any if the altered inputs began within past 10 years, and only for the part of the AA that experiences those. Input timing now vs. previously Shift of weeks shift of days shift of loavs shift of hours or minutes 0 of Sum- 0, (1 pt) if Sum- 1.4. (2 pt) if 5.6. (3 pt) if 7.8. (4 pt) if 9.10. (5 pt) if >10 Accelerated Inputs of Nutrients, Contaminants, and/or Salts In the last column place an X next to any litem – occurring in either the AA or its CA - that is likely to have accelerated the inputs of nutrients, contaminants, or salts to the AA stored days applications for controlling non-natives in the AA Stormwater or waskewater effluent (including falling selling systems), landlills If any items and part of the AA including saline seeps Needstock, dogs Needstock, dogs Needstock, dogs of the saline seeps of the AA including spot applications for controlling non-natives in the AA A changing of large amounts of wood, laves, grass clippings, trash into the AA or its tributaries artificated and page of upstage along the arms and the AA including spot applications for controlling non-natives in the AA A continger of upstage amounts of wood slaves, grass clippings, trash into the AA or its tributaries artificated and the application for controlling non-natives in the AA If any items were checked above, then for each row of the table below assign points (3, 2, or 1) in the less column that describe the combined maximum effect of those items in generating loads of nutrients, contaminants		significant			
If any items were checked above, then for each row of the table below assign points (3, 2, or 1) in the last column that describe the combined maximum effect of those items on the timing of water inputs to the AA. To estimate that, contrast It with the condition if checked items never occurred or were no longer present. Severe (3ph) Medium (2 phs) Mid (1 pt) Spatial extent within the AA of timing shift. Severe (8ph) Medium (2 phs) Mid (1 pt) Spatial extent within the AA of timing shift. Severe (8ph) Medium (2 phs) Mid (1 pt) Spatial extent within the AA of timing shift began Severe (8ph) Medium (2 phs) Mid (1 pt) Severe (8ph) Mid (1 pt) Mid (1 pt) Mid (1 pt) Mid (1 pt) Severe (8ph) Mid (1 pt) Mid (1		<u> </u>			-
Spatial extent within the AA of timing shift 975% of AA 5.95% of AA				those items on the timing of	
When most of the timing shift began Soore the following 2 rows only if the altered inputs began within past 10 years, and only for the part of the Antal experiences those. Input timing now vs. previously Flashiness or multing bocame very flashy or controlled Oil Sum-0. (1 pi) il Sum-1-4. (2 pi) il 5-6. (3 pi) il 7-8. (4 pi) il 9-10. (5 pi) il 7-10. Accelerated Inputs of Nutrients, Contaminants, and/or Salts In the last column, place an X next to any item-occurring in either the AA or its Sca-thal Is likely to have accelerated the inputs of nutrients, contaminants, or salts to the AA stormacter or wastewater either in (including flashing seles systems), landfills irrigation water discharges into the AA, including saline seeps Institute of the spin of the spin of the AA, including spin seeps Institute of the spin of the spin of the AA, including spin seeps Institute of the spin of the spin of the AA, including spin seeps Institute of the spin of the spin of the AA, including spin seeps Institute of the spin of the spin of the AA, including spin seeps Institute of the spin of the spin of the AA, including spin seeps Institute of the spin of the spin of the AA, including spin seeps Institute of the spin of the		Severe (3 pts)	Medium (2 pts)	Mild (1 pt)	
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Flashiness or multing became very flashy or controlled became well flashy or controlled became mildly flashy or controlled became mildly flashy or controlled became mildly flashy or controlled or controlled became mildly flashy or controlled or controlled or controlled became mildly flashy or controlled became mildly flashy or controlled or controlled flash or controlled became mildly flashy or controlled became were flashed for the controlled became mildly flashy or controlled final scale in the controlled became mildly flashy or salts to the AA or its controlled became mildly flashy or salts to the AA or its controlled became mildly flashy or salts to the AA or its controlled became mildly flashy or salts to the AA or its controlled became mildly flashy or salts to the AA or its controlled became mildly flashy or non-natives in the AA or its tributaries arithmeter flash or mildly flash, or many ears tributaries in the AA or its tributaries arithmeter flash or mildly flash or many ears flash or mildly flash or many	Score the following 2 rows only if the altered inputs began within past 10 years, and only for			, ,	
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* categorized by ODEQ as Water Quality Limited (303d) and toxic substances are listed by ODEQ as one reason. See item D40 in data form OF. sum= 4				runoff events mainly	
			v	'	1
0 if Sum= 0, (1 pt) if Sum= 1-3. (2 pt) if 4-5. (3 pt) if 6-7. (4 pt) if 8. (5 pt) if 9. final score= 2	* categorized by ODEQ as Water Quality Limited (303d) and toxic substances are listed by OD	EQ as one reason. See item [O40 in data form OF.	sum=	4
	0 if Sum= 0,	(1 pt) if Sum= 1-3. (2 pt) if 4-5	5. (3 pt) if 6-7. (4 pt) if 8. (5 pt) if 9.	final score=	2

S7	Excessive Sediment Loading from Contributing Area				
	In the last column, place an X next to any item present in the CA that is likely to have elevated t	he load of waterborne or wind	borne sediment reaching the AAfro	m its CA.	
	erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires				Х
	erosion from construction, in-channel machinery in the CA				
	erosion from off-road vehicles in the CA				Χ
	erosion from livestock or foot traffic in the CA				X
	stormwater or wastewater effluent				Х
	sediment from gravel mining, other mining, oil/ gas extraction accelerated channel downcutting or headcutting of tributaries due to altered land use				Х
	other human-related disturbances within the CA natural processes within the CA, e.g., streambank erosion, landslides, erosion of erosion-pro	nno coile ocnocially following fi	ro floods		-
	If any items were checked above, then for each row of the table below assign points (3, 2, or 1)			those items in increasing the	-
	amount or transport of sediment into the AA. To estimate that, contrast it with the condition if ch			those items in increasing the	
	·	Severe (3 pts)	Medium (2 pts)	Mild (1 pt)	
	Erosion in CA	extensive evidence, high	potentially (based on high-	potentially (based on low-	3
		intensity*	intensity* land use) or scattered evidence	intensity* land use) with little or no direct evidence	
	Recentness of significant soil disturbance in the CA	current & ongoing	1-12 months ago	>1 yr ago	3
	Duration of sediment inputs to the AA	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	3
	AA proximity to actual or potential sources	0-50 ft, or farther but on steep erodible slopes	50-300 ft	in other part of contributing area	2
	* high-intensity= plowing, grading, excavation, erosion with or without veg removal; low-intensi disturbance of soil or sediment	ty= veg removal only with little	or no apparent erosion or	sum=	11
	0 if Sum= 0, (1 pt)	if Sum= 1-4. (2 pt) if 5-6. (3 p	ot) if 7-8. (4 pt) if 9-10. (5 pt) if >10.	final score=	5
S8	Soil or Sediment Alteration Within the Assessment Area				
	In the last column, place an X next to any item present in the AA that is likely to have compacted	d eroded or otherwise altered	the AA's soil		1
	compaction from machinery, off-road vehicles, or mountain bikes, especially during wetter pe				_
	leveling or other grading not to the natural contour	511043			-
	tillage, plowing (but excluding disking for enhancement of native plants)				
	fill or riprap, excluding small amounts of upland soils containing organic amendments (comp	ost, etc.) or small amounts of	topsoil imported from another wetlar	nd	
	livestock and other sediment- or soil-disturbing animals, e.g., carp, nutria, wild boar, people of	on foot	<u> </u>		Χ
	excavation				
	dredging in or adjacent to the AA				
	boat traffic in or adjacent to the AA and sufficient to cause shore erosion or stir bottom sedim				-
	artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments				
	natural processes within the AA, e.g., trampling by concentrated wildlife, shore or streamban	ık erosion, landslides, normal (erosion of erosion-prone soils espec	cially following fire, floods.	Х
	If any items were checked above, then for each row of the table below assign points (3, 2, or 1) AA's soils. To estimate that, contrast it with the soil condition if checked items never occurred o		be the combined maximum effect of	those items in altering the	
		Severe (3 pts)	Medium (2 pts)	Mild (1 pt)	
	Spatial extent of altered soil	>95% of AA or >95% of its upland edge (if any)	5-95% of AA or 5-95% of its upland edge (if any)	<5% of AA and <5% of its upland edge (if any)	2
	Recentness of significant soil alteration in AA	current & ongoing	1-12 months ago	>1 yr ago	1
	Duration	long-lasting, minimal veg recovery	long-lasting but mostly revegetated	short-term, revegetated, not intense	2
	Timing of soil alteration	frequent and year-round	frequent but mostly seasonal	infrequent & mainly during scattered events	2
				sum=	7
	0 if Sum= 0. (1 pt)	if Sum= 1-4. (2 pt) if 5-6. (3 r	ot) if 7-8. (4 pt) if 9-10. (5 pt) if >10.	final coore	
			76) II 7 O. (1 pt) II 7 10. (0 pt) II 7 10.	final score=	3

Vegetated Cover Removal Within the Assess	sment Area		
In the last column, place an X next to any item present in the AA that species composition (not total cover or biomass) changed, do not che		less vegetation biomass, or less wo	od generally. If only the
clearing, logging, excepting removal of woody vegetation from nat	tive prairies		
grazing by livestock			
mowing			
herbicides, excepting spot applications for controlling non-native p	plants in the AA		
plowing, regrading			
removal of woody debris			
shading from large artificial structure, e.g., bridge, boardwalk, doc	rk		
other human-related disturbances within the AA			
natural processes concentrated within the AA, e.g., wind & wave s	scouring, windthrow, insect or disease infestations, fires,	beaver damage, natural erosion, int	ensive grazing by deer, elk,
geese.			
geese. If any items were checked above, then for each row of the table below egetation cover in the AA.	w assign points (3, 2, or 1) in the last column that descri	be the combined maximum effect of	those items on the amount of
f any items were checked above, then for each row of the table below	w assign points (3, 2, or 1) in the last column that descri	be the combined maximum effect of Medium (2 pts)	those items on the amount of Mild (1 pt)
f any items were checked above, then for each row of the table below			
f any items were checked above, then for each row of the table belowegetation cover in the AA.	Severe (3 pts)	Medium (2 pts)	Mild (1 pt)
If any items were checked above, then for each row of the table belowegetation cover in the AA.	Severe (3 pts) >95% of AA or >95% of its	Medium (2 pts) 5-95% of AA or 5-95% of its water edge	Mild (1 pt) <5% of AA and <5% of its
of any items were checked above, then for each row of the table below vegetation cover in the AA. Spatial extent of veg removal	Severe (3 pts) >95% of AA or >95% of its water edge	Medium (2 pts) 5-95% of AA or 5-95% of its water edge	Mild (1 pt) <5% of AA and <5% of its water edge if any

0 if Sum= 0, (1 pt) if Sum= 1-3. (2 pt) if 4-5. (3 pt) if 6-7. (4 pt) if 8. (5 pt) if 9.

sum= final score=

ORWAP SCORES SHEET	version 2.0.2				
Site Name: Bowman- Riverine Wetlands					
Investigator Name:	Melanie Sharp				
Date of Field Assessment:	6/1/2012				
Latitude (decimal degrees):	44.1106	Longitude (decimal degrees):	-120.7896		

	Relative	
	Effectiveness of	Relative Values
Specific Functions:	the Function	of the Function
Water Storage & Delay (WS)	3.21	2.50
Sediment Retention & Stabilization (SR)	3.65	3.19
Phosphorus Retention (PR)	3.72	3.48
Nitrate Removal & Retention (NR)	3.49	4.17
Thermoregulation (T)	1.25	3.33
Carbon Sequestration (CS)	1.81	
Organic Matter Export (OE)	8.21	
Aquatic Invertebrate Habitat (INV)	3.88	6.50
Anadromous Fish Habitat (FA)	0.00	4.43
Non-anadromous Fish Habitat (FR)	2.35	7.21
Amphibian & Reptile Habitat (AM)	2.87	4.33
Waterbird Feeding Habitat (WBF)	4.43	6.50
Waterbird Nesting Habitat (WBN)	4.24	4.33
Songbird, Raptor, & Mammal Habitat (SBM)	5.01	4.33
Pollinator Habitat (POL)	5.29	0.00
Native Plant Diversity (PD)	5.34	6.50

			1
GROUPED FUNCTIONS	Group Scores (functions)	Group Scores (values)	
Hydrologic Function (WS)	3.21	2.50	(identical to Water Storage and Delay function and value scores)
Water Quality Group (WQ)	3.72	4.17	(maximum of scores for SR, PR, NR, and T)
Carbon Sequestration (CS)	1.81		(identical to Carbon Sequestration score above)
Fish Support Group (FISH)	2.35	7.21	(maximum of scores for FA and FR)
Aquatic Support Group (AQ)	8.21		(maximum of scores for OE, AM, INV, WBF, and WBN)
Terrestrial Support Group (TERR)	5.34	6.50	(maximum of scores for PD, POL, and SBM)
Public Use & Recognition (PU)		10.00	(click on this cell to see this attribute defined)
Provisioning Services (PS)		2.00	(click on this cell to see this attribute defined)

OTHER ATTRIBUTES

Wetland Ecological Condition (CQ)	3.79
Wetland Stressors (STR)	6.67
Wetland Sensitivity (SEN)	6.67

HGM Class - Relative Probabilities (select max)	
Estuarine	0.00
Riverine	3.00
Slope	4.00
Flat	0.00
Depressional	3.33
Lacustrine	0.00

CoverPg: Basic Description of Assessment	ORWAP version 2.0.2
Site Name:	Bowman Dam - Pond
Investigator Name:	Melanie Sharp
Date of Field Assessment:	6/1/2012
County:	Crook
Nearest Town:	Prineville
Latitude (decimal degrees):	44.1102
Longitude (decimal degrees):	-120.7888
TRS, quarter/quarter section and tax lot(s)	T17S, R16E, S10
Approximate size of the Assessment Area (AA, in acres)	0.57 acres
AA as percent of entire wetland (approx.)	100%
If delineated, DSL file number (WD #) if known	
Soil Map Units within the AA (list these in approx. rank order by area, from	None- soil survey has not been completed
WSS web site or published county survey; see manual)	The Prineville Reservoir Resource Management Plan shows Redcliff-Rock Outcrop Complex – well drained non-hydric at the study area
Soil Map Units surrounding and contiguous to the AA (list all present in approx. rank order by area; see manual)	None- soil survey has not been completed
	PABHh (Palustrine, Aquatic Bed, Permanently
Cowardin Systems & Classes (indicate all present, based on field visit and/or aerial imagery):	Flooded, Diked/Impounded)
Cowardin Systems & Classes (indicate all present, based on field visit and/or aerial imagery): Systems: Palustrine =P, Riverine =R, Lacustrine =L, Estuarine =E Classes: Emergent =EM, Scrub-Shrub =SS, Forested =FO, Aquatic Bed (incl. SAV) =AB, Open Water =OW, Unconsolidated Bottom =UB, Unconsolidated Shore =US	
and/or aerial imagery): Systems: Palustrine =P, Riverine =R, Lacustrine =L, Estuarine =E Classes: Emergent =EM, Scrub-Shrub =SS, Forested =FO, Aquatic Bed (incl. SAV) =AB, Open Water =OW, Unconsolidated Bottom =UB, Unconsolidated Shore =US HGM Class (Scores worksheet will suggest a class; see manual section	Flooded, Diked/Impounded) PEMCh (Palustrine, Emergent, Seasonally Flooded,
and/or aerial imagery): Systems: Palustrine =P, Riverine =R, Lacustrine =L, Estuarine =E Classes: Emergent =EM, Scrub-Shrub =SS, Forested =FO, Aquatic Bed (incl. SAV) =AB, Open Water =OW, Unconsolidated Bottom =UB, Unconsolidated Shore =US HGM Class (Scores worksheet will suggest a class; see manual section 2.4.2)	Flooded, Diked/Impounded) PEMCh (Palustrine, Emergent, Seasonally Flooded, Diked/Impounded) Diked/Impounded) Depressional
and/or aerial imagery): Systems: Palustrine =P, Riverine =R, Lacustrine =L, Estuarine =E Classes: Emergent =EM, Scrub-Shrub =SS, Forested =FO, Aquatic Bed (incl. SAV) =AB, Open Water =OW, Unconsolidated Bottom =UB, Unconsolidated Shore =US HGM Class (Scores worksheet will suggest a class; see manual section 2.4.2) If tidal, the tidal phase during most of visit:	Flooded, Diked/Impounded) PEMCh (Palustrine, Emergent, Seasonally Flooded, Diked/Impounded)
and/or aerial imagery): Systems: Palustrine =P, Riverine =R, Lacustrine =L, Estuarine =E Classes: Emergent =EM, Scrub-Shrub =SS, Forested =FO, Aquatic Bed (incl. SAV) =AB, Open Water =OW, Unconsolidated Bottom =UB, Unconsolidated Shore =US HGM Class (Scores worksheet will suggest a class; see manual section 2.4.2) If tidal, the tidal phase during most of visit: What percent (approx.) of the wetland were you able to visit?	Flooded, Diked/Impounded) PEMCh (Palustrine, Emergent, Seasonally Flooded, Diked/Impounded) Depressional N/A 100
and/or aerial imagery): Systems: Palustrine =P, Riverine =R, Lacustrine =L, Estuarine =E Classes: Emergent =EM, Scrub-Shrub =SS, Forested =FO, Aquatic Bed (incl. SAV) =AB, Open Water =OW, Unconsolidated Bottom =UB, Unconsolidated Shore =US HGM Class (Scores worksheet will suggest a class; see manual section 2.4.2) If tidal, the tidal phase during most of visit:	Flooded, Diked/Impounded) PEMCh (Palustrine, Emergent, Seasonally Flooded, Diked/Impounded) Depressional N/A

	A	В	С	D	E				
ľ		Date: 06/01/12	Site Name: Bowman Dam- Pond		Investigator: Melanie Sharp				
1									
					agery and maps, covering an area up to within 2 miles of the AA. In the Data column, change the 0				
					ed parts of this data form. Questions whose cells in column D have a W" MUST be answered only				
	for the I	ENTIRE wetland. Italici	ized indicators pertain only to wetland values. Although some land cover types (e.g., crop	os) can vary greatly from year to year, report only the conditions known to prevail during the majority				
	of the p	ast 5 years, or if unknown	wn, then the conditions found in the available aerial imagery. Please do not atter	npt to fill	out this data form until you're familiar with the accompanying manual.				
2	"		lo mi		le de la company				
3		Indicator	Conditions	Data	Explanations, Definitions				
	D1	Mitigation Investment	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere (0= no, 1=	0	[PUv+]				
4			yes)						
5			(no information)	1					
	D2	Conservation Investment	The AA is part of or contiguous to a wetland on which public or private organizational funds	0	voluntary= WRP, CRP, land trust easements with partial public funding, etc. Locations of some sites are shown online				
			were spent to preserve, create, restore, or enhance habitat mainly as part of a voluntary		at: http://www.conservationregistry.org/ . Also, locations of OWEB-funded projects are mapped at				
			effort not used explicitly to offset impacts elsewhere (0= no, 1= yes)		http://www.oregonexplorer.info/owri_vistool/Intro.aspx [PUv+]				
6									
7			(no information)	0					
	D3	Historically Lacking Trees	This AA (a) is not along (or in the biennial floodplain of) a large stream or river where riparian	0	If the openness of the surrounding landscape is due almost entirely to agriculture and other human activities occurring				
			woodlands would be typical and (b) had a Presettlement vegetation class not dominated by		within the past century, do not answer affirmatively. This question is used as a classification variable mainly to set				
			trees as indicated by the Wetlands Explorer web site:		appropriate expectations for the extent of surrounding forest cover. [INVc,FAc,FRc,SBMc,PD,CQc,SENSc]				
			www.oregonexplorer.info/wetlands/ORWAP . Enter 1 if both are true, 0= if not.						
8									
	D4	Enclosed by Roads	Draw a circle of radius of 2 miles centered on the AA. Within that circle, do paved roads	0	See illustration in Appendix A of the manual. Consider only paved roads expected to have at least 1 vehicle per hour,				
			completely encircle the AA? (0= no, 1= yes)		and which are visible in aerial imagery regardless of width. Presence of culverts or bridges along the roads is				
					irrelevant. Do not consider other potential barriers to wildlife movement (e.g., large rivers, fields). A circle of any				
					radius can be placed on aerial imagery at http://tnm2beta.cr.usgs.gov/viewer . Click on Imagery, then GIS				
					Toolbox, Advanced, RangeRing. [AM-,SBM-,Stress+]				
9									
		Distance to Nearest Busy	The distance from the center of the AA to the nearest road with an average daytime traffic rate		Estimate the traffic rate using your judgment and considering the road width, local population, alternate routes, and				
10		Road	of at least 1 vehicle/ minute is:		other factors. [AM-,WBN-,SBM-, PD-,STR+]				
11			>1 mile	1					
12			0.5- 1 mile	0					
13			1000-2600 ft	0					
14			500-1000 ft	0					
15			100-500 ft	0					
16	DC	Farest Landanana Fisterst	<100 ft	0	Forested - weed we retain a surrently tellor them 20 ft and with , 700/ company closure. (CCN) 1				
17	D6	Forest Landscape Extent	Draw a circle of radius of 2 miles centered on the AA. Including the AA itself, the cumulative amount of forest (regardless of patch sizes) is:		Forested= woody vegetation currently taller than 20 ft, and with >70% canopy closure. [SBM+]				
18			<5% of the circle	1					
19			5 to 20%	0					
20			20 to 50%	0					
21			50 to 80%	0					
22			>80%	0	1				
			Landaria		!				

	Α	В	С	D	E
23		Forest Tract Proximity	The minimum distance from the AA edge to the closest forested tract or corridor larger than 100 acres is:	2	forested tract= a land cover patch that has >70% tree cover. A corridor is simply an elongated forested patch that is not narrower than 150 ft at any point. "Not separated" from the AA means not separated by roads or other
24			<100 ft, or 100-300 ft and not separated from the AA by stretches of open water, bare ground, lawn, or impervious surface that are wider than 150 ft.	0	features that create a tree canopy gap wider than 150 ft. [SBM+]
25			100-300 ft and separated from the AA by stretches of open water, bare ground, lawn, or impervious surface that are wider than 150 ft.	0	
26			300-1000 ft	0	
27			>1000 ft	1	
28 29 30	D8	Size of Nearby Forest	The largest patch or corridor within 0.5 mile of the AA edge that is forested (and not separated from the AA by roads, fields, etc. that create a gap wider than 150 ft), occupies:		The patch or corridor may either be entirely or only partially within the 0.5 mile distance. Disqualify any patch or corridor of forest where canopy thins to <70% cover, or where the forested patch becomes separated from the AA by a tree canopy gap of >150 ft or where the forested corridor narrows to less than 150 ft width. See diagram in
29		•	<1 acre of forest	1	Appendix A of the manual. Patch area can be measured at http://tnm2beta.cr.usgs.gov/viewer (GIS Toolbox,
30			1-10 acres	0	Advanced) or estimated online in GoogleEarth using the following guidelines:
31			10-100 acres	0	1 acre is about: 200 ft on a side (if square)
32			100-1000 acres	0	10 acres is about: 660 ft on a side
			>1000 acres	0	100 acres is about: 0.5 mile on a side
33					1000 acres is about: 1 mile on a side [SBM+]
	D9	Natural Land Cover Extent	Within a 2-mile radius measured from the center of the AA, the percent of the land that has		Natural land cover includes wooded areas, native prairies, sagebrush, vegetated wetlands, as well as relatively
34			natural land cover (see definition on right) is:		unmanaged commercial lands such as ryegrass fields, hayfields, lightly grazed pastures, timber harvest areas, and
35			<5% of the land	0	rangeland. It does not include water, row crops (vegetable, orchards, Christmas tree farms), residential areas, golf
36			5 to 20% of the land	0	courses, recreational fields, pavement, bare soil, rock, bare sand, or gravel or dirt roads. Natural land cover is not the
36 37			20 to 60% of the land	0	same as native vegetation. It frequently includes a dominance of non-native plants (e.g., cheat grass, Himalayan
38			60 to 90% of the land	0	blackberry). Although some land cover types (e.g., crops) can vary greatly from year to year, report only the
			>90% of the land	1	conditions known to prevail during the majority of the past 5 years, or if unknown, then the conditions found in the
					available aerial imagery. [AM+,SBM+)
39					
	D10	Type of Land Cover	Within a 2-mile radius measured from the center of the AA, the area that is not "natural land		[POLv-,AM+,SBM+]
40		Alteration	cover" or water is mostly:		
41		,	impervious surface, e.g., paved road, parking lot, building, exposed rock	0	
42			bare pervious surface, e.g., dirt or gravel road, plowed fields, dunes, recent clearcut or landslide	0	
43			cultivated row crops, orchards, vineyards, tree plantations	0	
43 44			artificially landscaped areas or lawn	0	
45			grassland grazed or mowed to a height usually shorter than 4 inches	0	
46			other	0	
47			(none of above; land cover is >90% natural land cover)	1	

Г	Α	В	C	D	E
\vdash		_	The minimum distance from the AA edge to the edge of the closest tract or corridor of natural		Natural land cover includes wooded areas, native prairies, sagebrush, vegetated wetlands, as well as relatively
		Cover	(not necessarily native) land cover larger than 100 acres, is:		unmanaged commercial lands such as ryegrass fields, hayfields, lightly grazed pastures, timber harvest areas, and
			(· · · · · · · · · · · · · · · · · · ·		rangeland. It does not include water, row crops (vegetable, orchards, Christmas tree farms), residential areas, golf
48					courses, recreational fields, pavement, bare soil, rock, bare sand, or gravel or dirt roads. Natural land cover is not the
			<100 ft, or the AA contains >100 acres of vegetation, or >100 acres of natural land cover is	1	same as native vegetation. It frequently includes a dominance of non-native plants (e.g., cheatgrass, Himalayan
			connected to the AA and is not separated from it by stretches of open water, bare ground,		blackberry). [POL+,INV+,AM+,SBM+,Sens-]
			lawn, or impervious surface that are wider than 150 ft.		,, , , , , , , , , , , , , , , , , , , ,
49					
50			<100 ft, but separated from the wetland by stretches of open water, bare ground, lawn, or	0	
50			impervious surface that are wider than 150 ft. 100-300 ft, and not separated from the wetland by stretches of open water, bare ground, lawn,	0	
51			or impervious surface that are wider than 150 ft.	U	
31			100-300 ft, but separated from the wetland by stretches of open water, bare ground, lawn, or	0	
52			impervious surface that are wider than 150 ft.	U	
53			NONE of the above	0	
	D12	Size of Largest Nearby	The largest patch or corridor that is natural land cover and is within 0.5 mile of the AA edge,	Ť	The patch or corridor may either be entirely or only partially within the 0.5 mile distance. Disqualify any patch or
			and not separated from the AA by roads etc. that create gaps wider than 150 ft, occupies:		corridor of natural land cover where it becomes separated from the AA by a gap of >150 ft, if the gap is comprised of
54		Land Cover	,		impervious surface, bare dirt, or lawn, or if the natural land corridor narrows to less than 150 ft.
55			<1 acre	0	[POL+,AM+,WBN+,SBM+, Sens-]
56			1-10 acres	0	1 acre is about: 200 ft on a side (if square)
56 57			10-100 acres	0	10 acres is about: 660 ft on a side
58			100-1000 acres	0	100 acres is about: 0.5 mile on a side
59			>1000 acres	1	1000 acres is about: 1 mile on a side
	D13	Local Wetland Uniqueness	Within 0.5 mile of the center of the AA, the AA and vegetation of the same form that is		This question will require field verification. In all cases, the patch may be entirely within the wetland, or may cover
	- 10		contiguous to the AA together provide (select all that apply):		only part of the wetland but extend into contiguous upland. Likewise the patches to which it is being compared may
60			· · · · · · · · · · · · · · · · · · ·		be entirely or only partially within the 0.5 mile radius. There is no minimum size limit.
61			the largest patch of currently ungrazed, unmowed, and unshaded herbaceous vegetation	0	[POLv+,AMv+,WBNv+,SBMv+,PDv+]
62			the largest patch of unshaded shrubland (excluding plantations)	0	
63			the largest patch of deciduous or evergreen trees (excluding plantations)	0	
64			NONE of above	1	
	D14	· ·	Draw a circle of radius of 2 miles centered on the AA. The amount of herbaceous openland		Herbaceous openland can include (for example) pasture, herbaceous wetland, meadow, prairie, ryegrass fields, row
65		Landscape	is:		crops, plowed land, herbaceous rangeland, golf courses, grassed airports, and hayfields but only if they are known to be in flat terrain (almost no noticeable slope). Do not include open water of lakes, ponds, or rivers. See
66			<5% of the land	1	photographs in Appendix A of manual. In dry parts of the state, croplands in flat areas are often irrigated and are
67			5 to 20%	0	distinctly greener in aerial images. [POLv+,WBF+]
68			20 to 50%	0	7,0
69 70			50 to 80% >80%	0	
70	D15	Proximity to Open Land	The distance from the AA edge to the closest patch of herbaceous openland larger than 1	U	See definition of herbaceous openland above, and photographs in Appendix A of manual. Must be in flat terrain.
71	סוט	Froximity to Open Land	acre is:		[POLv+,WBF+]
		·	<100 ft, or the AA contains >1 acre of such cover, or is contiguous to >1 acre of such cover	0	
72 73					
73			100 to 300 ft	0	
74			300 to 1000 ft	0	
75			>1000 ft	1	

	A	В	С	D	E
	D16	Ponded Water in	Draw a circle of radius of 2 miles centered on the AA. Including water ponded in the AA itself		Ponded water = any surface water that is not obviously part of a river, stream, or tidal system. Include herbaceous
		Landscape	or in a fringing water body, the amount of non-tidal water that is ponded during most of the year		(emergent) wetlands larger than 1 acre if they are inundated and water is ponded at least seasonally. Also include
76			is:		waters such as sloughs that are ponded most of the year but connected seasonally to rivers. Consult the online
77			<5% of the circle, located in 5 or fewer ponds or lakes	0	wetland maps at Wetland Explorer and note wetlands that are not obviously intersected by streams and are not
78			<5% of the circle, located in >5 ponds or lakes	0	estuarine [AM+,WBF+,WBN+,SBM+,Sens-]
78 79			5 to 30%, located in 10 or fewer ponds or lakes	1	
80	1		5 to 30%, located in >10 ponds or lakes	0	
81			>30%, located in 15 or fewer ponds or lakes	0	
82			>30%, located in >15 ponds or lakes	0	
	D17	Ponded Water Proximity	The minimum distance from the AA edge to the closest non-tidal wetland, pond, or lake that is		If multiple smaller water bodies are separated by <150 ft they may be combined when evaluating acreage.
			larger than 1 acre, is ponded most of the year, and is not part of the same associated		"Uninterrupted" means no impervious surfaces wider than 150 ft interrupt the corridor. "Natural" land corridor means a
83			wetland, pond, or lake, is:		corridor comprised of natural land cover as defined in D9 above. Consult wetland maps, considering only those
84	1		<300 ft, and connected with a natural land corridor	0	polygons whose water regime may be "permanent," "intermittently exposed," or "semipermanent" (codes F, G, or H on
85			<300 ft, but no uninterrupted natural land corridor	0	NWI maps). [AM+,WBF+,WBN+,SBM+,Sens-]
86	-		300-1000 ft, and connected with a natural land corridor	0	
87			300-1000 ft, but no uninterrupted natural land corridor	1	
88			>1000 ft, and connected with a natural land corridor	0	
89			>1000 ft, but no uninterrupted natural land corridor	0	
		Large Ponded Water	The distance from the AA edge to the closest (but separate) non-tidal body of water that is		If multiple smaller water bodies are separated by <150 ft they may be combined when evaluating acreage. Consult
		Proximity	ponded during most of the year and is larger than 20 acres (about 1000 ft on a side) is:		wetland maps, considering only those polygons whose water regime may be "permanent," "intermittently exposed," or
90					"semipermanent" (codes F, G, or H on NWI maps). [WBF+,WBN+,Sens-]
91			<1 mile	1	
92 93			1-5 miles	0	
			>5 miles	0	
	D19	Tidal Proximity	The distance from the AA edge to the closest tidal body of water is:		[CS+,WBF+]
95			<1 mile	0	
96			1-5 miles	0	
97			>5 miles	1	
	D20	Upslope Soil Erodibility	Using the Web Soil Survey procedure described in the ORWAP manual, the rating of the soil		See the ORWAP manual for instructions on how to obtain this information online. [SRv+, Sens+]
		Risk	map unit which occupies the largest percentage of the zone 200 ft uphill from the AA is:		
98					
99			very severe	0	
100 101			severe	0	
101			moderate	0	
102			slight	0	
103			(could not determine)	1	

	A	В	С	D	Е
	D21	Extent of Dominant	Using the Web Soil Survey AOI tool to measure it, what is the area of the largest patch of		When drawing the polygon around the patch, exclude vegetation of the same patch type if separated by a gap
		Vegetation Class in	emergent, shrub, or forest vegetation within the entire wetland of which the AA is a part?		created by open water, a road, dike, or upland that is wider than 150 ft. [WBF+, WBN+, SBM+, POL+, Sens-]
		Wetland	Use just the dominant class. See instructions in last column.		
104				_	
105			<0.1 acre	0	
106			0.1 - 1 acre	1	
106 107 108 109			1 to 10 acres	0	
108			10 to 100 acres	0	
109			100 to 1000 acres	0	
			>1000 acres	0	
	D22	Wetland Size Uniqueness	From the Wetlands Explorer web site (see Manual), note the 12-digit code number for this		"of its type" means Cowardin system and class. First determine size importance in HUC6 and if criteria met, then also
		in Watershed	wetland's HUC6 (Hydrologic Unit Code, i.e., watershed). Then turn to the HUC4, HUC5, and		screen for importance in HUC5 and if met then in HUC4. Alternatively, instead of checking the worksheets, you may
			HUC6 worksheets in the ORWAP_Supplnfo file. Compare the extent of the wetland's		go to the Wetland Explorer web site, locate this wetland, activate the boundaries for wetlands plus the HUC4, 5, and 6,
			dominant vegetation form (from above) with that of the largest wetlands of the same class in		and then determine visually if this is the largest wetland of its class. Note that data are lacking for some HUCs. Also
			the same HUC4 (first 8 digits), the same HUC5 (first 10 digits), and the same HUC6 (12 digits).		note that a HUC4 is the same as an 8-digit HUC, a HUC5 is the same as a 10-digit HUC, and a HUC6 is the same as
			Enter "1" for all that apply below:		a 12-digit HUC. [WBFv+, WBNv+, SBMv+]
111					
			the vegetated part of this wetland is as large or larger than any of its class mapped in its HUC4	0	
112			watershed	_	
			the vegetated part of this wetland is as large or larger than any of its class mapped in its HUC5	0	
113			watershed		
			the vegetated part of this wetland is as large or larger than any of its class mapped in its HUC6	0	
114			watershed		
115 116			none of above	0	
		14/ // / 4/ / 2	data are inadequate (NWI mapping not >90% completed in HUC)	1	
	D23	Wetland Number &	Turn to the HUCbest worksheet in the ORWAP_SuppInfo file. Using the HUC code noted		"type diversity" was based on Cowardin system and class (e.g., Palustrine emergent). Note that data are lacking for
		Diversity Uniqueness	from the web site, is this AA located in one of the HUCs that are listed as having a large		some HUCs. Because the diversity of types, number of wetlands, and proportional area of wetlands are highly
			diversity of wetland types relative to area of wetlands (column 3), or a large number (column 4)		intercorrelated, the criteria used to define "large" were based on the residuals of regression of those variables against
			or area (column 5) of wetlands relative to area of the HUC? Enter "1" for all that apply below:		wetland area or numbers in the associated HUC. Thus, the relative rather than the absolute number of types or
					number of wetlands in the HUC was the basis for judging "large," and the top 5% of the residuals was used to identify
117					the most outstanding wetlands in each category. [AM+, WBF+, WBN,+ SBM]+
118 119 120 121		<u>'</u>	yes, for the HUC4 watershed	0	
119			yes, for the HUC5 watershed	0	
120			yes, for the HUC6 watershed	0	
121			none of above	0	
122			data are inadequate (NWI mapping not completed in HUC)	1	

	A	В	С	D	E
			ng questions, you must obtain specific information from web sites or agencies as		
			ne last column (E). In a few cases you may need to also examine aerial imagery.		
			e the 0 (false) to a 1 (true) for the best choice, or for multiple choices where		
	allowed	and so indicated.			
123					
124		Historical Hydrologic Connectivity	Compared to extent of wetland that may have been originally present at this location (just prior to settlement in 1851), the current wetland is:	W	"Originally present" means immediately prior to widespread settlement of the region by western cultures (generally, about 1850). See ORWAP manual (section 2.2.8) for instructions on how to see hydric soils in the vicinity. If
125			same size and boundaries, approximately. For example, wetland boundary may be nearly identical to hydric soil boundary	0	the hydric soil map units that intersect the wetland are together much larger than the wetland, assume fragmentation has occurred. If possible, also see maps of pre-settlement vegetation (available from ORNHIC for parts of Oregon), and topography. [CQ+]
126			smaller (50-99% of the original size) and/or severed (by roads, dikes, drained soils, etc) from a few historically connected wetlands that may no longer exist. Soil map may show hydric soil extending somewhat beyond current wetland boundary.	1	
127			much smaller (<50% of the original size) and/or extensively severed (by roads, dikes, drained soils) from many historically connected wetlands that may no longer exist. Soil map may show hydric soil extending far beyond current wetland boundary.	0	
127			larger (due to damming of stream or runoff, excavation, removal of obstructions, irrigation, etc. that floods soils not mapped as hydric) or has been connected to wetlands from which it existed in isolation just prior to settlement.	0	
128			no unablemad in luminos de la constante de la	0	
			no wetland is known to have been present at this location originally (no hydric soil is mapped and presettlement vegetation was not wetland; the entire wetland may have resulted from impoundment, excavation, or regrading of upland soils)	U	
129					
130		Special Conservation Designations of the Wetland or Local Area	Go to the Oregon Wetlands Explorer web site or other sources noted below and use those to help determine each of the following:		See section 2.2.8 of the ORWAP manual.
		TOTAL OF ECONOMICS	a) the AA is within or is connected to (at least seasonally) a stream or other water body within 0.5 mile that has been designated as Essential Indigenous Anadromous Salmonid Habitat (ESH)	0	You must use information not contained on the Wetlands Explorer web site to determine if such a connection exists at least seasonally. If no mapped ESH is near the AA but ODFW has confirmed the accessibility of the AA by salmonids and the presence of salmonids in nearby waters, this question may be answered affirmatively. Many potential blockages along streams are shown in maps that may be downloaded from: http://nrimp.dfw.state.or.us/nrimp/default.aspx?pn=fishbarriermaps
131					
122			 b) the AA is within or contiguous to a Special Protected Area managed by a conservation group or designated as specially protected for conservation by a state or federal resource agency, 	1	This includes BLM Area of Critical Environmental Concern (ACEC) or Outstanding Natural Area (ONA), Federal Research Natural Area (RNA) or Special Interest Area (SIA), or Natural Heritage Conservation (NHCA), Land Trust and Nature Conservancy Preserves, and others.
132			c) the AA is within or contiguous to a Wetland Priority Area as determined partly by ODFW	0	As recognized by the Oregon Wildlife Conservation Strategy or the Oregon Natural Heritage Program
133			d) the AA is within an IBA (Important Bird Area, as officially designated) and listed in the IBA	0	
134			worksheet in the ORWAP_Supplinfo file	U	
135			NONE of above	0	

	A	В	С	D	E
\Box	D26	Non-anadromous Fish	According to the Wetlands Explorer web site, the score for occurrences of rare non-		Species include Pit-Klamath brook lamprey (S3), Miller Lake lamprey (S1), Klamath lamprey (S3), Malheur mottled
136		Species of Conservation	anadromous fish species in the vicinity of this AA is:		sculpin (S3), Margined sculpin (S3), Slender sculpin (S3), Alvord chub (S2), Tui chub (S), Borax Lake chub (S1),
130		Concern	high (≥ 0.75 for maximum score, or ≥ 0.90 for this group's score sum), or there is a recent	0	Speckled dace (SS), Oregon chub (S2), Umpqua chub (S2), Modoc sucker (S1), Klamath smallscale sucker (SS),
			(within 5 yrs) onsite observation of any of these species by a qualified observer under	U	Warner sucker (S1), Shortnose sucker (S1), Pit Sculpin (S1), Klamath Lake Sculpin (S3), Bull Trout (S3), Blue Chub
137			conditions similar to what now occur		(S3), Umpqua Dace (S3), Lahontan Redside (S2), Klamath Largescale Sucker (S3), Tahoe Sucker (S1), Lost River
138			intermediate (i.e., not as described above or below)	0	Sucker (S1), Sacramento Perch (S3). Note that for some of these species, only specific geographic populations are designated. S1 is the most imperiled, S3 less so, according to ratings by the Oregon Natural Heritage
130			low (≤ 0.33 for both the maximum score this group's score sum, but not 0 for both)	0	Information Center. [FRv+]
139					
140			zero for both this group's maximum and its sum score, and no recent onsite observation of these species by a qualified observer under conditions similar to what now occur	1	
110	D27	Invertebrate Species of	According to the Wetlands Explorer web site, the score for occurrences of rare invertebrate		
141		Conservation Concern	species in the vicinity of this AA is:		
			high (≥ 0.75 for maximum score, or for this group's score sum), or there is a recent onsite	0	
			observation of any of these species by a qualified observer under conditions similar to what		
142			now occur		
143			low (< 0.75 for maximum score AND for this group's score sum, but not 0 for both)	0	
			zero for both this group's maximum and its sum score, and no recent onsite observation of	1	
			these species by a qualified observer under conditions similar to what now occur		
144					
	D28	Amphibian or Reptile of	According to the Wetlands Explorer web site, the score for occurrences of rare amphibian or		Species include: Painted Turtle (S2), Northwestern Pond Turtle (S2), Clouded Salamander (S3), Oregon Slender
145		Conservation Concern	reptile species in the vicinity of this AA is:		Salamander (S2), Larch Mountain Salamander (S2), Siskiyou Mountains Salamander (S2), Cope's Giant Salamander
			high (≥ 0.60 for maximum score, or >0.90 for score sum), or there is a recent onsite	0	(S2), Cascade Torrent Salamander (S3), Columbia Torrent Salamander (S3), Coastal Tailed Frog (S3), Inland Tailed
146			observation of any of these species by a qualified observer under conditions similar to what now occur		Frog (S2), Northern Red-legged Frog (S3), Foothill Yellow-legged Frog (S2), Cascades Frog (S3), Northern Leopard Frog (S1), Oregon Spotted Frog (S2), Columbia Spotted Frog (S2), Great Basin Back-collared Lizard (S3), Desert
146 147			intermediate (i.e., not as described above or below)	0	Horned Lizard (S3), Night Snake (S3), Common Kingsnake (S3), Ground Snake (S3). [AMv+]
148			low (≤ 0.21 for maximum score AND <0.15 for score sum, but not 0 for both)	0	Tionica Eleana (00), Night Orland (00), Common Ningshake (00), Croana Orland (00). [11117-]
110			zero for both this group's maximum and its sum score, and no recent onsite observation of	1	
			these species by a qualified observer under conditions similar to what now occur	·	
149					
	D29	Nesting Waterbird	According to the Wetlands Explorer web site, the score for occurrences of rare nesting		Species include: Red-necked Grebe (S1), Am. White Pelican (S2), Snowy Egret (S2), Barrow's Goldeneye (S3),
150		Species of Conservation	waterbird species in the vicinity of this AA is:		Bufflehead (S2), Yellow Rail (S1), Sandhill Crane (S3), Snowy Plover (S2), Black-necked Stilt (SS), Long-billed Curlew
		Concern	high (≥ 0.60 for maximum score, or ≥1.00 for this group's score sum), or there is a recent	0	(S3), Franklin's Gull (S2), Caspian Tern (SS). [WBNv+]
			onsite observation of any of these species by a qualified observer under conditions similar to		
151			what now occur		
152			intermediate (i.e., not as described above or below)	0	
153			low (≤ 0.09 for maximum score and for score sum, but not 0 for both) zero for both this group's maximum and its sum score, and no recent onsite observation of	0	
			these species by a qualified observer under conditions similar to what now occur		
154			areae species by a qualified observer under containing similar to what now occur		
	D30	Feeding (Non-breeding)	According to the Wetlands Explorer web site, the score for occurrences of rare non-breeding		"Non-breeding" mainly refers to waterbird feeding during migration and winter. [WBFv+]
155		Waterbird Species of	(feeding) waterbird species in the vicinity of this AA is:		
		Conservation Concern	high (≥ 0.33 for maximum score, or there is a recent onsite observation of any of these species	0	
			by a qualified observer under conditions similar to what now occur		
156			1(40.20 frame shows a sent frame shows a little	^	
157			low (< 0.33 for maximum score and for score sum, but not 0 for both)	0	
			zero for both this group's maximum and its sum score, and no recent onsite observation of these species by a qualified observer under conditions similar to what now occur		
150			These species by a qualified observer under confutions similar to what now occul		
158					

	A	В	С	D	Е
	D31	Songbird, Raptor,	According to the Wetlands Explorer web site, the score for occurrences of rare songbird,		Species include: Bald Eagle (SS), Northern Goshawk (S3), Swainson's Hawk (S3), Ferruginous Hawk (S3), Peregrine
159		Mammal Species of	raptor, or mammal species in the vicinity of this AA is:		Falcon (S1), Band-tailed Pigeon (S3), Flammulated Owl (S3), Burrowing Owl (S3), Spotted Owl (S3), Great Gray Owl
		Conservation Concern	high (≥ 0.60 for maximum score, or >1.13 for score sum), or there is a recent onsite	0	(S3), Short-Eared Owl (SS), Common Nighthawk (SS), Lewis's Woodpecker (S3), White-Headed Woodpecker (S2),
			observation of any of these species by a qualified observer under conditions similar to what		Black-Backed Woodpecker (S3), American Three-toed Woodpecker (S3), Pileated Woodpecker (SS), Olive-sided Flycatcher (S3), Willow Flycatcher (SS), Horned Lark (SS), Purple Martin (S2), White-breasted (Slender-billed)
160			now occur		Nuthatch (SS), Blue-gray Gnatcatcher (S3), Varied Thrush (SS), Loggerhead Shrike (S3), Yellow-breasted Chat (SS),
161			intermediate (i.e., not as described above or below)	0	Chipping Sparrow (SS), Brewer's Sparrow (SS), Vesper Sparrow (SS), Sage Sparrow (SS), Grasshopper Sparrow
101			low (≤ 0.09 for maximum score AND <0.13 for score sum, but not 0 for both)	0	(S2), Western Meadowlark (SS), Fringed Myotis (S2), Long-Legged Myotis (S3), California Myotis (S3), Silver-haired
162			,		Bat (S3), Hoary Bat (S3), Spotted Bat (S2), Townsend's Big-eared Bat (S2), Pallid Bat (S2), Red Tree Vole (S3), Kit
102			zero for both this group's maximum and its sum score, and no recent onsite observation of	1	Fox (S1), Ringtail (S3), American Marten (S3), Fisher (S2), Columbian White-Tailed Deer (SS) . [SBMv+]
			these species by a qualified observer under conditions similar to what now occur		
163	200	84 + 6			TOD 1
164	D32	Plant Species of Conservation Concern	According to the Wetlands Explorer web site, the score for occurrences of rare plant species in		[PDv+]
104		CUISEI VALIUN CUNCEIN	the vicinity of this AA is: high (≥ 0.75 for maximum score, or > 4.00 for score sum), or there is a recent onsite	0	
			observation of any of these species by a qualified observer under conditions similar to what	U	
165			now occur		
166			intermediate (i.e., not as described above or below)	0	
			low (≤ 0.12 for maximum score AND < 0.20 for score sum, but not 0 for both)	0	
167			zero for both this group's maximum and its sum score, and no recent onsite observation of	1	
			these species by a qualified observer under conditions similar to what now occur		
168			a decision by a qualified observer and obser		
169	D33	Floodable Property	According to the Wetlands Explorer web site:		Do not consider pasture or hayfields to be "cropland." See the ORWAP manual for instructions on how to obtain this
107		,,,,,	The AA is tidal, or is either (a) not within a 100-yr floodplain of a river, or (b) there are no	0	information online at http://www.oregonexplorer.info/wetlands/ORWAP [WSv+]
			inhabited buildings or cropland within 2 miles downslope that are within the 100-yr floodplain.	v	
170			Mark "1" then SKIP TO D35.		
			Inhabited buildings within 1 mile downslope from the AA also are within the 100-yr floodplain	0	
171					
			Croplands but no inhabited buildings are within 1 mile downslope from the AA, and that	0	
172			cropland is also within the 100-yr floodplain	0	
173			Inhabited buildings within 1-2 miles downslope from the AA are also are within the 100-yr floodplain	0	
173			Croplands but no inhabited buildings are within 1-2 miles downslope from the AA, and that	0	
174			cropland is also within the 100-yr floodplain		
			No floodplain data are available, and damage from river floods has not been known to have	1	
			occurred within 2 miles downgradient. Mark "1" then SKIP to D35.		
175					
	D34	Downslope Storage			"Seasonally ponded areas" includes (for example) detention ponds, reservoirs, and depressional wetlands [WSv-]
176			Between the AA and any floodable buildings or cropland located within 2 miles downslope:		
			river flow is regulated and there are many seasonally ponded areas capable of storing water.	0	
177					
			river flow is regulated or there are many seasonally ponded areas capable of storing water.	0	
178			NOVE (III)		
179			NONE of the above	0	

	Α	В	С	D	E
$\vdash \vdash \vdash$	D35	Relative Elevation in	According to Wetlands Explorer map showing this AA's position within its HUC4 (8-digit)	ע	1) Which end of the HUC4 is the bottom? Where streams join, the "V" that they form on the map points towards
		Watershed	watershed, the AA is [see last column and Manual for specific guidance]:		bottom of the HUC.
100					2) If the AA is closer to the HUC4's outlet than to its upper end, and is closer to the river or large stream that exits at
180			in the upper one-third of its watershed	1	the bottom of the HUC4 than it is to the boundary (margin) of the HUC4, then check "lower 1/3" If not near that river,
101			in the upper one-third of its watershed	- 1	check "middle 1/3".
181			in the middle one-third of its watershed	0	3) If the AA is not in a 100-yr floodplain, is closer to the HUC4 upper end than to its outlet, and is closer to the
102			in the middle one-third of its watershed	U	boundary (margin) of the HUC4 than to the river or large stream that exits at the bottom of the HUC4, then check
182			in the lower one-third of its watershed	0	"upper 1/3"
183			in the lower one-time of its watersneed	U	4) For all other conditions, check "middle 1/3".
	D36	Contributing Area (CA)	Based on the definition and protocol in the ORWAP manual, the area of the wetland of	W	The CA is basically the upslope area that has the potential to deliver water to the wetland. The CA boundary typically
		Percent	which this AA is a part, relative to the wetland's contributing area (CA) is:		does not cross any streams or ditches except the one at the wetland outlet (if any). Remember that if the wetland is
184					flooded as little as once every 2 years by river flow, the CA includes all upslope areas that feed that river. If
			<1% of its CA (true if wetland is tidal, or along major river, or has many tributaries, or gets	1	the wetland is on the fringe of a pond or lake, compare the area of that water body to its contributing area not the
			substantial water drawn from other surface water bodies, e.g., flood irrigation)		area of the wetland compared to only the wetland's contributing area. For most wetlands, and especially ones
185					containing tributaries, the first choice will be the most appropriate. For AA's that are intercepted by a mapped stream, delineation and area calculation for the CA will be done automatically at this USGS web site:
186			1 to 10% of its CA	0	http://streamstats.usgs.gov/orstreamstats/index.asp . Enter the coordinates, zoom to scale of 1:24000 or finer,
187			10 to 100% of its CA	0	click on the stream, and click on Basin Delineation, then BasinChar. [WSv+,SRv+,PRv+,NRv+, Sens+]
107			Larger than the area of its CA (wetland has essentially no CA, e.g., isolated by dikes with no	0	
			input channels, or is in terrain so flat that a CA can't be delineated). SKIP TO D40.	Ü	
188					
	D37	Unvegetated Surface in	The proportion of the CA comprised of buildings, roads, parking lots, other pavement, exposed	W	[WSv-SRv-PRv-NRv-]
189		the Contributing Area	bedrock, and other impervious surface is about :	VV	
190		J	>25%	0	
191			10 to 25%	0	
192			<10%, or wetland is tidal	1	
193	D38	Upslope Storage	The cumulative area of seasonally ponded areas in the same CA is:	W	"Seasonally ponded area" includes (for example) detention ponds, reservoirs, and depressional wetlands [WSv-,SRv-
			Much (>10x) greater than the area of this wetland (plus any contiquous pond or lake), or	1	,PRv-,NRv-]
194			inflow is strongly regulated by dams etc.		
171			Somewhat greater than the area of this wetland (plus any contiguous pond or lake) and flows	0	
195			to wetland are not strongly regulated		
170			Less than the area of this wetland (plus any contiguous pond or lake), or wetland is tidal, or no	0	
196			upslope wetlands/ ponds and no inflow regulation		
	D39	Transport From Upslope	A relatively large proportion of the precipitation that falls farther upslope in the CA reaches	W	[WSv+,SRv+,PRv+,NRv+]
	בנים	Transport From Opsiope	this wetland quickly as runoff (surface water), as indicated by the following: (a) input channel	VV	[1400,141,141,141]
			is present, (b) CA slopes are steep, (c) input channels have been straightened, (d) upslope		
			wetlands have been ditched extensively, (e) land cover is mostly non-forest, and/or (f) most CA		
			soils are shallow and/or have high runoff coefficients). This statement is:		
197					
198			Mostly true	1	
199			Somewhat true	0	
200			Mostly untrue, or wetland is tidal	0	

	Α	В	C	D	E
\vdash			Within 1 mile upstream from the wetland, at least one of the major sources of surface water to	W	See the ORWAP manual (section 2.2.7) for instructions on how to obtain this information online at
			this wetland (at least seasonally) has been designated as Water Quality Limited (303d) for at	VV	http://deq12.deq.state.or.us/lasar2/default.aspx [SRv+,PRv+,NRv+,TRv+,INV-,WBF-,WBN-,STR+]
		· ·	least one of the parameters below. Obtain from web site only do not guess. Select all that		
			apply.		
201					
202			total suspended solids (TSS), sedimentation, or turbidity	0	
203			phosphorus	0	
203			nitrate or ammonia	0	
204 205			toxics, dioxin, heavy metals (iron, manganese, lead, zinc, etc.)	0	
206			temperature	0	
207			None of above, or degraded water cannot reach wetland, or no data.	1	
	D41		Within 1 mile downstream or downslope from this wetland, there is at least one stream or other	•	Con the ODMAD manual (anotice 2.2.7) for instructions on hourse obtain this information culing at
			·	W	See the ORWAP manual (section 2.2.7) for instructions on how to obtain this information online at
			water body that has been designated as Water Quality Limited (303d) for at least one of the		http://deq12.deq.state.or.us/lasar2/default.aspx [SRv+,PRv+,NRv+,TRv+,INV-,WBF-,WBN-,STR+]
			parameters below. The water body need not be connected to the AA. Obtain from web site		
200			only do not guess. Select all that apply.		
208					
209			total suspended solids (TSS), sedimentation, or turbidity	0	
210			phosphorus	0	
211 212			nitrate or ammonia	0	
212			toxics, dioxin, heavy metals (iron, manganese, lead, zinc, etc.)	0	
213			temperature	0	
214			None of above, or no data. Mark "1" then SKIP TO D43.	1	
	D42	Type of Outflow	At least part of the AA is connected to the downstream 303d water mentioned in D41 above:		persistent water= flows for more than 9 months during most years. [SRv+,PRv+,NRv+,TRv+,INV-,WBF-,WBN-,STR+]
215		Connection to 303d			
		'	for 9 or more continuous months annually (persistent water in a stream, ditch, lake, or other	0	
216			water body)		
217			intermittently (at least once annually, but for less than 9 months continually)	0	
218			Not connected, or connected less than annually	0	
219	D43	Drinking Water Source	According to the ODEQ LASAR database, the AA is within:		See the ORWAP manual (section 2.2.7) for instructions on obtaining this online from
220		(DEQ)	the source area for a surface-water drinking water (DW) source	0	http://deq12.deq.state.or.us/lasar2/default.aspx [NRv+]
221 222			the source area for a groundwater drinking water source	0	
222			Neither of above	1	
223	D44	Groundwater Risk	The AA is (select all that apply):		[NRv+]
		Designations	within a designated Groundwater Management Area (ODEQ), see maps in Appendix A of	0	
224			ORWAP manual.		
			within a designated Sole Source Aquifer area (EPA): the North Florence Dunal Aquifer. See	0	
			map downloadable from: http://oregonstatelands.us/DSL/WETLAND/or_wet_prot.shtml		
225					
226			NONE of above	1	
	D45		According to the PRISM Data Explorer (see ORWAP manual for instructions), annual		Obtain online as explained in Manual from: http://gisdev.nacse.org/prism/nn/index.phtml These categories reflect the
	-		precipitation in the vicinity of the wetland has normally been:		10th, 25th, 50th, 75th, and 90th percentiles of all points in a comprehensive spatial grid of annual precipitation points
227			r - r		in Oregon, for the years 1971-2000. [INVv+,AMv+,WBFv+,WBNv+,PDv+,Sens-]
228			<10 inches per year	0	
229			10-12 inches per year	1	
230			13-19 inches per year	0	
231			20-47 inches per year	0	
232			48-77 inches per year	0	
230 231 232 233			>77 inches per year	0	
	D46	County Rank for	The phosphorus loading rank of the county in which the AA is located is: (select one); see		If you don't know it, determine which county the wetland is in from the ODEQ web site
			WQprob worksheet in ORWAP Supplnfo file.		ttp://deq12.deq.state.or.us/lasar2/default.aspx as explained in Manual. Data used for these rankings are from a
234 235		,	top 4 in Oregon (Marion, Malheur, Umatilla, Linn)	0	national survey by USGS and represent the combined inputs (kg of P per sq. km.) from fertilizer (2001) and livestock
235			top 4 in Oregon (Marion, Maineur, Omatilia, Linn) top 18 (see Table 6 in WQprob worksheet in file ORWAP_SuppInfo)	1	(average of the years 1982, 1987, 1992, and 1997). [PRv+]
237			bottom 18 (see Table 6 in WQprob worksheet)	0	
231			norrout to feet table a lit Michiga Morketieer)	U	

T	Λ	В	C	D	E
238	_ A		bottom 4 (Josephine, Hood River, Lincoln, Clatsop)	0	E
	D47	County Rank for Nitrogen Loading	The nitrogen loading rank of the county in which the AA is located is: (select one); see WQprob worksheet in ORWAP SuppInfo file.		Determine county from a map or online from http://deq12.deq.state.or.us/lasar2/default.aspx as explained in Manual. Data used for these rankings are from a national survey by USGS and represent the combined inputs (kg of N per sq.
240			top 4 in Oregon (Marion, Malheur, Umatilla, Linn)	0	km.) from fertilizer, livestock, and atmospheric deposition of N during 2001. [NRv+]
241			top 18 (see Table 7 in WQprob worksheet)	1	
242 243			bottom 18 (see Table 7 in WQprob worksheet)	0	
		these final two questions	bottom 4 (Curry, Josephine, Lincoln, Clatsop)	U	
		Estuarine Position	The AA's relative position in the estuary is (SKIP if nontidal):		[WSv+,PR+,PD+]
246	D40		lower 1/3 (often on a bay and distant from the head-of-tide of a major river; includes most saline tidal wetlands)	0	[₩٥٧+, Ҡ+, IJ+]
247			mid 1/3	0	
248			upper 1/3 (near the head-of-tide of a major river; includes most brackish and fresh tidal wetlands)	0	
249	D49	Salinity	The usual maximum water-surface salinity during high tide in summer in the main channel or bay closest to the AA is (SKIP if nontidal):		Refer to Estuary Salinity maps at https://oregonstatelands.us/DSL/WETLAND/or wet prot.shtml or (preferably) determine this from field measurement or from data at the ODEQ LASAR web site (see ORWAP manual for
250			>30 parts per thousand (undiluted seawater)	0	instructions on accessing those data). [SR-,PR-,CS+,OE+,FA-,PD-]
251			5-30 ppt (mesohaline, polyhaline)	0	
252			0.5 - 5 ppt (oligohaline)	0	
253			<0.5 ppt (fresh)	0	
			no data for nearby locations found at the ODEQ LASAR web site or from other sources	0	
254					

	A	В	С	D	E			
1		Date: 06/01/12	Site Name:Bowman Dam- Pond		Investigator: Melanie Sharp			
	Field F data form. ORWAP version 2.0.2. In the Data column, change the 0 (false) to a 1 (true) for the best choice, or for multiple choices where allowed and so indicated. Answer these questions primarily based on your onsite observations and interpretations. Do not write in any shaded parts of this data form. Answering some questions accurately may require conferring with the landowner or other knowledgable persons, and/or reviewing aerial imagery. Although accuracy will be greater if questions are answered for the entire wetland (not limiting only to the part potentially affected by a project), most questions may be answered for just part of a wetland the assessment area (AA). HOWEVER, questions with a W in the gray box in column D must be answered for the ENTIRE wetland of which the AA is a part.							
3	#	Indicator	Conditions	Data	Explanations, Definitions			
4	F1	Presence of Specific Wetland Types	Does the AA contain, or is it part of, any of these wetland types? Mark "1" next to all that apply.	W				
5			Tidal wetland: receives tidal water at least once during a normal year, regardless of salinity, and dominated by emergent or woody vegetation.	0	tidal = level of surface water fluctuates every ~6 hours on a daily basis in response to tides. [All functions, as classifier]			
6			Lacustrine wetland: an undiked non-tidal wetland bordering a body of standing open water that is >20 acres.	0	open water = surface water that contains no vegetation (except perhaps floating-leaved or completely submersed species). [WBN+]			
			Fringe wetland: an undiked "shoreline" wetland bordering persistent open water that is >3 times wider than the wetland (includes most tidal, lacustrine, large riverine, some others).	0	[WSv-, T-, FA+,FR+, WBF+]			
8			NONE of above	1				
-	F2	Wetland Type of Conservation Concern	Does the AA contain, or is it part of, any of these wetland types? Mark "1" next to all that apply. Consult the "Rare Wetland Type" reported for the general vicinity by the Oregon Explorer web site, but be aware that those may not apply to the exact AA you have delimited.	W				
10			Bog or Fen: contains a sponge-like organic soil layer which covers most of the AA AND often has extensive cover of sedges and/or broad-leaved evergreen shrubs (e.g., <i>Ledum</i>). Often lacks tributaries, being fed mainly by groundwater and/or direct precipitation.	0	[CS+,Sens+]			
11			Playa, Salt Flat, or Alkaline Lake: a non-tidal ponded water body usually having saline (salinity >1 ppt or conductivity >1000 μS) or alkaline (conductivity >2000 μS and pH >9) conditions and large seasonal water level fluctuations (if inputs-outputs unregulated). If a playa or salt flat, vegetation cover is sparse and plants typical of saline or alkaline conditions (e.g., <i>Distichlis</i> , <i>Atriplex</i>) are common.	0	See file ORWAP_SuppInfo, worksheet P_Salt for species typically occurring in tidal or saline conditions. [PR+,CS+,INV+,FA-,FR-,AM-,WBF+]			
12			Hot spring (anywhere in Oregon): a wetland where discharging groundwater in summer is >10 degrees (F) warmer than the expected water temperature.	0	[FA-]			
13			Native wet prairie (west of the Cascade crest): a seasonally inundated wetland, usually without a naturally-occurring inlet or outlet, and dominated primarily by native graminoids often including species in column E.	0	Deschampsia caespitosa, Danthonia californica, Camassia quamash, Triteleia hyacinthina, Carex densa, C. aperta, and/or C. unilateralis [PDv,CQc]			

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14			Vernal pool (Willamette Valley): a seasonally inundated wetland, underlain by hardpan or claypan, with hummocky micro-relief, usually without a naturally-occurring inlet or outlet, and with native plant species distinctly different from those in slightly higher areas, and often including species in column E.		Downingia elegans, Isoetes nuttallii, Triteleia hyacinthina, Eleocharis spp., Eryngium petiolatum, Plagiobothrys figuratus, Plagiobothrys scouleri, Grindelia nana, Veronica peregrina, Lasthenia glaberrima, Cicendia quadrangularis, Kickxia elatine, Gnaphalium palustre, and/or Callitriche spp.[PDv]
15			Vernal pool (Medford area): a seasonally inundated acidic wetland, underlain by hardpan, with hummocky micro-relief, usually without a naturally-occurring inlet or outlet, and having concentric rings of similar native vegetation, often including species in column E.		Downingia vina, Isoetes nuttalli, Pilularia americana, Triteleia hyacinthina, Eleocharis spp., Eryngium petiolatum, Plagiobothrys brachteatus, Plagiobothrys scouleri, Grindelia nana, Veronica peregrina, Alopecurus saccatus, Lasthenia californica, Deschampsia danthonioides, and/or Callitriche spp. [PDv]
16			Vernal pool (Modoc basalt & Columbia Plateau): a seasonally inundated wetland, usually without a naturally-occurring inlet or outlet, located on shallow basalt bedrock and often having species in column E.		Blennosperma nanum, Camassia quamash, Epilobium densiflorum, Callitriche marginata, Cicendia quadrangularis, Eryngium vaseyi, Psilocarphus brevissimus, and/or Sedella pumila. [PDv]
17			Interdunal wetland (Coastal ecoregion): a seasonally inundated wetland, usually without a naturally-occurring inlet or outlet, located between sand dunes where wind has scoured the sand down to the water table (deflation plain), and often with significant cover of native species in column E.		Carex obnupta, Argentina egedii, Juncus Iesueurii, J. nevadensis, J. falcatus, Sisyrinchium californicum, and/or Salix hookeriana [PDv]
18			Mature forested wetland (anywhere): a wetland in which mean diameter of trees (d.b.h., FACW and FAC species only) exceeds 18 inches, and/or the average age of trees exceeds 80 years, or there are >5 trees/acre with diameter >32 inches.	0	To qualify, the diameter of >18 inches must be the mean measured from at least 10 trees. [PDv]
			Ultramafic soil wetland (mainly southwestern Oregon): a low-elevation wetland, usually with a sponge-like organic soil layer, occurring in an area with exposed serpentine or peridotite rock, and/or in soils with very low Ca:Mg ratios.	0	[PDv]
20	-		Wooded tidal wetlands with >30% cover of trees and shrubs. A wetland inundated at least once annually by tides and often dominated by woody plant species.	0	The plant species may include Sitka spruce, crabapple, and/or others [PDv]
21			Undiked tidal freshwater wetland: an emergent or wooded wetland inundated at least once annually by tides and with surface salinity <0.5 ppt during most of spring and summer, and which has never been diked.	0	[PDv]
22			NONE of above	1	

	A	В	C	D	E
20 1	ls nar	t of the site tidal? If ve	s, answer next 2 questions. If no, SKIP TO # F5.	D	L
	F3	Low Marsh	The percent of the vegetated part of the AA that is "low marsh" (covered by tidal water for part of		Include any natural channels within the marsh that are inundated at least once daily by tide. See file
24			almost every day) is:	_	ORWAP_Supplnfo, worksheet P_LowTidal. [WS-,OE+,POL-,INV+,FA+,FR+,WBF+,WBN-,SBM-,PD-]
25			>95% of the AA	0	
26			50-95% of the AA	0	
27			25-50% of the AA	0	
28			1-25% of the AA	0	
29			<1% or none of the AA (high marsh only)	0	
30 F		Tidal-Nontidal	This tidal wetland is (select one):	W	contiguous = abutting, with no major physical separation that prohibits free exchange or flow of surface water,
30		Hydroconnectivity	contiquous to a non-tidal palustrine wetland that contains surface water at least seasonally, and	0	if any is present. See diagram in Appendix A of the manual. [FA+,WBF+,WBN+,PD+]
			mostly not separated by a dike or other barrier, allowing fish access to both wetlands during spring.	U	
31			iniosity not separated by a dike of other barrier, allowing first access to both wettands during spring.		
31			contiguous to a non-tidal palustrine wetland that contains surface water at least seasonally, but	0	
			mostly separated by a dike or other barrier, yet still allowing fish access to both wetlands during	U	
32			spring.		
32			not contiguous to a non-tidal palustrine wetland that contains surface water, but has an inflowing	0	
			stream that allows fish during the springtime to access a non-tidal wetland < 1 mile upstream.	U	
			isacam macanows non during the optinguine to access a non-tidal wetiand < 1 mile upsteam.		
33					
			not contiguous to a non-tidal palustrine wetland that contains surface water, but has an inflowing	0	
			stream that allows fish during the springtime to access a non-tidal wetland > 1 mile upstream.		
34					
			not contiguous to a non-tidal palustrine wetland, and lacks an inflowing non-tidal stream that	0	
			provides fish access to an upstream wetland that contains surface water at least seasonally.	-	
35			F		
36 F	F5	Interrupted Hydroperiod	Select one:		[PR-,NR-,CS-,OE+,INV+,FR-,WBF+,WBN+,PD+]
			during 4 of the last 5 years most of the AA has been covered year-round with surface water, but	0	
			that part went mostly dry during at least one unusual event.	-	
37					
			during 4 of the last 5 years most of the AA has been dry year-round on the surface (i.e.,	0	
			saturated only below the surface), but during at least one unusual event most of that part was		
38			flooded, even if only briefly.		
39			neither of above	1	
40			unknown	0	
F	F6	Saturated-only Wetland	No part of the AA is ever inundated (contains at least 1 inch of water above the land surface) for	0	[classifier for all functions]
l ľ			more than 14 consecutive days during a normal year. That is, it is a saturated-only wetland. If	Ŭ	[
			true, mark "1" here, then SKIP TO F39 (Herbaceous Extent)		
1					
41					
F	F7	Seasonal Water Extent	During normal years, the percent of the AA that is inundated only seasonally (more than 14		Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully
			consecutive days but no more than 9 months, or in tidal wetlands is "high marsh" that is inundated		inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant species.
			by tides fewer than half the days in any month) is:		Vegetation may be patterned in concentric or parallel zones, as one moves outward & away from the deepest
42					part of the wetland or channel. Although useful only as a general guide, the NRCS county soil survey
43			>75% of the AA	0	descriptions of the predominant soil types usually includes information on flooding frequency and saturation
44			50-75% of the AA	0	persistence. [WS+,SR+,NR+,CS+,OE+,INV-,FA+, AM-, Sens+]
45			25-50% of the AA	0	
46			5-25% of the AA	1	
47			<5% of the AA, or none	0	

	Α	В	С	D	E
		Extent of Persistent	When the AA's surface water is at its lowest annual level, the percent of the AA still containing		For tidal sites, consider the condition that would exist at annual lowest tide. Indicators of persistence may
48		Surface Water (Dry	surface water (whether obscured by vegetation or not) is:		include fish, some dragonflies, beaver, and muskrat. In the county soil survey, the NRCS descriptions of the
49		Season)	>95% of the AA	0	predominant soil types may include information on saturation persistence in those types. [WS-,PR-,NR-,CS-
50			50-95% of the AA	1	,POL-,INV+,FR+,AM+,WBF+,WBN+,SB-]
51			25-50% of the AA	0	
52			1-25% of the AA	0	
			None of the above, and the AA contains or is part of a fringe wetland, SKIP to F10	0	
53					
54			None of the above, and not a fringe wetland, SKIP to F10	0	
	F9	Onsite Surface Water	When the AA's surface water is at its lowest annual level (for tidal wetlands = annual lowest tide),		For tidal sites, consider the condition at annual lowest tide. See DSL web site for general maps of waters that
		Isolation (Dry Season)	the percent of the surface water that is in or connected to flowing channels that exit the AA,		may be tidal. Swales and channels are areas that have surface flow for at least 2 consecutive days per year.
		, , , , , , , , , , , , , , , , , , ,	compared to surface water that is outside of channels and their floodplains (e.g., in small		Swales are less distinct (broader and flatter in cross-section) than channels. [WS+, SR+,PR+,NR+,OE-,T-,
			depressions that do not connect annually to the channel if any), is:		INV+,FA-,FR+,AM+,WBF+,WBN+,Sens+]
55			, , , , , , , , , , , , , , , , , , ,		
			all (100%) located in channels, swales, or other areas with a surface water connection to a river,	0	
56			lake, or estuary at all times of year	Ŭ	
			75-99% in or connected to channels, swales, or contiguous lake/ estuary, 1-25% in isolated pools	0	
57				-	
			50-75% in or connected to channels, swales, or other areas with a surface water connection to a	0	
			river, lake, or estuary at all times of year, 25-50% in isolated pools		
58					
			25-50% in or connected to channels, swales, or other areas with a surface water connection to a	0	
			river, lake, or estuary at all times of year, 50-75% in isolated pools		
59					
			1-25% in or connected to channels, swales, or other areas with a surface water connection to a	0	
			river, lake, or estuary at all times of year, 75-99% in isolated pools		
60					
			all located in isolated pools or a single isolated pond from which no surface water exits when levels	1	
61			are lowest		
	F10	Onsite Surface Water	During the wettest time of a normal year, the percent of the surface water that is in or connected		For tidal sites, consider the condition at mean high tide. See DSL web site for general maps of waters that may
		Isolation (Wet Season)	to ditches, swales, or flowing channels that exit the AA, compared to surface water that is in		be tidal. Swales and channels are areas that have surface flow for at least 2 consecutive days per year.
			isolated pools that do not connect annually to channels or swales (if any), is:		Swales are less distinct (broader and flatter in cross-section) than channels. Sites fed by unregulated streams
62					that descend on north-facing slopes tend to remain wet longer into the summer, especially in montane snow-
02			all (100%) located in channels, swales, or in other areas with a wet-season surface connection to	1	fed areas.[WS+, SR+,PR+,NR+,CS+,OE-,INV+,FA-,FR+,AM+,WBF+]
63			channels or to a contiguous lake or estuary		
			75-99% in or connected to channels, swales, or contiguous lake/ estuary, 1-25% in isolated pools	0	
64			J. T. Zoro III Boldod poolo	-	
			50-75% in or connected to channels, swales, or contiguous lake/ estuary, 25-50% in isolated pools	0	
65			, , , , , , , , , , , , , , , , , , ,		
			25-50% in or connected to channels, swales, or contiguous lake/ estuary, 50-75% in isolated pools	0	
66			·		
			1-25% in or connected to channels, swales, or contiguous lake/ estuary, 75-99% in isolated pools	0	
67					
68			all located in isolated pools or a single isolated pond from which no surface water exits	0	

	Α	В	С	D	Е
	F11	Predominant Water	During most years, the difference in surface water level between the driest and wettest time of year		[WS+,PR-,NR+,CS-,OE+,INV-, AM-,WBN-]
69		Fluctuation Range	in most of the area that is not inundated year-round is:		
70			>6 ft change	0	
71			3-6 ft change	0	
72			1-3 ft change	1	
73			0.5 - 1 ft change	0	
74			<0.5 ft or no change (stable)	0	
75	F12	Predominant Depth Class	When present, surface water in most of the AA is usually:		"Usually" means the majority of the weeks during which the AA is at least partly inundated. This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only seasonal
76		•	>6 ft deep	0	or temporary. If inundation in most but not all of the AA is brief, the answer will be based on the depth of the
77			2-6 ft deep	1	most persistently inundated part of the AA. Include surface water in channels and ditches as well as ponded
78			1-2 ft deep	0	areas. See diagram in Appendix A of the manual. For tidal sites, assess the condition as it exists at mean high
79			0.5 - 1 ft deep	0	tide. [SR+,PR+,CS-,OE-,T+,INV-,FA+,FR+,WBF-,WBN-,PD-,Sens-]
80			<0.5 ft deep (but >0)	0	
81	F13	Depth Class Distribution	When present, surface water in most of the AA usually consists of (select one):		Estimate these proportions by considering the gradient and microtopography of the site. See diagram in Appendix A of the manual. For tidal waters, estimate at mean high tide. [INV+,FR+,WBF+,WBN+]
82		'	One depth class (use the classes in F12) that comprises >90% of the AA's inundated area	0	
83			One depth class that comprises >50% of the AA's inundated area	1	
84			Neither of above	0	
85	F14	Deep Spots	Ponded nontidal water deeper than 3 ft covers at least 1 acre or >5% of the AA during (check all that apply):		[AM+, WBN+]
86			most of the period (generally, November-April) when waterfowl are migrating or wintering, and/ or amphibians are in aquatic phases	1	
87			most of the period (generally, May-August) when waterfowl are breeding	1	
88			neither of above (no ponded water >3 ft deep is that extensive)	0	
89			impossible to tell	0	
			Visualize the extent and distribution of ponded open water within the AA, relative to the	15	[NR+,OE+,INV+,FA+,FR+,WBF+,WBN+]
		J	distribution of the most dominant form of partly-submerged vegetation (herbaceous or woody, with stems and leaves >4" above the water surface). Visualize this as it occurs during May of most years. In the table to the right, first estimate the percent open water (left column) in the AA, then		Cat-tail, bulrush, or woody plants which are partly submerged in May with Open with Open
			its distribution (secondary header). Select the highest applicable number and enter it in column D. See photographs in Appendix A of manual. If the AA has no ponded water during May, score it "1." If this is a fringe wetland, assume Open Water is >70%.		open water in open water in open one/ water in one/ water in one/ water in one/ sas % small inter- larger small inter- larger
90					of AA patches mediate patches patches mediate patches
90			Note: Ponded open water is surface water that is not visibly flowing and contains no vegetation		>70 19 15 6 12 9 3
					30-70 20 16 7 14 10 4
			(except perhaps floating-leaved or completely submersed species) and is not beneath a canopy of trees or shrubs. For tidal sites, consider the condition at average mid-tide.		1.30 18 14 5 11 8 2
91			grees of striubs. For dual sites, consider the condition at average find-due.		<1 1 1 1 1 1
71			I .		

	Α	В	С	D	Е
92	F16	Inflow	When surface water enters the AA, it enters as (select all applicable choices):		[HGM, Sens]
93			flow moving in streams, ditches, other channels	1	
			surface water exchanged broadly as overflow with contiguous waters such as an estuary, lake, or	0	
94			river		
			water pumped into or intentionally diverted to the AA, e.g., as part of a stormwater dispersion	0	
95			system, irrigation practice, or drainage tile outlet		
96			groundwater, runoff, and direct precipitation	1	
90	F17	Groundwater	Select one:	W	If discharging groundwater in summer is warmer than ambient air temperature, answer "None of the above."
97	1 17	Groundwater	Select one.	VV	[NR+,CS+,T+,POL+,INV+,FA+,AM+,HGM]
98			Part of the wetland contains strong evidence of groundwater discharges at the wetland surface during summer: (a) Springs are observed or are shown on Wetland Explorer map, or (b) water is cooler in summer and warmer in winter than in other local wetlands, or (c) measurements from shallow wells indicate groundwater is discharging to the wetland.	0	[INCT, CST, 17,1 OET, INCT, 1 AT, ANT, 1 ON]
70			Part of the wetland has less definitive evidence of discharging groundwater during summer. Wetland has no perennial tributary and is on organic, sandy, or gravelly soil (as determined in F58) AND has one or more: (a) outflow is present and persists during most of the summer or (b) on a natural slope of >5%, or (c) very close to the base of a natural slope steeper than 15%, and longer than 300 ft, or (d) located at a geologic fault, or (e) has rust deposits, colored precipitates, or dispersible natural oil sheen, or (f) within a mile of the top of a HUC4 watershed (see Wetland Explorer for boundaries).	0	
99					
100			Neither of above is true, although some groundwater may discharge to or flow through the wetland, and wetland is in a region of eastern Oregon with mean annual precipitation of less than 20 inches.	1	
101			None of the above	0	
	F18	Outflow Duration	The most durable surface water connection between the wetland and the closest contiguous	W	The connection may be via a ditch, pipe, tidegate, or culvert as well as through a natural channel, floodplain, or
102	. 10	Odinow Baration	and/or downslope surface waters is:	VV	overflow area. Do not rely only on topographic or NWI maps to show this; inspect while in field. The
103			persistent (>9 months/yr), or daily tidal exchange	0	frequencies given are only approximate and are for a "normal" year. The inundation need not occur during the
104			seasonal (14 days to 9 months/yr, not necessarily consecutive)	1	"growing season." See photographs in Appendix A of manual. [WS-,SR+,PR+,NR+,CS-
105			temporary (<14 days, not necessarily consecutive)	0	,OE+,T+,FA+,FR+,Sens-]
			none the wetland lacks an outlet. If so, mark "1" here and SKIP TO F25 (Sheltering of Water).	0	
106					
100	F19	Outflow Confinement	During major runoff events, in the places where surface water exits the wetland it is:	W	"Impeded" means causing a delay or reduction in water velocity or volume. "Major runoff events" would
107	,	Camen Commonicin	Samy major ranon oronto, in the places where surface water onto the welland it is.	- "	include biennial high water causes by storms and/or rapid snowmelt. [WS-,SR+,PR+,NR+,CS-
107			impeded by a pipe, culvert, tidegate, narrowly breached dike, berm, beaver dam, or other	1	,OE+,FA+,FR+,Sens-]
			obstruction (other than natural topography), or water is pumped out of the wetland (e.g., for		1
100			irrigation)		
108			<i>,</i>	0	
109			not impeded by anything other than (possibly) natural topography	0	
	F20	Inlet+Outlet	Either the wetland has BOTH an inlet and outlet with seasonal or persistent surface flow, or the		The inflow and outflow from the wetland may be via a shallow ditch, pipe, or culvert, or as overbank flow in a
110			wetland is fringe or tidal . If so, enter "1" here and continue. If neither condition met , enter "0"		floodplain (which counts as both an inlet and outlet). Do not rely only on topographic or NWI maps to show
			here and then SKIP to F25 (Sheltering of Water).	W	this; inspect while visiting the site.
111					
111					

	Α	В	С	D	Е
	F21	Throughflow Complexity	During peak annual flow, most of the surface water that flows through the AA:		This mainly refers to surface water that moves between the inlet and outlet. Some judgment is required in
112	1				assessing straight vs. indirect flow path. See diagram in Appendix A of the manual.
			encounters little or no vegetation, boulders, or other sources of friction, or no flowing water is	0	[WS+,SR+,PR+,NR+,CS+,INV+,FA+,FR+,WBF+,WBN+]
113	4		present		
			mostly encounters herbaceous vegetation that offers little resistance, and water follows a fairly	0	
			straight path from entrance to exit (few internal channels, only slight meandering)		
114	1				
			mostly encounters herbaceous vegetation that offers little resistance and follows a fairly indirect path from entrance to exit (non-channelized flow or many internal channels, or very braided or	0	
			tightly meandering)		
115					
			encounters measurable resistance from fairly-rigid vegetation (e.g., cattail, bulrush, woody	0	
			plants) or channel-clogging debris, and follows a fairly straight path from entrance to exit.		
116					
			encounters measurable resistance from fairly-rigid vegetation (e.g., cattail, bulrush, woody species)	0	
			or channel-clogging debris, and follows a fairly indirect path from entrance to exit.		
117					
		Vegetated Zone Relative	During most of the time open water is present in the AA, vegetated areas within the AA, where		open water = surface water that contains no vegetation (except perhaps floating-leaved or completely
118		Width	they are contiguous to open water, are:		submersed species) when viewed from above. May include channels, ditches, ponded areas, regardless if
119			wider than the contiguous open water	0	seasonal, persistent, or temporary. For tidal areas, assess condition as it exists at mean high tide
	1		narrower than the contiguous open water (i.e., fringe wetlands)	0	[SRv+,PRv+,NRv+, CS+,OE-,Sens-]
120					
		•	The average width of vegetated area in the AA that separates adjoining uplands (if any) from		Note: For most sites larger than 10 acres and with persistent water, measure the width using aerial
121		Width	contiguous open waters (if any) is:		imagery rather than estimate in the field. For tidal areas, assess condition as it exists at mean high tide.
122			>300 ft, or no contiguous upland or open waters (not even temporary)	0	[SR+,PR+,NR+, CS+,OE-,WBN+,Sens-]
123			100-300 ft	0	
124	1		25-100 ft	0	
125 126			5-25 ft <5 ft	0	
126		Undercut Banks	The percent of the AA's water edge, if any, that has undercut banks that are partially visible above	0	water edge= streambank (both sides) or other edge between open water and soil. undercut= indented such
127		OTHER CUL DATES	the water is:		that surface water flows beneath a canopy layer of soil, tree roots, or sod. At tidal sites, assess this at mid-tide.
128			>75%	0	[FA+,FR+,AM+]
129	1		50-75%	0	6
130			25-50%	0	
131			1-25%	0	
132			<1%, or no definable water edge is present	0	
133			cannot estimate	0	
	F25	Sheltering of Water	At mid-day in summer, the area of surface water within the AA that is shaded by herbaceous or		For tidal sites, consider the condition at mean low tide. For all sites, consider the aspect and surrounding
			woody vegetation, incised channels, streambanks, or other features also present within the AA is:		topographic relief as well as vegetation height and density. [T+,FA+]
134			THE COLUMN TO TH		
135	-		>75% of the water	0	
136 137	1		50-75% of the water	1	
137	ł		25-50% of the water 5-25% of the water	0	
139	1		-25% of the water	0	
140	1		(surface water is typically absent in summer or during low tide)	0	
0		1	(,	

	A	В	С	D	E
	F26	Abovewater Wood	The number of downed wood pieces thicker than 4 inches that remain only partly underwater		For tidal sites, consider the condition at mean high tide. Only the wood that is at or above the water surface is
			during most of the spring or early summer, thus potentially serving as basking sites for turtles,		assessed because of the impracticality of assessing underwater wood accurately when using a rapid
141			birds, or frogs, is:		assessment method. [FA+,FR+,AM+,WBF+,SBM+]
142			Several	0	
143			Few or none, or AA never has any surface water at that time	1	
144	F27	Islands	Select all that apply:	W	island = terrestrial or wetland area larger than 400 sq.ft, and smaller than 1 sq. mi, and separated from "mainland" by water deeper than 3 ft over a distance of >50 ft during early summer. [AM+,WBF+,WBN+]
145			During early summer the wetland contains a floating vegetation mat suitable for nesting birds and isolated from the shore by water depths >3 ft. Or AA is an island with similar isolation and a gently-sloping water edge that is mostly vegetated .	0	mainiand by water deeper than 3 it over a distance of >50 it during early summer. [AM+,WBF+,WBN+]
146			During early summer the wetland contains (or is) an island with a gently-sloping water edge, that is mostly bare and is isolated from the shore by water depths >3 ft.	0	
147			Neither of above	1	
	F28	Shorebird Feeding	The maximum extent of mudflats or unwooded shortgrass areas within the AA during shorebird		These areas must have (a) no vegetation (bare/ fallow), or herbaceous cover comprised mainly of grasses
148		Habitats	migration and wintering (generally August through through April (and for tidal AAs, during mean low tide) is usually:		shorter than 4 inches during some part of this period, and (b) soils are saturated or are covered with <1" of water during some part of this period, and (c) no detectable surrounding slope (e.g., not the bottom of an
149			none, or <100 sq. ft, and there are none that cover >10,000 sq. ft anywhere within 300 ft of the AA	1	incised dry channel), and (d) no substantial areas of shrubs or trees. See photograph in Appendix A of manual.This addresses needs of most migratory sandpipers, plovers, stilts, avocets, curlews, and godwits. [WBF+]
150			none, or <100 sq. ft, but some that cover >10,000 are within 300 ft of the AA	0	[WDI +]
151			100-1000 sq. ft. within AA	0	
152			1000 – 10,000 sq. ft. within AA	0	
153			>10,000 sq. ft within AA	0	
154	F29	Waves	Which of the following is most true:		Erosive wave conditions often occur where adjoining open water has a fetch (uninterrupted distance) of greater
155			Wind or boats frequently generate waves of >1 ft near the AA, those waves are intercepted by the wetland, and structures behind the AA are protected from wave erosion	0	than approximately 1 mile in the direction of the strongest and most frequent wind. [SRv+, PD-, STR+]
156			Wind or boats frequently generate waves of >1 ft near the AA, those waves are intercepted by the wetland, but there are no structures behind the wetland	0	
157			Neither wind nor boats frequently generate waves of >1 ft near the AA	1	
158	F30	Vectors for Waterborne	Select all that apply:		[SRv+, FA-,FR-,AM-,PD-,STR+]
159		Pests	a regularly-used boat dock is present within or contiguous to the AA	0	
160			a regularly-used boat dock is not within the AA , but there is one within 300 ft of the AA and there is a persistent or tidal surface connection between the dock and the AA	0	
161			large ships that empty ballast water are regularly present in nearby contiguous waters	0	
162			the AA has a persistent or tidal surface water connection (>9 mos./yr, via ditch, pipe, channel, tidegate, or floodplain) to a nearby perennial stream, river, lake, or estuary	0	
163			none of the above	1	

	A	В	C	D	E
	F31	Non-native Aquatic	The following are known or likely to have reproducing populations in this AA, its wetland, or in	Ъ	Assume non-native fish to be present if wetland is associated with a nearby reservoir, fish pond, or perennial
	1 31	Animals	water bodies within 300 ft that connect to the AA at least seasonally . Select all that apply:		stream flowing through an agricultural or residential area. Assume bullfrog, nutria, and/or carp to be present if
164		Allillais	water bodies within 300 it that connect to the AA at least seasonary. Select all that apply.		(a) the AA contains persistent water or is flooded seasonally by an adjoining body of permanent water, and (b)
			P 19 / 1 HC \ P1 / 1 P1 \	0	not a forested wetland, and (c) in western Oregon, elevation is lower than about 3000 ft. In the
165			non-native amphibians (e.g., bullfrog) or reptiles (e.g., red-ear slider)	0	ORWAP_Supplnfo file, see Inverts_Exo worksheet for more complete list of non-native invertebrates or
166			carp	0	Oregon, and WetVerts worksheet for more complete list of fish that are not native to Oregon. You may also
167			other non-native fish (e.g., bass, gambusia, walleye, crappie, brook trout)	0	consult: http://nas.er.usgs.gov/queries/default.aspx
			non-native invertebrates (e.g., New Zealand mudsnail, mitten crab, rusty crayfish)	0	http://www.dfw.state.or.us/conservationstrategy/invasive_species.asp
168					INV-,FA-,FR-,AM-,CQ-
169			nutria	0	[[וועי-, ה-, ול-, השי-, טעי-]
170			none of above, or unknown	1	
	For F	32 to 34, if the statemer	nt is true, enter a "1" in column D. Otherwise that should be a "0"		
171					
	F32	Ice-free	During most years, most of the AA's surface water does not freeze, or freezes for fewer than 4	1	[WS+,PR+,NR+,CS+,OE+,FR+,WBF+,Sens-]
			continuous weeks, or surface water is absent most winters.		
172					
	F33	Ponded Threshold	During most of the summer, the AA contains more than 0.25 acre of ponded non-tidal surface	1	[WBN+]
			water that is deeper than 1 ft, or is within 300 ft of such an area and the intervening habitat is not		
173			developed (roads, etc.). Or nesting within the AA by ducks, geese, or swans has been proven.		
174					
	F34	No Scum	During most summers, less than 80% of the AA's water surface is covered by floating algae,	1	If wetland can be visited only during winter, it may not be possible to answer this question with much certainty
			duckweed, and other non-rooted aquatic plants, AND no major fish kills occur. If no surface		unless local sources are contacted or indicators (e.g., dried remains of algae) are found. [PR+,FA+,PD+,CQ+]
			water is present in summer, mark "1" in column D.		
175					
	F35	Submerged & Floating-	SAV (submerged & floating-leaved aquatic vegetation) occupies an annual maximum of:		SAV = herbaceous plants that characteristically grow at or below the water surface, i.e., whose leaves are
176		leaved Aquatic Vegetation			primarily and characteristically under or on the water surface during most of the part of the growing season
177		(SAV)	>95% of the surface water area	0	when surface water is present. Some species are rooted in the sediment whereas others are not. If pond lily
178			50-95% of the surface water area	0	(Nuphar) is the predominant species, consider its maximum extent only during the period when surface water
179			25-50% of the surface water area	0	is present beneath the leaves. For tidal sites, consider the condition during mean high tide.
180			5-25% of the surface water area	1	[INV+,FA+,FR+,AM+,WBF+,PDc,CQc,SENSc]
101			<5% of the surface water area. Mark "1" here and SKIP TO F39 (Herbaceous Extent).	0	
181 182	F2/	SAV Invasive vs. Non-	The excel equal of CAV at mid cummer is comprised of		Investus CAV energies include. Facris dense (Prazilian eledes). Ludrilla verticillata. At viscolo de la constante
182	F 30		The areal cover of SAV at mid-summer is comprised of:		Invasive SAV species include: Egeria densa (Brazilian elodea), Hydrilla verticillata, Myriophyllum aquaticum
		invasive Cover	mostly invasive SAV species (see list in column E). Mark "1" here and underline the species in	0	(parrotfeather watermilfoil), <i>Cabomba caroliniana</i> (fanwort), <i>Nymphaea odorata</i> (white pondlily). For known
183			column E. Then SKIP to F39.		distributions of these in your county, see: http://www.weedmapper.org/maps.html [PD-,CQ-,Sens-]
184			mostly non-invasive species	1	
185		ļ	impossible to tell	0	
186	F37	SAV Native Species	Considering just the SAV species that are native:		[PD-, CQ-, Sens-] Duckweed
		Dominance	one or two of those species together comprise >50% of the SAV cover. Mark "1" here and write	1	
187		1	names of dominant species in column E.		
188			no two of the native SAV species together comprise >50% of the SAV cover	0	
189			impossible to tell	0	
10)		1	The state of the s		1

	Α	В	С	D	E
190			Of all the SAV species in this AA:		[PD-, CQ-, Sens-]
191			all are species that are common among Oregon's wetlands and lakes.	1	• • •
121			at least one native species is a SAV plant that is not common among Oregon's wetlands and lakes, and it covers >1% of the SAV area or >100 sq. ft. See file ORWAP_Supplnfo, worksheet P_UnCom . Mark "1" in next column and write names of the species in column E.	0	
192			· · · · · · · · · · · · · · · · · ·		
193			impossible to tell	0	
-,-	Note:		, "herbaceous" does not include SAV or herbaceous plants growing under a		
			nopy covers >80% of the vegetated part of the AA. If the AA is farmed, estimate		
			crops) as it would exist under maximum cover conditions during the majority of the		
		years.	or open as it would exist and or maximal over contained adming the majority of the		
194					
195	F39	Herbaceous Extent	The areal cover of herbaceous plants during mid-summer is:		herbaceous = forbs, graminoids, ferns, liverworts, moss. Can include crops. Do not include submersed and
196			>95% of the vegetated part of the AA	1	floating-leaved aquatics (SAV) in the category of "herbaceous", or when defining the "vegetated part" of the
197			50-95% of the vegetated part of the AA	0	site. Note: For sites larger than 10 acres, this should be determined from aerial imagery rather than estimated in the field. [POLc,INV+,WBF+,WBN+,PDc, CQc,SENSc]
198			25-50% of the vegetated part of the AA	0	icominated in the neta. [FOLC,IIVV+,WDI +,WDIV+,FDC, CQC,3EIV3C]
199			5-25% of the vegetated part of the AA	0	
200			<5% of the vegetated part of the AA. Mark "1" here and SKIP TO F44 (Woody Extent).	0	
200	F40	Graminoid vs. Forb Cover	When the areal cover of herbaceous plants is at an annual maximum, those plants are:		graminoids = grasses, sedges, rushes, reeds, burreed, cat-tail, and other grasslike plants. Remember to
201	. 10	Grammoid V3. 1 GID GOVE	which the dreaf cover of herbaccous plants is at an annual maximum, mose plants are.		focus only on plants not beneath a woody canopy, unless that canopy occupies >80% of the AA. If possible
202			overwhelmingly graminoids (>80% cover of grasslike plants)	0	this should be assessed during mid-summer. [POLL-]
203			mostly graminoids (50-80% cover)	0	
204			mostly non-graminoids (e.g., forbs, ferns) (50-80%)	1	
205			overwhelmingly (>80%) non-graminoids	0	
206	F41		The maximum annual areal cover of herbaceous plants is:		In the file ORWAP_SuppInfo, see P_Invas worksheet for list of invasives and P_Exo for non-native species
207			overwhelmingly (>80% cover) non-native species, of which >10% are species considered invasive (see column E). Mark "1" in next column and write names of dominant invasive species in column E. Then SKIP to F43.	0	list. For known distributions of invasive plants in your county, see: http://www.weedmapper.org/maps.html Remember to focus only on plants not beneath a woody canopy. [POL-,PD-,CQ-,Sens-]
207			overwhelmingly (>80% cover) non-native species, but <10% are considered invasive (see column	0	
			E). Mark "1" in next column and write names of dominant non-native species in column E. Then	U	
208			SKIP to F43.		
209			mostly (50-80%) non-native species, regardless of invasiveness. Mark "1" and SKIP to F43.	0	
210			mostly (50-80%) native species	1	
211			overwhelmingly (>80%) native species	0	
212		D!	Of just the herbaceous (forb and graminoid) species that are native:		Remember to focus only on plants not beneath a woody canopy. [POL-,PD-,CQ-,Sens-] Common mare's-tail
			one or two native species together comprise >50% of the areal cover of native herbaceous plants	1	(Hippuris vulgaris)
			at any time during the year. Mark "1" in next column and write names of dominant native species		
213			in column E.		
21.4			no two of the native species together comprise >50% of the areal cover of native herbaceous	0	
214	E42		plants Of all the hortespace energies in this AA.		This question and squared others (F27, 20, 42, 40, 40) are used as "also sheld as "ustill - First-ti- Coulti-
215			Of all the herbaceous species in this AA:	1	This question and several others (F37, 38, 42, 48, 49) are used as "placeholders" until a Floristic Quality Assessment index can be developed for Oregon. Much information on distribution and frequencies of plar
216			all are species that are common among Oregon's wetlands. at least one native species is not common among Oregon's wetlands and it covers >1% of the	0	species is available from the Oregon Flora Project: www.oregonflora.org/ [POL-,PD-,CQ-,Sens-]
			AA's herbaceous area or >100 sq. ft (either contiguous or scattered). See file ORWAP_Supplnfo, worksheet P_UnCom . Mark "1" in next column and write names of the species in column E.	U	species is available from the Oregon Flora Floject, www.oregonilora.org/ [FOE-,FD-,CQ-,Sells-]
217					

A	В	С	D	E
218 F44	Woody Extent Within the	Within the AA, woody vegetation (shrubs, trees, woody vines) occupies:		Note: For sites larger than 10 acres, this should be determined from aerial imagery rather than
219	AA	>95% of the vegetated part of the AA	0	estimated only in the field. Vines are twining or climbing plants with relatively long stems, and can be either
220		50-95% of the vegetated AA	0	woody or herbaceous. Include Himalayan blackberry. [CS+,POLc,SBM+,PDc,CQc,SENSc]
221		25-50% of the vegetated AA	0	inough of northead and minimal year blackwards (2004), 625/655/14/15 50/64/62/62/16/9
222		5-25% of the vegetated AA	0	
223		<5% of the vegetated AA	1	
F45	Woody Extent Along Water	Where surface water is present during the wettest time of year, the AA's woody vegetation	'	[SBM+]
224	Edge	occupies:		[ODINIT]
22-	Luge	>95% of the area within 100 ft of the surface water	0	
225		27376 of the area within 100 ft of the surface water	U	
226		50-95% of the area within 100 ft of surface water	0	
227		25-50% of the area within 100 ft of surface water	0	
228		5-25% of the area within 100 ft of surface water	0	
		<5% of the area within 100 ft of surface water; mark "1" here and SKIP TO F50 (Woody Diameter	1	
229		Classes).		
230 F46	Woody Distribution	The woody vegetation (if any) within the AA is:		"contiguous to" means separated by less than one tree height. The separation may be caused by herbaceous
230 F46		3 0 1 3		vegetation, persistent water, roads, buildings, or bare soil, but not shrubs. [SBM+, CQ+, Sens+]
		clumped in fairly distinct bands or patches mostly separate from herbaceous vegetation, and most	0	rogotation, possition nator, roduct ballings, or ball occur, balling of the balli
		patches or bands are large (>1 acre including contiguous upland woody veg). Or nearly the		
		entire AA is wooded. Isolated shrubs or trees are few.		
231				
		clumped in fairly distinct bands or patches mostly separate from herbaceous vegetation, and most	0	
		patches are small (<1 acre including contiguous upland woody veg).		
232				
		dispersed quite evenly amid the herbaceous vegetation, in many small patches, or many isolated	0	
233		shrubs or trees.		
234 F47	Cover of Woody Invasives	Mithin parts of the AA having shrubs or weeds vines the great sover is		In the file ODWAD Complete, and D. Investigated for list of investigation and D. Eve for non-native angles
234 F47	Cover or woody irivasives	Within parts of the AA having shrubs or woody vines, the areal cover is:	0	In the file ORWAP_Supplnfo, see P_Invas worksheet for list of invasives and P_Exo for non-native species
		overwhelmingly (>80%) non-natives that are categorized as invasive (see column E). Mark "1" in	0	list. Woody invasives include: Hedera helix, Ailanthus altissima, Buddleja spp., Cytisus spp., Rubus
		next column and write names of dominant invasives in column E. Then SKIP to F49.		armeniacus (discolor), Rubus Iaciniatus, Tamarix spp., Umbellularia californica, Robinia pseudoacacia. For
235				known distribution of some invasives in your county see: http://www.weedmapper.org/maps.html [POL-,PD-
		overwhelmingly other non-natives. Mark "1" in next column and write names of dominant non-	0	,CQ-,Sens-]
		native shrubs/ vines in column E. Then SKIP to F49.		
236				
		mostly (50-80%) non-natives. Mark "1" in next column and write names of dominant non-native	0	
237		shrubs/ vines in column E. Then SKIP to F49 .		
238		mostly (50-80%) natives	0	
239		overwhelmingly (>80%) natives	0	
240 F48	Shrub & Vine Species	Of just the shrub & woody vine species that are native:		[POL-,PD-,CQ-,Sens-]
H 10	Dominance	one or two of the native species together comprise >80% of the native shrub & vine cover.	0	[· -= · -]
	20	Mark "1" in next column and write names of dominant species in column E.		
241		imark i in next column and write names of dominant species in column E.		
241		no two of the native species together comprise >80% of the native shrub & vine cover	0	
1 1		The two of the native species together comprise >00% of the native stitub & ville cover	0	
242				
243 F49	Shrub & Vine Species	Of all the shrub & woody vine species in this AA:		[POL-,PD-,CQ-,Sens-]
244	Ubiquity	all are species that are common among Oregon's wetlands.	0	
		at least one native species is not common among Oregon's wetlands and it covers >1% of the AA	0	
		or >100 sq. ft See file ORWAP_Supplnfo, worksheet P_UnCom. Mark "1" in next column and		
245		write species in column E.		
2.0	1			I .

	A	В	С	D	E
\Box	F50		Select all the types occupying >5% of the wooded part of the AA or >5% of its wooded upland		wooded upland edge = where woody plants are located within one tree-height of the wetland-upland
246		,	edge if any.		boundary. Measurements are the d.b.h., which is the tree diameter at 4.5 ft above the ground. If visited only in
247			deciduous 1-4" diameter and >3 ft tall	0	winter, consider "dead standing trees" to be those that are mainly without bark. Include woody vines such as
248			evergreen 1-4" diameter and >3 ft tall	0	Himalayan blackberry. [CS+,POL+,INV+,AM+,WBN+,SBM+,Sens+]
249			deciduous 4-9" diameter	0	
250			evergreen 4-9" diameter	0	
248 249 250 251 252 253 254 255 256			dead standing 4-9" diameter	0	
252			deciduous 9-21" diameter	1	
253			evergreen 9-21" diameter	0	
254			dead standing 9-21" diameter	0	
255			deciduous >21" diameter	0	
256			evergreen >21" diameter	0	
257			dead standing >21" diameter	0	
			Lacks woody vegetation, or none of above occupy >5% of the wooded part of the AA or 5% of the	0	
258			length of the upland edge.		
	F51	N Fixers	Within the vegetated part of the AA, the cover of nitrogen-fixing plants (e.g., alder, sweetgale,		For a more complete list see file ORWAP_SuppInfo , worksheet NFIX . Do not include algae.
259			legumes) is:		
260			<1% or none	1	
261			1-25%	0	
262			25-50%	0	
263			50-75%	0	
264		W	>75%	0	Nune way 1
	F52		The percent of the vegetated part of the AA, excluding areas that are never inundated, which		[WBF+,WBN+]
			contains one or more of these plants: Alisma spp., Beckmannia spp., Polygonum spp. (natives		
			only), Potomogeton (Stuckenia) spp., Ruppia spp., Sagittaria spp., Sparganium spp., Zostera spp.,		
265			IS:		
		'	<1% or none, and none are known to occur commonly within the same wetland or within 300 ft of	1	
266			this AA		
			<1% or none, but some are known to occur commonly within the same wetland or within 300 ft of	0	
267			this AA		
268			1-10%	0	
269			10-50%	0	
270			>50%	0	
	F53		The last time that >5% of the AA's vegetation cover was burned or harvested for hay or timber		[PR-,NR-,CS-,OE+,POL-,WBF+,PD+]
271			was:		
272			0-12 months ago, and this occurs almost annually within part of the AA	0	
273			0-12 months ago, but was not an annual (or near-annual) event	0	
274			1-5 years ago	0	
275			>5 years ago, or never	1	
276			unknown	0	
	F54	3	Within the stratum (herbaceous, shrub, or tree) that covers the most onsite area, the wetland		e.g., If dominantly herbaceous, then "diverse heights" might include both short and tall forbs, some non-woody
		Dominant Stratum	plants during maximum annual cover condition are mostly:		vines, and mid-height graminoids. See photograph of a vertically diverse herbaceous stratum in Appendix A of
277					manual. [POL+,INV+,WBN+,SBM+, PD+]
278			of nearly uniform height (+ or - 20% of average)	0	
279			of very diverse heights (e.g., short & tall forbs, short & mid-height grasses)	1	

	Α	В	С	D	E
	F55	Bare Ground &	Consider the parts of the AA that usually are not inundated in May, or are inundated by tides at		Estimates of "plant litter" cover should include only the litter and woody debris that would be visible from a
		Accumulated Plant Litter	least once annually. Viewed from 6 inches above the soil surface, the condition in most of this		height of 6 inches above the soil surface. Emphasis should be on plant litter that has remained from prior years
280			area during May is:		("thatch"), not recent. Erect plant stems should not be counted as plant litter, even if dead. "Bare ground" that
			little or no (<5%) bare ground or plant litter (thatch) is visible between erect stems or under		is present under a tree or shrub canopy should be counted. It includes unvegetated soil, rock, sand, or mud
			canopy. This can occur if ground surface is extensively blanketed by moss, graminoids with great		between stems if any. See photographs in Appendix A of manual for examples. Wetlands that are dominated
			stem densities, or plants with ground-hugging foliage.		by annual plant species tend to have more extensive areas that are bare or covered only by plant litter, during
281					minimum annual cover conditions. [SR-,PR-,NR-,CS-,OE-,POL-,INVAM-,SBM-,Sens+]
			some (5-20%) bare ground or litter is visible. Herbaceous plants have moderate stem densities	0	
282			and do not closely hug the ground.		
			much (20-50%) bare ground or plant litter is visible. Low stem density and/or tall plants with little	0	
202			near-ground foliage. May be mostly woody plants, woody vines, cattail, bulrush, sparse annuals.		
283			mostly (>50%) bare ground or accumulated plant litter. Or, during May the entire AA is constantly	0	
284			under water.	U	
204	F56	Upland Edge Shape	Most of the edge between the wetland and upland is (select one):	W	See illustrations in Appendix A of the ORWAP manual . [NR+,SBM+]
20.7		Complexity	most of the eage between the welland and apiana is (selectione).		oco indoledilo in ripportant reol the Ortera Handar. [interpolitin]
285		· · · F · · O · · · · J		1	
200			Linear: a significant proportion of the wetland's upland edge is straight, as in wetlands bounded by	1	
286			partly or wholly by dikes or roads Convoluted: Wetland perimeter is many times longer than maximum width of the wetland, with	0	
287			many alcoves and indentations ("fingers")	U	
207			Intermediate: Wetland's perimeter either (a) is only mildly convoluted, or (b) mixed contains	0	
288			about lengths of linear and convoluted segments.	_	
	F57	Upland Inclusions	The extent of inclusions of upland within the AA (as indicated by their topography, plants, and/or		[NR+,AM+,SBM+]
289		·	soils) is:		
290		ľ	Many (e.g., wetland-upland "mosaic")	0	
291			Few or none	1	
		' '	The composition of the soil in the soil pit at the ground surface (uppermost soil layer and excluding		duff layer= leaves, woody material, and live or dead roots, moss that has undergone partial decomposition.
		Pit	the duff layer, see protocol in ORWAP Manual, section 2.3.2) is:		[PR,NR,CS,OE, PD, Sen]
292					
293		'	Loamy: includes silt, silt loam, loam, sandy loam	1	
293			Clayey: includes clay, clay loam, silty clay, silty clay loam, sandy clay, sandy clay loam	0	
20.4			Chayey . Includes clay, clay loant, sing clay, sing clay loant, sandy clay, sandy clay loant	Ü	
294			Organic: includes muck, mucky peat, peat, and mucky mineral	٥	
295			3	U	
			Coarse: includes sand, loamy sand, gravel, cobble, stones, boulders, fluvents, fluvaquents,	0	
296			riverwash		
	F59	Downed Wood	The number of downed wood pieces longer than 6 ft and with diameter >6", and not persistently		include driftwood. [POL+,INV+,AM+,SBM+]
297			submerged, is:		
298			Several (>5 if AA is >10 acres, or >2 for smaller AAs)	0	
299	F/0	Cround Irrogularity	Few or none		"microtopography" refere mainly to vertical relief of . 1 m and is represented only by in
	F60	Ground Irregularity	The number of animal burrows, mounds, hummocks, boulders, upturned trees, islands, natural levees, dry channels, pits, wide soil cracks, and microdepressions (in parts of the AA that lack		"microtopography" refers mainly to vertical relief of <1 m and is represented only by inorganic features, except where plants have created depressions or mounds of soil. See photographs in Appendix A of manual for
300			persistent water) is:		examples. [WS+,SR+,PR+,NR+,CS+,POL+,INV+,AM+,SBM+,PD+]
301			Several (extensive micro-topography)	0	CAMINIPIOS. [1873-1,514-1,11414-1,00-1,1 OET,1144-1,0191-1,00-1]
501			Few or none (minimal microtopography; <1% of the area that isn't persistently inundated); e.g.,	0	
302			many flat sites having a single hydroperiod		
303			Intermediate	1	

	Α	В	С	D	E
	F61	Internal Gradient	The gradient along most of the AA's water flow paths (both sheet and channel flow) is:		Except in isolated wetlands (no outlets), this is not the same as the shoreline slope. It is the elevational
304			, ,		difference between highest and lowest points within the site, divided by the flow-distance between them and
305		l	>10%	0	converted to percent. If most of the surface water is impounded within the site, the gradient is the gradient of
306			6-10%	0	the water surface, not the gradient of the submerged substrate. See diagram in Appendix A. If available, use
307			2-5%		a clinometer to measure this. [WS-,SR-,PR-,NR-,CS-,OE+,AM-,WBF-,WBN-]
507			Flat (<2%, no slope or flow is ever apparent, or AA is an estuarine fringe wetland). Includes most	1	· · · · · · · · · · · · · · · · · · ·
308			depressional sites		
500	F62	Fish Access From Offsite	Small fish (e.g., stickleback, minnow) from elsewhere in the watershed can access part of this AA	0	Although incomplete, the species maps may be helpful at: http://map.streamnet.org/ or
	1 02	1 ISH 7 GCCSS 1 TOHI CHISIC	for at least 2 days during most years or are known to already be present onsite.	o	http://query.streamnet.org/ [INV-,FA+,FR+,AM-,WBF+]
309			tor at reast 2 days daring most years or are known to already be present on the.		interregion for the first firs
309	F/2	Mosting or Deseting	Within the AA or within its westend or within 200 ft of AA there are bridges buildings source or	1	a a constitution for here qualitate bridges for aliff qualitate wood dual between good posting platforms.
		Nesting or Roosting	Within the AA or within its wetland or within 300 ft of AA, there are bridges, buildings, caves, or		e.g., open buildings for barn swallows, bridges for cliff swallows, wood duck boxes, goose nesting platforms,
		Structures	ledges with openings/ crevices, well-maintained bird or bat boxes, elevated platforms, or other		sheltered places for bees and wasps [POL+,SBM+]
			artificial structures suitable for nesting by some native bird or bat species.		
310				_	
	F64	Cliffs, Banks, or Beaver	In the AA or within its wetland or within 100 ft of the AA, there are elevated terrestrial features such	0	[POL+,SBM+]
			as cliffs, stream banks, excavated pits, or pumice walls (but not riprap) that extend at least 6 ft		
			nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for		
			nesting or den areas. Or there is evidence that beaver have used this AA (e.g., gnawed limbs).		
1					
311					
	F65	Visibility	The maximum percent of the wetland that is visible from the best vantage point on public roads,		[PU+]
			public parking lots, public buildings, or public paved paths that adjoin or are within 300 ft of the AA		
312			(select one) is:		
313			>50%	1	
314			25-50%	0	
315			<25%	0	
316	F66	Ownership	Most of the AA is (select one):		[PU+]
317			in public ownership	1	
318			in private ownership	0	
319	F67	Public Access	For most of the AA, permission for access is normally given or allowed:		In all cases, this question assumes that permission for access may be limited to certain activities. [PU+]
320			to anyone, mostly unrestricted	1	
321			to anyone, but significant restrictions (e.g., limited dates, permit required)	0	
322			only on a case-by-case basis, but with few other restrictions	0	
1			only on a case-by-case basis, with restrictions (e.g., limited dates, permit required)	0	
323					
324			seldom or never	0	
325	F/0	Non concumptive Us	(do not know)	0	[htt.]
326		Non-consumptive Uses -	Assuming access permission was granted, select all statements that are true of this AA as it		[PU+]
326		Actual or Potential	currently exists:	1	
225			Walking is physically possible in >5% of the AA during most of year, e.g., free of deep water and dense shrub thickets	1	
327					
220			All or part of the AA (or an area within sight of the AA and within 100 ft) would be physically	0	
328			accessible to people in wheelchairs, e.g., paved and flat	0	
1			Maintained roads, parking areas, or foot-trails are within 30 ft of the AA, or the AA can be accessed	U	
329			most of the year by boat	_	
	F69	Sustained Scientific Use	Plants, animals, or water in the AA have been monitored for >2 years, unrelated to any regulatory	0	[PU+]
1			requirements, and data are available to the public. Or the AA is part of an area that has been		
1			designated by an agency or institution as a benchmark, reference, or status-trends monitoring		
320			area.		
331			(do not know)	0	
331			tuo not vitow)	U	

	A	В	C	D	P.
\vdash	F70	Consumptive Uses	Recent evidence was found within the AA of the following potentially-sustainable consumptive		"Low impact" means adherence to Best Management Practices such as those defined by NRCS and other
332		(Provisioning Services)	uses. Select all that apply.		agencies. Evidence may consist of direct observation, or presence of physical evidence (e.g., recently cut
333		(low-impact commercial timber harvest	0	stumps, fishing lures, shell cases), or communication with the land owner or manager. [PS+]
334			low-impact grazing	0	interior in management of the second second in the second
335			commercial harvesting of hay or mushrooms	0	
336			waterfowl hunting or furbearer trapping	0	
337			fishing (including shellfish harvest)	0	
338			None of the above	1	
339	F71	Domestic Wells	Wells that currently provide drinking water are:		If unknown, assume this is true if there is an inhabited structure within the specified distance and the
340			Within 500 ft and downslope from the AA or at same elevation	0	neighborhood is known to not be connected to a municipal drinking water system (e.g., is outside an Urban
341			500-1000 ft and downslope or at same elevation	0	Growth Boundary), or if crops are irrigated annually and the site is distant from a major water body. [NRv+]
342			>1000 ft downslope, or none downslope, or AA is tidal, or no information	1	
	F72	Sediment Removal	Excessive accumulation of sediment has caused frequent problems for large boats, with shoaling		[SRv+]
		Countries reconstruction	necessitating frequent dredging, in waters that are located:		[onn-]
343					
344			contiguous to the AA, or <1 mile downslope from the AA	0	
345			1-5 miles downslope	0	
346			>5 miles downslope, or no shoaling, or no boats, or no information	1	
	F73	Devegetation	The percent of the AA's vegetation cover that normally grows taller than 4 inches but which has		[OE-,INV-,AM-,WBN-,SBM-,PD-,CQ-]
			been persistently reduced to less than that height by mowing (many times per year), plowing,		[
			and/or grazing by domestic or wild animals is:		
347			ditars grazing by defined to this difficulty		
348			>95%	0	
349			50-90%	0	
350			5-50%	0	
351			<5%, or grazing/ mowing does not cause the described condition	1	
352	F74	Core Area 1	The part of the AA almost never visited by humans during an average year probably comprises:		Judge this based on proximity to population centers, roads, trails, accessibility of the AA to the public, wetland size, usual water depth, and physical evidence of human visitation. Exclude visits that are not likely to continue
353			>95% of the AA	0	and/or that are not an annual occurrence, e.g., by construction or monitoring crews. See diagram in Appendix
354			50-95%	1	A of the manual. [AM+,WBF+,WBN+,SBM+,PD+,STR-]
			5-50% and inhabited building is within 300 ft of the AA, or <5% and no inhabited building is within	0	
355			300 ft of the AA		
356			none of the above	0	
	F75	Core Area 2	The part of the AA visited by humans almost daily for several weeks during an average year		Exclude visits that are not likely to continue and/or that are not an annual occurrence, e.g., by construction or
357			probably comprises:		monitoring crews. See diagram in Appendix A of the manual. [AM-,WBF-,WBN-,SBM-,PD-,STR+]
358			OFFICE AA	0	
			>95% of the AA	0	
359 360			50-95%	0	
361			5-50% <5%	1	
	F76	Weed Source Along	Along the AA's boundary with upland, the percent of the upland edge (within 10 ft of AA) that is		Some of the most common invaders along upland edges of Oregon wetlands are Himalayan blackberry,
		Upland Edge	occupied by species that are marked as invasive in the Plants worksheet is:		knotweed, sweetbrier rose, Russian olive, English ivy, nightshade, pepperweed, medusahead, white clover,
362		opiana Euge	occupied by species that are marked as invasive in the Plants worksheet is:		ryegrass, quackgrass, false brome, bentgrass, dandelion, oxeye daisy, pennyroyal, bull and creeping thistles,
363			most (-E09/) of the unland edge	1	ryegrass, quackgrass, talse brome, bentgrass, dandellon, oxeye dalsy, pennyroyal, bull and creeping tristles, tansy raqwort, poison hemlock, and teasel. See file ORWAP_SuppInfo , worksheet P_Invas . If a plant cannot
			most (>50%) of the upland edge much (5-50%) of the upland edge	0	
364 365			some (1-5%) of the upland edge	0	be identified to species (e.g., winter conditions) but its genus contains an invasive species, assume the
303				0	unidentified plant to also be invasive. If vegetation is so senesced that apparently dominant edge species
			none of the upland edge (invasives apparently absent), or AA is not within 10 ft of upland	U	cannot be identified even to genus, answer "none". [PD-,STR+]
366					

	Α	В	С	D	E
	F77	Natural Land Cover in	Within 100 ft upslope of the AA's wetland-upland boundary, the percent of the upland that	D	Natural land cover includes wooded areas, sagebrush, vegetated wetlands, prairies, as well as relatively
	. ,,	Buffer	contains <i>natural</i> (not necessarily native) land cover is:		unmanaged commercial lands such as hayfields, lightly grazed pastures, and most rangeland. It does not
367		Build	contains natural (not necessarily native) land cover is.		include water, row crops (vegetable, orchards, Christmas tree farms), residential areas, lawn, pavement, bare
			>90%, or there is no upland boundary	0	soil, gravel or dirt roads. Natural land cover is not the same as native vegetation or undisturbed soil. It
368 369			60 to 90%	0	frequently includes a dominance of non-native plants (e.g., ryegrass, Himalayan blackberry). If the entire site is
370			30 to 60%	1	an island without an upland edge, select the last choice. [POL+,INV+,FA+,FR+,AM+,WBN+,SBM+,PD+,Sens-]
371			5 to 30%	0	an island without an upland cage, solect the last choice. [i OE+,iiVV+,i A+,i R+,AiV+,WDIV+,ODIVI+,i D+,OCIS]
			<5%	0	
372				0	
	F78	Type of Land Cover	Within 100 ft upslope of the AA's wetland-upland boundary, the upland land cover that is not		[INV-,FA-,AM-,WBN-,SBM-,PD-,STR+]
373		Alteration in Buffer	natural (as defined above) is mostly:		
374			impervious surface, e.g., paved road, parking lot, building, exposed rock	0	
375			bare pervious surface, e.g., dirt road, dike, dunes, recent clearcut, landslide	1	
376			cultivated row crops or orchard	0	
377			artificially landscaped areas or lawn	0	
			grain fields, or grassland grazed or mowed to a height usually shorter than 4 inches	0	
378					
379			other	0	
380			(buffer is >90% natural land cover or AA occupies all of an island)	0	
	F79	Buffer Slope	Along the AA's wetland-upland boundary and extending 100 ft uphill, the slope of the land is		See diagram in Appendix A of the manual. If the described area contains a disturbance feature, estimate
	. , ,	,	mostly:		instead the slope between the wetland-upland boundary and the most extensive such feature. Disturbance
381 382			•	0	feature = building, paved area, recently cleared area, dirt road, lawn, intensely grazed pasture, orchard,
			<1% (flat almost no noticeable slope, or there is no upland boundary)	0	vineyard, annually-harvested row crops [Sens+]
383 384			2-5% 5-30%	1	integral annually man object to make the state of the sta
385			>30%	0	
	F00	E 1 . CI		U	
	F80	Edge Slope	Within 10 ft of ponded surface water (if any) in early summer, the percent of the herbaceous area		See diagram in Appendix A of the manual. If several isolated pools are present in early summer, estimate the
			(wetland or upland) that has a gentle or moderate slope (less than 5% slope) is:		percent of their collective shorelines that has such a gentle slope. [AM-,WBN-]
386					
387			>75%	0	
388			50-75%	0	
389			25-50%	1	
390			1-25%	0	
391			<1%,	0	
			(ponded surface water in early summer covers <1% of AA, or AA is tidal, or no herbaceous	0	
392			vegetation is present near ponded water)		
	F81	Independently Sustainable	How likely is it that any or all of this AA will persist as a wetland (not necessarily of the same type)		If all such human activities and structures disappeared, would the site still be a wetland?
		Hydrology	if an existing dike or berm, water control structure (e.g., dam, weir), or pumping/ diversion system		[WSv,SRv,PRv,NRv,INVv,AMv,WBFv,WBNv,SBMv,PDv+]
			that now helps sustain it and is within 1 mile of the AA was removed or became inoperable?		
393					
394			Very likely, or no such feature is present (greater sustainability potential)	0	
395			Somewhat likely part but not all of the AA would remain a wetland	1	
396			Unlikely or not at all (lower sustainability potential)	0	

Site Name: Bowman Dam- Pond	Investigator: Melanie Sharp		Date: 06/01/12				
eld S data form. ORWAP version 2.0.2							
Wetter Water Regime - Internal Causes							
	In the last column, place an X next to any item that is likely to have caused a part of the AA to be inundated more extensively, more frequently, more deeply, and/or for longer duration than it would be without that item or activity. (The items you check are not used automatically by ORWAP. They are included simply so they may be considered when evaluating the factors in the table beneath them).						
an impounding dam, dike, levee, weir, berm, road fill, or tidegate within or do	wngradient from the AA, or raising of outlet of	culvert elevation.		Х			
excavation within the AA, e.g., artificial pond, dead-end ditch							
excavation or reflooding of upland soils that adjoined the AA, thus expanding the	excavation or reflooding of upland soils that adjoined the AA, thus expanding the area of the AA						
plugging of ditches or drain tile that otherwise would drain the AA (as part of int	entional restoration, or due to lack of mainte	nance, sedimentation, etc.)					
vegetation removal (e.g., logging) within the AA							
compaction (e.g., ruts) and/or subsidence of the AA's substrate as a result of m	nachinery, livestock, or off road vehicles						
changes not related directly to humans, e.g., beaver							
If any items were checked above, then for each row of the table below, assign poi wetter water regime that still persists in the AA. To estimate that, contrast it with the automatically.							
	Severe (3 points)	Medium (2 points)	Mild (1 point)	Pt			
Spatial extent of resulting wetter condition	>95% of AA or >95% of its upland edge (if any)	5-95% of AA or 5-95% of its upland edge (if any)	<5% of AA and <5% of its upland edge (if any)	2			
When most of AA's wetter condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	1			
Score the following 2 rows only if the wetter conditions began within past 10 year for the part of the AA that got wetter.	rs, and only						
Inundation now vs. previously	persistent vs. seldom	persistent vs. seasonal	slightly longer or more often	C			
Average water level increase	>1 ft	6-12"	<6 inches	0			
* Score these 2 rows only for the part of the AA that got wetter, and only if the wett	ter conditions began within past 10 yrs		sum=	3			
0 if S	um= 0, (1 pt) if Sum= 1-4. (2 pt) if 5-6. (3 p	t) if 7-8. (4 pt) if 9-10. (5 pt) if >10	0. final score=	1			
Wetter Water Regime - External Causes							
In the last column, place an X next to any item occurring in the CA (including chamore frequently, more deeply, and/or for longer duration than it would be without the CA includes all upstream areas of that river.							
subsidies from stormwater, wastewater effluent, septic system leakage, or irriga	ation water (direct or via seepage)			Х			
pavement, ditches, or drain tile in the CA that incidentally increase the transpor	t of water into the AA			Χ			
removal of timber or phreatophytes in the CA or along the AA's tributaries							
removal of a water control structure or blockage in tributary upstream from the	AA						
changes in the CA that are not related directly to humans, e.g., channel migrati	on, landslides, forest die-offs, seismic activit	у					
If any items were checked above, then for each row of the table below, assign poi wetter water regime in the AA. To estimate that, contrast it with the condition if che	nts (3, 2, or 1) in the last column that describ ecked items never occurred or were no long	e the combined maximum effect of er present.	of those items in creating a				
	Severe (3 pts)	Medium (2 pts)	Mild (1 pt)	Pt			
Spatial extent of resulting wetter condition	>20% of the AA	5-20% of the AA	<5% of the AA	1			
When most of AA's wetter condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	1			
Score the following 2 rows only if the wetter conditions began within past 10 year for the part of the AA that got wetter.	rs, and only						
Inundation now vs. previously	persistent vs. seldom	persistent vs. seasonal	slightly longer or more often	O			
Average water level increase	>1 ft	6-12"	<6 inches	C			
		* Score this row only for the part of the AA that got wetter, and only if the wetter conditions began within past 10 yrs sum= 2					
* Score this row only for the part of the AA that got wetter, and only if the wetter co	Inditions began within past 10 yrs um= 0, (1 pt) if Sum= 1-4. (2 pt) if 5-6. (3 p			2			

Drier Water Regime - Internal Causes			-					
In the last column, place an X next to any item located within or immediately adjacent to the A	A, that is likely to have caused	a part of the AA to be inundated	ess extensively, less deeply,					
less frequently, and/or for shorter duration that it would be without that item.								
ditches or drain tile in the AA or along its edge that accelerate outflow from the AA	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1							
lowering or enlargement of a surface water exit point (e.g., culvert) or modification of a water I	·	g in quicker drainage						
accelerated downcutting or channelization of an adjacent or internal channel (cut below the hi	istorical water table level)							
deep ripping (e.g., with plows) that severs an underlying hydrologically-confining soil layer								
placement of fill material x								
withdrawals (e.g., pumping) of natural surface or ground water directly out of the AA (not its tri	ibutaries)							
If any items were checked above, then for each row of the table below assign points (3, 2, or 1) in the last column that describe the combined maximum effect of those items in creating a drier water regime in the AA. To estimate that, contrast it with the condition if checked items never occurred or were no longer present.								
	Severe (3 pts)	Medium (2 pt)	Mild (1 pt)					
Spatial extent of AA's resulting drier condition	>95% of AA or >95% of its upland edge (if any)	5-95% of AA or 5-95% of its upland edge (if any)	<5% of AA and <5% of its upland edge (if any)	1				
When most of AA's drier condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	1				
Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the AA that got drier.								
Inundation now vs. previously	seldom vs. persistent	seasonal vs. persistent	slightly shorter or less often	0				
Water level decrease	>1 ft	6-12"	<6 inches	0				
			sum=	2				
	if Sum= 1-4. (2 pt) if 5-6. (3 pt) if 7-8. (4 pt) if 9-10. (5 pt) if >10	final score=	1				
Drier Water Regime - External Causes								
In the last column, place an X next to any item within the CA (including channels flowing into the deeply, less frequently, and/or for shorter duration that it would be without those.	e AA) that is likely to have caus	sed a part of the AA to be inundate	d less extensively, less					
a dam, dike, levee, weir, berm, or tidegate that interferes with natural inflow to the AA				Х				
relocation of natural tributaries whose water would otherwise reach the AA				<u> </u>				
instream water withdrawals from tributaries whose water would otherwise reach the AA				<u> </u>				
groundwater withdrawals that divert water that would otherwise reach the AA proliferation of phreatophytes (woody plants with deep roots and high transpiration, e.g., junip	or autumn olivo) or crops with	high transpiration rates that are n	oar tho AA	<u> </u>				
changes not related directly to humans	ici, autumin dilve) di ciops wili	i ingri transpiration rates triat are n	cai the AA	_				
If any items were checked above, then for each row of the table below assign points (3, 2, or 1) in	n the last column that describe	the combined maximum effect of	those items in creating a drier	T				
water regime in the AA. To estimate that, contrast it with the condition if checked items never oc	curred or were no longer pres	ent.	v					
	Severe (3 pts)	Medium (2 pts)	Mild (1 pt)					
Spatial extent of AA's resulting drier condition	>20% of the AA	5-20% of the AA	<5% of the AA	1				
When most of AA;s drier condition began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	1				
Score the following 2 rows only if the drier conditions began within past 10 years, and only for the part of the AA that got drier.								
Inundation now vs. previously	seldom vs. persistent	seasonal vs. persistent	slightly shorter or less often	(
Water level decrease	>1 ft	1-12"	<1 inch	(
			sum= 2					
				_				

S5	Altered Timing of Water Inputs								
	In the last column, place an X next to any item that is likely to have caused the timing of water i muted (smaller or less frequent peaks spread over longer times, more temporal homogeneity of	nputs (but not necessarily thei f flow or water levels) or mor e	r volume) to shift by hours, days, or flashy (larger or more frequent spi	weeks, becoming either more ikes but over shorter times).					
	flow regulation in tributaries or water level regulation in adjoining water body, or tidegate or other control structure at water entry points that regulates inflow to the AA								
	increased pavement and other impervious surface in the CA	reased pavement and other impervious surface in the CA							
	straightening, ditching, dredging, and/or lining of tributary channels in the CA								
	discharges of irrigation water to the AA, applied at times when natural runoff typically is not significant other If any items were checked above, then for each row of the table below assign points (3, 2, or 1) in the last column that describe the combined maximum effect of those items on the timing of water inputs to the AA. To estimate that, contrast it with the condition if checked items never occurred or were no longer present.								
		Severe (3 pts)	Medium (2 pts)	Mild (1 pt)					
	Spatial extent within the AA of timing shift	>95% of AA	5-95% of AA	<5% of AA	3				
	When most of the timing shift began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	1				
	Score the following 2 rows only if the altered inputs began within past 10 years, and only for the part of the AA that experiences those.								
	Input timing now vs. previously	shift of weeks	shift of days	shift of hours or minutes	0				
	Flashiness or muting	became very flashy or controlled	intermediate	became mildly flashy or controlled	0				
	0.1.0	"C 1.1 (0.1) "F / (0.	1) '(7 0	sum=	4				
C4		If Sum= 1-4. (2 pt) If 5-6. (3 p	ot) if 7-8. (4 pt) if 9-10. (5 pt) if >10.	final score=	1				
S6	Accelerated Inputs of Nutrients, Contaminants, and/or Salts In the last column, place an X next to any item occurring in either the AA or its CA that is li	lich, to have applicated the i	anuta of nutrianta contaminanta or	colto to the AA					
	stormwater or wastewater effluent (including failing septic systems), landfills	kely to have accelerated the li	iputs of nutrients, contaminants, or	Sails to the AA	Х				
					^				
	irrigation water discharges into the AA, including saline seeps								
	livestock, dogs fertilizers applied to lawns, ag lands, or other areas in the CA				X				
	pesticides applied to lawns, ag lands, roadsides, or other areas in the CA, but excluding spot	applications for controlling no	n-natives in the AA		X				
	dumping of large amounts of wood, leaves, grass clippings, trash into the AA or its tributaries								
	artificial drainage of upslope lands								
	reflooding of soils that had been dry for many years								
	fire retardants from aerial firefighting oil or chemical spills (not just chronic inputs) from nearby roads								
	erosion of nutrient-rich or contaminated soils				Х				
	chemical wastes from mining, oil/ gas extraction, other industrial sources								
	other human-related disturbances within the CA								
	sources not related directly to humans, e.g., fire, extensive cover of nitrogen-fixing plants (e.ç								
	If any items were checked above, then for each row of the table below assign points (3, 2, or 1) loads of nutrients, contaminants, or salts reaching the AA. To estimate that, contrast it with the		er occurred or were no longer prese	ent.					
		Severe (3 pts)	Medium (2 pts)	Mild (1 pt)					
	Usual toxicity of most toxic contaminants	industrial effluent or 303d* for toxics	domestic effluent, cropland, or 303d for nutrients	mildly impacting (livestock, pets, low density residential)	1				
	Frequency & duration of input	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	3				
	AA proximity to main sources (actual or potential)	0-50 ft	50-300 ft or in groundwater	in other part of contributing area	1				
	* categorized by ODEQ as Water Quality Limited (303d) and toxic substances are listed by ODE	Q as one reason. See item D	40 in data form OF.	sum=	5				
	0 if Sum= 0,	(1 pt) if Sum= 1-3. (2 pt) if 4-5	5. (3 pt) if 6-7. (4 pt) if 8. (5 pt) if 9.	final score=	2				

67	Excessive Sediment Loading from Contributing Area						
	In the last column, place an X next to any item present in the CA that is likely to have elevated the load of waterborne or windborne sediment reaching the AA from its CA.						
	erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires						
	erosion from construction, in-channel machinery in the CA						
	erosion from off-road vehicles in the CA						
	erosion from livestock or foot traffic in the CA				Х		
	stormwater or wastewater effluent				Х		
	sediment from gravel mining, other mining, oil/ gas extraction				 		
	accelerated channel downcutting or headcutting of tributaries due to altered land use				<u> </u>		
	other human-related disturbances within the CA	, , , , , ,	a I		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		
	natural processes within the CA, e.g., streambank erosion, landslides, erosion of erosion-pro				Χ		
	If any items were checked above, then for each row of the table below assign points (3, 2, or 1) in the last column that describe the combined maximum effect of those items in increasing the amount or transport of sediment into the AA. To estimate that, contrast it with the condition if checked items never occurred or were no longer present.						
	Severe (3 pts) Medium (2 pts) Mild (1 pt)						
	Erosion in CA	extensive evidence, high intensity*	potentially (based on high- intensity* land use) or scattered	potentially (based on low- intensity* land use) with little	3		
	evidence or no direct evidence						
	Recentness of significant soil disturbance in the CA	current & ongoing	1-12 months ago	>1 yr ago	3		
	Duration of sediment inputs to the AA	frequent and year-round	frequent but mostly seasonal	infrequent & during high	2		
				runoff events mainly			
	AA proximity to actual or potential sources	0-50 ft, or farther but on steep erodible slopes	50-300 ft	in other part of contributing area	1		
	* high-intensity= plowing, grading, excavation, erosion with or without veg removal; low-intensity	ity= veg removal only with little	or no apparent erosion or	sum=	9		
	disturbance of soil or sediment						
	0 if Sum= 0, (1 pt)	if Sum= 1-4. (2 pt) if 5-6. (3 μ	ot) if 7-8. (4 pt) if 9-10. (5 pt) if >10.	final score=	4		
8	Soil or Sediment Alteration Within the Assessment Area						
	In the last column, place an X next to any item present in the AA that is likely to have compacted	d, eroded, or otherwise altered	the AA's soil				
	compaction from machinery, off-road vehicles, or mountain bikes, especially during wetter pe						
	leveling or other grading not to the natural contour				 		
	tillage, plowing (but excluding disking for enhancement of native plants)				1		
	fill or riprap, excluding small amounts of upland soils containing organic amendments (comp	ost, etc.) or small amounts of t	opsoil imported from another wetlar	nd			
	livestock and other sediment- or soil-disturbing animals, e.g., carp, nutria, wild boar, people of						
	excavation						
	dredging in or adjacent to the AA						
	boat traffic in or adjacent to the AA and sufficient to cause shore erosion or stir bottom sedim				ļ		
	artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments						
	natural processes within the AA, e.g., trampling by concentrated wildlife, shore or streamban	k erosion, landslides, normal e	erosion of erosion-prone soils espec	ially following fire, floods.			
	If any items were checked above, then for each row of the table below assign points (3, 2, or 1) AA's soils. To estimate that, contrast it with the soil condition if checked items never occurred o		e the combined maximum effect of	those items in altering the			
		Severe (3 pts)	Medium (2 pts)	Mild (1 pt)			
	Spatial extent of altered soil	>95% of AA or >95% of its	5-95% of AA or 5-95% of its	<5% of AA and <5% of its	0		
		upland edge (if any)	upland edge (if any)	upland edge (if any)			
	Recentness of significant soil alteration in AA	current & ongoing	1-12 months ago	>1 yr ago	0		
	Duration	long-lasting, minimal veg recovery	long-lasting but mostly revegetated	short-term, revegetated, not intense	0		
	Timing of soil alteration	frequent and year-round	frequent but mostly seasonal	infrequent & mainly during scattered events	0		
				sum=	0		
	0 if Sum= 0. (1 pt)	if Sum= 1-4. (2 pt) if 5-6. (3 r	ot) if 7-8. (4 pt) if 9-10. (5 pt) if >10.	final score=	0		
	5 our - 0, (1 py		, -: (.F.) (9 P.) (0.	111101 00010	_ Ŭ		

In the last column, place an X next to any item present in the AA that is likely to have caused less canopy or ground cover, or less vegetation biomass, or less wood generally. If only the					
species composition (not total cover or biomass) changed, do not chec	, , ,	J	g , ,		
clearing, logging, excepting removal of woody vegetation from nativ	ve prairies			T	
grazing by livestock					
mowing				1	
herbicides, excepting spot applications for controlling non-native pla	ants in the AA			1	
plowing, regrading				+	
removal of woody debris				+	
shading from large artificial structure, e.g., bridge, boardwalk, dock other human-related disturbances within the AA				+	
natural processes concentrated within the AA, e.g., wind & wave sc	ouring windthrow incost or disease infectations fires	honyar damaga natural arasian int	oncivo grazina by door alk	+	
Tradular processes concentrated within the AA, e.g., while a wave sc deese.	ourning, windulinow, insect or disease infestations, files,	beaver damage, natural erosion, inte	ensive grazing by deer, eik,		
				L	
If any items were checked above, then for each row of the table below	assign points (3, 2, or 1) in the last column that describ	pe the combined maximum effect of t	those items on the amount of	l	
f any items were checked above, then for each row of the table below	assign points (3, 2, or 1) in the last column that describ	pe the combined maximum effect of t	those items on the amount of		
f any items were checked above, then for each row of the table below	assign points (3, 2, or 1) in the last column that describes Severe (3 pts)	pe the combined maximum effect of the Medium (2 pts)	those items on the amount of Mild (1 pt)		
f any items were checked above, then for each row of the table below regetation cover in the AA.					
f any items were checked above, then for each row of the table below regetation cover in the AA.	Severe (3 pts)	Medium (2 pts)	Mild (1 pt)		
f any items were checked above, then for each row of the table below regetation cover in the AA. Spatial extent of veg removal	Severe (3 pts) >95% of AA or >95% of its water edge	Medium (2 pts) 5-95% of AA or 5-95% of its water	Mild (1 pt) <5% of AA and <5% of its		
f any items were checked above, then for each row of the table below egetation cover in the AA. Spatial extent of veg removal	Severe (3 pts) >95% of AA or >95% of its	Medium (2 pts) 5-95% of AA or 5-95% of its water edge	Mild (1 pt) <5% of AA and <5% of its water edge if any		
f any items were checked above, then for each row of the table below regetation cover in the AA. Spatial extent of veg removal Frequency of significant veg removal	Severe (3 pts) >95% of AA or >95% of its water edge regularly during most of the	Medium (2 pts) 5-95% of AA or 5-95% of its water edge	Mild (1 pt) <5% of AA and <5% of its water edge if any		
If any items were checked above, then for each row of the table below vegetation cover in the AA. Spatial extent of veg removal Frequency of significant veg removal Biomass recovery after each removal	Severe (3 pts) >95% of AA or >95% of its water edge regularly during most of the year	Medium (2 pts) 5-95% of AA or 5-95% of its water edge a few times a year	Mild (1 pt) <5% of AA and <5% of its water edge if any annual or less		

ORWAP SCORES SHEET	version 2.0.2		
Site Name:	Bowman Dam - Pond		
Investigator Name:	Melanie Sharp		
Date of Field Assessment:	6/1/2012		
Latitude (decimal degrees):	44.1102	Longitude (decimal degrees):	-120.7888

	Deletine	
	Relative	5
	Effectiveness of	Relative Values
Specific Functions:	the Function	of the Function
Water Storage & Delay (WS)	3.98	2.50
Sediment Retention & Stabilization (SR)	6.85	3.79
Phosphorus Retention (PR)	5.76	4.05
Nitrate Removal & Retention (NR)	5.03	4.96
Thermoregulation (T)	4.44	1.67
Carbon Sequestration (CS)	2.62	
Organic Matter Export (OE)	5.20	
Aquatic Invertebrate Habitat (INV)	5.93	6.56
Anadromous Fish Habitat (FA)	0.00	4.76
Non-anadromous Fish Habitat (FR)	6.34	2.38
Amphibian & Reptile Habitat (AM)	6.54	4.33
Waterbird Feeding Habitat (WBF)	4.76	6.50
Waterbird Nesting Habitat (WBN)	6.56	4.33
Songbird, Raptor, & Mammal Habitat (SBM)	4.54	4.33
Pollinator Habitat (POL)	5.69	0.00
Native Plant Diversity (PD)	5.17	6.50

GROUPED FUNCTIONS	Group Scores (functions)	Group Scores (values)	
Hydrologic Function (WS)	3.98	2.50	(identical to Water Storage and Delay function and value scores)
Water Quality Group (WQ)	6.85	4.96	(maximum of scores for SR, PR, NR, and T)
Carbon Sequestration (CS)	2.62		(identical to Carbon Sequestration score above)
Fish Support Group (FISH)	6.34	4.76	(maximum of scores for FA and FR)
Aquatic Support Group (AQ)	6.56	0.00	(maximum of scores for OE, AM, INV, WBF, and WBN)
Terrestrial Support Group (TERR)	5.69	6.50	(maximum of scores for PD, POL, and SBM)
Public Use & Recognition (PU)		10.00	(click on this cell to see this attribute defined)
Provisioning Services (PS)		0.00	(click on this cell to see this attribute defined)

OTHER ATTRIBUTES

Wetland Ecological Condition (CQ)	3.75
Wetland Stressors (STR)	5.30
Wetland Sensitivity (SEN)	4.90

HGM Class - Relative Probabilities (select max)	
Estuarine	0.00
Riverine	1.90
Slope	1.50
Flat	3.91
Depressional	15.83
Lacustrine	0.00

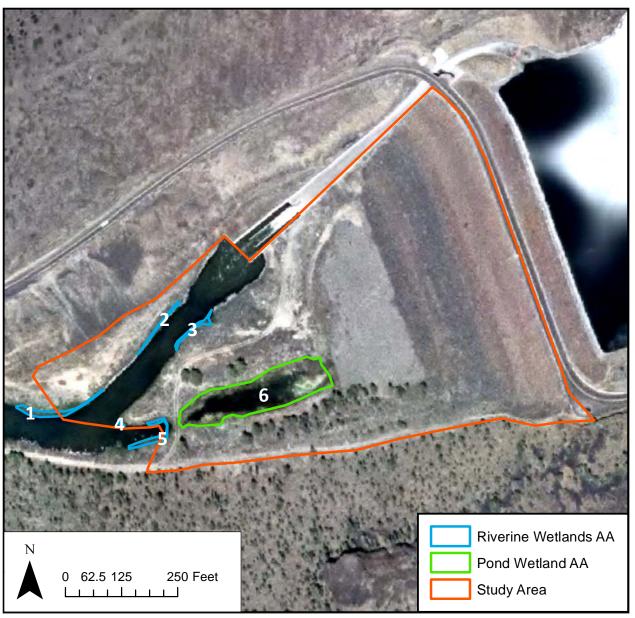


Figure 1. Assessment Area (AA) Aerial Photograph

This figure shows the assessment area of the five riverine and one pond wetland. The wetlands were assessed for the entire wetland area and not just those sections within the study area.

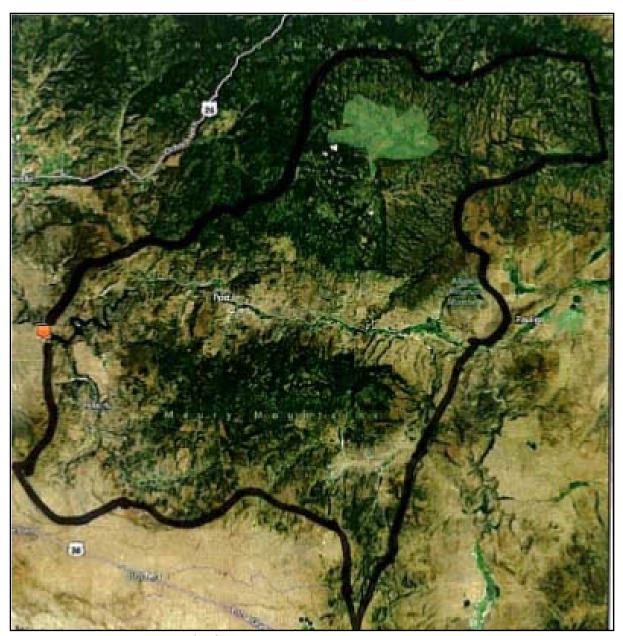


Figure 2. Contributing Area (CA) Aerial Photograph

The black line designates the HUC 4 watershed boundary that drains into the Crooked River at the project site (orange marker). Both the riverine and pond wetlands receive their hydrology inputs from the Crooked River at this location and their CA boundary would be the HUC 4 watershed. The wetlands also receive a very small amount of hydrology from the hillslope directly above them.

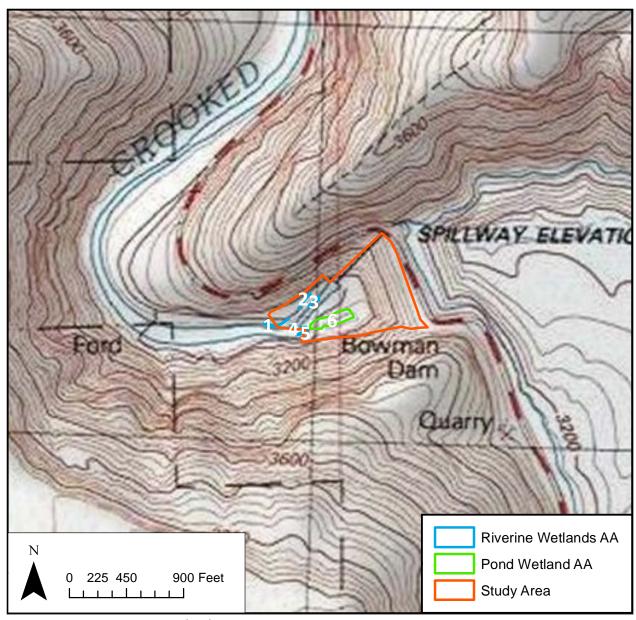


Figure 3. Assessment Area (AA) Topographic Map

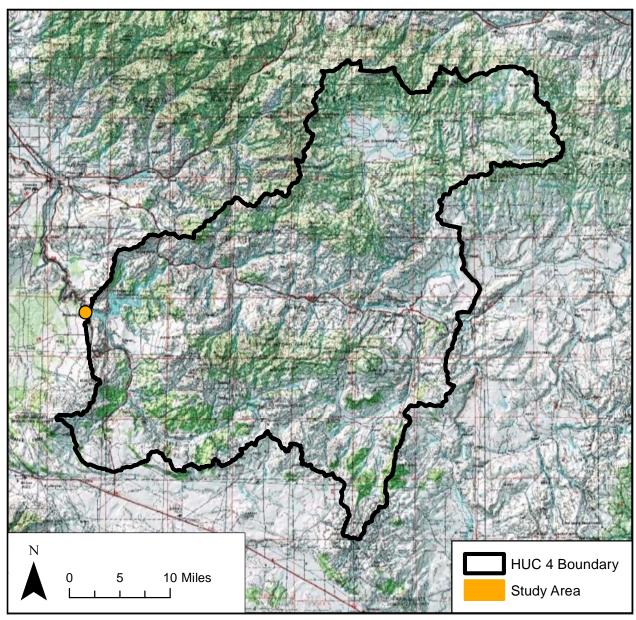


Figure 4. Contributing Area Topographic Map

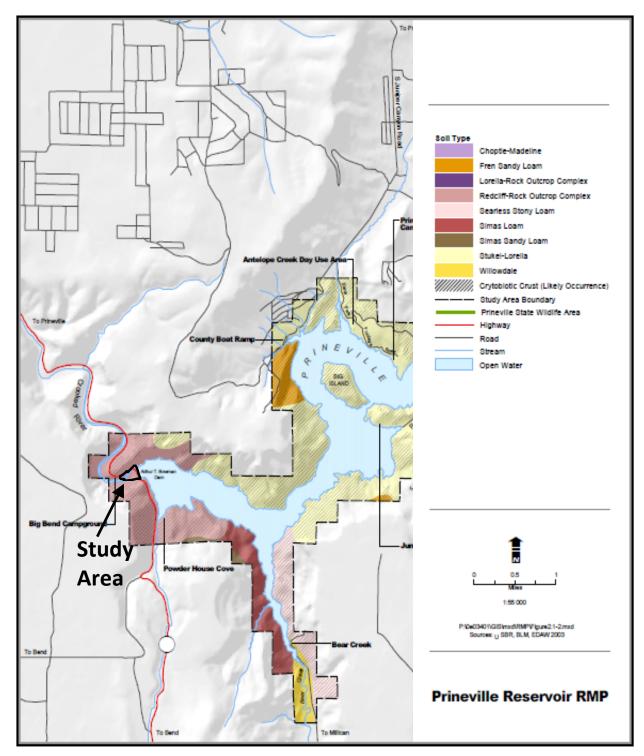


Figure 5. Soil Type Map from Prineville Reservoir Resource Management Plan (RMP)Although a soil survey has not been completed by the USDA for the study area, the Prineville Reservoir RMP does show the presence of Redcliff-Rock Outcrop in the Assessment Area.

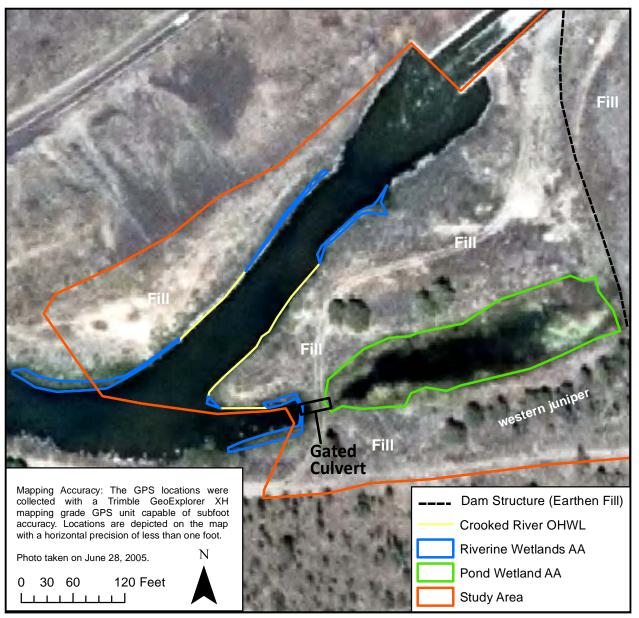


Figure 6. Base Map Showing the Riverine and Pond Assessment Areas (AA).